

**FINAL ENVIRONMENTAL ASSESSMENT  
FOR THE  
LICENSE TERMINATION PLAN  
HUMBOLDT BAY POWER PLANT UNIT 3**

**Docket No. 50-133  
Pacific Gas & Electric Company**

**U.S. Nuclear Regulatory Commission  
Division of Fuel Cycle Safety, Safeguards, and Environmental Review  
Office of Nuclear Material Safety and Safeguards**

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# 1 INTRODUCTION

By letter dated May 3, 2013, Pacific Gas and Electric Company (PG&E) submitted a license termination plan (LTP) (PG&E 2013d) to the United States Nuclear Regulatory Commission (NRC) for its Humboldt Bay Power Plant (HBPP) Unit 3 nuclear power reactor, located near Eureka, California. HBPP Unit 3 is currently undergoing decommissioning,<sup>1</sup> which is a process that takes several decades. PG&E submitted its LTP in accordance with the NRC regulation, 10 CFR 50.82(a)(9). The NRC's approval of a LTP is one of the final steps in the decommissioning process.

The May 3, 2013 letter also transmitted License Amendment Request 13-01, "Addition of License Condition 2.C.5, License Termination Plan" (PG&E 2013e), to amend the HBPP Unit 3 operating license to include the LTP.<sup>2</sup> This license amendment, if approved, would reflect the NRC's approval of PG&E's LTP. The approval of the LTP is the proposed agency action and as such, is the subject of this environmental assessment. If the NRC approves the LTP, the next and final step in the decommissioning process would be for PG&E to demonstrate that radioactive material has been removed from the HBPP Unit 3 site to levels that permit termination of the operating license. The applicable radiological criteria for unrestricted use is set forth in NRC's regulation, 10 CFR 20.1402.

The NRC has prepared this environmental assessment to comply with the requirements of the National Environmental Policy Act (NEPA), 42 USC 4321 *et seq.* This environmental assessment has been prepared in accordance with the NRC's NEPA implementing regulations in 10 CFR Part 51 and with the associated guidance in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs" (NRC 2003). This document provides the results of the NRC staff's environmental review.

## 1.1 Background

PG&E received a construction permit for the HBPP Unit 3 reactor on October 17, 1960. An operating license, designated by the NRC as DPR-7, was issued in August 1962, with commercial operation (electric generation) of the HBPP Unit 3 reactor beginning in August 1963. Both the construction permit and the operating license were issued in accordance with NRC regulations in 10 CFR Part 50.<sup>3</sup> On July 2, 1976, HBPP Unit 3 was shut down for refueling. During the shutdown, PG&E upgraded the seismic design basis for the plant based on new seismic information in response to a NRC order issued on May 17, 1976. In 1983, PG&E concluded that the necessary modifications were not economical and chose to decommission HBPP Unit 3. HBPP Unit 3 has not operated since it was shut down in July 1976 (PG&E 2003a).

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<sup>1</sup> The NRC defines the term "decommission" as the removal of "a facility or site safely from service" and the reduction of "residual radioactivity to a level that permits—(1) Release of the property for unrestricted use and termination of the license; or (2) Release of the property under restricted conditions and termination of the license" (10 CFR 50.2).

<sup>2</sup> The NRC docket number for the HBPP Unit 3 license is 50-133.

<sup>3</sup> The NRC's regulations in 10 CFR Part 50 concern the design, construction, operation, and decommissioning of nuclear power reactors.



In 1988, the NRC approved the safe storage (SAFSTOR)<sup>4</sup> plan for HBPP Unit 3 and amended the license under 10 CFR Part 50 to a “possession only” license.<sup>5</sup> PG&E currently stores spent fuel from previous HBPP operations in an Independent Spent Fuel Storage Installation (ISFSI)<sup>6</sup> located on the HBPP Unit 3 site (NRC 2005b).

Although 10 CFR 50.82(a)(9) requires the licensee to identify remaining dismantlement activities in its LTP, the NRC’s approval or disapproval of the LTP does not control the licensee’s demolition or dismantlement of any buildings or structures. The licensee, however, in accordance with 10 CFR 50.82(a)(7), is bound by the licensee’s post-shutdown decommissioning activities report (PSDAR) (PG&E 2013c).<sup>7</sup> To the extent any decommissioning activity, including the demolition or dismantlement of any buildings or structures, is inconsistent with the PSDAR, the licensee is required to notify the NRC in writing before performing that activity. A summary of the remaining major decommissioning activities is presented in tabular form in Appendix A of this document.

In accordance with the NRC’s regulation, 10 CFR 50.82(a)(11), the NRC shall terminate the HBPP Unit 3 operating license upon PG&E’s demonstration, through its final radiation survey, that it has met the radiological release criteria of 10 CFR 20.1402. In this regard, the NRC considers the actual termination of the operating licenses itself, as opposed to the approval of the LTP, to be an administrative action, with no further NEPA review.

## **1.2 Need for the Proposed Action**

The LTP provides the basis for the NRC to ensure that the licensee has adequate funds available to complete decommissioning. Specifically, the licensee must have adequate funds to conduct any necessary activities to reduce the licensed facility’s residual radioactivity to levels that will allow the NRC to terminate the operating license and release the site for future use, in accordance with NRC’s regulations 10 CFR 20.1402 (unrestricted use) or 10 CFR 20.1403 (restricted use). In addition, the LTP enables the NRC to ensure that the licensee is using the proper radiation release criteria and to determine the adequacy of the licensee’s final site survey, which is required to verify that the radiation release criteria have been met. Thus, the NRC’s review and approval of the LTP is the regulatory mechanism by which the NRC ensures that final decommissioning activities are appropriately completed. Once decommissioning has been completed and the NRC license terminated, the site can be made available for another use.

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<sup>4</sup> SAFSTOR is the decommissioning method in which a nuclear facility is placed and maintained in a condition that allows the safe storage of radioactive components of the nuclear plant and subsequent decontamination to levels that permit license termination.

<sup>5</sup> A “possession only” license permits the licensee to possess radioactive material at the licensed site; under a possession only license, the licensee cannot use the material.

<sup>6</sup> The NRC defines the term “Independent spent fuel storage installation or ISFSI” as “a complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related [Greater than Class C] waste, and other radioactive materials associated with spent fuel and reactor-related [Greater than Class C] waste storage.”

<sup>7</sup> The PSDAR “must contain a description of the planned decommissioning activities along with a schedule for their accomplishment, a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements” (10 CFR 50.82(a)(4)(i)).

The 10 CFR 20.1402 criteria for unrestricted use is as follows:

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a [total effective dose equivalent] to an average member of the critical group<sup>8</sup> that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

### 1.3 Scope

The NRC's regulatory mission is to ensure the adequate protection of both the public and occupational workers from radiological hazards at a licensed site and to ensure the physical security of radioactive materials in the licensee's possession.<sup>9</sup> The NRC, acting by itself or on behalf of the United States, holds no real property interest in those properties owned or otherwise controlled by its licensees. Similarly, the NRC has no land management authority over licensee owned or controlled properties.

