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Staff:	C. Kenyon-A
Staff Report:	1/30/15
Hearing Date:	2/13/15

STAFF REPORT: REGULAR CALENDAR

Application No.:	**1-14-0773**
Applicant:	**Chevron USA, Inc.**
Agent:	Pacific Affiliates
Location:	Chevron Terminal dock, off the eastern shore of Humboldt Bay, on a tideland parcel adjacent to 3400 Christie Street, Eureka (APN 007-071-13).
Project Description:	Perform structural repairs to an existing barge dock over a four-year period including the replacement of up to 100 timber piles.
Staff Recommendation:	Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

Chevron proposes to perform structural repairs over a four-year period to an existing barge dock off the eastern shore of Humboldt Bay, adjacent to 3400 Christie Street, Eureka. Approximately 80% of the fuel used by the greater Eureka area is delivered via barge to the Chevron dock. The proposed repairs are necessary to maintain the structural integrity of the dock and include replacing up to 100 piles over the life of the project, support beams, decking, and railings. All work would be performed from a barge, maneuvered by a tugboat. The proposed work constitutes a repair and maintenance project pursuant to Section 30610(d) of the Coastal Act and Section

13252 of the Commission's regulations. In its consideration of a repair and maintenance project, the Commission reviews whether the proposed method of repair or maintenance – not the underlying existing development – is consistent with the Chapter 3 policies of the Coastal Act.

The applicant proposes to remove existing piles at the Chevron Terminal dock with a vibratory hammer and install new piles with an impact hammer. The proposed method of repair and maintenance has the potential to adversely affect wetlands and the biological productivity and quality of coastal waters, including potential impacts on: (1) fisheries and marine mammals from pile driving; (2) eelgrass and mudflat habitat from pile replacement and barge anchoring; and (3) water quality from the use of pressure-treated wood in the marine environment and from the discharge of debris and hazardous materials generated during construction.

To ensure that fish and marine mammals are not exposed to sound levels that could cause them injury, Chevron has submitted an Underwater Noise and Marine Mammal Monitoring Plan and staff has included **Special Condition Nos . 2, 5**, and **10** requiring sound impact avoidance and minimization measures and underwater acoustic monitoring during impact pile driving. The National Marine Fisheries Service (NMFS) issued a concurrence letter (**Exhibit 10**) for the project, concluding that with the aforementioned measures, they do not expect the project to result in significant adverse impacts to federally threatened coho salmon, Chinook salmon, Steelhead, green sturgeon, and their critical habitats in Humboldt Bay.

Given that native eelgrass (*Zostera marina*) grows in the project area north and south of the dock's trestle, Chevron has submitted an Eelgrass Mitigation and Monitoring Plan and staff has included **Special Condition No. 6** to minimize, monitor, and mitigate for potential disturbance to eelgrass habitat.

To prevent water quality impacts, the applicant proposes and **Special Condition No. 7** requires that the ACZA pressure-treated wood piles proposed to be installed be sealed with a polyurea coating prior to installation and a number of Best Management Practices (BMPs) be implemented to minimize potential adverse impact of the use of pressure-treated wood in the marine environment.

The applicant is requesting a term of four years to make repairs to the dock through 2018. Because Chevron has only submitted a detailed work plan for the first year of proposed repairs, staff has attached **Special Condition No. 1** requiring that the applicant submit annually, for the review and approval of the Executive Director, a dock repair plan for the following year of work that is consistent with all special conditions of this permit.

Staff believes that the proposed project, as conditioned, is consistent with all applicable Chapter 3 policies of the Coastal Act. The motion to adopt the staff recommendation of **approval** of Coastal Development Permit (CDP) 1-14-0773 with special conditions is found on **page 4**.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve coastal development permit 1-14-0773 pursuant to the staff recommendation.

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit 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:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following 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 of interpretation of any condition will be resolved by the Executive Director or 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.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. Annual Dock Repair Plan.

A. BY FEBRUARY 15th OF EACH YEAR OF REPAIR WORK FROM 2016 – 2018, the permittee shall submit, for the review and written approval of the Executive Director, a final dock repair plan for that year of dock construction consistent with the terms and conditions of this permit. The final dock repair plan shall include:

1. A project description and corresponding site plan that identify the proposed components of the dock to be repaired or replaced during that construction year including details about their location, size, material composition, and condition.

2. A detailed work plan that describes the tentative order, duration, and timing of construction activities, and any changes from the previous year to the construction plans including the equipment, staging area, and disposal location utilized.

3. A description of any work proposed for that construction year that may impact eelgrass habitat, including the number and location of piles proposed to be replaced within areas that may support eelgrass.

4. Evidence that the proposed repairs will be consistent with all Standard and Special Conditions of this permit, including the limitations on the timing of in-water construction and number of piles to be replaced specified in **Special Condition Nos. 2** and **10** below.

B. The permittee shall undertake development in accordance with the approved final dock repair plans. Any proposed changes to the approved final dock repair plans shall be reported to the Executive Director. No changes to the approved final dock repair plans shall occur without a Commission amendment to this CDP, unless the Executive Director determines that no amendment is legally required.

2. Timing of In-Water Construction. In accordance with the applicant's proposal, in-water construction activities authorized by this permit shall be conducted during the period of August 1st through October 15th to minimize conflicts with commercial and recreational fisheries and to protect sensitive fish species.

3. Construction Responsibilities. The permittee shall comply with the construction Best Management Practices listed in the permittee's project description and accompanying plans titled "Chevron U.S.A. Inc. Eureka Marine Terminal Motems Inspection Repairs" and dated

January 26, 2015 (**Exhibit 3**), except as modified herein. Construction-related requirements shall include, but shall not be limited to, the following Best Management Practices:

A. The contractor shall make all reasonable efforts to place all debris generated during construction onto the barge or dock and prevent debris from entering the water. Floating containment booms shall be deployed around the area under construction to contain debris discharged into coastal waters, and any debris discharged shall be removed as soon as possible but no later than the end of each day.

B. All materials removed from the dock and debris generated during the project shall not be allowed to rest on the bay substrate and shall be held in a containment area on the barge until transferred to the staging area at Schneider Dock (990 W. Waterfront, Eureka), where they will be placed in water-tight containers. Covers shall be provided to prevent water from entering the containers and absorbent pads or booms shall be placed in each container to soak up any free water that accumulates.

C. Except for the crane, equipment that will be operated over the water shall utilize bio-diesel and vegetable based hydraulic oil.

D. Construction equipment shall be fueled, maintained, and washed in confined areas specifically designed to control runoff and located more than 100 feet away from the mean high tide line.

E. Fuels, lubricants, and solvents shall not be allowed to enter coastal waters. Spill kits equipped with enough material to provide preliminary containment for a volume of material that can reasonably be expected to spill shall be maintained on the barge and the dock. Spill containment trays shall be placed around the welders, generators, air compressor, crane, and any other equipment on the barge deck. A registered first-response, professional hazardous materials clean-up/remediation service shall be locally available on call.

4. **Pile Removal.** The permittee shall remove timber piles proposed for removal in their entirety. Piles that cannot be removed in their entirety shall be cut off at least one foot below the level of the mudline.

