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Staff Report: June 20, 2008
Hearing Date: July 11, 2008
Commission Action:

STAFF REPORT:

PERMIT AMENDMENT

APPLICATION NUMBER: **1-04-010-A1**

APPLICANT: **Pacific Gas & Electric Company**

AGENT: Natural Resources Management Corporation (Attn: David Loya)

PROJECT LOCATION: At Freshwater Slough, at the east end of Park Street, east of Eureka, Humboldt County.

DESCRIPTION OF PROJECT PREVIOUSLY APPROVED: Replace a 1,200-foot-long section of an 8-inch diameter high-pressure natural gas pipeline beneath Freshwater Slough and in adjoining pastureland.

DESCRIPTION OF CURRENT AMENDMENT REQUEST: Amend the approved project description in accordance with Special Condition No. 2 of CDP 1-04-010 to provide for necessary revisions to the project to avoid another frac-out and restoration of areas affected by the frac-out to pre-project conditions.

OTHER APPROVALS: 1) U.S. Army Corps of Engineers Nationwide Permit No. 12 Verification
2) North Coast Regional Water Quality Control

Board CWA Sec.401 Water Quality Certification
3) California Department of Fish & Game
Streambed Alteration Agreement

SUBSTANTIVE FILE DOCUMENTS:

- 1) Commission CDP File No. 1-04-010
- 2) Humboldt County Local Coastal Program

SUMMARY OF STAFF RECOMMENDATION

On November 19, 2004 the Commission approved Pacific Gas and Electric Company's (PG&E) Coastal Development Permit Application No. 1-04-010 to replace 1,200 lineal feet of natural gas pipeline that extends under Freshwater Slough and adjoining pasturelands. The approved project, which to date remains incomplete, includes the installation of a new segment of pipeline under the slough using horizontal directional drilling (HDD) techniques.

On August 29, 2005 during drilling of the pilot hole of the HDD bore, a "frac-out" occurred on the south bank of the slough within coastal salt marsh habitat which contains populations of two sensitive plant species. Frac-out is an inadvertent release of drilling fluids (mostly bentonite) into terrestrial and/or aquatic surface environments as a result of the propagation of fractures from the drilling bore to the ground surface. Roughly half of the coastal salt marsh habitat was affected by the frac-out and subsequent clean-up activities. Impacts included direct spillage of drilling mud onto salt marsh vegetation (including the sensitive plant species Humboldt Bay owl's-clover and western sand spurrey) as well as heavy trampling of vegetation by foot traffic, sand bags, and other clean-up materials.

Special Condition No. 2 of CDP No. 1-04-010 requires, in part, that in the event of a frac-out, all construction shall cease and shall not recommence until a revised project and restoration plan is submitted as a request to amend CDP No. 1-04-010 to provide for (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions.

Under the current amendment request, the applicant proposes project revisions and a restoration plan in accordance with Special Condition No. 2. The changes include drilling at least 30 feet deeper than the previous attempt to further reduce the chance of a frac-out and providing for better monitoring of conditions during drilling operations by (1) maintaining an experienced drilling engineer expert in the HDD process present on site, (2) using a down-hole pressure monitoring tool that will provide additional information regarding bottom hole pressure that can be compared against calculated maximum allowable drilling fluid pressure, and (3) installing two piezometers to regularly monitor drilling fluid excess pressures, and various other measures. This

monitoring information would enable drilling operators to better adjust drilling speed, pressure, and drilling fluid content to reduce the chances of a frac-out and the severity of any frac-out that does occur. The proposed project revisions would also provide for additional containment and cleanup measure to respond more readily to any frac-out that might occur. Staff believes that the proposed HDD boring remains the least environmentally damaging alternative for replacing the segment of pressurized gasline, which is hazardous, in danger of rupture, and if not replaced could result in a shut down of natural gas for a large portion of the region.

The submitted restoration plan for the area affected by the 2005 frac-out calls for up to five years of monitoring of the two sensitive plant species that occur in the marsh. The spilled drilling fluid had been cleaned up using containment devices such as silt fences and sand bags, and vacuuming up the drilling mud as much as possible. The restoration plan determined that that native marsh vegetation would likely re-grow on the site naturally, and that replanting of vegetation would not be necessary. The monitoring results to date indicate that the native salt marsh vegetation has recovered and that the “mixed marsh community” which contains the two sensitive plant species has apparently expanded its aerial cover in the salt marsh (into what had been *Spartina* marsh dominated by the nonnative, invasive dense-flowered cordgrass, *Spartina densiflora*). If the monitoring results indicate that the natural recolonization of the site is not successful, the restoration plan calls for remedial actions to be implemented including distributing seeds of the two sensitive plant species to the area to increase population numbers and hand removal of the invasive dense-flowered cordgrass to reduce competition and allow the native vegetation, including the two sensitive species, the opportunity to flourish.

Staff recommends modifying and reimposing various conditions of the original permit and replacing certain other conditions and adding new conditions to this permit amendment to ensure the consistency of the amended development with all Coastal Act Chapter 3 policies. Recommended special conditions include modifying and reimposing Special Condition No. 2 to require, in part, conformance with the approved drilling fluid spill contingency measures submitted by the applicant and reviewed and approved by the Commission’s geologist; modifying and reimposing Special Condition No. 7 to require, in part, conformance with the recommended geotechnical specifications submitted by the applicant and reviewed and approved by the Commission’s geologist; modifying and reimposing Special Condition No. 8 to require the permittee to notify Commission staff prior to HDD operations and to grant Commission staff permission to inspect the project area for purposes of determining compliance with the permit amendment; and, among others, adding Special Condition Nos. 13 through 16 to require the amended development to be carried out in accordance with the approved plans for wetland mitigation, erosion control, hazardous materials management, and debris disposal, respectively.

Staff believes that the amended development, as conditioned, is consistent with all Coastal Act Chapter 3 policies.

The Motion to adopt the Staff Recommendation of Approval with Conditions is on Pages 7-8.

STAFF NOTES:

1. Procedural Note

Section 13166 of the California Code of Regulations states that the Executive Director shall reject an amendment request if: (a) it lessens or avoids the intent of the approved permit; unless (b) the applicant presents newly discovered material information, which he or she could not, with reasonable diligence, have discovered and produced before the permit was granted.

On November 19, 2004 the Commission approved Pacific Gas and Electric Company's (PG&E) Coastal Development Permit Application No. 1-04-010 to replace 1,200 lineal feet of natural gas pipeline that extends under Freshwater Slough and adjoining pasturelands. The approved project, which to date remains incomplete, includes the installation of a new segment of pipeline under the slough using horizontal directional drilling (HDD) techniques.

On August 29, 2005 during drilling of the pilot hole of the HDD bore, a "frac-out" occurred on the south bank of the slough within sensitive coastal salt marsh habitat. Frac-out is an inadvertent release of drilling fluids (mostly bentonite) into terrestrial and/or aquatic surface environments as a result of the propagation of fractures from the drilling bore to the ground surface. Frac-out results from drilling through brittle, fractured and/or poorly consolidated rocks or sediments, the maintenance of too-high fluid pressures in the bore during drilling, and drilling at too shallow a depth below the ground. As soon as the frac-out was witnessed by the biological monitor, the contractor halted drilling and circulating activities, implemented spill contingency measures, and contacted the appropriate regulatory agencies.

Special Condition No. 2 of CDP No. 1-04-010 requires, in part, that in the event of a frac-out, all construction shall cease and shall not recommence until a revised project and restoration plan is submitted to the Executive Director and approved by the Commission as an amendment to CDP No. 1-04-010. The revised project and restoration plan shall be prepared by qualified professionals and shall provide, in part, for the following: (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions.

Under the current amendment request, the applicant proposes to implement essentially the same project that was originally approved under CDP No. 1-04-010. However, the applicant has prepared a revised project and restoration plan in accordance with Special Condition No. 2. Some revisions to the project, which are designed to reduce the likelihood of another frac-out, include the following:

- (1) The HDD will bore at least 30 feet deeper (to a depth of approximately 85 feet

- beneath the slough channel) than the previous attempt to avoid possible soil disturbances caused by the prior bore and thereby decrease the likelihood of another frac-out. Entry and exit angles will be increased, and setback distances will be increased to allow the HDD bore to be deepened. A deeper bore will increase the overburden so that the confining pressure on the borehole is higher. Due to these changes, the length of the section of gas pipeline to be rerouted will increase from the approved 1,200 feet to approximately 1,350 feet.
- (2) An experienced drilling engineer expert in the HDD process will be present on site at all times during the drilling process from mobilization through demobilization and site restoration, including pilot bore, pre-reaming, reaming, and pullback to ensure appropriate drilling methodology techniques are used.
 - (3) The drilling contractor will use a down-hole pressure monitoring tool that will provide additional information regarding bottom hole pressure that can be compared against calculated maximum allowable drilling fluid pressure. The on site drilling engineer will compare the measured down-hole pressures to the maximum allowable pressures and minimum required pressures calculated from a hydrofracture risk evaluation prior to commencement of the bore. If actual down-hole pressures approach maximum allowable values, the drilling engineer will advise the contractor. The contractor may use this information to modify drilling practices and therefore further minimize chances of a frac-out.
 - (4) Two piezometers, which will be monitored regularly when the drill head is within 50 feet of piezometer locations, will be installed between the entry and Freshwater Slough to enable evaluation of drilling fluid excess pressures. The piezometer tips will be set 10- to 15-feet above the HDD bore, offset 5 feet from the centerline. If the piezometers indicate increasing pressures, the drilling engineer will advise the HDD contractor, who will then adjust drilling speed, drilling fluid properties, or other drilling operations as necessary to reduce excess pressures.
 - (5) The HDD contractor will have on-site tools, equipment, and personnel that are trained and experienced for rapid containment, clean-up, and removal of any drilling fluid surface spills or frac-outs to reduce the consequences of any incident.
 - (6) The HDD contractor selected for the project will be selected from a list of pre-qualified HDD contractors. The prequalification criterion will focus on successful bores in wetland areas and will have demonstrated good practices that avoided adverse impacts to sensitive river or wetland habitats.