The starting point for all NRC environmental reviews of proposed licensee commercial power reactor decommissioning actions is the "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, Regarding the Decommissioning of Nuclear Power Reactors," NUREG-0586, Supplement 1 (NRC 2002) (Decommissioning GEIS). The Decommissioning GEIS evaluated and identified 15 environmental resources as to whether they could be considered generic (common to all nuclear facilities) or site-specific. In so doing, the NRC concluded in the Decommissioning GEIS that only two environmental resource areas were determined to be site-specific – endangered species and environmental justice. Thus, these two resource areas must always be evaluated in the site-specific environmental assessment. Depending on the site-specific circumstances, four additional resource areas may also need to be considered in the site-specific environmental assessment: 1) historic properties and cultural resources (beyond the operational area<sup>10</sup> with no current cultural and historic resource survey); 2) land use involving offsite areas to support decommissioning activities; 3) aquatic ecology for activities beyond the operational area; and 4) terrestrial ecology for activities beyond the operational area. The remaining nine resource areas were considered generic, and their impacts were considered not significant (NRC 2002). Thus, absent any new and significant information, any environmental assessment prepared during the decommissioning process will be focused only on these resource areas. This EA tiers off of and incorporates by reference the Decommissioning GEIS.

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<sup>8</sup> The term "critical group" is defined in 10 CFR 20.1003 as "the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances." The term "residual radioactivity" is defined in 10 CFR 20.1003 as "radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control."

<sup>9</sup> The NRC's organic statutory authority is the Atomic Energy Act of 1954, as amended. 42 U.S.C. 2011 *et seq.*

<sup>10</sup> The Decommissioning GEIS defines the "operational area" as "the portion of the plant site where most or all of the site activities occur, such as reactor operation, materials and equipment storage, parking, substation operation, facility service, and maintenance. This includes areas within the protected area fences, the intake, discharge, cooling, and associated structures as well as surrounding paved, graveled, maintained landscape, or other maintained areas" (NUREG-0586, Supp. 1 at xvi).

The NRC staff is reviewing PG&E's LTP in accordance with 10 CFR 50.82(a).<sup>11</sup> The NRC staff's safety review of the LTP is documented separately in the Safety Evaluation Report (SER).

### **1.3.1 Partial Site Release**

PG&E owns real property surrounding the HBPP site in Humboldt County, California (part of the 58 ha (143 ac). After the approval of the LTP and prior to the termination of its license, PG&E intends to convey the property commonly known as the Fisherman's Channel and that portion of the property southwest of King Salmon Avenue to the Humboldt Bay Harbor, Recreation and Conservation District ("District"). During the operation of HBPP Unit 3, Fisherman's Channel was used by PG&E as the once through cooling water source for the HBPP Unit 3. The District, with PG&E's financial assistance, plans to return Fisherman's Channel to a depth adequate for commercial and recreational fishing vessels by dredging and the disposal of the dredged materials. PG&E would obtain all necessary governmental approvals to convey the subject property, consisting of 12.3 ha (30.4 ac) to the District (PG&E 2014a).

As documented in the SER, the NRC has determined that the residual radioactivity in Fisherman's Channel and the portion of the property southwest of King Salmon Avenue is within the 10 CFR 20.1402 regulatory limit for unrestricted use. The conveyance of this parcel is consistent with the proposed LTP.

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<sup>11</sup> The NRC regulation, 10 CFR 50.82(a), "Termination of license," sets forth the requirements for the termination of a nuclear power reactor's operating license.

## **2 THE PROPOSED ACTION**

The proposed action is the approval of the LTP for HBPP Unit 3. In determining whether to approve a LTP, the NRC considers the following elements: (a) the adequacy of the licensee's decommissioning funding plan for the purpose of assuring that sufficient funding is available to complete the remaining radiological remediation activities; (b) the appropriate radiation-release criteria for license termination; and (c) the adequacy of the design of the final survey to verify that the release criteria have been met.<sup>12</sup>

Although 10 CFR 50.82(a)(9) requires the licensee to identify remaining dismantlement activities in its LTP, the NRC's approval or disapproval of the LTP does not control the licensee's demolition or dismantlement of any buildings or structures. The licensee, however, in accordance with 10 CFR 50.82(a)(7), is bound by the licensee's post-shutdown decommissioning activities report (PSDAR) (PG&E 2013c).<sup>13</sup> To the extent any decommissioning activity, including the demolition or dismantlement of any buildings or structures, is inconsistent with the PSDAR, the licensee is required to notify the NRC in writing before performing that activity.

In accordance with the NRC's regulation, 10 CFR 50.82(a)(11), the NRC shall terminate the HBPP Unit 3 operating license upon PG&E's demonstration, through its final radiation survey, that it has met the radiological release criteria of 10 CFR 20.1402. In this regard, the NRC considers the actual termination of the operating licenses itself, as opposed to the approval of the LTP, to be an administrative action, with no further NEPA review.

### **2.1 Location of the Proposed Action**

The HBPP Unit 3 is sited on the northern California coast in Humboldt County, approximately 3 miles southwest of the City of Eureka and approximately 400 kilometers (km), or 250 miles (mi) north of San Francisco. An aerial photo is shown in Appendix B. PG&E owns 58 hectares (ha), 143 acres (ac), of land along the mainland shore of Humboldt Bay and the intertidal areas extending approximately 150 meters (m), or 500 feet (ft) into Humboldt Bay. The HBPP Unit 3 site is located within the larger PG&E property on a small peninsula known as Buhne Point. The approximate footprint of the Unit 3 site is 0.8 ha (2 ac).

### **2.2 The License Termination Plan**

Prior to the NRC's termination of the license, PG&E must show that the Humboldt Bay site will be in compliance with the NRC's radiological criteria for unrestricted use in 10 CFR 20.1402. The criteria in 10 CFR 20.1402 provides that a licensee must demonstrate that the residual radioactivity that is distinguishable from background radiation results in an annual, all-pathways total effective dose equivalent that does not exceed 25 millirem (mrem), or 0.25 millisieverts

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<sup>12</sup> NUREG-1757, Vol. 2, Rev. 1, "Consolidated Decommissioning Guidance," Appendix O, O-17. The statements of consideration, or preamble, for the NRC's final rule that amended 10 CFR 50.82 also describe the purpose of the license termination plan (see 61 FR 39278, 39284 and 39289; July 29, 1996).

<sup>13</sup> The PSDAR "must contain a description of the planned decommissioning activities along with a schedule for their accomplishment, a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statement" (10 CFR 50.82(a)(4)(i)).

(mSv), and that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).<sup>14</sup>

Remediation actions are dependent upon the material that was contaminated during the operation of the power plant. The ongoing and planned remediation actions are presented in Chapter 4 of the LTP (PG&E 2013d), and describe decontamination of the soil and structures at the HBPP Unit 3 site.

Following the decontamination of the remaining site structures and soil, HBPP Unit 3 would be decommissioned through the following steps:

- Identify and remove all residual radioactive material above the applicable NRC radiological criteria for unrestricted use, in accordance with the NRC's regulation 10 CFR 20.1402;
- Conduct a final radiological survey; and
- Upon NRC's review of the final radiological survey and determination that the radiological criteria for unrestricted use in 10 CFR 20.1402 have been satisfied, the NRC's termination of the HBPP Unit 3 operating license.

Based upon radiation measurements taken regularly by PG&E since HBPP Unit 3 was placed in SAFSTOR, current estimates indicate that HBPP Unit 3 site should comply with the NRC's criteria for unrestricted release annual dose limit of 25 mrem (0.25 mSv) and ALARA in 2020 (PG&E 2013d).

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<sup>14</sup> The NRC regulation 10 CFR 20.1003 defines ALARA as "making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest."

### **3 ALTERNATIVES TO THE PROPOSED ACTION**

The no-action alternative was considered relative to the PG&E request for approval of the LTP. The no-action alternative would mean that NRC would not approve the LTP and the HBPP Unit 3 operating license would not be terminated. Assuming the NRC finds PG&E's LTP to be sufficient, there is no practical reason not to approve the LTP. PG&E ceased power operations in July 1976; the HBPP Unit 3 site has been in decommissioning since 1983. The no-action alternative would keep the PG&E operating license in effect and the HBPP Unit 3 site would not be available for another use. Therefore, the no-action alternative is not being considered further in this EA.