5. **Pile Driving Limitations.**

A. All pile-driving activities shall be performed in full accordance with the following provisions:

1. Pile driving of all piles shall occur only during the period of August 1st through October 15th, pursuant to **Special Condition No. 2** above.

2. The piles to be installed shall consist only of 16-inch-diameter wood piles covered with a polyurea coating.

3. A nylon cushion and pile cap shall be employed between the impact hammer and piles during all pile driving to dampen underwater noise generated by hammer strikes.

4. All impact pile-driving activities shall incorporate a "soft start" approach whereby hammer strikes on each pile begin at low pressure and slowly increase to full hammer strength in order to frighten fish away from the piles before the acoustics generated by pile driving approach levels that could cause injury.

5. To protect fish from the acoustic impacts of pile driving, peak sound pressure levels generated by the project shall not exceed 206 dB and accumulated sound exposure levels shall not exceed 187 dB.

6. Hydroacoustic monitoring shall be performed consistent with the methods detailed in the underwater acoustic monitoring plan titled, "Underwater Noise and Marine Mammal Monitoring Plan," dated January 27, 2015, and prepared by H.T. Harvey & Associates (**Exhibit 6**). Hydroacoustic monitoring shall be conducted initially for at least the first five piles to be driven with an impact hammer. Monitoring results from the first five piles shall be reported to the Executive Director before any additional piles-driving activity occurs. The Executive Director may make a determination that hydroacoustic monitoring can be discontinued if the piles monitored are representative of the water depths into which all piles will be driven and sound pressure levels at the closest hydrophone during sound testing (stationed at 10 meters from each pile being driven) are below both criterion of the dual metric exposure criteria (206 dB peak or 187 dB accumulated SEL level). Until the Executive Director makes a determination that hydroacoustic monitoring can be discontinued, hydroacoustic monitoring shall continue for any additional piles-driving activities.

7. A final report that includes data collected and summarized for all monitoring locations shall be submitted to the Executive Director within 90 days of completion of the hydroacoustic monitoring including all the information listed on pg. 7 of the report titled, "Underwater Noise and Marine Mammal Monitoring Plan," dated January 27, 2015, and prepared by H.T. Harvey & Associates (**Exhibit 6**).

8. In the event of an exceedance of either criterion of the dual metric exposure criteria, (a) pile-driving operations shall immediately cease; (b) the event shall be immediately reported to the Executive Director; and (c) pile-driving operations shall not recommence unless the Executive Director, in consultation with the fisheries biologists of the California Department of Fish & Wildlife and the National Marine Fisheries Service so authorizes based on the resumption of hydroacoustic monitoring of all pile-driving operations and the deployment of additional sound attenuation measures or other measures deemed likely by qualified technical experts to return the pile driving to conformance with the dual metric exposure criteria.

9. If the return to pile driving after the implementation of the additional measures discussed in Subparagraph (8) above results in an exceedance of either criterion of the dual metric exposure criteria, pile driving shall be stopped immediately and shall not re-commence until or unless the Commission approves an amendment to CDP 1-14-0773 that proposes

changes to the project that are deemed by the Executive Director to offer a high likelihood of success in preventing further exceedance of the dual metric exposure criteria.

10. To insure injury does not occur to marine mammals, the hydroacoustic monitoring required under Subparagraph (6) above shall be used to determine the distance from pile driving at which underwater peak sound levels caused by pile driving reach 180 dB. If this sound level is reached, then a shut-down zone equal to that distance shall be established around each pile being driven and pile-driving operations shall be shut down if a marine mammal is within that zone. If a shut-down zone needs to be established because sound levels caused by pile driving reach 180 dB, then a qualified biological monitor shall be present throughout all pile-driving activities for the duration of the project to visually search for marine mammals in the shut-down zone 30 minutes prior to and continuously throughout periods of impact pile-driving activities and to alert equipment operators as needed. If any marine mammal is about to enter or is observed within the shutdown zone at these times, the operator will delay or shut down pile-driving activities until the animal has moved outside the shutdown zone or the animal is not re-sighted within 15 minutes for pinnipeds or 30 minutes for cetaceans.

B. Pile driving shall be conducted at all times in accordance with these provisions. Any proposed changes to these pile-driving requirements and limitations shall be reported to the Executive Director. No changes to the requirements of the special condition shall be made without a Coastal Commission approved amendment of CDP 1-14-0773 unless the Executive Director determines that no amendment is legally required.

6. Eelgrass Monitoring and Mitigation Requirements.

A. Eelgrass monitoring and mitigation shall comply with the applicant's "Chevron Eureka Terminal Inspection Repairs Project: Eelgrass Mitigation and Monitoring Plan," dated January 21, 2015, and prepared by H.T. Harvey & Associates (**Exhibit 7**), except as modified herein:

1. Prior to each year of dock repair work that may impact eelgrass habitat, a pre-construction growing season survey shall be completed during the month of July, the middle of the period of active growth of eelgrass. If construction for that year's dock repair work does not commence within 60 days of completion of the July survey, a new pre-construction survey shall be completed and submitted to the Executive Director prior to the commencement of construction.

2. All construction activities authorized under this CDP involving the portion of the trestle east of the channel in shallow waters shall be conducted during periods of high-tides only to prevent grounding of the barge on mudflat or eelgrass habitat. The distance between the bottom of the barge and the ground shall be monitored continuously when the barge is in shallow water and a tide of at least five feet above mean lower low water (MLLW) shall be required to ensure there is enough water to clear the five foot loaded draft depth of the barge. The barge

shall be moved to deeper water when necessary to ensure the barge does not rest on the bay bottom. If the barge inadvertently grounds, the Executive Director shall be alerted within 24 hours. Areas impacted shall be photodocumented, and the area of substrate disturbed shall be measured as soon as possible following the accident to determine the amount of compensatory mitigation required.

3. The area of permissible substrate disturbance from the barge shall be limited to the placement of two 28-inch-diameter spud poles per barge work location; no chains or other materials shall be dragged on the substrate surface. Where possible, in shallow waters barge spuds shall be deployed in areas of mudflat devoid of eelgrass. The maximum duration of spud pole penetration at each work location shall be one tidal cycle. When not in use, the barge shall be moored in deep water, away from potential eelgrass habitat.

4. Substrate disturbance shall be minimized during pile replacement by pulling old piles straight out of the substrate and inserting new piles into existing holes (if possible) or adjacent to the existing holes. Old piles shall be placed in a containment area on the barge and not allowed to rest on the substrate surface, consistent with Special Condition No. 3 Subparagraph (B) above.

5. During construction, georeferenced and time-stamped photographs shall be taken showing the locations where spud pole anchoring occurs and where piles are replaced.

6. A qualified biologist shall be present on-site while work is being performed in areas that may impact eelgrass habitat to help monitor and avoid impacts to eelgrass. Among other duties, the biological monitor shall: (1) ensure piles are pulled straight out and new piles are inserted into existing holes or immediately adjacent to existing holes to minimize the area of substrate disturbance; (2) ensure piles that are removed are placed in a containment area on the barge and not allowed to rest on the substrate surface; (3) document the number of times the barge is repositioned and observe spud pole placements; (4) georeference and take time-stamped photographs of all locations where spud poles are anchored and where piles are replaced; and (4) document the timing and location of substrate disturbance if accidental barge grounding should occur.