Although these proposed measures will minimize the chances that a damaging frac-out would result from the amended development, because of the uncertainties about the exact soil conditions existing at each drilling location and the potential for human error in the directional drilling process, it cannot be guaranteed that no damaging frac-out will occur. Therefore, the applicant has prepared a revised and updated frac-out contingency plan detailing precautions and cleanup methods that would be employed in the event of a frac-out. The applicant also has prepared a hazardous materials management plan, which

addresses the management of all hazardous materials on site such as fuels, fluids, drilling mud, concrete, pipe coating, etc. Furthermore, additional frac-out contingency measures have been included in the applicant's revised erosion control plan, which include "staged and ready" measures necessary to contain and clean up an accidental spill in the terrestrial or aquatic environment. Finally, the applicant's consultant, Bennett Trenchless Engineers, has prepared a list of technical procedures to be followed by the drilling contractor not only to reduce the risks of frac-out, but also appropriate procedures to be followed in the event that another unexpected frac-out does occur.

The current amendment request necessitates changes to the original permit conditions that relate to the gasline replacement project. In particular, staff recommends a change to the requirement of Special Condition No. 2 that in the event of a frac-out, all operations shall cease and shall not recommence until after the Commission approves an amendment to CDP No. 1-04-010. The applicant has demonstrated, and the Commission's geologist concurs, that HDD boring as proposed remains the least environmentally damaging alternative for replacing the segment of pressurized gasline, which is hazardous, in danger of rupture, and if not replaced could result in a shut down of natural gas for a large portion of the region.

Staff believes that with the attachment of the modified or new conditions described below, the development authorized by the amended permit would be consistent with the Commission's intent in granting the original permit with conditions to avoid significant adverse impacts to wetland and other ESHA resources by minimizing the chances for a frac-out and providing for effective contingencies to minimize the damage to wetland resources from any frac-out that does occur:

- Modify and reimpose Special Condition No. 2 to require, in part, conformance with the approved drilling fluid spill contingency measures submitted by the applicant and reviewed and approved by the Commission's geologist;
- Modify and reimpose Special Condition No. 7 to require, in part, conformance with the recommended geotechnical specifications submitted by the applicant and reviewed and approved by the Commission's geologist;
- Modify and reimpose Special Condition No. 8 to require the permittee to notify Commission staff prior to horizontal direction drilling operations and to grant Commission staff permission to inspect the project area for purposes of determining compliance with CDP Amendment No. 1-04-010-A1.
- Add Special Condition No. 14 to require conformance with the approved erosion control plan, which includes additional frac-out contingency measures; and
- Add Special Condition No. 15 to require conformance with the approved hazardous materials management plan, which addresses all hazardous materials to be used on site.

The Executive Director has determined that the proposed amendment as conditioned would not lessen or avoid the intent of the approved permit. Therefore, the Executive Director has accepted the amendment request for processing.

2. Commission Jurisdiction and Standard of Review

The amended development will be conducted within an area over which the state retains a public trust interest. Pursuant to Section 30519 of the Coastal Act, the Coastal Commission retains jurisdiction over the review and issuance of coastal development permits in these areas even though the County of Humboldt has a certified Local Coastal Program. The standard of review for projects located in the Commission's original jurisdiction is Chapter 3 of the Coastal Act.

3. Scope

This staff report addresses only the coastal resource issues affected by the proposed permit amendment, provides recommended special conditions to reduce and mitigate significant impacts to coastal resources caused by the development as amended in order to achieve consistency with the Coastal Act, and provides findings for conditional approval of the amended development. All other analyses, findings, and conditions related to the originally permitted development, except as specifically affected by the current permit amendment request and addressed herein, remain as stated within the original permit approval adopted by the Commission on November 19, 2004 attached as Exhibit No. 13.

I. MOTION, STAFF RECOMMENDATION, AND RESOLUTION:

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve the proposed amendment to Coastal Development Permit No. 1-04-010 pursuant to the staff recommendation.

Staff Recommendation of Approval:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit amendment as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution to Approve with Conditions:

The Commission hereby approves the proposed permit amendment and adopts the findings set forth below, subject to the conditions below, on the grounds that the development with the proposed amendment, as conditioned, will be in conformity with the Chapter 3 policies of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because all feasible mitigation measures and alternatives have been incorporated to substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS: See Attachment A.

III. SPECIAL CONDITIONS:

Note: The original permit (CDP No. 1-04-010) contains 12 special conditions. Special Condition No. 9 of the original permit is reimposed as a condition of CDP Amendment No. 1-04-010-A1 without any changes and remains in full force and effect. Special Condition Nos. 2, 7, 8, 10, 11, and 12 of the original permit are modified and reimposed as conditions of CDP Amendment No. 1-04-010-A1. Special Condition Nos. 1, 3, 4, 5, and 6 of the original permit are deleted and replaced by modified Special Condition No. 7 and new Special Condition Nos. 13, 14, 15, and 16 (respectively) in this permit amendment. Special Condition Nos. 13 through 17 are additional new special conditions attached to CDP Amendment No. 1-04-010-A1. For comparison, the text of the original permit conditions is included in Exhibit No. 13.

Special Condition Nos. 1, 3, 4, 5, and 6 of the original permit are deleted in their entirety and not shown below. Deleted wording within the modified special conditions is shown in ~~text~~, and new condition language appears as **bold double-underlined** text.

2. Drilling Fluid Spill Contingency Plan for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

- A. ~~**PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit, for review and written approval of the Executive Director, a final revised horizontal directional drilling (“HDD”) fluid monitoring and spill contingency plan that substantially conforms with the 23 July, 2004 HDD Fluid Release Contingency Plan prepared by Matrix Environmental Planning entitled “HDD Fluid Release Contingency Plan G/L 137B Crossing of Freshwater Slough Project,” except that Material Safety Data Sheets for all materials that will be used in the horizontal directional drilling operation shall be attached to the plan.~~
The permittee shall employ drilling fluid spill contingency measures in accordance with the following approved final plans:

Pacific Gas and Electric Company's March 28, 2008 revised horizontal directional drilling ("HDD") fluid release contingency plan entitled "*HDD Fluid Release Contingency Plan G/L 137B Freshwater Slough Project*" (Exhibit No. 8);

Bennett Trenchless Engineers, Inc. April 3, 2008 letter to Mr. David Goldberg of Latham and Watkins, LLP regarding "*PG&E Freshwater Slough Line 137B: Response to Questions by Bob Merrill, California Coastal Commission*" and signed by David Bennett, Ph.D., P.E. (Exhibit No. 6);

Bennett Trenchless Engineers, Inc. June 12, 2008 letter to Ms. Patricia Sanchez of PG&E regarding "*Addendum to Bennett Trenchless Engineers letter of April 3, 2008, describing measures that should be taken if inadvertent fluid return or hydrofracture occurs during Freshwater Slough HDD bore*" and signed by David Bennett, Ph.D., P.E. (Exhibit No. 6); and

Frac-out contingency measures listed in PG&E's March 31, 2008 Erosion Control Plan entitled "*Erosion Control Plan Line 137B HDD Freshwater Slough Crossing Project*" (Exhibit No. 9).

- B. ~~The permittee shall undertake horizontal directional drilling activities in accordance with the approved final plan. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.~~
- C. In the event that a spill or accidental discharge of drilling fluids occurs during horizontal directional drilling operations, all construction shall cease and shall not recommence except as provided in subsection (D) hereof:
- D. Following discovery of the spill or accidental discharge of drilling fluids, the permittee shall submit to the Executive Director a revised project and restoration plan prepared by qualified professional(s) that provides for **implement frac-out contingency and spill clean-up measures according to the above-cited plans** (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) **to assure** restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions. ~~The revised project and restoration plan shall be consistent with any applicable requirements of the State Water Resources Control Board and the California Department of Fish & Game. The revised project and restoration plan shall be processed as an amendment to the coastal development permit unless the Executive Director determines that no amendment is required. Construction **Development** may not recommence until~~

~~any necessary amendment to this permit is approved by the Commission or the Executive Director has determined that no amendment is legally required.~~ after all contingency and spill clean-up measures have been implemented according to the above-cited plans and evidence is submitted for the Executive Director's review and approval demonstrating that the California Department of Fish and Game and NOAA-Fisheries have authorized recommencement of drilling activities.

E. Within 120 days of discovery of a spill or accidental discharge of drilling fluids, the permittee shall submit to the Executive Director a restoration plan prepared by qualified professional(s) that provides for restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions. The revised restoration plan shall be consistent with any applicable requirements of the State Water Resources Control Board and the California Department of Fish & Game. The restoration plan shall be processed as an amendment to the coastal development permit unless the Executive Director determines that no amendment is legally required.

F. Restoration of the area affected by the frac-out that occurred on August 29, 2005 during horizontal directional drilling activities authorized under the original permit shall be implemented in accordance with the wetland restoration plan prepared by Natural Resources Management Corporation for PG&E entitled "Wetland Restoration Plan for Coastal Salt Marsh Habitat Affected by Pacific Gas and Electric Company's Freshwater Slough HDD G/L 137B Project" dated October 18, 2005 (Exhibit No. 7). No changes to the approved final plan shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

7. Conformance of Horizontal Directional Drilling Activities to Updated Geotechnical Report Specifications for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

A. The permittee shall undertake the horizontal directional drilling activities for the proposed fiber optic cable gasline installation development in accordance with all recommendations and geotechnical specifications contained in the following Engineering Geologic Report approved final plans:

Pacific Gas and Electric Company's revised project description entitled "PG&E Gas Line 137B Horizontal Directional Drill (HDD) Crossing of Freshwater Slough Revised Project Description February 2008" (Exhibit No. 4) and associated plans (Exhibit No. 5);

Bennett Trenchless Engineers, Inc. February 12, 2008 letter to Mr. Rand Unverferth of PG&E regarding "Review of PG&E Line 137B,

HDD Crossing of Freshwater Slough Revised Project Description and Plans, dated February 2008 and signed by David Bennett, Ph.D., P.E. (Exhibit No. 6);

Bennett Trenchless Engineers, Inc. April 3, 2008 letter to Mr. David Goldberg of Latham and Watkins, LLP regarding "PG&E Freshwater Slough Line 137B: Response to Questions by Bob Merrill, California Coastal Commission" and signed by David Bennett, Ph.D., P.E. (Exhibit No. 6);

Bennett Trenchless Engineers, Inc. June 12, 2008 letter to Mrs. Patricia Sanchez of PG&E regarding "Addendum to Bennett Trenchless Engineers letter of April 3, 2008, describing measures that should be taken if inadvertent fluid return or hydrofracture occurs during Freshwater Slough HDD bore" and signed by David Bennett, Ph.D., P.E. (Exhibit No. 6);

~~except that the horizontal drilling shall be conducted as much as possible a depths greater than 35 feet.~~

- B. Any proposed changes to the horizontal directional drilling activities shall be reported to the Executive Director. No changes shall occur without a **further** Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

8. Notification of Work and Coastal Commission Staff Inspection

At least one week prior to performing any horizontal directional drilling boring, the permittee shall submit written notice to the Eureka office of the California Coastal Commission of the specific dates when the horizontal directional drilling boring will be performed. The notice shall indicate which boring(s) are to be performed, the dates the work will occur, and a map indicating the precise locations where boring would be performed. The permittee shall promptly notify Commission staff of any changes to the schedule for performing horizontal directional drilling for which notice has previously been given. The permittee shall permit the Coastal Commission staff to enter and inspect the project area for purposes of determining compliance with Coastal Development Permit No. 1-04-010 **and Coastal Development Permit Amendment No. 1-04-010-A1**.