## **4 THE ENVIRONMENTAL SETTING**

### **4.1 Site Description**

HBPP Unit 3 is located on the coast of northern California in Humboldt County, approximately 3 miles southwest of the City of Eureka. PG&E owns 58 ha (143 ac) of land along the mainland shore of Humboldt Bay and the intertidal areas extending approximately 150 m (500ft) into Humboldt Bay from this land area. The HBPP Unit 3 site is located in the vicinity of several ports that support commercial and sport fishing activities. A public trail to access a breakwater for recreational fishing crosses near the controlled area of decommissioning (PG&E 2013d, e and f; 2011; 2003a; 1984; and HC 2012a and b).

The 58-ha (143-ac) HBPP site once contained three electric generating plants, including the nuclear powered HBPP Unit 3, along with a number of ancillary facilities, currently contains only their remnants. The two fossil-fueled electric generating plants have been demolished, as well as most of the above-ground structures associated with HBPP Unit 3. In place of the three plants, a 10-unit natural gas-fired plant has been constructed, and is currently operating.

Other features that remain on the HBPP site are the road system, electrical switchyard, parking lots, waste storage areas, and laydown areas that were formally foundations for ancillary structures. Much of the below ground infrastructure also remains, some of which will be removed during the continuing decommissioning process. The most significant underground structure to be removed is the reactor caisson for HBPP Unit 3.

#### **4.1.1 ISFSI**

PG&E currently stores spent nuclear fuel from HBPP Unit 3 operations in an ISFSI located on the HBPP Unit 3 site (NRC 2005b). The HBPP Unit 3 ISFSI license was issued by the NRC on November 17, 2005 in accordance with the NRC regulations in 10 CFR Part 72. The HBPP Unit 3 ISFSI license is valid for 20 years. PG&E completed the transfer of spent fuel from the HBPP Unit 3 SFP into the ISFSI on December 11, 2008.

### **4.2 Demography**

The population distribution for areas around the HBPP Unit 3 site is based on the 2010 census. The area within a 80.5 km (50 mi) radius of the HBPP Unit 3 includes most of Humboldt County and a small portion of Trinity County. Approximately 50 percent of the area within the radius is land, with the balance being Humboldt Bay and the Pacific Ocean. In general, the portion of California that lies within 80.5 km (50 mi) of the HBPP Unit 3 is sparsely populated with the exception of a few urban areas along the coast. According to the 2010 census, the population of Humboldt County was 134,623, and the population of Trinity County was 13,786 (U.S. Census Bureau, 2010). The nearest urban center to the HBPP Unit 3 site, the City of Eureka, had a population of 27,191 in 2010 (PG&E 2013d, e and; 2011; 2003a; 1984; and HC 2012a and b).

### **4.3 Site Access**

The primary highway access to the HBPP Unit 3 site is U.S. Route 101, a major north-south 4-lane divided highway located immediately east of the site. The average annual daily traffic (AADT), 2 directions, in the area of the site is about 24,000 vehicles, with the peak hour, 2,600 vehicles (State of CA 2012a). AADT truck traffic runs about 1,700 trucks (all axels) representing 6.5 percent of all vehicles (State of CA 2012).

From U.S. Route 101, the site is accessed directly via King Salmon Avenue, a Humboldt County-maintained road between U.S. Route 101 and the community of King Salmon. King Salmon Avenue provides the main access to the HBPP Unit 3 site. King Salmon Avenue is lightly traveled by cars and trucks (HC 2012a; PG&E 2013c&d; 2012b; 2011; 2005; and NRC 2005a). King Salmon Avenue is also used by Eureka City School buses to pick up and drop off students (ECS 2014).

### **4.4 Climate**

The climate of the greater Humboldt Bay region, including Eureka and the immediate coastal strip where the HBPP Unit 3 is located, is characterized as Mediterranean. The warmest months are from July to September, and the coldest months are from December to February. The rainy season generally falls between November and March. The wind is predominantly from the north to northwest, with a shift to the south to southeast during the winter months (PG&E 2013g).

### **4.5 Geology and Seismology**

The HBPP Unit 3 site is located on Buhne Point, a small headland on the eastern shore of Humboldt Bay. The site is underlain by a thick sequence of late tertiary and quaternary sedimentary rocks, and is capped by a late Pleistocene terrace. The depth to bedrock at the site ranges from 900 – 1,200 m (3,000 – 4,000 ft.). A dense sand and silty sand layer, with a layer of clay 15 m (50 ft.) thick, lies approximately 50 – 55 m (160 - 180 ft) beneath the HBPP Unit 3 site. This layer is called the Lower Hookton Formation (PG&E 2013d).

The HBPP Unit 3 site is underlain by the Upper and Lower Hookton Formation, which is composed of layered sedimentary alluvial deposits of silt, clay, sand and gravel. Bedrock lies between 900 and 1,200m (3,000 and 4,000 ft) below the land surface, and would not be affected by the decommissioning. The Lower Hookton comprises dense sand and silty sand that includes a 15-m (50-ft) thick layer of clay, approximately 50 to 55 m (160 to 180 ft) below the Unit 3 site (PG&E 2013d).

The HBPP site is located in the Coast Ranges Physiographic/Tectonic Province, a highly active seismic region. The HBPP site lies within the Little Salmon Fault Zone and has been uplifted and tilted gently to the northeast by displacement on the fault. Four traces of the Little Salmon fault zone have been mapped in the vicinity of the HBPP Unit 3 site. Faults in the Little Salmon fault zone are close to the site and have the potential to generate large-magnitude earthquakes (PG&E 2003a). However, the style and structure of deformation associated with future activity along the Little Salmon fault zone is not expected to cause surface rupture, and the site is not susceptible to deep landslides from such activity.



There are geologic/seismologic hazards that have the potential to affect the HBPP Unit 3 site: 1) seismic shaking; 2) liquefaction; 3) tsunami inundation; 4) surface faulting; and 5) erosion. However, based on analysis of geologic data from extensive trenching borehole data and detailed site mapping, the NRC staff verifies that the potential for seismic risk at the HBPP Unit 3 site is low (PG&E 2002).

Tsunami hazards along the coast of northern California have been recognized for many decades. The tsunami associated with the 1964 “Good Friday” Alaska earthquake caused minor run-ups within Humboldt Bay. The HBPP Unit 3 is situated about 15 m (50 ft) above mean lower low water, higher than the conservative estimates of calculated tsunami run-up for the area (PG&E 2013d).

#### **4.6 Water Resources**

The HBPP Unit 3 is located on a relatively flat area on Buhne Point about 15 m (50 ft) mean lower low water (MLLW). MLLW is generally defined as “the average height of the low waters over a 19-year period (WDE 2007). Surface drainage around the HBPP Unit 3 area flows naturally into the existing plant drainage system discharging into the cooling water intake canal, flowing through the plant, and ultimately discharging into Humboldt Bay via the cooling water discharge canal. Outside the area served by the plant drainage system, most of the surface runoff drains to the east and into the discharge canal. The remainder drains into Buhne Slough, a natural collector for the area, which drains directly into both the intake canal and Humboldt Bay (PG&E 2013d).

Several rivers and creeks drain the region around the HBPP Unit 3 site, including the Mad River, which flows northwestward into the Pacific Ocean approximately 24.1 km (15 mi) northeast of the site, and the Eel River, which also flows northwestward into the Pacific Ocean approximately 12.9 km (8 mi) south of the site. Of the four major creeks that drain into Humboldt Bay, Salmon Creek and Elk River are the ones nearest to the HBPP Unit 3 site. Salmon Creek and Elk River are used for watering livestock, but are not used as a potable water supply (HC 2012a; PG&E 2013d; 2011). The Humboldt Bay Municipal Water District supplies the HBPP site with domestic water. Raw water is no longer used by the HBPP Unit 3 site as the plant is no longer operating and reactor cooling water is not needed (PG&E 2013d).