7. Post-construction georeferenced photographs shall be taken as soon as feasible following construction each year that work is performed that may impact eelgrass habitat to document the extent of substrate disturbance caused by pile replacement, spud pole placement, and any other barge operations. Photographs shall be repeated during the following growing season survey. If visible scarring is evident as a result of project actions, then the extent of this area will be measured directly in the field. A visible scar is defined as an area that is devoid of eelgrass cover where a project action is known to have occurred during the previous construction year and where eelgrass occurred during the previous growing season.

8. For each year that work is performed that may impact eelgrass habitat, a post-construction growing season survey shall be completed in the same month as the pre-construction survey during the next growing season.

9. Each time a growing season survey is conducted, eelgrass spatial distribution, aerial extent, percent vegetated cover, and turion density shall be sampled within two 33-foot-wide strips on either side of the trestle and one 33-foot-wide strip 115-148 feet south of the trestle where spud poles will be anchored. The same eelgrass parameters shall also be sampled and characterized at the selected control site located 246-279 feet south of the trestle to help determine whether changes in eelgrass characteristics are attributable to natural variability or project actions. Spatial distribution and aerial extent shall be based on field mapping and geospatial analysis, while percent cover and turion density shall be based on quantitative plot-based field sampling within vegetated eelgrass cover. Each monitoring year, a minimum of 30 plots per survey area shall be sampled.

10. For each year that work is performed, the need for compensatory mitigation will be determined the following growing season. If there is any visible scarring or detectable decline in eelgrass areal extent, cover, or turion density the first growing season following each construction year and the scarring or decline can be attributed to project actions, compensatory mitigation shall be required. If a decrease in aerial extent is detected through calculations based on mapping, the amount of this area will require compensatory mitigation. If the direct measurement of visible scarring is higher than the area detected by mapping, then the higher value will be used as a basis for mitigation. Within vegetated areas, if a decrease (defined as a greater than 25% reduction) in either mean percent cover or mean turion density is detected relative to the reference site, the decline will require compensatory mitigation. If a decline in both percent cover and turion density can be detected, then the higher value will be used as a basis for mitigation. The magnitude of the impact will be equivalent to the proportion of the decrease. For example, a 25% reduction in eelgrass cover within a 10-square-foot area would constitute a 2.5 square-foot loss. Compensatory mitigation shall be performed prior to impacts or within one year of determination of impacts.

11. During the first year of construction, the permittee shall perform mitigation for potential losses to eelgrass habitat by (1) removing an approximately 152-square-foot derelict structure directly south of the dock and (2) removing four concrete dock sections, each approximately 172-183 square feet in size, from areas around Humboldt Bay. The removal of the marine debris adjacent to the dock shall constitute in-kind mitigation, while the removal of the four concrete dock sections shall constitute out-of-kind mitigation.

12. The permittee shall remove the debris adjacent to the trestle in conjunction with terminal repairs during the August 1st – October 15th work window, consistent with the limitations and responsibilities outlined in the special conditions of this permit. During the debris removal, the barge shall anchor in an area that is too deep to support eelgrass, avoiding potential spud pole impacts to eelgrass. Eelgrass in the vicinity of the mitigation site shall be surveyed during the eelgrass growing season prior to removal work and yearly for five years following debris removal to determine whether eelgrass becomes established in the area where debris is removed. If it can be demonstrated sufficiently to the

Executive Director that the restored area is sustaining eelgrass growth at levels comparable to the reference site at similar elevations, the full five years of monitoring of the mitigation site shall not be required. The debris removal and pre- and post-mitigation monitoring of the mitigation site shall be conducted in accordance with Subparagraphs (1)-(11) above.

13. The permittee shall remove the four abandoned floating concrete dock sections from areas around Humboldt Bay in 2015 in accordance with the project description and Best Management Practices included in the applicant's concrete dock section removal eelgrass mitigation plan titled "Chevron Eureka Terminal MOTEMS Inspection Repair Project Proposed Eelgrass Mitigation" and dated January 15, 2015 (**Exhibit 8**).

14. The actual surface area of debris removal and eelgrass establishment south of the trestle and the surface area of the four concrete dock sections shall be measured in the field and used to calculate the mitigation credit earned based on the mitigation ratios outlined in Subparagraph (15) below. The surface area measurements and mitigation credit calculation shall be included in the eelgrass monitoring reports submitted to the Commission as described in Subparagraphs (16)-(17) below.

15. The permittee shall perform in-kind compensatory mitigation at a 1:1 eelgrass creation to eelgrass impact ratio for mitigation that occurs prior to impacts and at a 1.2:1 ratio for mitigation that is performed within one year after the determination of impacts. The out-of-kind compensatory mitigation involving the removal of four floating concrete dock sections required in Subparagraph (13) above shall be credited at a 2:1 eelgrass mitigation to eelgrass impact ratio (For example, the uncovering of 2 square feet of area covered by each abandoned concrete floating dock section mitigates for project impacts to 1 square foot of eelgrass habitat).

16. Monitoring reports shall be provided to the Coastal Commission, the National Marine Fisheries Service, the California Department of Fish and Wildlife, and the North Coast Regional Water Quality Control Board by November 15th of years 2016-2019 presenting the results of any pre-construction, post-construction, and/or mitigation monitoring conducted that year. These survey reports shall include eelgrass maps and information on the spatial distribution, areal extent, percent cover, and turion density of eelgrass at the project and reference sites within defined survey areas and within mitigation areas. The reports shall also include: (1) a summary of work operations relevant to post-construction assessment of work performed the previous year, including the dates work was performed in eelgrass habitat, the number of times the barge was moved, and the location of spud pole placements; (2) photodocumentation of pre- and post-construction site conditions, and areas of substrate disturbance; (3) an impact analysis, including a quantitative assessment of any impacts on eelgrass that may have occurred as a result of project actions during the previous year; and (4) a calculation of the area required for compensatory mitigation if needed and a description of how mitigation requirements have or will be met.

Survey results shall be submitted for the review and approval of the Executive Director.

17. A final report that (a) summarizes the full set of eelgrass monitoring results, (b) evaluates the success of the eelgrass restoration area in sustaining eelgrass growth at levels comparable to the reference site at similar elevations as required by Subparagraph (12) above and (c) evaluates the compliance of the mitigation performed with the eelgrass mitigation ratios required in Subparagraph (15) above shall be submitted for the review and written approval of the Executive Director within three months of completing all pre-construction, post-construction, and/or mitigation monitoring associated with the project. If the final report indicates that the mitigation project has been unsuccessful, in part, or in whole, in meeting these required performance standards, the applicant shall submit a revised or supplemental restoration program to compensate for those portions of the original program which did not meet the required performance standards. The revised restoration program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

B. The permittee shall undertake development in accordance with the approved eelgrass mitigation and monitoring plan. 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 Commission approved amendment to this CDP unless the Executive Director determines that no amendment is legally required.