10. Construction Access, Materials, and Equipment Staging for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

- A. All construction materials and equipment staging areas shall be limited to the locations and sizes specified in the permit **amendment** application **and shown on the March 2008 Site Plan prepared by Natural Resources Management**

Corporation (Exhibit No. 3).

- B. Access routes and the watercourse crossing shall be limited to the routes mapped and described in the permit **amendment** application **and shown on the March 2008 Site Plan prepared by Natural Resources Management Corporation (Exhibit No. 3).** Portions of access routes within wetlands that are excessively wet or soft shall be covered with: (a) heavy synthetic mats or other acceptable non-toxic material that can be readily laid down along equipment access routes and immediately removed following construction and (b) shall be the minimum width and length necessary to allow movement of equipment to and from the project site.

11. Construction Methods for the Development Authorized by CDP Amendment No. 1-04-010-A1

All pipeline construction shall be performed consistent with the following provisions:

- A. The top six to eight inches (6-8") of excavated material within grazed seasonal wetlands (which contains the root masses, rhizomes, seeds, and accumulated organic material of the vegetation that dominates these seasonal wetlands) shall be separately stockpiled by the contractor, and the contractor shall assure that this stockpiled soil material is kept moist and that the material is reintroduced as soon as possible to excavation as the top fill material.
- B. Prior to the commencement of ~~construction~~ **development authorized by CDP Amendment No. 1-04-010-A1**, the work area should be delineated, limiting the potential area affected by ~~construction~~ **development** and workers shall be educated about the limitations on ~~construction~~ **development**;
- C. A qualified biologist shall monitor the site during all ground disturbing activities to avoid impacts to sensitive species. All occurrences of special status plants will be delineated and entry to areas containing such plants shall be restricted;
- D. All vehicles and equipment shall be restricted to pre-established work areas and established or designated access routes;
- E. Soil compaction from heavy equipment travel in wetland areas ~~will~~ **shall** be alleviated through mechanical soil aeration where appropriate.
- F. All trash and waste items shall be contained;
- G. The contractor shall implement erosion control techniques around the temporarily stored spoil material.
- H. All construction activities in the vicinity of the south bank of Freshwater Slough

shall be conducted after the Humboldt Bay owl's-clover and the western sand spurrey have set seed as verified by a qualified biologist.

12. Grazed Seasonal Wetland Vegetation Monitoring

The permittee shall submit a vegetation monitoring report for the review and written approval of the Executive Director within 18 24 months ~~after completion of construction of the replacement gasline approved under~~ **of Commission approval of CDP No. 1-04-010 Amendment No. 1-04-010-A1.** The monitoring report shall be prepared by a qualified biologist or botanist and shall evaluate whether the objective of reestablishing vegetation in all of the ~~grazed~~ seasonal wetland areas impacted by **development project construction to a level of coverage and density equivalent to vegetation coverage and density of the surrounding undisturbed areas has been achieved, including within those seasonal wetlands affected by development performed pursuant to the original permit and those additional seasonal wetlands affected by development performed pursuant to CDP Amendment No. 1-04-010-A1.** If the report indicates that the revegetation of any of the disturbed areas including the construction corridor and staging areas has not been successful, in part, or in whole, the permittee shall submit a revised revegetation program to achieve the objective. The revised revegetation program shall require a **further** amendment to this coastal development permit.

13. Conformance with the Approved Wetland Mitigation Plan for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

A. The permittee shall undertake wetland mitigation and restoration of the approximately 3 acres of seasonal wetlands to be impacted by the development authorized by CDP Amendment No. 1-04-010-A1 in accordance with the wetland mitigation plan prepared by Natural Resources Management Corporation for PG&E entitled "Wetland Mitigation for Pacific Gas and Electric Company's Freshwater Slough 137B Gas Pipeline Replacement Project" dated March 26, 2008 (Exhibit No. 12).

B. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

14. Conformance with the Approved Erosion Control Plan for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

A. The permittee shall undertake erosion control measures for the amended development authorized by CDP Amendment No. 1-04-010-A1 in accordance

with the erosion control plan referenced in Special Condition No. 2 above (Exhibit No. 9).

B. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

15. Conformance with the Approved Hazardous Materials Management Plan for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

A. The permittee shall undertake hazardous materials management for the amended development authorized by CDP Amendment No. 1-04-010-A1 in accordance with the hazmat plan prepared by PG&E Applied Technology Services entitled “Wetland Humboldt County Gas Line 137B Horizontal Directional Drill Crossing of Freshwater Slough” dated March 2008 (Exhibit No. 10) and with the supplemental hazardous materials management measures included in the HDD fluid release contingency plan referenced in Special Condition No. 2 above (Exhibit No. 8).

B. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

16. Conformance with the Approved Debris Disposal Plan for the Amended Development Authorized by CDP Amendment No. 1-04-010-A1

A. The permittee shall undertake debris disposal for the amended development authorized by CDP Amendment No. 1-04-010-A1 in accordance with the debris disposal plan entitled “Pacific Gas and Electric Company Line 137B Freshwater Slough Project Debris Disposal Plan” (undated) (Exhibit No. 11).

B. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

17. Assumption of Risk, Waiver of Liability and Indemnity Agreement

By acceptance of this permit amendment, the applicant, on behalf of (1) itself; (2) its successors and assigns and (3) any other holder of the possessory interest in the development authorized by this permit, acknowledges and agrees (i) that the directional drilling activities proposed by the applicant may subject the project area to hazards from accidental spills of drilling fluids; (ii) to assume the risks to the applicant and the property that is the subject of this permit amendment of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and (v) to agree to include a provision in any assignment of the development authorized by this permit amendment requiring the sublessee or assignee to submit a written agreement to the Commission, for the review and approval of the Executive Director, incorporating all of the foregoing restrictions identified in (i) through (iv).

IV. FINDINGS & DECLARATIONS

The Commission finds and declares the following:

A. Project & Site Description

1. Environmental Setting

The project area encompasses approximately 4.5 acres and bisects Freshwater Slough, which is a tributary to Eureka Slough, which drains into Humboldt Bay at the northeastern edge of Eureka (see Exhibit Nos. 1-2). The existing gas pipeline crosses under the slough as shown in the site plan (Exhibit No. 3) but has become exposed along the northern slough bank and is at risk of rupture. Freshwater Slough is subject to tidal action at the project location, and the south (left) bank of the slough harbors a small (approximately 6,000 square feet) peninsula of coastal salt marsh vegetation. Two sensitive plant species, Humboldt Bay owl's-clover (*Castilleja ambigua* ssp. *humboldtiensis*) and western sand spurrey (*Spergularia canadensis* var. *occidentalis*), have been identified within this salt marsh habitat. Additionally, Lyngbye's sedge (*Carex lyngbyei*), also a sensitive plant species, occurs along the banks of Freshwater Slough in the project vicinity. Riparian and upland species such as coyote brush (*Baccharis pilularis*), scotch broom (*Cytisus scoparius*), blackberries (*Rubus* spp.), and an ornamental cypress tree (*Cupressus* sp.) occur on and behind (south of) the left bank of the slough above the salt marsh habitat.

The adjoining pastureland to the north of the slough where the approved trenching operations are to be conducted consists of grazed seasonal wetlands. These diked former

tidelands are currently agricultural grasslands used primarily for livestock grazing. Vegetation in the grazed seasonal wetlands is dominated by various native and exotic grasses and herbs such as sweet vernal grass (*Anthoxanthum odoratum*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), tall fescue (*Festuca arundinacea*), perennial ryegrass (*Lolium perenne*), creeping buttercup (*Ranunculus repens*), curly dock (*Rumex crispus*), and others.

Ruderal vegetation, typical of roadsides and disturbed areas, makes up the sparse mostly forb cover within the proposed horizontal directional drilling entry pit staging area on the south bank of the slough. The drilling exit pit and associated staging area and construction corridor is located north of the slough within the grazed seasonal wetlands described above.

2. Background

On November 19, 2004 the Commission approved Pacific Gas and Electric Company's (PG&E) Coastal Development Permit Application No. 1-04-010 to replace 1,200 lineal feet of natural gas pipeline that extends under Freshwater Slough and adjoining pasturelands. The approved project, which to date remains incomplete, includes the installation of a new segment of pipeline under the slough using horizontal directional drilling (HDD) techniques.

On August 29, 2005 during drilling of the pilot hole of the HDD bore, a "frac-out" occurred on the south bank of the slough within the coastal salt marsh habitat described above. Frac-out is an inadvertent release of drilling fluids (mostly bentonite) into terrestrial and/or aquatic surface environments as a result of the propagation of fractures from the drilling bore to the ground surface. Frac-out results from drilling through brittle, fractured and/or poorly consolidated rocks or sediments, the maintenance of too-high fluid pressures in the bore during drilling, and drilling at too shallow a depth below the ground. In this case, the drilling process had proceeded to approximately 350 feet and was 55 feet below the ground surface when the driller experienced a loss of returning fluids back to the drilling rig. The driller stopped drilling and pumping, pulled approximately 105 feet of drill pipe back out of the hole, and reestablished drilling fluid circulation back to the drill rig. The driller then began to add drill pipe to the drill string and push back into the previously drilled hole. During the push-back process, the frac-out occurred. As soon as the frac-out was witnessed by the biological monitor, the contractor halted drilling and circulating activities, implemented spill contingency measures, and contacted the appropriate regulatory agencies (including CDFG, NOAA-Fisheries, and Commission staff).