PG&E investigated groundwater in the HBPP Unit 3 site area over a several-year period during the mid- to late-1980s. Two areas were investigated in detail, one near HBPP Unit 3 and one near the former wastewater pond site that lies east of Unit 3. Based on information taken from borings analysis of the stratigraphy and aquifer characteristics, several aquifers and zones of perched groundwater in the HBPP Unit 3 site area are evident. Groundwater level and flow direction at the HBPP Unit 3 is influenced by several factors, including topography, proximity to Humboldt Bay, stratigraphy, and tectonic tilting and faulting of the Hookton Formation. Beneath the HBPP Unit 3 site, the first aquifer encountered is the upper Hookton aquifer. The top of this aquifer is located at approximately 1.8 m (6 ft.) above MLLW or approximately 6.7m (22 ft) below the base of the HBPP Unit 3. Localized perched water zones are also found beneath the HBPP Unit 3 site (PG&E 2013d; 2012a; 2005; 2003a; 1984).

## **4.7 Ecology**

### **4.7.1 Terrestrial Resources**

The area within 8.0 km (5 mi) of the HBPP Unit 3 site provides a wide array of habitats for plants and animals. Terrestrial ecological surveys identified more than 200 vascular plants and 12 vegetation communities in the area in and around the HBPP Unit 3 site. PG&E-owned land near the HBPP Unit 3 site was inventoried for the presence of special status plant species in 1999 and 2002. Site vegetation habitats, present in the HBPP Unit 3 area consist primarily of disturbed coastal terrace prairie. A comprehensive field study in 2002 on the HBPP Unit 3 site did not locate suitable habitat for or any presence of plant species designated for special status by the State of California or Federally-listed or candidate threatened or endangered plant species. Numerous special status terrestrial wildlife species occur within the ecologically diverse and productive habitats surrounding Humboldt Bay, however, the inventories conducted in 1999 and 2002 on PG&E-owned property did not indicate the presence of any of these species and found that the lack of suitable habitat made their presence unlikely (PG&E 2012a&b). Lack of suitable habitat for these special status species indicates that they are not present at the HBPP Unit 3 site.

A biological assessment was conducted in 2013 by Stillwater Sciences for PG&E for the Section 404 Permit of the Federal Water Pollution Control Act of 1972 (FWPCA) to be issued by the Army Corps of Engineers (ACOE) to remediate the two canals (PG&E 2014d). Two species of birds, the marbled murrelet and the western snowy plover, listed as threatened by the Fish and Wildlife Service (FWS), were found to have no suitable habitat inside the ACOE action area.

### **4.7.2 Aquatic Resources**

The biological assessment for the remediation of the intake and discharge canals found five species of fish that are known to occur in the region of the HBPP Unit 3 site that are listed as either threatened or endangered by the FWS. These species are: the Southern Distinct Population Segment (DPS) green sturgeon, the tidewater goby, the Southern Oregon/Northern California Coast (SONCC) coho salmon, the California Coastal (CC) Chinook salmon, and the Northern California (NC) DPS steelhead. Habitats for these species are found in Humboldt Bay and the surrounding region (PG&E 2014c).

## **4.8 Historic Properties and Cultural Resources**

No known ethnographic sites are located within the HBPP Unit 3 site and surrounding area. According to an early 20<sup>th</sup> century map of ethnographic site locations, one village site was located adjacent to the project on Buhne Point, but apparently it had been washed away by tidal action as of 1918 (California Office of Historic Preservation (COHP) 2013; PG&E 2013b and d; 2003b).

The California Energy Commission (CEC) declared the entire 58-ha (143-ac) site a historic district under the California Environmental Quality Act. PG&E prepared a Historic American Building Survey and Historic American Engineering Record program to document the historic district in accordance with National Park Service standards (PG&E 2013d). A CUL-10 historic properties mitigation plan was submitted to the CEC in August 2009, revised in October 2010, and the cultural monitoring study was completed in August 2013 (PG&E 2013b).

As a federal agency, the NRC must comply with Section 106 of the National Historic Preservation Act (NHPA).<sup>15</sup> The Section 106 process includes consultation with the applicable state historic preservation officer, in this case, the COHP. By letter dated February 18, 2015 to the COHP, the NRC identified the area of potential effects (APE),<sup>16</sup> including a direct and an indirect APE (NRC 2015b). The NRC identified the direct APE as the HBPP Unit 3 site, the intake and discharge canals and other associated structures. The NRC identified the indirect APE as the remainder of the 58-ha (143-ac) PG&E-owned Humboldt Bay site and locations where site activity can either be seen or heard. There are no properties within either the direct or indirect APEs that are listed on the National Register of Historic Places (NRHP). The HBPP Unit 3 was included in the 2012 PG&E contractor prepared Historic American Engineering Report (HAER). The HAER documented the history of the HBPP Unit 3 and its associated facilities. The National Park Service accepted the HAER as a donation in 2012 and designated it as HAER No. CA-2293.

There is no indication that a historic or cultural resources site survey was conducted prior to the construction of the HBPP Unit 3 in 1962 (PG&E 2014b). Considering the amount of ground disturbance that has taken place in the project area in the past, the NRC staff determined that it is highly unlikely that additional unidentified resources may be present, as most of the upland portions of the 58-ha (143-ac) PG&E-owned Humboldt Bay site have been used continuously as an industrial site for several decades. PG&E noted that no cultural artifacts or archaeological items were observed during HBPP Unit 3 construction activities. PG&E's current excavation program requires work stoppage and taking appropriate actions if unidentified items are unearthed (PG&E 2013b).

In accordance with 36 CFR 800.3(a)(1), the NRC determined that the proposed action does not have the potential to cause effects on historic properties, assuming such historic properties are present. The NRC completed its Section 106 consultation with the COHP, as described in the NRC's letter of December 8, 2015 (NRC 2015a).

#### **4.9 Background Radiological Conditions**

PG&E conducts radiological environmental monitoring of the HBPP Unit 3 and surrounding area under the HBPP site-wide environmental monitoring program. While radioactive gas and liquid effluents were routinely released from the HBPP Unit 3 during operation and after cessation, a radioactive effluent monitoring system remains in-place. A 2011 radiological site assessment contains documentation of past leaks and spills (PG&E 2011).

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<sup>16</sup> Section 106 of the NHPA is codified at 54 USC 306108 (formerly, 16 USC 470f). The implementing regulations for Section 106, issued by the Advisory Council on Historic Preservation, are at 36 CFR Part 800.

<sup>17</sup> The "Area of potential effects" is defined to mean "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." 36 CFR 800.16(d).

## **5 ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION**

In this chapter, the impacts to threatened and endangered species, environmental justice, and waste disposal are evaluated. Given the limited scope of the proposed action, and given that the proposed action is concerned solely with PG&E's ability to demonstrate that it will bring the residual radioactivity on-site to levels that permit an unrestricted release, as described in Section 2, the NRC has determined that the proposed action will result in no significant environmental impact to offsite resources, including land use, aquatic and terrestrial ecology, and historic and cultural resources.

### **5.1 Threatened and Endangered Species**

There are currently five federally-listed threatened and endangered species of fish that may be found in the area of HBPP. They are the: (1) southern DPS green sturgeon; (2) tidewater goby; (3) SONCC Coho salmon; (4) CC Chinook salmon; and (5) NC DPS steelhead; these species are not likely to be affected by the remediation of the intake and discharge canals. These listed species are not likely to have their habitats adversely affected by the proposed action (PG&E 2014d).