7. **Pressure-Treated Wood in the Marine Environment.** The permittee shall comply with the following requirements related to the removal of creosote-treated or ACZA-treated wood piles and other debris and the use of pressure-treated wood in the marine environment:

A. Each new pressure-treated pile installed shall be precoated and cured with a marine-grade polyurea coating, extending from the top of the pile to a point on each pile that will be driven to a depth at least 5 feet below the mudline.

B. Pressure-treated wood used in construction of the project shall meet the American Wood Protection Association's (AWPA) wood preservative standards, specifically AWPA Standard U1, the primary specification for pressure-treated wood.

C. Ammoniacal copper zinc arsenate (ACZA) pressure-treated wood shall be treated to the proper preservative retention standard (i.e., amount of preservative) specified by the AWPA for the appropriate AWPA Use Category. The ACZA pressure-treated wood used for the project shall not have a preservative retention exceeding the minimum specified for the appropriate Use Category, in order to minimize the amount of preservative present in treated wood on-site that may subsequently leach into the marine environment.

D. The ACZA pressure-treated wood shall be inspected on-site to assure it is free of visible surface residues or bleeding of preservatives. If ACZA pressure-treated wood has a noticeable ammonia odor, then it has not been properly processed or aged, and

the preservative may thus not be properly fixed, therefore the lumber shall not be used.

E. The ACZA pressure-treated wood shall be stored in a contained area within a continuous, plastic-lined berm either on the deck of the barge or the identified staging area as depicted in the "material storage containment" graphic on plan sheet C-3 of the site plans titled "Chevron U.S.A. Inc. Eureka Marine Terminal Motems Inspection Repairs" and dated January 26, 2015 (**Exhibit 3**). If there is a chance of precipitation, the wood shall be stored under a covered area or tarp to minimize exposure to precipitation.

F. Whenever possible, cutting or drilling of ACZA pressure-treated wood shall be performed at a site a minimum of 100 feet away from the water, to minimize transport of sawdust by wind. The resulting sawdust, drill shavings, and wood scraps shall be contained and collected, in order to prevent the discharge of pressure-treated wood to the marine environment. If it is essential that treated wood be cut or drilled in place on the dock, all sawdust, shavings, and wood scraps generated during construction must be collected and prevented from entering the water below.

G. The procedures outlined in AWPA Standard M4, Standard for the Care of Preservative-Treated Wood Products, shall be followed when applying a topical (non- pressure treated) preservative to the cut ends of treated wood. Whenever possible, application of a topical preservative to treated wood shall be performed at a site a minimum of 100 feet away from the water, equipped with containment for potential drips and spills, in order to prevent discharge of the preservative to the environment. The topical preservative shall not be applied during rain events. Any excess topical preservative shall be wiped off, and the preservative shall be allowed to fully dry before the wood is used in construction. If a small amount of touch-up preservative application must be performed over water, then tarps or containers shall be used to capture any potential spills or drips.

H. Existing creosote-treated or ACZA-treated piles at the barge dock to be removed shall be removed and disposed of at a landfill authorized to accept such chemically treated waste.

8. **Assumption of Risk, Waiver of Liability and Indemnity.** By acceptance of this permit, the applicant acknowledges and agrees: (i) that the site may be subject to hazards from waves, tidal inundation, and other hazards; (ii) to assume the risks to the applicant and the property that is the subject of this permit 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; and (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.

9. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-14-0773,** the applicant shall provide to the Executive Director a copy of a permit or permit

amendment issued by the **Humboldt Bay Harbor, Recreation, and Conservation District** for the proposed eelgrass mitigation debris removal work, or evidence that no permit is required. The applicant shall inform the Executive Director of any changes to the project required by the District. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

10. Limited Development Authorization.

A. This permit only authorizes repair and maintenance activities through December 31, 2018. All repair and maintenance development after that date shall require a new coastal development permit.

B. The permittee shall replace a maximum of 100 piles over the 4-year period from 2015 through 2018, with a maximum of 25 piles placed during any single year and a maximum of 4 piles placed during any single day.

C. All work shall involve repair or replacement of existing structural elements of the dock including piles, pile caps, stringers, support beams, wales, dolphins, lagging, decking, railings, and all connections between those elements. Not included shall be repairs to electrical, mechanical, or piping systems, or any expansion of the existing structure.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. ENVIRONMENTAL SETTING

Chevron proposes to perform structural repairs over a four-year period to an existing barge dock at the company's Eureka Terminal. The Chevron Eureka Terminal consists of a timber dock situated on a tidelands parcel of Humboldt Bay and a bulk fuel storage facility on the adjacent upland parcel at 3400 Christie Street, Eureka. The site is located west of the Bayshore Mall and approximately 2,500 feet north of the mouth of the Elk River (see **Exhibits 1-2**).

The Chevron Eureka Terminal is a port facility used for off-loading petroleum products from ocean going barges to storage tanks on shore for later distribution by truck to customers throughout the north coast. Approximately 80% of the fuel used by the greater Eureka area is delivered via barge to the Chevron Terminal. The tidelands parcel where the dock is located is owned by the City of Eureka and leased to Chevron. The dock was originally constructed in the early 1900s and has since been repaired, upgraded, and expanded numerous times.

The dock is a T-shaped structure with a 594-foot-long trestle extending out into the bay and connecting to a 152-foot-long wharf. The wharf in turn is connected by timber catwalks to five mooring/breasting dolphins. Water depth at the offshore (seaward) end of the dock around the wharf, catwalks, and dolphins ranges from approximately 18 to 28 feet Mean Low Low Water (MLLW). Most of the 472 piles that currently support the trestle, wharf, dolphins and catwalks

are creosote-treated, although piles that have been added since the 1990s are treated with ammoniacal copper zinc arsenate (ACZA) preservative.

The dock extends westward from the shore through shallow intertidal areas to the margin of the dredged North Bay Channel. The shoreline to the east of the dock is a sloped, sandy beach with large boulder rip-rap. The lower end of the beach transitions into a soft, fine-grained mudflat formed by the deposition of sediments from the nearby confluence of the Elk River and Humboldt Bay. The mudflat supports native eelgrass (*Zostera marina*) which grows in patches near the riprap shoreline and forms a dense, continuous bed at greater depth further out in bay waters on either side of the trestle. Dense macroalgae, primarily sheet *Ulva* sp., grows with the eelgrass in the mid to high regions of the mudflat. The deepwater regions around the end of the trestle and the wharf are too deep to support eelgrass. In September 2014, the Executive Director granted Chevron a Coastal Development Permit (CDP) waiver (1-14-1587-W) to replace two missing piles and three severely damaged piles in this deepwater channel area (See **Exhibit 9**).

The aforementioned CDP waiver and the proposed dock maintenance project were prompted by an inspection of the dock in September 2013 required by the State Lands Commission. The State Lands Commission requires periodic audits of piers in state waters to ensure that the structures are properly maintained for public safety. During the September 2013 inspections, damage to support piles, superstructure framing, decking, equipment, and hardware was rated from minor to severe. In total, 23 piles were identified as having major or severe damage (See **Exhibit 4** for dock inspection findings). Five of these piles were replaced under CDP Waiver No. 1-14-1587-W.