Roughly half of the coastal salt marsh peninsula (see Environmental Setting above) was affected by the frac-out and subsequent clean-up activities. Impacts included direct spillage of drilling mud onto salt marsh vegetation (including Humboldt Bay owl's-clover and western sand spurrey) as well as heavy trampling of vegetation by foot traffic, sand bags, and other clean-up materials. Clean-up activities included using containment devices such as silt fences and sand bags, and vacuuming up the drilling mud as much as

possible. Photos of clean-up activities are attached in Exhibit No. 7.

Special Condition No. 2 of CDP No. 1-04-010 requires, in part, that in the event of a frac-out, all construction shall cease and shall not recommence until a revised project and restoration plan is submitted to the Executive Director and approved by the Commission as an amendment to CDP No. 1-04-010. The revised project and restoration plan shall be prepared by qualified professionals and shall provide, in part, for the following: (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions.

After the frac-out occurred and the PG&E contractor ceased operations, PG&E opted to suspend the project indefinitely rather than to immediately pursue the permit amendment required by Special Condition No. 2, since it would have been impossible to gain Commission approval of the necessary amendment and resume operations that year within the narrow late summer construction window allotted by the resource agency permits.

3. Description of Originally Approved Project

On November 19, 2004, the Coastal Commission approved, with conditions, the rerouting of a 1,200-foot-long section of exposed, existing, pressurized natural gasline that crosses beneath Freshwater Slough at the east end of Park Street east of Eureka (CDP No. 1-04-010; Exhibit No. 13). The existing section of line that crosses beneath the slough has become exposed and is at risk of rupture. As approved, the exposed section of line would be bypassed by the new crossing and abandoned in place (see Exhibit No. 3).

Beginning at the southern tie-in point, the approved project, which remains incomplete for the reasons described above (Background), includes the installation of 700 feet of new pipe under the slough using the horizontal directional drilling (HDD) method and the installation of approximately 500 feet of new pipe in the pasture on the north side of the slough up to the northern tie-in point by open cut trench. The approved new alignment would remove a dog-leg in the existing alignment and provide the correct configuration and position to string the pipe for pullback under the slough. Once the new pipe is tied in, the segment of the bypassed pipeline between the bank and the low tide level would be removed. The remaining sections of the bypassed line would be capped, filled with nitrogen, and retired in place.

Approved construction access to the south bank of the slough where an HDD set-up area and entrance pit would be installed is via Park Street. Access to the receiving pit and north tie-in point is through private property from Myrtle Avenue, north on Devoy Road, northwest along an abandoned railroad right-of-way, then southwest along farm roads and the pipeline easement strip to the work site.

Approved surface disturbance associated with the HDD process includes an entry pit and a receiving pit, with each pit measuring approximately 6-ft by 12-ft by 8-ft deep, with

associated tail ditches each measuring 3-ft by 20-ft by 6-ft deep. The approved HDD set-up area would be approximately 100-feet by 100-feet to accommodate the drilling rig, mud tanks, pumps, and drill stem racks.

During drilling operations, the special armor-coated pipe sections to be pulled through the crossing corridor would be strung on pipe supports in the extra workspace along the edge of the 100-foot-wide temporary construction right-of-way, welded together, and the joints coated. Once the bore hole is the correct diameter, the pipe would then be pulled through the bore until it surfaces on the entry side. Bulldozers with side booms and slings would support the pipe as it is slowly pulled through the bore until it surfaces on the entry side. The completed bored crossing would then be connected to the section of pipeline to be installed in a trench within the pastureland, and the entry and receiving pits for the HDD would be backfilled.

Open cut trenching was approved within a right-of-way through the pastureland on the north side of the slough between the tie-in with the HDD bored segment of line and the northern tie-in with the existing line. The trenching would be conducted by tracked backhoes or ditchers. The trench would be a minimum of 12 inches wide and about 5 feet deep to ensure at least 4 feet of cover over the pipeline. Stringing of the pipe is completed by trucking pipe lengths to and along the right-of-way and unloading with a crane or bulldozer with a side boom onto wood skid supports. The pipe would be lowered into the trench from the skid supports using side booms. The excavated soil will be backfilled in layers into the trench after installation of the pipeline. The topsoil would be replaced last to re-establish the preconstruction soil profile.

Hydrostatic testing is completed prior to tie-in by filling the new pipeline with water, increasing the pressure to a minimum of 125 percent of the maximum operation pressure, and holding the pressure for a period of time. Following testing, the pipe would be flushed to remove dirt and other debris. An energy dissipation device would be utilized to control the water discharged from the pipeline following hydrostatic testing and flushing, and appropriate best management practices would be used to ensure no silt enters the slough from this discharge.

4. Description of Amended Development Proposed Under CDP Amendment No. 1-04-010-A1

Under the current amendment request, the applicant proposes to implement essentially the same project that was originally approved under CDP No. 1-04-010. However, the applicant has amended the project in accordance with Special Condition No. 2 of the permit to provide for “necessary revisions to the project to avoid another frac-out and restoration of areas affected by the frac-out to pre-project conditions” (see Background above). To this end, the applicant has prepared a revised project and restoration plan in accordance with Special Condition No. 2 that includes (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions. The 2008 proposed project description is included in Exhibit No. 4.

Revisions to the project, which are designed to reduce the likelihood of another frac-out, include the following (see Exhibit Nos. 4, 5, and 6 for full details):

- (1) The HDD will bore at least 30 feet deeper (to a depth of approximately 85 feet beneath the slough channel) than the previous attempt to avoid possible soil disturbances caused by the prior bore and thereby decrease the likelihood of another frac-out. Entry and exit angles will be increased, and setback distances will be increased to allow the HDD bore to be deepened. A deeper bore will increase the overburden so that the confining pressure on the borehole is higher. Due to these changes, the length of the section of gas pipeline to be rerouted will increase from the approved 1,200 feet to approximately 1,350 feet.
- (2) An experienced drilling engineer expert in the HDD process will be present on site at all times during the drilling process from mobilization through demobilization and site restoration, including pilot bore, pre-reaming, reaming, and pullback to ensure appropriate drilling methodology techniques are used.
- (3) The drilling contractor will use a down-hole pressure monitoring tool that will provide additional information regarding bottom hole pressure that can be compared against calculated maximum allowable drilling fluid pressure. The on site drilling engineer will compare the measured down-hole pressures to the maximum allowable pressures and minimum required pressures calculated from a hydrofracture risk evaluation prior to commencement of the bore. If actual down-hole pressures approach maximum allowable values, the drilling engineer will advise the contractor. The contractor may use this information to modify drilling practices and therefore further minimize chances of a frac-out.
- (4) Two piezometers, which will be monitored regularly when the drill head is within 50 feet of piezometer locations, will be installed between the entry and Freshwater Slough to enable evaluation of drilling fluid excess pressures. The piezometer tips will be set 10- to 15-feet above the HDD bore, offset 5 feet from the centerline. If the piezometers indicate increasing pressures, the drilling engineer will advise the HDD contractor, who will then adjust drilling speed, drilling fluid properties, or other drilling operations as necessary to reduce excess pressures.
- (5) The HDD contractor will have on-site tools, equipment, and personnel that are trained and experienced for rapid containment, clean-up, and removal of any drilling fluid surface spills or frac-outs to reduce the consequences of any incident.
- (6) The HDD contractor selected for the project will be selected from a list of pre-qualified HDD contractors. The prequalification criterion will focus on successful bores in wetland areas and will have demonstrated good practices that avoided adverse impacts to sensitive river or wetland habitats.

Additional measures that the applicant is proposing to address a further accidental release of drilling fluid into the environment are included in the following plans:

- Erosion Control Plan (Exhibit No. 9), which includes, among other things, additional frac-out contingency measures to be implemented to ensure rapid and effective response in the event of a frac-out. These include the following:
 - (1) Staging a 50-ft-long silt curtain at the south end of the slough;
 - (2) Installing terrestrial silt fencing to enclose the site of the previous frac-out;
 - (3) Staging a boat on the south side of the slough at the base of the sit curtain to store remaining staged items, including a 50-gallon drum, five sand bags to weigh the drum down over a frac-out, shovels, rakes, and bags to contain shoveled soils;
 - (4) Staging a vacuum truck on an upland site with a hose staged and ready to be used at the water's edge on the south side of the slough.
 - (5) Staging four 4 by 8 by $\frac{3}{4}$ plywood sheets to protect marsh vegetation on the slope above the salt marsh
 - (6) Maintaining on site additional materials for use if needed including 100 sand bags, absorbent mats, 200 feet of fiber rolls, and 200 feet of terrestrial silt fencing;
- Revised HDD Fluid Release Contingency Plan (Exhibit No. 8), which addresses all inadvertent releases of drilling fluids into terrestrial and aquatic environments; and
- Hazardous Materials Management Plan (Exhibit No. 10), which defines hazardous materials control, containment, and spill removal procedures to reduce the risks associated with their use.

In addition to the plans listed above, the applicant has prepared various additional revised and updated plans for the proposed amended development, including the following:

- Restoration Plan, prepared pursuant to Special Condition No. 2 of the original permit, which addresses restoration of the coastal salt marsh habitat affected by the frac-out to pre-project conditions (Exhibit No. 7). Restoration primarily involves annual monitoring of the site (including population monitoring for the two sensitive plant species that occur in the affected salt marsh habitat) and conferring with CDFG annually to assess the need for contingency measures. Included with the submitted restoration plan are the 2006 and 2007 monitoring results and recommendations for the area impacted by the frac-out. The submitted restoration plan for the area affected by the 2005 frac-out calls for up to five years of monitoring of the two sensitive plant species that occur in the marsh. The spilled drilling fluid had been cleaned up using containment devices such as silt fences and sand bags, and vacuuming up the drilling mud as much as possible. The restoration plan determined that that native marsh vegetation would likely re-grow on the site naturally, and that replanting of vegetation would not be necessary. The monitoring results to date indicate that the native salt marsh vegetation has recovered and that

the “mixed marsh community” which contains the two sensitive plant species has apparently expanded its aerial cover in the salt marsh (into what had been *Spartina* marsh dominated by the nonnative, invasive dense-flowered cordgrass, *Spartina densiflora*). If the monitoring results indicate that the natural recolonization of the site is not successful, the restoration plan calls for remedial actions to be implemented including distributing seeds of the two sensitive plant species to the area to increase population numbers and hand removal of the invasive dense-flowered cordgrass to reduce competition and allow the native vegetation, including the two sensitive species, the opportunity to flourish.