A biological assessment was completed in May 2014 as part of the ACOE review of PG&E's Section 404 (FWPCA) permit application for the remediation of the intake and discharge canals on the HBPP site. Based upon the results of the biological assessment, it was concluded that there are no critical habitats for birds (marbled murrelet or western snowy plover special status species) on, or near, the site. In addition, there is no habitat for endangered vegetative species (Humboldt Bay wallflower, beach layia or western lily) (PG&E 2014e and c). In addition, a comprehensive field study was conducted on the HBPP site in 2002, and found: 1) no suitable habitat for, or any presence of, plant species designated for special status by the State of California; 2) no special status terrestrial wildlife species or presence of their habitat; and 3) no special status freshwater aquatic species (NRC 2013).

Based upon the foregoing, the NRC staff determined that there would be no significant impacts to these listed or candidate species that may be found at, or in the vicinity of, the HBPP Unit 3 site. The National Marine Fisheries Service concurred with the NRC determination that the proposed action is not likely to adversely affect listed species or critical habitat (NRC 2014b). The U.S. Fish and Wildlife Service also concurred with the NRC determination (NRC 2014a).

### **5.2 Environmental Justice**

A review of 2010 U.S. Bureau of Census data for the presence of either minority or low-income communities was made for the area surrounding the HBPP Unit 3 site (primarily for Humboldt County – USCB 2010). The King Salmon, the closest community to the HBPP site, lies immediately west of the HBPP property, and consists of trailer parks, permanent residential structures and commercial establishments. Originally, the trailer parks and surrounding housing accommodated a thriving recreational and commercial fishery. Visitors from inland California, as well as surrounding states, book spaces in the trailer parks to spend the summer months fishing and enjoying the temperate climate. The community provides affordable housing, as well as spaces for fishermen and visitors. However, it is not considered either a minority or low-income community (HC 2012a).

### **5.2.1 Socio-Economic Impacts**

In general, there are two ways in which a nuclear generating facility may have a social and economic impact on a community and its surrounding area: 1) through expenditures in the community by the facility workforce and direct purchases of goods and services necessary for facility operation; and 2) the effects on local government tax revenues and services (NRC 2002).

The greatest impact has already occurred to the cities and towns surrounding the HBPP Unit 3 facility when it shut down, permanently, more than 30 years ago. The HBPP Unit 3 workforce diminished, along with that workforce's expenditures in the community. Similarly, tax revenues used to fund community infrastructure, services and education were greatly reduced. However, in the intervening years, the workforce has varied from 40 permanent workers (during the period of SAFSTOR) to 500 temporary workers at the height of decommissioning. In comparison, during operation, there were 90 permanent workers at HBPP Unit 3. PG&E estimates, as decommissioning progresses and the number of structures and facilities are reduced, that the workforce will be reduced to 250 temporary workers by 2017. And, once the license is terminated (anticipated to occur in 2020), there will be no HBPP Unit 3 workforce. PG&E expects to continue employ 40 permanent workers to operate the Humboldt Bay (Gas) Generating Station (HBGS) (PG&E 2014d).

The current PG&E total workforce is composed of craft workers, and security and engineering personnel (approx. 75 percent) that live locally, in and around Eureka, while most of the management, technical support and planning staff (approx. 25 percent) live outside of Humboldt County (PG&E 2014b). According to Appendix J of the Decommissioning GEIS, changes in local population greater than 3 percent have detectable effects on communities. At the expected termination of the HBPP Unit 3 license around 2020, the workforce would have been reduced from a peak of 540 workers (500 HBPP Unit 3 temporary workers plus the 40 HBGS permanent workers) to the 40 HBGS permanent workers. This represents a change of less than 2 percent when considering the City of Eureka, CA (population 27,000, est. 2012), within 8 km (5 mi) of the site. Therefore, the NRC staff has determined that the proposed action will not result in a disproportionately high and adverse human health or environmental effect upon the King Salmon community or any other minority or low-income population.

### **5.2.2 Traffic and Transportation**

Although not part of the proposed action, the NRC staff analyzed the impacts of increased traffic on the King Salmon community as a result of PG&E's continuing demolition and dismantlement activities at the HBPP Unit 3 site. The majority of the transportation activity would involve hauling wastes offsite to landfills (non-radiological wastes) or to specialized sites licensed to dispose of radioactive contaminated materials and soils.

A traffic control plan (TCP) was developed by PG&E contractor, Chicago Bridge and Iron Company, for both vehicular and pedestrian movement within the entire 58 ha (143 ac) HBPP site (PG&E 2014f). Trucks accessing the HBPP site would utilize King Salmon Avenue, which has direct access to U.S. Highway 101. Once on King Salmon Avenue, entrance to the HBPP Unit 3 site would be made by taking the first right after crossing the intake canal. All delivery truck and waste-hauling trucks would enter via this road (called Bravo Road) and exit via Charlie Road which exits onto King Salmon Avenue approximately 450 m (1,500 ft) north of the

entrance (Bravo Road). King Salmon Avenue is also the only access road to the King Salmon community, made up of both residences and commercial establishments. Between Charlie and Bravo Road, trucks would pass directly in front of more than a dozen residences and small businesses. In addition, Eureka City school buses also use King Salmon Avenue to pick up and drop off school children; South Bay Elementary School is located across Highway U.S. 101 (approximately 0.4 km (0.25 mi) from the HBPP site, and connects directly with King Salmon Avenue (ECS 2014). As part of the TCP, PG&E would coordinate site truck traffic to avoid those times when the school busses pick up and drop off children.

The peak truck traffic is expected to occur between 2015 and 2018 during the reactor caisson dismantling and removal, slurry wall installation<sup>17</sup> (to prevent groundwater infiltration during caisson removal), and intake and discharge canal remediation. A maximum of 80 trucks with intermodal containers would be used each week; each truck is capable of carrying 26.7 cubic meters (m<sup>3</sup>), or 35 cubic yards (cy), of soil. Once the trucks leave the HBPP Unit 3 site, they will access Highway U.S. 101, which would take them, north, along the City of Eureka U.S. 101 Bypass. The trucks would then travel to Richland, Washington, where their cargo will be transferred to long-haul trucks that would take the contaminated soil to a LLW site in Idaho, operated by U.S. Ecology (PG&E 2014e).

As of August 2014, about 15 trucks per week leave the HBPP Unit 3 site with radioactive contaminated materials and soils primarily from the turbine building and other ancillary facilities. By the fall of 2014, truck traffic carrying radioactive contaminated materials and soils from the dismantling of other facilities at the HBPP Unit 3 site increased to 20 trucks per week. Also, trucks carrying clean soil and other materials and equipment needed for decommissioning and decontamination activities would enter the site from King Salmon Avenue. In addition, it is expected that workers involved in the decommissioning and decontamination activities would park their vehicles on the HBPP site. Once the workforce increases to the point where there is insufficient parking to handle personal vehicles, a satellite parking facility would be made available at the College of the Redwoods, which is located approximately 2 miles south of the HBPP Unit 3 site, off of Highway U.S. 101. From there, a shuttle bus would transport workers to the HBPP Unit 3 site (PG&E 2014f).

The TCP, if followed, is expected to mitigate traffic issues associated with the flow of trucks and personal vehicles into, and out of, the site. As a result, the impact of traffic in, and around, the site, including traffic flow along King Salmon Avenue and bypassing the City of Eureka, is not significant, and as such, is not expected to have a disproportionately high and adverse human health or environmental effect upon the King Salmon community or any other minority or low-income population (NRC 2014c). Similarly, the increased site traffic would not reduce the levels of service on U.S. Highway 101.