B. PROJECT DESCRIPTION

Chevron is proposing to replace the remaining 18 piles identified as having major or severe damage as well as other damaged structural elements of the dock during an initial construction window in 2015. These other structural elements to be replaced include metal handrails and walkway grating; timber fender lagging, bracing, beams, and blocking; and a containment membrane along the west side of the dock (See **Exhibit 3**, plan sheet C-2 for a site plan that identifies all elements of the dock proposed to be replaced in 2015).

In addition, Chevron is seeking authorization to perform additional structural repairs to the dock as needed during the following three years from 2016 through 2018. The applicant has similarly applied for permits from other permitting agencies including the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and the Humboldt Bay Harbor, Recreation, and Conservation District, for the same repair and maintenance work for the period ending in 2018. Each year the dock would be re-inspected and Chevron would prepare a scope of work outlining necessary repairs, including individual piles proposed to be replaced. All work would involve repair or replacement of existing structural elements of the dock including piles, pile caps, stringers, support beams, wales, dolphins, lagging, decking, railings, and all connections between those elements. Not included would be repairs to electrical, mechanical, or piping systems, or any expansion of the existing structure. In total, Chevron is proposing to replace a maximum of 100 piles over the 4-year period from 2015 – 2018, with up to 25 piles replaced during any single year and up to 4 piles replaced per day. All underwater work is proposed to be conducted within a work window extending from August 1st to October 15th of each year to minimize disturbance to threatened migratory salmonids and other fish. The Commission attaches **Special Condition No.**

1 requiring that the applicant submit annually for the review and approval of the Executive Director a dock repair plan for each year of work from 2016 through 2018 to ensure that each year's planned development is consistent with all special conditions of this permit.

All work would be performed from a barge, maneuvered by a tugboat. The barge would access the trestle from the south side and would be positioned perpendicular to the trestle about 10 feet away, moving as needed to each work location. The barge would be anchored at each work location by two spud poles that penetrate the substrate at the stern of the boat. A crane positioned on the barge would be used to remove and install elements of the dock. The proposed crane would be able to reach across the dock, enabling work to be performed on both sides of the dock from a single location. When work would be required in shallow intertidal waters, the work would take place during high tides to allow the barge to float at least one foot above the bay bottom. In contrast, pile driving in deeper waters would be scheduled during low tides, to minimize its underwater acoustic effects.

The dock would be deconstructed as necessary to access the piles, including the removal of pile caps, stringers, railing, decking, and equipment attached thereto. The crane, fitted with a vibratory hammer, would attach to the pile to be removed and subsequently vibrate and pull the pile out of the ground. In the event that a pile could not be removed in its entirety, it would be cut off one foot below the existing mudline. Once removed, piles would be placed on the barge in a containment area. The new piles would then be hoisted and placed in the footprints of the old piles or as close to the original pile locations as possible. The new piles proposed by the applicant are the same diameter as the existing piles (16 inches in diameter), and are composed of ammoniacal copper zinc arsenate (ACZA) pressure-treated wood and coated with Specguard's Marine Grade Polyurea coating. The applicant proposes to use an impact hammer to drive the piles into the ground approximately 20 feet deep. Once each pile is in place, the pile cap, stringers, and decking would be replaced. Any of the structural elements detached to access the piles that are deemed unfit to be reused would be replaced in-kind.

All materials removed from the dock and debris generated during the project would be held in a containment area on the barge until transferred to the staging area at Schneider Dock (990 W. Waterfront, Eureka), where they would be placed in water-tight containers. When the containers become full, they would be transported to a landfill in Anderson, CA.

C. Standard of Review

The proposed dock repair project is located almost entirely within the Commission's retained jurisdiction area in submerged and tidal areas along Humboldt Bay. The only part of the proposed project outside the Commission's retained jurisdiction is the staging proposed to occur at Schneider Dock at 990 West Waterfront Drive, which is within the CDP jurisdiction of the City of Eureka.

Section 30601.3 of the Coastal Act authorizes the Commission to process a consolidated CDP application when requested by the local government and the applicant and approved by the Executive Director for projects that would otherwise require CDPs from both the Commission and a local government with a certified LCP. In this case, the applicant requested a consolidated permit process, and the City of Eureka's Community Development Director consented on behalf

of the City Council in a letter dated August 7, 2014. The Executive Director also agreed to the consolidated permit processing request.

The policies of Chapter 3 of the Coastal Act provide the legal standard of review for a consolidated CDP application submitted pursuant to Section 30601.3. The local government's certified LCP may be used as guidance.

D. OTHER AGENCY APPROVALS

City of Eureka

As described above, the City of Eureka and the applicant have requested and the Executive Director has agreed to a consolidated coastal development permitting process. In addition, the City, as lessor of the tidelands and submerged lands in the project area, has granted authority through its lease to the applicant to undertake the proposed repairs. The City has no other discretionary permit requirements for this project.

Humboldt Bay Harbor, Recreation, and Conservation District

The Harbor District is a county-wide agency with permit jurisdiction over all the tidelands and submerged lands of Humboldt Bay. On September 16, 2014, the Harbor District issued Permit No. 2014-03 for the dock repair project. The Harbor District has indicated that proposed eelgrass mitigation measures described below in the subsection titled "Disturbance of Eelgrass Habitat," including the removal of the remnant wharf and concrete dock sections, may require additional authorization from the District. To ensure that the project ultimately approved by the Harbor District is the same as the project authorized herein, the Commission attaches **Special Condition No. 9**, which requires the County to submit to the Executive Director evidence of the Harbor District's approval of the debris removal for mitigation components of the project prior to issuance of the permit. The condition also requires that any project changes resulting from the Harbor District's approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit.

North Coast Regional Water Quality Control Board

The Regional Board requires a water quality certification (WQC) for projects involving dredging and/or filling activities under Section 401 of the Clean Water Act. The Regional Board issued a 401Water Quality Certification for the project dated September 17, 2014 (WDID No. 1B14050WNHU).

California Department of Fish and Wildlife (CDFW)

CDFW, in its administration of the California Endangered Species Act (CESA), requires an Incidental Take Permit (ITP) for "take" of listed species incidental to otherwise lawful development projects. The applicant consulted with CDFW on the project and CDFW determined that no CDFW permit is necessary.

U.S. Army Corps of Engineers

The Army Corps has regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (*33 U.S.C. 1344*) which regulates the diking, filling, and

placement of structures in navigable waterways, and Section 404 of the Clean Water Act which regulates the discharge of dredged or fill material in waters of the United States. In a letter dated October 3, 2014, the Army Corps determined that the proposed project (Army Corps File No. 2014-00292N) qualifies for authorization under Department of the Army Nationwide Permit (NWP) 3 Maintenance, 77 Fed. Reg. 10,184, February 21, 2012.

National Marine Fisheries Service
Pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended (U.S.C. Sec 1531 et seq.), the Army Corps initiated consultation with the National Marine Fisheries Service (NMFS) requesting their concurrence that the proposed project is not likely to adversely affect listed species. In a letter to the Army Corps dated September 24, 2014, NMFS concurred with the determination that the project was not likely to adversely affect Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*), California Coastal (CC) Chinook salmon (*O. tshawytscha*), Northern California (NC) steelhead (*O. mykiss*), North American green sturgeon (*Acipenser medirostris*) and designated critical habitat for these species.