- Wetland Mitigation Plan (Exhibit No. 12), which addresses the “best management practices” (BMPs) for construction work within grazed seasonal wetlands and the restoration of wetland areas temporarily impacted by the amended development to pre-project conditions;
- Biological Assessment, which includes additional recommendations for avoiding and minimizing impacts to sensitive habitats; and
- Debris Disposal Plan (Exhibit No. 11), which addresses the management and disposal of construction-related debris generated from the proposed amended development.

The Commission notes that the applicant has been issued several permits and associated authorizations for the project that contain terms and conditions for avoiding or minimizing impacts to coastal resources and the environment (see “other approvals” listed on Page 1).

B. Geologic Hazards

Coastal Act Section 30253 states the following, in applicable part:

New development shall:

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...*

...

Consistency Analysis:

Section 30253 of the Coastal Act states that development shall neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas. The principal geologic concern related to the amended development is that horizontal directional drilling (HDD) activities associated with the installation of

the replacement gasline under Freshwater Slough could result in a further release of drilling fluids (mostly bentonite) into the waters of the slough. As discussed above in Section IV-A-2 (Background), the most likely cause of a release of bentonite would be as a result of a “frac-out,” which is what occurred in 2005 during the initial attempt to implement the project.

The most effective way to guard against the release of drilling fluid into the environment through frac-out is to drill in geologic strata that are least susceptible to frac-out and to maintain moderate drilling fluid pressures during drilling. A site specific geotechnical analysis of the geology at the bore site is the most effective way of determining how to avoid boring through geologic strata that are susceptible to frac-out. The applicant’s geotechnical engineering consultant, Kleinfelder, Inc, performed a geotechnical analysis for the HDD bore approved under the original permit in 2004 to determine, among other things, the appropriate bore depth. The geotechnical investigation included specific recommended drilling depths for the directional bore and included other recommendations for the directional boring contractors to follow. This information was reviewed by the Commission’s geologist, who generally agreed with the report’s conclusions and recommendations. Thus, the original permit contained Special Condition Nos. 1 and 7 to ensure that directional drilling would be implemented in a manner consistent with the geotechnical report recommendations, including drilling at depths greater than 35 feet.

As discussed above (see Background) however, despite precautionary measures taken to guard against a frac-out, on August 29, 2005 during drilling of the pilot hole of the HDD bore, a frac-out occurred on the south bank of the slough within the coastal salt marsh habitat described above (see Environmental Setting). Just before the frac-out, the drilling process had proceeded to approximately 350 feet and was 55 feet below the ground surface when the driller experienced a loss of returning fluids back to the drilling rig. The driller stopped drilling and pumping, pulled approximately 105 feet of drill pipe back out of the hole, and reestablished drilling fluid circulation back to the drill rig. The driller then began to add drill pipe to the drill string and push back into the previously drilled hole. During the push-back process, the frac-out occurred. As soon as the frac-out was witnessed by the biological monitor, the contractor halted drilling and circulating activities, implemented spill contingency measures, and contacted the appropriate regulatory agencies.

Since ceasing operations in 2005 following the frac-out, the applicant has reexamined alternatives for replacing the pipeline crossing of Freshwater Slough that would not involve the use of horizontal directional drilling. The alternative approaches that the applicant has examined and the conclusion reached by the applicant include the following:

- Install an Ercon mat system on the slough bottom to support and protect the pipeline: This approach is not feasible, as the soils in the slough are soft and do not offer a stable foundation for the mat. Furthermore, over time the mat would settle and require repair or replacement. As the work would take place in the

slough and as it would be only a temporary fix that would likely have to be replaced every 5 to 10 years, this approach is not a less environmentally damaging feasible alternative to the proposed project.

- Replace the pipeline crossing using the direct burial method: This approach would involve extensive trenching through the slough to provide sufficient cover for the pipeline. The trench across the slough would be approximately 75 feet long, 15 to 20 feet wide, and 8 feet deep. Installation of the trench would require the slough to be dammed upstream and downstream of the site, with a number of large conduits installed in the slough bed and with a high potential for adverse impacts to migrating adult salmonids and/or rearing juvenile salmonids. Therefore, this approach is a less environmentally damaging feasible alternative to the proposed project.
- Build a pipeline suspension bridge: This approach raises visual impact and safety issues. Creation of a new suspension bridge for securing the pipeline would itself have environmental impacts (necessary wetland fill for bridge crossing supports) and would create a visually obtrusive structure in an otherwise rural setting. Furthermore, the safety of the high pressure gasline would be at risk, as the above-ground structure would be subject to vandalism that could cause an explosion. Therefore, this approach is a less environmentally damaging feasible alternative to the proposed project.

The Commission agrees with the applicant's analysis and conclusions, and based on this, and the concurrence of the Commission's geologist with the mitigation measures discussed below, finds that there is no less environmentally damaging feasible alternative for replacing the segment of pressurized gasline, which is hazardous, in danger of rupture, and if not replaced could result in a shut down of natural gas for a large portion of the region. This approach also provides a "long-term" solution (in terms of less maintenance since the pipeline would be below ground). The applicant has submitted revised project plans (Exhibit No. 5) showing the planned trajectory of the HDD bore to be at least 30 feet deeper (to approximately 85 feet beneath the slough channel) than the minimum bore depth required by the original permit. Furthermore, as discussed above in Section IV-A-4 (Project Description), the applicant has prepared a revised project and restoration plan in accordance with Special Condition No. 2 of the original permit that includes (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of drilling fluids, and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions. The 2008 proposed project description is included in Exhibit No. 4. Revisions to the project, which are designed to reduce the likelihood of another frac-out, include the following (see Exhibit Nos. 4, 5, and 6 for full details):

- (1) An experienced drilling engineer expert in the HDD process will be present on site at all times during the drilling process from mobilization through demobilization and site restoration, including pilot bore, pre-reaming, reaming, and pullback to ensure appropriate drilling methodology techniques are used.
- (2) The drilling contractor will use a down-hole pressure monitoring tool that will

- provide additional information regarding bottom hole pressure that can be compared against calculated maximum allowable drilling fluid pressure. The on site drilling engineer will compare the measured down-hole pressures to the maximum allowable pressures and minimum required pressures calculated from a hydrofracture risk evaluation prior to commencement of the bore. If actual down-hole pressures approach maximum allowable values, the drilling engineer will advise the contractor. The contractor may use this information to modify drilling practices and therefore further minimize chances of a frac-out.
- (3) Two piezometers, which will be monitored regularly when the drill head is within 50 feet of piezometer locations, will be installed between the entry and Freshwater Slough to enable evaluation of drilling fluid excess pressures. The piezometer tips will be set 10- to 15-feet above the HDD bore, offset 5 feet from the centerline. If the piezometers indicate increasing pressures, the drilling engineer will advise the HDD contractor, who will then adjust drilling speed, drilling fluid properties, or other drilling operations as necessary to reduce excess pressures.
 - (4) The HDD will bore at least 30 feet deeper (to a depth of approximately 85 feet beneath the slough channel) than the previous attempt to avoid possible soil disturbances caused by the prior bore and thereby decrease the likelihood of another frac-out. Entry and exit angles will be increased, and setback distances will be increased to allow the HDD bore to be deepened. A deeper bore will increase the overburden so that the confining pressure on the borehole is higher. Due to these changes, the length of the section of gas pipeline to be rerouted will increase from the approved 1,200 feet to approximately 1,350 feet.
 - (5) The HDD contractor will have on-site tools, equipment, and personnel that are trained and experienced for rapid containment, clean-up, and removal of any drilling fluid surface spills or frac-outs to reduce the consequences of any incident.
 - (6) The HDD contractor selected for the project will be selected from a list of pre-qualified HDD contractors. The prequalification criterion will focus on successful bores in wetland areas and will have demonstrated good practices that avoided adverse impacts to sensitive river or wetland habitats.

The applicant's consultant, Dr. David Bennett of Bennett Trenchless Engineers, Inc., has reviewed the revised project description and plans and has visited the project site. He believes that the revised plans incorporate all feasible best management practices both for reducing risks of hydrofracture and minimizing potential impacts should it occur (see Exhibit No. 6). Furthermore, the Commission's geologist, Dr. Mark Johnsson, has reviewed the proposed amended development and also concurs with Dr. Bennett's recommendations and conclusions.

Therefore, the Commission modifies and reimposes Special Condition No. 7. This condition requires that the permittee undertake HDD activities in accordance with all recommendations and geotechnical specifications contained in the applicant's revised

project description (Exhibit Nos. 4-5) and the various correspondences from the applicant's consultant, Bennett Trenchless Engineers, which specify various technical protocols and procedures to be followed to reduce the likelihood of a frac-out occurring (Exhibit No. 6).