### **5.2.3 Noise**

Most of the daytime noise generated in the area is a result of traffic (road noise) from U.S. Highway 101. At night, the loudest noise is attributed to the HBGS, adjacent to the HBPP Unit 3 site. The nearest receptors to the Unit 3 site are the residences located on King Salmon Avenue, at a distance of approximately 460 m (1,500 ft) from the HBPP Unit 3 site. The South

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<sup>17</sup> The slurry will be constructed of bentonite cement to minimize groundwater infiltration during the removal of the reactor caisson (PG&E 2012a).

Bay Elementary School, another receptor, is located about 730 m (2,400 ft) southeast of the Unit 3 site. Located east of U.S. Highway 101, sound emanating from the HBPP Unit 3 work site would be masked by roadway noise from U.S. Highway 101.

Site termination activities are scheduled to take place during the daytime hours, between 7:00 a.m. and 5:30 p.m. (PG&E 2013d). It is likely that there will be times that the traffic noise from U.S. Highway 101 will be drowned out by site termination activities. Specifically, there are some large pieces of equipment that could potentially be heard over the highway noise, such as the vibratory pile driver (not continuous). Noise from this equipment could be heard at the nearest King Salmon residence (predicted noise level would be 72 dBA (the decibel A-scale corresponds to human hearing)). A senior citizens mobile home park, located 0.8 km (0.5 mi) from the site would have a predicted noise level from the pile driver of 68 dBA. Sound levels were estimated using 'free-field' attenuation, which assumes no interference from terrain, atmospheric conditions, or features that may reflect or absorb sound, and sound diminishes at the constant rate of 6 dB for every doubling of distance. Typical suburban residential background noise ranges from 40 to 50 dBA.

Truck traffic entering the HBPP Unit 3 site from, and exiting to, King Salmon Avenue could also create undesirable noise at the nearest King Salmon residence, located approximately 210 m (700 ft) from the construction entrance (predicted noise level is 67 dBA). Overall, noise could have an undesirable effect on local residences, but the effects would only be temporary, and not continuous. Therefore, the NRC staff has concluded that there will not be a disproportionately high and adverse human health or environmental effect upon the King Salmon community or any other minority or low-income population.

### **5.3 Offsite Land Use to Support Decommissioning Activities**

Offsite land use to support decommissioning activities would involve the offsite disposal of waste resulting from demolition and dismantlement activities.

#### **5.3.1 Waste Disposal**

Demolition and dismantlement activities, including slurry wall and soil nail (reinforcement) construction, reactor caisson removal (steel and concrete), soil excavation, and timber pilings, would generate construction debris, soil and miscellaneous waste materials. By far, the largest amount of wastes would be attributed to excavations of the reactor caisson, the construction of the slurry wall, and the excavation of the spent fuel pool (greater than 22,900 m<sup>3</sup> [30,000 yd<sup>3</sup>] of soil).

HBPP has shipped for radioactive disposal approximately 6,016 m<sup>3</sup> (7,869 yd<sup>3</sup>) through December 31, 2013. PG&E estimates the remaining waste is 60,000 m<sup>3</sup> (78,478 yd<sup>3</sup>), most of which is very low activity soils, sediments, and concrete debris. This volume of waste exceeds the Decommissioning GEIS volume of 18,343 m<sup>3</sup> (24,000 yd<sup>3</sup>) for the reference boiling water reactor. The LTP states that the additional waste is due to the removal of the caisson and the removal of low-level sediments in the discharge canal.

Demolition and excavation wastes generated at the HBPP Unit 3 site is subject to regulation and control by the NRC, EPA (under the Resource Conservation and Recovery Act [RCRA]), and California Hazardous Waste Regulations. PG&E is expected to implement compliance

measurements, contractor oversight, and screening and documenting waste characterization, for HBPP Unit 3 waste management. While much of the excavated soil will be stockpiled for re-use on the HBPP site, much is radiologically contaminated and would be disposed of offsite at a landfill licensed by the NRC or an NRC Agreement State. The concrete and steel from the reactor caisson and spent fuel pool would also require disposal offsite at an NRC-licensed facility. The transport of radiologically contaminated waste offsite would be subject to applicable NRC or NRC Agreement State and USDOT regulations.

There are two types of wastes that would be transported offsite: (1) structural, such as concrete and steel from the reactor caisson, concrete and steel from onsite buildings, and underground conduits; and (2) contaminated soil from construction of the slurry wall, excavation of the reactor caisson and spent fuel pool, and contaminated sediment from the intake and discharge canals. Not all the soil that will be excavated is radiologically contaminated; however, the uncontaminated portion will be stockpiled at western portion of the HBPP site for re-use (PG&E 2013d).

Other demolition debris, including timber piles, underground cables and conduits, and rubble would be processed in an open area, just to the southwest of the cooling water intake structure, to meet transport requirements of the radiological disposal facility. Radiologically contaminated waste will be shipped in intermodal containers, while non-radiological waste would either be recycled or disposed of in a CA EPA Class II landfill for hazardous wastes possessing a low risk to water quality (PG&E 2013f).

To the degree that excavated soils and waste materials would be processed and disposed of in appropriately licensed disposal facilities, the NRC staff concluded that impacts to offsite land use from waste disposal related to the dismantling and demolition of HBPP Unit 3 would not be significant.



## **6 CUMULATIVE EFFECTS**

The NRC staff evaluated whether cumulative environmental impacts could result from the incremental impact of the proposed action when added to past, present, or reasonably foreseeable future actions in the area. Current and reasonably foreseeable future actions in the area include: 1) continued operation of the HBPP Unit 3 ISFSI; 2) remaining decommissioning activities and final site survey; 3) implementation of the Humboldt County General Plan (HCGP) (Humboldt County 2012a); and 4) the ongoing operations of the HBGS, a gas-fired electric generating facility that is the replacement for HBPP Units 1, 2 and 3, located in the southeastern portion of the 58-ha (143-ac) HBPP site. The HCGP describes: 1) community development; 2) the transportation of goods and people; 3) management of natural resources; and 4) planning for hazards. In addition, within the coastal zone, Humboldt County has adopted six coastal land use plans and zoning regulations that form Humboldt County's Local Coastal Program.

The NRC staff has concluded that there are not any resources that would be affected cumulatively in regard to the NRC's approval of the LTP. The purpose of the LTP is to ensure that the site will meet the radiological criteria specified in 10 CFR 20.1402, Radiological Criteria for Unrestricted Use. Specifically, the purpose of the LTP is to ensure: (a) the adequacy of the licensee's decommissioning funding plan for the purpose of assuring that sufficient funding is available to complete the remaining radiological remediation activities; (b) the development of the appropriate radiation-release criteria for license termination; and (c) that the design of the final survey is adequate to verify that the release criteria have been met. The approval of the LTP will authorize no construction or other land-disturbing activities nor will it authorize any increases in the amounts or types of effluents generated at HBPP Unit 3.

The NRC staff has assessed the potential incremental impacts of the proposed action to the current and reasonably foreseeable activities discussed above and has determined that there would be no significant incremental environmental impacts resulting from the approval of the proposed action.

## **7 AGENCIES AND PERSONS CONTACTED OR REFERENCED**

The NRC staff consulted with several federal, state, and local agencies as well as several Native American tribes regarding the proposed action. These consultations were intended to afford the respective agencies and tribes the opportunity to comment on the proposed action, and to ensure that the requirements of Section 106 of the NHPA and Section 7 of the Endangered Species Act (ESA) were met.

In addition to meeting the requirements of Federal agencies, there is a number of State, regional and local agencies that have specific requirements for implementation of PG&E's license termination activities. A list of current licenses and permits is presented in Appendix C.