State Lands Commission
The project site is located in an area subject to the public trust. The applicant emailed project information to the State Lands Commission on March 19, 2014. The State Lands Commission responded that the tidelands in the project area have been granted to the City of Eureka and therefore no approvals from State Lands Commission are needed for the project.

E. PERMIT AUTHORITY FOR REPAIR & MAINTENANCE DEVELOPMENT

Section 30610 of the Coastal Act provides, in relevant part (emphasis added):

> *Notwithstanding any other provision of this division, no coastal development permit shall be required pursuant to this chapter for the following types of development and in the following areas: . . .*
>
> *(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter.*

Section 13252 of the Commission administrative regulations (14 CCR 13000 *et seq.*) provides, in relevant part (emphasis added):

> *(a) For purposes of Public Resources Code section 30610(d), the following extraordinary methods of repair and maintenance shall require a coastal development permit because they involve a risk of substantial adverse environmental impact: ...*
>
> *(3) Any repair or maintenance to facilities or structures or work located in an environmentally sensitive habitat area, any sand area, within 50 feet of the edge of*

a coastal bluff or environmentally sensitive habitat area, or within 20 feet of coastal waters or streams that include:

(A) The placement or removal, whether temporary or permanent, of rip-rap, rocks, sand or other beach materials or any other forms of solid materials;

(B) The presence, whether temporary or permanent, of mechanized equipment or construction materials.

All repair and maintenance activities governed by the above provisions shall be subject to the permit regulations promulgated pursuant to the Coastal Act, including but not limited to the regulations governing administrative and emergency permits. The provisions of this section shall not be applicable to methods of repair and maintenance undertaken by the ports listed in Public Resources Code section 30700 unless so provided elsewhere in these regulations. The provisions of this section shall not be applicable to those activities specifically described in the document entitled Repair, Maintenance and Utility Hookups, adopted by the Commission on September 5, 1978 unless a proposed activity will have a risk of substantial adverse impact on public access, environmentally sensitive habitat area, wetlands, or public views to the ocean....

The proposed development involves the repair and maintenance of an existing barge dock. Coastal Act Section 30610(d) generally exempts from Coastal Act permitting requirements the repair or maintenance of structures that does not result in an addition to, or enlargement or expansion of, the structure being repaired or maintained. However, the Commission retains authority to review certain extraordinary methods of repair and maintenance of existing structures that involve a risk of substantial adverse environmental impact as enumerated in Section 13252 of the Commission regulations.

The proposed project qualifies as a repair and maintenance project under Section 30601(d) of the Coastal Act and Section 13252 of the Commission's regulations because it does not involve an addition to or enlargement or expansion of the subject dock structure, which was originally constructed in the early 1900s. Although certain types of repair projects are exempt from CDP requirements, the proposed repair work involves the presence of construction materials and placement and removal of solid materials within 20 feet of coastal waters. The proposed repair project therefore requires a CDP under CCR Section 13252(a)(3) as an extraordinary method of repair and maintenance of existing structures that involve a risk of substantial adverse environmental impact.

In considering a permit application for a repair or maintenance project pursuant to the above-cited authority, the Commission reviews whether the proposed method of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act. The Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of the conformity with the Coastal Act of the underlying existing development.

The applicant proposes to maintain the existing barge dock facility in part by replacing timber piles and other elements of the dock. If not properly undertaken with appropriate mitigation, the necessary barge dock maintenance activities could have adverse impacts on coastal resources,

including threatened salmonids and other fish and marine mammals, eelgrass, mudflat habitat and water quality.

While the applicant has proposed some mitigation measures to protect coastal resources, more specific measures are needed to further minimize the project's expected and potential impacts on wetlands, marine habitats, and water quality. The conditions required to ensure that these measures are part of the project are discussed in the following findings relevant to fill in coastal waters and water quality. Therefore, as conditioned in these findings, the Commission finds that the proposed method of repair and maintenance development is consistent with all applicable Chapter 3 policies of the Coastal Act.

F. FILL IN COASTAL WATERS AND PROTECTION OF MARINE RESOURCES

Section 30230 of the Coastal Act states, in applicable part, as follows:

> *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.*

Section 30231 of the Coastal Act states as follows:

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

Section 30233 of the Coastal Act states, in applicable part, as follows:

> *(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:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(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.

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(6) Restoration purposes.

(7) Nature study, aquaculture, or similar resource dependent activities.

...

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary...

Coastal Act Section 30108.2 defines "fill" as "*earth or any other substance or material, including pilings placed for the purposes of erecting structures thereon, placed in a submerged area.*" The proposed project involves the in-kind replacement of up to 100 16-inch diameter piles within open and intertidal waters of Humboldt Bay, resulting in approximately 140 square feet of replacement fill. The proposed project also involves temporary fill of bay substrate from the anchoring of a barge used to access the dock during project construction. The barge will be anchored by two 2.3-foot diameter spuds, resulting in approximately 4.3 square feet of temporary fill per spud pole placement. The barge will need to be repositioned and the spuds placed a maximum of one time for each pile located in deep water and a maximum of three times for each pile located in shallow water, although piles in close vicinity to one another can likely be replaced without repositioning the barge. Based on the estimate that 19 piles will need to be replaced in shallow water and the remaining 81 in deep water, the barge will need to be repositioned a maximum of 138 times over the 5 year construction window, resulting in approximately 1,187 square feet of temporary fill impacts (138 placements X 2 spuds X 4.3 square feet of impact per spud). The Commission must consider whether authorizing the aforementioned fill is consistent with Coastal Act policies addressing the protection of the marine environment, including, but not limited to the requirements of Section 30233 regarding the filling of coastal waters.

The applicable provisions of Sections 30230, 30231, and 30233 of the Coastal Act cited above require that the method of proposed repair and maintenance: (1) use the least environmentally damaging feasible alternative; (2) provide feasible mitigation measures to minimize adverse environmental effects; and (3) protect the biological productivity and the quality of coastal wetlands and waters.

Least Environmentally Damaging Feasible Alternative

As previously discussed, the Commission must ensure that the method of repair and maintenance be the least environmentally damaging feasible alternative consistent with Section 30233 of the Coastal Act. Coastal Act Section 30108 defines "feasible" as "*...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors.*" In this case, alternatives that have been

identified include: (1) the "no project" alternative; (2) alternative pile installation methods; (3) alternative pile types; and (4) alternative dock access methods.

a. No project alternative

The primary purpose of the proposed project is to repair or replace damaged components of the Chevron Terminal Dock to ensure regulatory compliance with California Code of Regulations Title 24 Part 2 Chapter 31F, Marine Oil Terminal Engineering and Maintenance Standards. Under the "no project" alternative, the objective of the project – to repair and maintain the facility – would not be met. The port facility would not comply with safety requirements set forth by the State Lands Commission, and the dock would continue to deteriorate, with more of the existing piles becoming severely damaged and eventually being swept away. Although the "no project" alternative would avoid the adverse impacts to coastal resources that are posed by the dock repair project, this benefit would disappear when the existing dock ultimately fails, potentially during a seismic event. The dock is used to transfer fuel from barges to an upland bulk storage facility. If the dock collapses, fuel transfer lines could rupture and spill fuel into the bay, severely impacting water quality and marine habitat and temporarily shutting down the marine terminal, leaving the greater Eureka area without the terminal it currently relies on for 80% of its fuel. As the project is necessary to maintain a structurally secure terminal and safe transport of fuels at the site, the no project alternative is not a less environmentally damaging feasible alternative to the proposed project as conditioned.