With the geotechnical analyses conducted by the applicant's geotechnical consultants and with the precautionary measures required by modified and reimposed Special Condition No. 7, the chances that a damaging frac-out would result from the proposed amended development have been minimized. However, because of the uncertainties about the exact soil conditions existing at each drilling location and the potential for human error in the directional drilling process, it cannot be guaranteed that no damaging frac-out will ever occur. Therefore, the applicant has prepared a revised and updated frac-out contingency plan detailing precautions and cleanup methods that would be employed in the event of a frac-out (see Exhibit No. 8). The plan includes an on-site materials checklist to manage and control drilling fluid surface releases, pre-construction protection measures, details on the proposed on-site biological monitoring program, a summary of the additional measures proposed to reduce the likelihood of a frac-out (as proposed in the revised project description, Exhibit No. 4), containment and control methods in case of a frac-out, notification processes and contacts, an evaluation plan/abandonment contingency plan, and supplemental details on hazardous materials management. A separate hazardous materials management plan also is included as Exhibit No. 10, which addresses the management of all hazardous materials on site such as fuels, fluids, drilling mud, concrete, pipe coating, etc. Furthermore, as summarized above under the Project Description (section IV-A-4), additional frac-out contingency measures have been included in the applicant's revised erosion control plan (Exhibit No. 9). These include the minimum amount of "staged and ready" measures necessary to contain and clean up an accidental spill in the terrestrial or aquatic environment. The measures will be installed prior to construction and will remain on-site for the duration of drilling activities. Finally, the applicant's consultant, Bennett Trenchless Engineers, has prepared a list of technical procedures to be followed by the drilling contractor not only to reduce the risks of frac-out, but also appropriate procedures to be followed in the event that another frac-out does occur (Exhibit No. 6). These include, for instance, diluting drilling fluids with ground water, injecting circulation loss material (such as Poly Seal, Kem Pak ULV, Tru-Bore, etc.) into the bore, monitoring fluid levels and waiting an appropriate amount of time prior to re-drilling, adjusting drilling fluid properties as necessary by dilution or mixing new fluids to ensure that mud weights are less than 9.5 pounds per gallon and viscosity is satisfactory, using thinner fluid with a higher value of filtration control, drilling a relief hole to relieve excessive formation pressures, and various other measures to be used as appropriate by an experienced driller.

The Commission's geologist has reviewed Dr. Bennett's recommended procedures to be followed in the event that another frac-out occurs. Dr. Johnsson believes that the proposed contingency measures are appropriate.

Therefore, the Commission modifies and reimposes Special Condition No. 2 and adds Special Condition Nos. 14 and 15. Special Condition No. 14 requires that the permittee

undertake erosion control procedures, including implementing the frac-out contingency measures included in Appendix B of the erosion control plan, in conformance with the approved erosion control plan (Exhibit No. 9). Similarly, Special Condition No. 15 requires that the permittee undertake hazardous materials management procedures in conformance with the approved hazardous materials management plan (Exhibit No. 10). Modified and reimposed Special Condition No. 2 requires that the permittee undertake drilling fluid spill contingency measures in conformance with the revised fluid release contingency plan (Exhibit No. 8) and the technical procedures recommended by Bennett Trenchless Engineers (Exhibit No. 6). The condition further requires that in the event that a spill or accidental discharge of drilling fluids during HDD operations, all construction shall cease and shall not recommence until the permittee implements the frac-out contingency and spill clean-up measures listed in the approved plans cited above. Construction may not recommence until after all contingency and spill clean-up measures have been implemented according to the above-cited plans and evidence is submitted for the Executive Director's review and approval demonstrating that the California Department of Fish and Game and NOAA-Fisheries have authorized recommencement of drilling activities.

In addition, the Commission modifies and reimposes Special Condition No. 8, which requires the permittee to submit to Commission staff the specific dates when the HDD boring will occur at least one week prior to commencement of operations. The permittee is required to allow Commission staff to enter and inspect the project area for purposes of determining compliance with CDP Amendment No. 1-04-010.

Finally, the Commission attaches Special Condition No. 17, which requires the applicant to assume the risks of accidental spills of drilling fluids during the proposed directional drilling activities and waive any claim of liability on the part of the Commission. Given that the applicant has chosen to implement the project despite these risks, the applicant must assume the risks. In this way, the applicant is notified that the Commission is not liable for damage as a result of approving the permit amendment for development. The condition also requires the applicant to indemnify the Commission in the event that third parties bring an action against the Commission as a result of the failure of the development to withstand hazards. In addition, the condition ensures that any future assignees of the permit will be informed of the risks, the Commission's immunity from liability, and the indemnity afforded the Commission.

Therefore, the Commission finds that as conditioned the amended development is consistent with the requirements of Coastal Act Section 30253 that development shall neither create nor contribute significantly to geologic instability or destruction of the site or surrounding areas.

C. Filling & Dredging in Coastal Waters

The proposed amended development includes various activities that are a form of filling and dredging in coastal wetlands. The main portion of the project that affects wetlands involves the trenching activity in the grazed seasonal wetlands on the north side of

Freshwater Slough to tie in the segment of pipeline to be installed under the slough (using horizontal directional drilling) with the existing gasline. Because the pipeline will be buried under pasturelands or installed under the slough using HDD, there is no permanent above ground wetland fill associated with the project. However, the project would temporarily disturb approximately 2.75 acres of grazed seasonal wetlands north of the slough and approximately 0.23-acre of ungrazed seasonal wetlands on the south side of the slough during construction. The affected areas on the north side of the slough, all of which occur within grazed seasonal wetlands (diked former tidelands) include a 6-ft x 12-ft x 8-ft-deep exit bore pit, a 12-inch-wide x 380-ft-long x 5-ft-deep open cut trenching area north of the HDD exit bore pit, and a 100-foot-wide x 1,200-ft-long construction corridor/staging area where soil compaction may occur from use of the area by tracked backhoes, bulldozers, trucks, etc. See Exhibit No. 3 for more details.

Coastal Act Section 30233 allows filling and dredging in wetlands only where there is no feasible less environmentally damaging alternative, where feasible mitigation measures have been provided to minimize adverse environmental effects, and where the project is limited to one of seven specified uses. Additionally, Coastal Act Sections 30230 and 30231 address protection of the biological productivity and water quality of the marine environment from the impacts of development.

Coastal Act Policies:

Coastal Act Section 30233 states the following, in applicable part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

...

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

Coastal Act Section 30230 states the following, in applicable part:

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

Coastal Act Section 30231 addresses the protection of coastal water quality and marine resources in conjunction with development and other land use activities. Section 30231

states the following:

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

Consistency Analysis:

The above policies set forth a number of different limitations on what development projects may be allowed in coastal wetlands. For analysis purposes, the limitations can be grouped into four general categories or tests. These tests are as follows:

1. that the purpose of the filling, diking, or dredging is for one of the seven uses allowed under Section 30233;
2. that the project has no feasible less environmentally damaging alternative;
3. that feasible mitigation measures have been provided to minimize adverse environmental effects; and
4. that the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

The conformance of the proposed amended development to each of the tests is discussed separately below.

1. Permissible Use for Fill

The first test set forth above is that any proposed filling, diking or dredging in wetlands must be for an allowable purpose as specified under Section 30233 of the Coastal Act. The relevant category of use listed under Section 30233(a) that relates to the proposed amended development is subcategory (4), stated as follows:

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

To determine if the proposed fill/dredging is for an incidental public service purpose, the Commission must first determine that the proposed filling/dredging is for a public service purpose. The project involves the replacement of ~1,350 lineal feet of high pressure natural gas transmission pipeline which traverses beneath Freshwater Slough and through

grazed seasonal wetlands within an existing PG&E right of way to ensure continued delivery of natural gas for a portion of the coastal communities of Humboldt County. Therefore, since the proposed amended development would be undertaken to ensure the continued delivery of natural gas service to the public, the Commission finds that the fill/dredging to replace the high-pressure natural gas transmission pipeline expressly serves a public service purpose consistent with Section 30233(a)(4).

The Commission must next determine if the fill/dredging is for an “incidental” public service purpose. The project would replace a segment of an existing 8-inch diameter high-pressure natural gas transmission line with a new segment of 8-inch diameter line. The project would not result in an expansion of natural gas service area. Rather, the project would replace a deteriorated section of line with a new one to assure the reliability of the primary natural gas service for the region. Therefore, the Commission finds that the replacement of a segment of high-pressure natural gas transmission line is incidental to the existing natural gas transmission line, as replacement of a segment of the line will serve to improve the reliability of the existing natural gas transmission line.

Therefore, the Commission finds that for the reasons discussed above, the dredging (excavation) and filling for the proposed project is for an incidental public service purpose and thus is an allowable use pursuant to Section 30233(a)(4) of the Coastal Act.

2. Alternatives Analysis

The second test set forth by the Commission’s fill policies is that the proposed fill project must have no feasible less environmentally damaging alternative. Coastal Act Section 30108 defines “feasible” as follows:

“Feasible” means capable of being accomplished in a successful manner within a reasonable time, taking into account economic, environmental, social, and technological factors.

Several alternatives have been evaluated to determine whether there is a feasible less environmentally damaging alternative to the proposed amended development. These alternatives are summarized in Section IV-B (Geologic Hazards) above and include (a) an Ercon mat system to support and protect the pipeline, (b) replacing the pipeline crossing using the direct burial method, and (c) building a pipeline suspension bridge. Additionally, findings for approval of the original permit also evaluated (d) reconstructing the gas line in a different alignment that might avoid wetlands, (e) boring the pipeline under the slough using the originally approved HDD trajectory, and (f) the no project alternative. The Commission finds, as discussed below, that there is no feasible less environmentally damaging alternative to the proposed amended development, as conditioned.

Placing the pipeline on the slough bottom on top of an Ercon mat system to support and protect the pipeline

This approach is not feasible, as the soils in the slough are soft and do not offer a stable foundation for the mat. Furthermore, over time the mat would settle and require repair or replacement. As the work would take place in the slough and as it would be only a temporary fix that would likely have to be replaced every 5 to 10 years, this approach is not a less environmentally damaging feasible alternative to the proposed amended development as conditioned.

Replace the pipeline crossing using the direct burial method

Installing the new section of gasline under Freshwater Slough using a trenching technique rather than horizontal directional drilling would reduce the total area of disturbance of grazed seasonal wetlands. As proposed, the bore pit for the horizontal directional drilling on the north side of the slough would affect 72 square feet of area. In addition, a 100-foot-wide by 600-foot-long staging area is proposed to be used primarily for set up of the horizontal directional drilling process and the stringing and welding of the pipe segment to be pulled back through the horizontal directionally drilled bore. Using trenching rather than horizontal directional drilling would eliminate the need for both of these proposed project elements, reducing the total amount of disturbance within the grazed seasonal wetlands. However, trenching through Freshwater Slough would result in significant impacts to the slough environment. The channel bottom and the banks of the channel, which are vegetated with salt marsh and include at least two listed plant species would be directly affected by excavation for the trench. The trench area would have to be dewatered and the slough water diverted prior to excavation by the construction of a coffer dam or similar device, resulting in an area of channel bottom and bank disturbance much greater than just the width of the trench. Diverting the slough waters would also adversely affect threatened salmonids and other fish species passing through the channel. The proposed HDD operation avoids all of these impacts. Although use of the HDD technique as proposed would result in greater impacts to the grazed seasonal wetlands, these impacts to the environment would be far less significant than the impacts to the channel from a trenching operation, as the proposed project, as conditioned, avoids all significant impact to threatened plant and fish species. In addition, restoration of the grassy vegetation of the grazed seasonal wetlands is far quicker and easier to achieve than restoration of disturbed salt marsh habitat within the slough channel, which is a more diverse and complex habitat type. Therefore, the Commission finds that using trenching to bury the new section of gasline under Freshwater slough is not a feasible less environmentally damaging alternative to the proposed amended development as conditioned.