The NRC staff consulted with the following federal, state, and local agencies:

### **7.1 Federal Agencies**

- U.S. Environmental Protection Agency, Region 9, San Francisco, CA
- U.S. Fish and Wildlife Service, Arcata, CA field office
- National Marine Fisheries Service, California Coastal Area Office, Long Beach, CA
- U.S. Army Corps of Engineers, San Francisco, CA

### **7.2 State Agencies**

- California Coastal Commission (CCC), Energy and Ocean Resources Division, San Francisco, CA
- California Energy Commission
- California Office of Historic Preservation (OHP).
- California Office of Native American Affairs (ONAA).
- California Native American Heritage Commission (NAHC)
- California Department of Toxic Substances Control (DTSC)
- California Occupational Safety and Health Administration (OSHA)

### **7.3 Regional and Local Agencies**

- Regional Water Quality Control Board (RWQCB)
- North Coast Unified Air Quality Management District (NCUAQMD)
- Humboldt County
  - County Supervisor (retired)
- City of Eureka
- Eureka City Schools

### **7.4 Federally-Recognized Indian Tribes**

- Wiyot Tribe
- Bear River Band of Rohnerville Rancheria
- Blue Lake Rancheria

## 8 CONCLUSION

The NRC staff has concluded that the proposed action, the approval of PG&E's LTP for the HBPP Unit 3 would not result in a significant impact to the human environment.

The potential environmental impacts of the proposed action have been reviewed in accordance with the requirements of 10 CFR Part 51 "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." The NRC staff has determined that the approval of PG&E's LTP for the HBPP Unit 3 would not significantly affect the quality of the human environment. Therefore, an environmental impact statement is not warranted for the proposed action, and pursuant to 10 CFR 51.31, a Finding of No Significant Impact is appropriate.

## 9 LIST OF REFERENCES

The documents related to this proposed action are available for public inspection and copying at NRC's Public Document Room, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. In addition, most of these documents are available for public review through the NRC's electronic reading room at <http://www.nrc.gov/reading-rm/adams.html>.

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\_\_\_\_\_, 2013c. "Humboldt Bay Power Plant, Unit 3, Post-Shutdown Decommissioning Activities Report, Revision 4." Eureka, CA. July 2013. ADAMS Accession No. ML13213A160.

\_\_\_\_\_, 2013d. "Humboldt Bay Power Plant, Unit 3, License Termination Plan Supplemental Information" Avila Beach, CA. May 2013. ADAMS Accession No. ML13130A131

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\_\_\_\_\_, 2014g. "Section 106 Consultation of the National Historic Preservation Act Regarding the Proposed Amendment to License No. DPR-7 for the Humboldt Bay Power Plant Unit 3 License Termination Plan." Letter from A. Persinko, NRC to L. Bowman, Bear River Band of Rohnerville Rancheria. March 11, 2014. ADAMS Accession No. ML 14041A064.

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# **APPENDIX A**

## **MAJOR REMAINING ACTIVITIES AND COMPLETION DATES**



## MAJOR REMAINING ACTIVITIES AND COMPLETION DATES

Activity	2013	2014	2015	2016	2017	2018	2019
	E-M-L	E-M-L	E-M-L	E-M-L	E-M-L	E-M-L	E-M-L
Turbine Building Removal	X						
GTCC Waste Moved to ISFSI	X						
Reactor Vessel Removal		X	X				
Waste Buildings and Vaults Removal			X	X			
Slurry Wall Installation			X	X			
LRW Building Removal			X				
Intake Canal Dredging/Remediation				X			
Discharge Canal Dredging/Remediation			X				
Reactor Building Removal – Above Grade			X				
Spent Fuel Pool Removal						X	
Caisson Removal (upper 10 feet)						X	
Site Restoration						X	
Final Status Survey (FSS) Activities							X

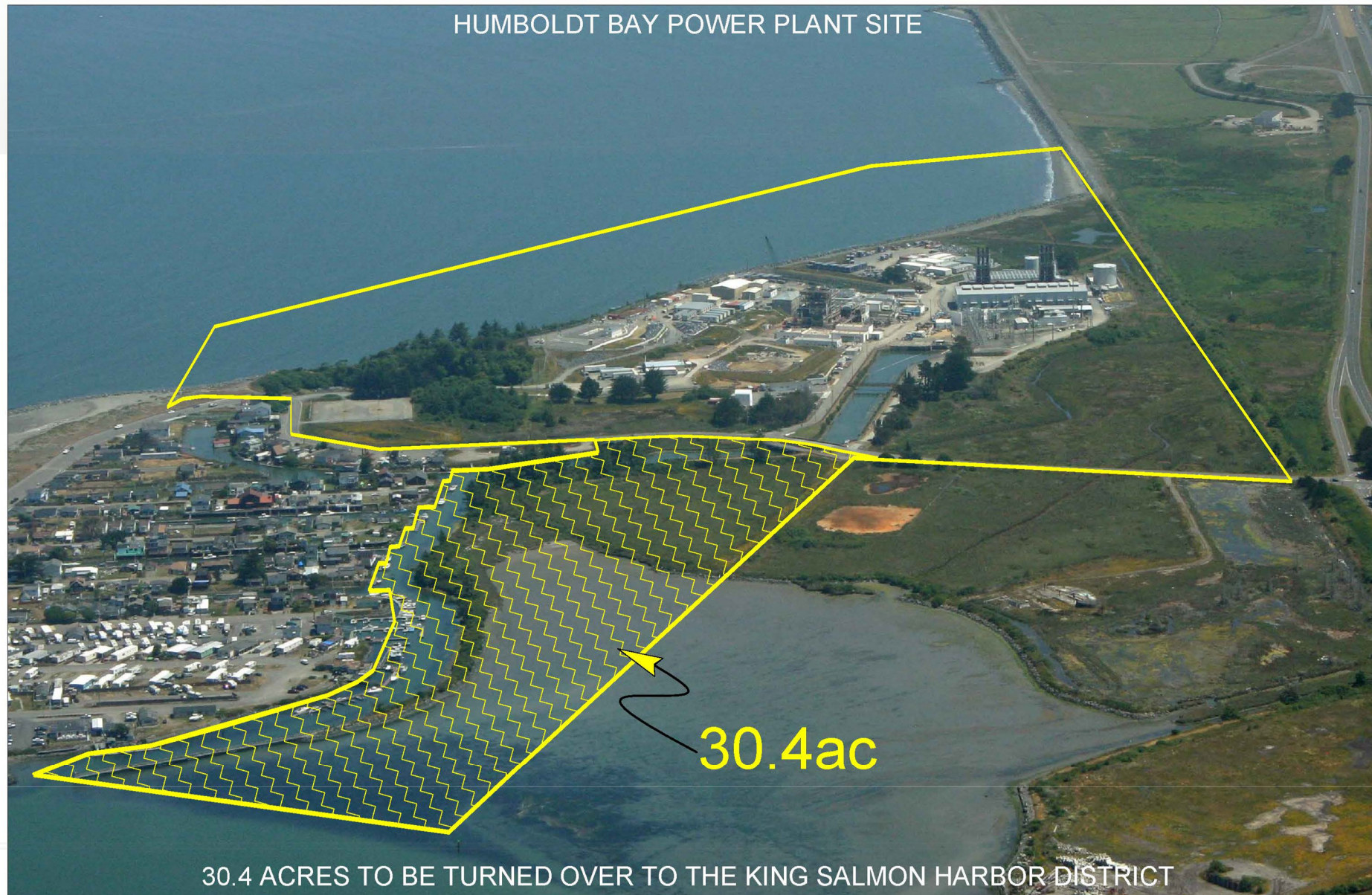
E-M-L: Early – Middle – Late (in the calendar year)