b. Alternative pile installation method

The applicant proposes to remove up to 100 existing piles at the Chevron Terminal dock with a vibratory hammer and install new piles with an impact hammer. Pile driving with an impact hammer generates hydroacoustic pressure impulses and particle velocities that can cause effects on fish ranging from altered behavior, hearing loss, and tissue injuries to immediate mortality. Vibratory hammers produce peak sound levels that are substantially lower than those produced by impact hammers and thus can be a less environmentally damaging alternative than impact pile driving.[1] However, while vibratory hammers generally produce much lower sound amplitudes, the total energy imparted can be comparable to impact driving because the vibratory hammer operates continuously and requires more time to install.[2] In addition, the use of a vibratory hammer is not always feasible because the impact forces are not as great as those generated by an impact hammer and therefore are not always adequate to drive piles deep enough to obtain the necessary structural capacity. The feasibility of the vibratory method depends on a number of factors, including pile length, diameter, and composition; the substrate conditions under the piles; and the bearing capacity necessary for the piles.[3] At the Chevron Terminal dock, the piles are 16-inch diameter, 70-foot long, wood piles, the substrate below the piles is composed of sand and silt, and a large load-bearing capacity is necessary because the piles support the dock. Vibratory hammers are routinely used on these types of piles and substrates; however, in this case, vibratory installation would not be feasible because a vibratory installation method would not drive enough piles deep enough to achieve the

[1] California Department of Transportation, 2009, p. 2-26.
[2] Ibid.
[3] Ibid., 4-9.

bearing capacity necessary to fully support the dock structure. The September 2014 CDP waiver granted by the Executive Director allowed Chevron to replace five of the dock's piles using a vibratory hammer. While it was feasible to install five of the docks 472 piles using a vibratory hammer without compromising the stability of the dock, the current project involves replacing up to 100 piles, over 20% of the dock's support structure. Because of the significant number of piles to be replaced, in this instance using a vibratory hammer to install the piles is not feasible. In addition, the vibratory hammer is larger than the impact hammer, and can be difficult to fit in certain tight spaces such as around the fuel pipes. Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project as conditioned.

As described further in the section on mitigation measures below, the Commission attaches **Special Condition No. 5** to ensure that the installation of the piles with an impact hammer is performed in the least environmentally damaging way possible. Special Condition No. 5 requires (1) the implementation of a number of measures to avoid sensitive fish species and minimize sound levels generated; (2) the monitoring of sound levels while at least the first few representative piles are driven; and (3) the cessation of pile-driving activities if sound levels exceed a threshold at which fish are likely to receive lethal physical injury. For the reasons described above, the Commission finds that installing the replacement piles with an impact hammer as conditioned is the least environmentally damaging feasible pile installation method.

c. Alternative dock construction access methods

The applicant proposes to access the dock from a construction barge maneuvered by a tugboat. While some of the repair work could be done from the dock itself, it is not feasible to replace the structural piles from the dock or the shore. In 2000, the Commission issued a CDP for repairs and improvements to the Chevron dock including the replacement of approximately 50 piles (CDP No.1-00-013). At that time, the Commission allowed for a construction barge rest on the mudflat during low tides. For the current project, the applicant is instead proposing to avoid grounding of the barge entirely by only allowing work in shallow waters during high tides and using depth-sounding equipment to alert the barge operator as tide levels recede. Moving the barge in on the incoming tide and out on the outgoing tide will cause the construction project to take longer and will result in the barge being repositioned and anchored a greater number of times. However, this method will prevent the barge from grounding in mudflat or eelgrass habitat. Therefore, utilizing alternate construction access methods as described above is not a less environmentally damaging feasible alternative to the proposed project as conditioned.

d. Alternative types of piles

The applicant proposes to replace damaged timber elements of the dock, including timber piles, with new ammoniacal-copper-zinc-arsenate (ACZA)-treated Douglass Fir. To prevent the wood preservative from leaching toxic chemicals into coastal waters, the applicant proposes prior to installation to seal new pressure-treated piles with Specguard's Marine Grade Polyurea coating from the top of each pile to a point on each pile that will be driven to a depth of at least 5 feet below the mudline. Originally the applicant proposed coating the piles with PermaPile which is an asphalt coating, but after consultation with

the Commission's Water Quality Unit, switched to a polyurea coating as the applicant did not have adequate data to show that their originally proposed material would not leach bitumens into the environment, and polyurea coatings have been used on a number of pile replacement projects along the California coast.

The use of steel or concrete piles instead of wood piles would further minimize the chance of water quality impairment. However, these alternatives are not feasible for repair and maintenance purposes on the existing wood dock. Concrete or steel piles could not be bolted to the existing pier and timber fender lagging in the same way as the existing wood piles, and the use of concrete or steel piles in a predominantly wood dock could compromise the structural integrity of the existing facility due to the differences in material properties (e.g. strength, flexibility, and weight). If the project involved the construction of an entirely new dock facility, the use of concrete or steel piles rather than treated wood piles would be feasible, but the environmental impacts of such a large construction project would likely outweigh the water quality benefits of replacing wood piles with steel or concrete piles. Therefore, the use of steel or concrete piles is not a less environmentally damaging feasible alternative to the proposed project as conditioned.

Feasible Mitigation Measures

The Commission must ensure that the method of repair and maintenance minimizes adverse environmental wetland effects consistent with Section 30233 and protects the biological productivity and the quality of coastal wetlands consistent with the requirements of Sections 30230 and 30231. The proposed project could have a number of potential adverse effects on the environment of Humboldt Bay, including potential impacts to: (1) fisheries; (2) marine mammals; (3) eelgrass; (4) mudflat habitat; and (5) water quality. The potential impacts and their mitigations are discussed in the following five sections:

a. Acoustic impacts from pile driving on fish

Chevron proposes to replace 18 damaged piles during 2015 and up to 82 additional piles during the subsequent three years as needed based on annual inspections of the dock. The old piles will be removed with a vibratory hammer and the new piles will be installed with an impact hammer. Pile driving with an impact hammer generates hydroacoustic pressure impulses and particle velocities that can cause a range of effects on fish from altered behavior to physical injury or mortality. The waters of Humboldt Bay provide habitat for over 100 fish species, including a variety of commercially significant and environmentally sensitive species that could be impacted by the proposed use of the impact hammer.

The sound generated by pile driving depends on the pile size and type, pile driver type, the substrate the pile is driven into, any sound attenuation methods used, and the number of strikes per day.[4] The effects of the sound generated in turn depend on numerous factors including the intensity and characteristics of the sound, the shape of the water body, the composition of the water body substrate, the distance and location of the fish in the water column relative to the sound source, the presence of obstructions between the fish and sound source, the size and mass of the fish, and the fish's anatomical characteristics.[5]

[4] California Department of Transportation, 2009, op cit.
[5] Ibid.