Build a pipeline suspension bridge

This approach raises visual impact and safety issues. Creation of a new suspension bridge for securing the pipeline would itself have environmental impacts (necessary wetland fill for bridge crossing supports) and would create a visually obtrusive structure in an otherwise rural setting. Furthermore, the safety of the pipeline would be at risk, as the above-ground structure would be subject to vandalism. Therefore, the Commission finds that building a pipeline suspension bridge is not a feasible less environmentally damaging alternative to the proposed amended development as conditioned.

Reconstructing Gasline in an Alternative Alignment

An alternative to reconstructing the affected section of gasline in the location proposed would be to reconstruct the line in an alternative alignment where wetlands might be avoided or the amount of wetlands affected might be reduced. Such an alternative might be to relocate the line adjacent to Old Arcata Road, along the inboard edge of the grazed seasonal wetland area that extends from Arcata to Eureka. However, PG&E does not own sufficient alternative right-of-way to accommodate a new gasline anywhere in the project vicinity. Therefore, the Commission finds that reconstructing the line in an alternative alignment is not a feasible less environmentally damaging alternative the proposed amended development as conditioned.

Boring the pipeline under the slough using the originally approved HDD trajectory

This alternative would essentially be resuming drilling under the plan approved by the original permit. This alternative is the not the least environmentally damaging feasible alternative because the risk of a frac-out is extremely high given that a frac-out did occur using this drilling trajectory and configuration during the original drilling effort in 2005.

No Project Alternative

The “no project” alternative would not replace the 1,350-foot-long section of pressurized gas pipeline and rely on continued use of the existing segment of pressurized gas line. The project was proposed because the existing situation is hazardous and could also result in a shut down of natural gas service for a large portion of the region. A section of the previously buried existing gasline is exposed along Freshwater Slough and is in danger of rupture. Rupture of the line would increase the risk of fire and explosion and would cut off natural gas service to a large portion of the region. Thus, the no project alternative would not meet the project goals of eliminating a hazardous condition that threatens public safety and ensuring the continued delivery of a vital utility for a large portion of the region. Therefore, the Commission finds that the no project alternative is not a feasible less environmentally damaging alternative the proposed amended development as conditioned.

Conclusion

For all of the reasons discussed above, the Commission finds that there is no less environmentally damaging feasible alternative the proposed amended development as conditioned as required by Section 30233(a).

3. Feasible Mitigation Measures

The third test set forth by Section 30233 is whether feasible mitigation measures have been provided to minimize adverse environmental impacts. The reconstruction of the 1,350-foot-long section of gasline would occur partially within grazed seasonal wetlands. The amended development would have potential adverse impacts to (1) seasonal wetland habitat, (2) sensitive plant species, and (3) water quality. The potential impacts and their

mitigation are discussed in the following sections.

(a) Seasonal Wetland Habitat

As noted above, the amended development will temporarily disturb approximately 3 acres of seasonal wetlands during construction. Most of the affected area is located on the north side of the slough including a 100-foot-wide construction corridor along the approximately 600 feet of pastureland between the slough and the tie-in point with the existing pipeline where most of the activity will be concentrated, and an additional 100-foot-wide by 600-foot-long strip north of the tie-in point where activities will generally be limited to the stringing and welding of the pipe segment to be pulled back through the bore under the slough. A 0.23-acre area of seasonal wetlands would also be affected on the south side of the slough.

Most of the seasonal wetlands in the project site were originally subject to tidal action, but like much of the land around Humboldt Bay, the project site was diked off a century ago and reclaimed for agricultural use. Due to its low elevation, the project area is subject to seasonal ponding from rain and runoff and also has a high groundwater table. The wetland vegetation on the site is not particularly abundant or diverse in comparison with other wetland habitats around Humboldt Bay because of its current and historic use as pasture for cattle grazing. Nonetheless, the area does provide some wetland habitat including foraging habitat for a diversity of water-associated wildlife including waterfowl, wading birds, and shorebirds. The wetlands also function to provide a certain degree of water quality protection, as they temporarily detain rainwater runoff and allow for the removal of impurities entrained in stormwater flowing over the pasturelands.

PG&E proposes to restore all of the grazed seasonal wetlands disturbed by the amended development to pre-project conditions. The applicant prepared a wetland mitigation plan (Exhibit No. 12), which details various impact minimization and resource protection measures to be implemented such as (1) delineating all work areas and construction corridors prior to construction activities and limiting construction activities to these delineated areas, (2) implementing a pre-project worker education program for construction crews to ensure that all ground personnel are aware of work area boundaries and sensitive resources in the project area, (3) stockpiling the top 6 to 8 inches of soil separately from the underlying soils and keeping the topsoil moist until it can be replaced following pipeline replacement, (4) implementing erosion and sediment control BMPs around temporarily stockpiled spoils material and work areas, (5) recontouring disturbed areas to original grade without depressions, ridges, or mounds, (6) ripping and decompacting areas of temporary impact following construction, (7) reseeding any disturbed areas following construction, (8) maintaining a qualified biological monitor on site for the duration of construction activities, and (9) properly disposing of excess stockpiled soils and other project spoils according to the debris disposal plan (Exhibit No. 11). The Debris Disposal Plan proposes to take excess debris to the Eureka Center Hazardous Collection Facility, the Eureka and Fortuna transfer stations, or the PG&E Eureka Service Center, as appropriate.

To ensure that all proposed impact minimization and resource protection measures are implemented as proposed, the Commission modifies and reimposes Special Condition No. 11 and adds Special Condition No. 13. Special Condition No. 13 requires the permittee to undertake the amended development in conformance with the approved wetland mitigation plan described above (Exhibit No. 12). Special Condition No. 11 requires, among other things, that the applicant save excavated topsoil and appropriately replace the topsoil at the end of construction to ensure that the area revegetates with the same species that currently inhabit the wetland areas. The condition also requires that temporarily impacted wetland areas be decompacted through mechanical soil aeration where appropriate, that work areas are delineated prior to construction to minimize wetland impacts, and that a qualified biologist monitor the site to avoid impacts to sensitive species and habitats. Additionally, the Commission adds Special Condition No. 16 to require conformance with the approved debris disposal plan (Exhibit No. 11), which will ensure that excess construction-related debris is appropriately discarded.

To further ensure that construction disturbance to the seasonal wetlands is minimized, the Commission modifies and reimposes Special Condition No. 10. This condition requires that all staging areas and construction access routes be limited to the location and sizes specified in the site plan submitted with the permit amendment application (Exhibit No. 3). Although project construction is not proposed to occur in the heart of the rainy season, there may be areas along the gasline that may be excessively wet or soft and unable to support construction equipment. In the event that such areas are encountered during project construction, modified and reimposed Special Condition No. 10 includes a requirement that the permittee utilize temporary stabilization materials such as reinforced construction stabilization mats. The use of stabilizing materials would minimize compaction impacts to the wetlands from construction equipment. Special Condition No. 10 requires that this construction method be implemented, that access routes be the minimum width necessary to allow movement of equipment to and from the project site, and that all stabilizing materials be removed entirely following project construction.

Finally, to ensure the success of restoring temporarily disturbed wetland areas to pre-project conditions, the Commission modifies and reimposes Special Condition No. 12. This condition requires the permittee to submit a monitoring report to the Executive Director within 24 months following completion of the installation of new segment of gasline, as is proposed in the wetland mitigation plan (Exhibit No. 12). The monitoring report must be prepared by a qualified biologist or botanist and must evaluate whether the objective of reestablishing vegetation in areas of project construction to a level of coverage and density equivalent to vegetation coverage and density of surrounding undisturbed areas has been achieved. If the report indicates that the revegetation of the disturbed areas following reseeded has not been successful, in part or in whole, the permittee is required to submit for the review and approval of the Executive Director a revised restoration program to achieve the objective. The revised restoration program shall require a further amendment to CDP No. 1-04-010.

Therefore, the Commission finds that the amended development, as conditioned, includes all feasible mitigation measures to minimize all significant adverse impacts to coastal

wetlands consistent with Section 30233 of the Coastal Act.

(b) Water Quality

The proposed amended development is located largely within seasonal wetlands and crosses underneath Freshwater Slough. Potential adverse impacts to the water quality of the seasonal wetlands and Freshwater Slough could occur in the form of sediment disturbance and transport and from the discharge of fuels, lubricants, debris, and other materials.

The proposed amended development incorporates various construction measures to minimize the potential for sediment mobilization, which could result in significant adverse water quality impacts in the form of increased turbidity. The applicant prepared an erosion control plan for the amended development (Exhibit No. 9), which details various BMPs to be used in each specific work area and for each project activity, such as the use of fiber rolls and other sediment barriers, preserving existing vegetation to the maximum extent possible, and various other measures. As discussed above under Geologic Hazards (section IV-B), the applicant also prepared a hazardous materials management plan for the amended development, which defines hazardous materials control, containment, and spill removal procedures to reduce the risks associated with their use. Additionally, as discussed above, the applicant has submitted debris disposal plan for the amended development, which addresses the management and disposal of construction-related debris generated from the proposed amended development.