Source: PG&E 2015

## **APPENDIX B**

# **HUMBOLDT BAY POWER PLANT SITE**

HUMBOLDT BAY POWER PLANT SITE



30.4ac

30.4 ACRES TO BE TURNED OVER TO THE KING SALMON HARBOR DISTRICT

## **APPENDIX C**

### **TABLE OF HUMBOLDT BAY POWER PLANT LICENSES AND PERMITS**

AGENCY	PERMIT / LICENSE	PERMIT NO.	LAST ISSUED	DURATION	EXPIRES	RESPONSIBLE DEPARTMENT	COMMENTS
NRC	Facility Operating License (Unit 3)	DPR-7	01/21/1964		11/09/2015	Licensing	
NRC	Radioactive Materials Packages	71-0202, Rev. 3	09/27/2009	10 Years	10/31/2019	Licensing	Nuclear Materials Safety Safeguards
NRC	ISFSI License	SNM-2514	11/17/2005	20 Years	11/17/2025	Licensing	
State of Tennessee	TN. Radioactive Waste License for Delivery	T-CA011-L14		1 Year		Strategic Waste	Renew annually, as needed
State of Utah-Dept of Environmental Quality	Generator Site Access Permit	511003518		1 Year		Strategic Waste	Renew annually, as needed
State of Texas	Low-Level Radioactive Waste Disposal Commission, Import Application, Final Agreement	2-0028-02		1 Year		Strategic Waste	Renew annually, as needed
Southwestern Compact	Petition to export Class A waste to Waste Control Specialist	WCS-14-005		1 Year		Strategic Waste	Renew annually, as needed
Southwestern Compact	Petition to export Class B or C waste to Waste Control Specialist	WCS-14-006		1 Year		Strategic Waste	Renew annually, as needed
Southwestern Compact	Petition to export radioactive waste to Energy Solutions	E-14-017		1 Year		Strategic Waste	Renew annually, as needed
Southwestern Compact	Petition to export radioactive waste to Energy Solutions	E-14-018		1 Year		Strategic Waste	Renew annually, as needed
CRWQCB(NCR)	General Permit for Storm Water Discharges Associated With Construction and Land Disturbance	CAS000002	07/01/2010		09/02/2014	Environmental Compliance	
Humboldt Community Services District	Trench and Foundation Discharge		05/04/2010	5 years	05/03/2015	Environmental Compliance	Permit Regulating Water Discharge to Sanitary Sewer System
North Coast Air Quality Management District	Demolition of Unit #3	73-09	08/03/2009		10/20/2015	Environmental Compliance	

<b>AGENCY</b>	<b>PERMIT / LICENSE</b>	<b>PERMIT NO.</b>	<b>LAST ISSUED</b>	<b>DURATION</b>	<b>EXPIRES</b>	<b>RESPONSIBLE DEPARTMENT</b>	<b>COMMENTS</b>
California Coastal Commission	ISFSI	E-05-001	03/14/2007			Environmental Compliance	Coastal Development Permit
California Coastal Commission	Immaterial Amendment to E-05-001	E-05-001-A1	02/17/2010			Environmental Compliance	Immaterial Amendment
California Coastal Commission	Construction of office buildings, a parking area, and associated infrastructure	E-07-005	10/12/2007			Environmental Compliance	Coastal Development Permit
California Coastal Commission	Change mitigation areas within Buhne Preserve	E-07-005-A1	04/01/2008			Environmental Compliance	Immaterial Amendment
California Coastal Commission	LFO Tank CDP Removal/Access Road	E-08-003	05/19/2008			Environmental Compliance	Coastal Development Permit
California Coastal Commission	LFO Tank CDP Removal/Access Road	E-08-003-A1	11/26/2008			Environmental Compliance	Immaterial Amendment
California Coastal Commission	Installation of 12 modular office Buildings, radiation portal monitors, and materials storage and construction staging areas within existing HBPP	E-08-008	09/28/2008			Environmental Compliance	Coastal Development Permit
California Coastal Commission	Combine four modulars into one and relocate	E-08-008-A1	11/19/2009			Environmental Compliance	Immaterial Amendment
California Coastal Commission	Site modifications to HBPP	E-09-005	06/15/2009			Environmental Compliance	Coastal Development Permit
California Coastal Commission	Modifications include expanding and constructing roads, parking, staging, laydown areas, and modular buildings	E-09-005-A1	10/13/2009			Environmental Compliance	Immaterial Amendment
California Coastal Commission	Demolition of Units 1, 2, & 3	E-09-010	12/28/2009			Environmental Compliance	Coastal Development Permit
California Coastal Commission	Install PVC fabric tent for equipment storage	E-09-010-A1	10/19/2010			Environmental Compliance	Immaterial Amendment

California Coastal Commission	Install Groundwater Treatment System	E-09-010-A2	09/18/2012	Environmental Compliance	Immaterial Amendment
California Coastal Commission	Excavate and Remove Unit 3 below-grade structures	E-09-010-A3	03/13/2013	Environmental Compliance	Immaterial Amendment
California Coastal Commission	Construction and operation of a Class B and C waste storage.*	E-011-018	09/14/2011	Environmental Compliance	Coastal Development Permit
California Coastal Commission	Remediation of Intake and Discharge Canals	9-13-0621	02/12/2014	Environmental Compliance	Coastal Development Permit

\* Facility not constructed due to WCS disposal facility opening

SOURCE: PG&E 2014

PERMIT NO.	DATE ISSUED	DESCRIPTION	RESPONSIBLE PARTY
12-227-X-4	MAR 16,2012	UNIT 3 CIRCULATION PIPE REMOVAL	PG&E
12-296-X-4	APR 5, 2012	COUNT ROOM PARKING LOT GRADING	PG&E
12-600-X-4	JUN 26, 2012	DEMOLISH EXISTING FOUNDATIONS AND REGRADE SITE	PG&E
12-812-B-4	AUG 23,2012	NEW WMS BLDG AND ASSOCIATED GRADING	PG&E
12-848-X-4	AUG 31, 2012	60 KV SWITCHYARD GRADING PERMIT	ABB
12-905-B-4	SEP 17, 2012	INSTALL GIS BLDG (60 KV SWITCHYARD)	ABB
12-908-PH-4	SEP 17, 2012	INSTALL 60 KV MPAC BLDG	ABB
12-907-B-4	SEP 17, 2012	CONSTRUCT BATTERY BLDG (60 KV SWITCHYARD)	ABB
12-813-X-4	AUG 23, 2012	60 KV SWITCHYARD UTILITY REMOVAL	ABB
12-960-X-4	SEP 27, 2012	GWTS GRADING	PG&E
13-111-D-4	JUL 29, 2013	TURBINE BLDG DEMOLITION	KIEWIT
13-607-E-4	JUN 14, 2013	INSTALL FIRE MONITORING STATION GIS BLDG	ABB
13-975-PH-4	SEP 10, 2013	NEW OFFICE TRAILER (COUNT ROOM PARKING LOT)	PG&E
13-1196-B-4	OCT 30,2013	NEW WAREHOUSE/OFFICE TRAILER	PG&E
14-398-D-4	APR 11,2014	WP-01/41 HOT MACHINE SHOP BLDG DEMOLITION AND BELOW GRADE EXCAVATION	CB&I
14-399-X-4	APR 11, 2014	WP-26 UNIT 2 DEMOLITION	CB&I
14-400-D-4	APR 11, 2014	OILY WATER SEPARATOR DEMOLITION	CB&I

SOURCE: PG&E 2014B