Therefore, the Commission adds Special Condition Nos. 14, 15, 16, and modifies and reimposes Special Condition No. 11 to ensure that feasible mitigation measures are implemented that will reduce adverse water quality impacts below a level of significance. Special Condition No. 14 requires the permittee to undertake the amended development in conformance with the revised erosion control plan submitted with the amendment application (Exhibit No. 9). Special Condition No. 15 requires the permittee to undertake the amended development in conformance with the revised hazardous materials management plan submitted with the amendment application (Exhibit No. 10), which incorporates “best management practices” to minimize the chances that spills from equipment fueling and rinsate from the cleaning of equipment would enter coastal waters. The plan designates specific fueling areas, ensures that oil absorbent booms and or pads will be on site at all time during construction for use during an accidental spill, and includes provisions for the handling, cleanup and disposal of any hazardous or non-hazardous materials used during the construction project. Special Condition No. 16 requires the permittee to undertake the amended development in conformance with the revised debris disposal plan submitted with the amendment application (Exhibit No. 11). As discussed above (Seasonal Wetland Habitat), the debris disposal plan addresses how excess construction related debris, including excess soil from the HDD and trenching operations, would be removed from the site and identifies disposal sites that are in upland areas where materials may be lawfully disposed. Finally, Special Condition No. 11 imposes certain construction responsibilities on the permittee that relate to the protection of water quality including requirements that all trash and waste items be contained, the

use of erosion control techniques around stockpiles, and that construction workers be educated about these limitations on construction prior to the commencement of construction.

Therefore, the Commission finds that the amended development, as conditioned, includes all feasible mitigation measures to minimize all significant adverse impacts on water quality consistent with Sections 30233 and 30231 of the Coastal Act.

(c) Sensitive Plant Species

Botanical surveys have been conducted for the project site each year since 2003. Two sensitive plant species occur within the project area, specifically within the coastal salt marsh habitat on the south bank of the slough. These include Humboldt Bay owl's clover (*Castilleja ambigua* ssp. *humboldtiensis*) and western sand spurrey (*Spergularia canadensis* var. *occidentalis*).

Humboldt Bay owl's-clover is a hemiparasitic annual species of coastal salt marsh habitats listed by the California Native Plant Society as 1B.2, which indicates plants that are rare, threatened, or endangered in California and elsewhere. Plants typically bloom between May and July. Humboldt Bay owl's-clover is well established in relatively high coastal salt marsh habitat along Eureka Slough and its tributaries, including Freshwater Slough at the project site.

Western sand spurrey is also an annual species found within coastal salt marsh habitats. The species is listed by the California Native Plant Society as 2.1, meaning its distribution is highly restricted in California and it is seriously endangered in California, but it is more or less widespread outside of the state. In California, it is known only from coastal salt or brackish marsh habitats around Humboldt Bay. Western sand spurrey typically blooms in July. Like the Humboldt Bay owl's clover, western sand spurrey is established in remnant salt marshes along Eureka Slough and its tributaries, including Freshwater Slough at the project site.

Unless a frac-out occurs in the salt marsh habitat, as happened in 2005, the use of horizontal directional drilling as part of the construction process would avoid the Humboldt Bay owl's clover and western sand spurrey and their associated salt marsh habitat by installing the new pipeline segment within a bore underneath the habitat. Furthermore, the work is proposed to take place after the plants have set seed for the season. Additionally, the amended development includes certain other mitigation measures to avoid impacts to the species including delineating and restricting access to all areas containing the plants, using qualified biological monitors to ensure that no disturbance to the rare plants occurs during construction, and, in the event of a frac-out, installing plywood over the marsh to reduce depressions and soil compaction from foot traffic during clean-up activities.

Following the frac-out that occurred during HDD boring operations in 2005, the permittee was required, pursuant to Special Condition No. 2 of the original permit, to

submit a restoration plan for the area affected by the spill or discharge to pre-project conditions. The frac-out and subsequent clean-up activities affected roughly half of the coastal salt marsh peninsula containing the two sensitive plant species (see Environmental Setting above). Impacts included direct spillage of drilling mud onto salt marsh vegetation (including Humboldt Bay owl's-clover and western sand spurrey) as well as heavy trampling of vegetation by foot traffic, sand bags, and other clean-up materials. The applicant prepared the required wetland restoration plan for the affected salt marsh habitat (Exhibit No. 7), which includes recommendations developed in consultation with the California Department of Fish and Game to monitor the site for up to five years if necessary to achieve population numbers for the two rare species comparable to the number of plants surveyed during the three blooming seasons prior to the frac-out (summers of 2003, 2004, and 2005). The restoration plan recommends submitting annual monitoring reports, which document the status of the plant species on the affected habitat including number of rare plant individuals present (relative to documented numbers for 2003-2005), recovery of trampled salt marsh vegetation, status of the invasive dense-flowered cordgrass (*Spartina densiflora*) in the affected area and whether or not the weed has increased its percent cover in the area since the disturbance, and other information. If the monitoring results indicate that the natural recolonization of the site is not successful, the restoration plan calls for remedial actions to be implemented including distributing seeds of the two sensitive plant species to the area to increase population numbers and hand removal of the invasive dense-flowered cordgrass to reduce competition and allow the native vegetation, including the two sensitive species, the opportunity to flourish.

The monitoring reports of the frac-out area for 2006 and 2007 (Exhibit No. 7) show that the salt marsh vegetation impacted by the frac-out appears to have recovered from being coated with drilling mud and the trampling associated with the clean-up efforts. Additionally, the region identified as the "mixed marsh community" where the two sensitive plant species occur appears to have expanded its aerial cover (into what previously was classified as *Spartina* marsh dominated by the invasive dense-flowered cordgrass), and the two rare plant populations are apparently vigorous. The 2007 monitoring report recommends that there is no need to monitor these rare plant populations again.

To ensure that the sensitive plant species and their associated salt marsh habitat are adequately protected from the amended development as proposed, the Commission modifies and reimposes Special Condition Nos. 2, 7, and 11. Special Condition Nos. 2 and 7 require the applicant to implement proposed drilling changes that will minimize the chances of another frac-out and list the major measures or changes such as drilling deeper, adaptive management of the drilling process to reduce drilling speeds and pressures if there are indications of possible frac-outs, etc. In addition, Special Condition No. 2 requires the submittal of a new restoration plan for the review and approval of the Executive Director in the event of another frac-out that will address how the habitat affected will be restored. Special Condition No. 2 requires that the permittee implement the previously approved restoration plan for the frac-out that occurred in 2005. As described above, the restoration plan provides for restoring the marsh habitat affected by

the 2005 frac out to pre-project conditions, which apparently has been satisfied. Special Condition No. 11 requires that the mitigation measures for protecting the sensitive salt marsh habitat and species discussed above be implemented and that the construction workers be educated about the extent and need for these limitations on construction. Furthermore, the Commission attaches Special Condition No. 13, which requires the permittee to undertake the amended development in conformance with the approved wetland mitigation plan (discussed above under Seasonal Wetland Habitat). This plan requires the delineation of all work areas and construction corridors prior to commencement of construction to ensure that construction activities do not occur in the sensitive salt marsh habitat.

Therefore, the Commission finds that the project as conditioned, includes all feasible mitigation measures to minimize all significant adverse impacts to sensitive plant species consistent with Section 30233 of the Coastal Act.

D. Maintenance and Enhancement of Marine Habitat Values

The fourth general limitation set by Sections 30233 and 30231 is that any proposed dredging or filling in coastal wetlands must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

As discussed above in the section of this finding on least environmentally damaging feasible alternatives and mitigation, the conditions of the permit amendment will ensure that the amended development will not have significant adverse impacts on the water quality of various watercourses within the project area and will ensure that the construction of the replacement gasline will not adversely affect the biological productivity and functional capacity of the wetland environments through which the replacement line will be constructed. Therefore, the Commission finds that the amended development, as conditioned, will maintain the biological productivity and functional capacity of the habitat consistent with the requirements of Sections 30233, 30230, and 30231 of the Coastal Act.

E. Conclusion

The Commission thus finds that the proposed amended development is an allowable use under Section 30233(a) of the Coastal Act, that there is no feasible less environmentally damaging alternative, that feasible mitigation is required to minimize all significant adverse impacts associated with the dredging and filling of coastal wetlands, and that wetland habitat values will be maintained or enhanced. Therefore, the Commission finds that the amended development, as conditioned, is consistent with Sections 30233, 30230 and 30231 of the Coastal Act.

D. Public Access

This proposed amended development is partially located between the first through public road and a tidal slough, an inlet to the sea (see Exhibit Nos. 1-2). Section 30604(c) of the

Coastal Act requires that every coastal development permit issued for development between the first public road and the sea “*shall include a specific finding that the development is in conformity with the public access and public recreation policies of Chapter 3 (commencing with Section 30200).*”

Summary of Coastal Act Policies:

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or adequate access exists nearby. Section 30211 requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30214 of the Coastal Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. In applying Sections 30210, 30211, 30212, and 30214 of the Coastal Act, the Commission is also limited by the need to show that any denial of a permit application based on these sections, or any decision to grant a permit subject to special conditions requiring public access, is necessary to avoid or offset a project's adverse impact on public access.

Consistency Analysis:

Although the proposed amended development is partially located between the first public road and a tidal slough, an inlet of the sea, it would not adversely affect public access. The project site is within a rural, agricultural area used primarily for cattle grazing. There are no trails or other public roads that provide shoreline access within the vicinity of the project that would be affected by the project. Furthermore, the proposed project would not create any new demand for public access or otherwise create any additional burdens on public access.

Therefore, the Commission finds that the proposed amended development does not have any significant adverse effect on public access, and that the amended development as proposed without new public access is consistent with the requirements of Coastal Act Sections 30210, 30211, 30212, and 30214.

E. California Environmental Quality Act (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full, including all associated environmental review documentation and related technical evaluations incorporated-by-reference into this staff report. Those findings address and respond to all public comments regarding potential significant adverse environmental effects of the amended development that were received prior to preparation of the staff report. As discussed above, the amended development has been conditioned to be consistent with the policies of the Coastal Act. As specifically discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse impacts that the activity may have on the environment. Therefore, the Commission finds that the amended development, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA.

V. EXHIBITS

Click on the link at left
to go to the exhibits.

- 1) Regional Location Map
- 2) Vicinity Maps
- 3) Site Plan and Wetland Impacts for Amended Development
- 4) Revised Project Description
- 5) Revised HDD Boring Plans
- 6) Geotechnical Recommendations
- 7) Restoration Plan and Monitoring Reports for Area Affected by 2005 Frac-out
- 8) Frac-out Contingency Plan
- 9) Erosion Control Plan
- 10) Hazardous Materials Management Plan
- 11) Debris Disposal Plan
- 12) Wetland Mitigation Plan
- 13) Adopted Findings for CDP No. 1-04-010

ATTACHMENT A

Standard Conditions:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director of the Commission.
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.