Because of the many variables involved, it has been difficult for the various regulatory agencies to estimate fisheries impacts and set standards with regards to pile driving. In order to improve and coordinate information, the California Department of Transportation (Caltrans), in coordination with the Federal Highways Administration (FHWA) and the departments of transportation in Oregon and Washington, established a Fisheries Hydroacoustic Working Group (FHWG) including representatives from NOAA Fisheries, U.S. Fish and Wildlife Service, CDFW, and the Army Corps. The working group has established interim standards that indicate the sound exposure levels at which fish are likely to receive lethal physical injury.[6] Based on these standards, NMFS, CDFW, and the Coastal Commission currently use a dual metric criteria of 206 decibel (dB) peak sound pressure level (SPL) for any single strike, and a cumulative sound exposure level (cSEL) of 187 dB as thresholds to correlate physical injury to fish greater than 2 grams in size exposed to underwater sound produced during the installation of piles with impact hammers. The peak SPL is the maximum absolute sound pressure generated during a single pile strike, while the cSEL is an estimate of the total underwater sound energy a fish may be exposed to through a pile-driving event (i.e. one day of pile driving). Both these criteria are considered because both exposure to high levels of sound for a short period of time and lower levels of sound for a relatively long period of time can impact fish.

To predict the sound exposure levels of a particular project, the standard is to use empirical data from projects with conditions similar to the project being evaluated. In this case, 16-inch diameter timber piles will be utilized. Based on information compiled by the California Department of Transportation[7], an impact pile-driving project in San Francisco Bay involving installation of 14-inch-diameter timber piles generated peak sound levels of 180 dB at a distance of 10 meters. This predicted peak SPL is below the peak SPL threshold of 206 dB set by the working group as potentially resulting in injury to fish. The Sound Exposure Level (SEL) of one pile strike (an estimate of the total energy of the strike), identified by the same project in San Francisco Bay was 160 dB at 10 meters. Based on the Chevron project's estimated 200 blows per day and the SEL estimate of 160 dB, the Chevron project is predicted to result in a cSEL of 183 dB at 10 meters. This cSEL is close to the threshold cSEL of 187 dB set by the working group and therefore could potentially result in injury to fish in close proximity to pile driving.

Chevron has proposed a number of measures to avoid or minimize the potential exposure of Humboldt Bay fish to sound generated by pile driving. Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and steelhead trout (*O. mykiss irideus*), all of which are federally listed as threatened, travel through Humboldt Bay as juveniles when out-migrating to the ocean and as adults when migrating back to their natal streams for spawning. Longfin smelt (*Spirinchus thaleichthys*), which is also a listed species, have a sustained population within Humboldt Bay and migrate up tributaries of the bay to spawn. Chevron plans to limit in-water project work to the period of August 1st to October 15th of each year, when these anadromous fish are least likely to be present in the area (i.e. before the majority of the upstream adult spawning migrations and after the downstream migration of smolts has occurred). Chevron has also proposed to limit the number of piles

[6] Fisheries Hydroacoustic Working Group, 2008.
[7] California Department of Transportation, 2007.

to be replaced to a maximum of 4 piles per day and 25 piles during any single year. Minimizing the number of pile strikes per day is crucial to the protection of fish because impacts depend not just on the amplitude of each individual strike but also on the accumulated exposure to multiple strikes over the course of a day. In addition, Chevron is proposing to replace piles located adjacent to the deep water channel during low tidal cycles in order to reduce the size of the sphere of acoustic influence and avoid exposing intertidal organisms to acoustics. The Commission attaches **Special Condition No. 2** which requires implementation of the proposed limitation on the timing of in-water construction activities and **Special Condition No. 10** which requires implementation of the proposed limitation on the number of piles to be replaced.

Chevron is also proposing to minimize the impacts of pile driving on marine life by utilizing a "soft start" approach where hammer strikes will begin at low pressure and slowly increase to full hammer strength in order to frighten fish away from the piles before the acoustics generated by pile driving approach levels that could cause injury. Because fish are highly mobile and there is abundant suitable habitat nearby, it is possible that a soft start will cause fish to flee before they are negatively impacted. However, little is known about fish's behavioral responses to pile driving and whether they will flee from habitats impacted by sound.[8] Finally, Chevron proposes to use a nylon cushion (Plasticized Blue Nylon Cushion Model MC904P) and pile cap (Model CDB-1, DCP-24) between the hammer and piles to dampen the noise generated while driving the piles. Studies conducted by the Washington State Department of Transportation indicate that nylon cushion blocks like those proposed to be used by Chevron can reduce sound pressure levels four to five dB.[9] The Commission attaches **Special Condition No. 5(A)(3-4)** which requires implementation of these mitigation measures proposed by the applicant.

To ensure that the aforementioned avoidance and minimization measures are adequate to reduce sounds below the duel criteria thresholds, the applicant has submitted an Underwater Noise and Marine Mammal Monitoring Plan, dated January 27, 2015 and prepared by H.T. Harvey & Associates (**Exhibit 6**). In several past projects approved by the Commission, acoustic monitoring has documented higher sound levels than were predicted and therefore the Commission typically requires a hydroacoustic monitoring plan. Some projects will clearly come close to exceeding the duel criteria thresholds, such as projects with large steel piles, projects that involve driving many piles a day, or projects that involve hard substrates. For those types of projects, constant in-situ monitoring would be necessary. In contrast, it is considered unlikely that sound levels generated by the Chevron Terminal dock repair project are going to exceed the criteria and therefore monitoring may only be necessary for pile-driving of the first few representative piles to demonstrate that the sound levels are as low as expected.

As described in the Underwater Noise and Marine Mammal Monitoring Plan, Chevron proposes to conduct hydroacoustic monitoring for at least the first five piles struck by an impact hammer and report the results to the Commission. Two hydrophones will be used to monitor sound; one will be placed at 10 meters from the pile that is undergoing sound

[8] Hastings, M. C. and A. N. Popper, 2005.
[9] California Department of Transportation, 2009, op cit., 4-11.

testing and the second will be placed at varying distances to determine the relationship between sound levels and distance from impact. After the installation of the initial five piles and submission of a monitoring report to the Commission, Chevron proposes to continue hydroacoustic monitoring for all additional pile-driving activities until the Executive Director makes a determination that based on the project monitoring results, pile driving has consistently not exceeded the sound level limitations and hydroacoustic monitoring is no longer required. Chevron proposes to then submit a final report within 90 days of completion of hydroacoustic monitoring summarizing the results of the monitoring. The Commission Staff Ecologist and CDFW and Regional Board staff have reviewed the Underwater Noise and Marine Mammal Monitoring Plan and concur with the proposed monitoring and reporting regime. The Commission attaches **Special Condition No. 5(A)(6-7)** to ensure implementation of the plan.

If either of the dual criteria thresholds are exceeded during the initial monitoring, Chevron proposes to cease pile driving and implement sound attenuation methods and/or further limit the number of pile strikes per day to ensure that pile-driving does not reach or exceed sound thresholds. The Commission attaches **Special Condition No. 5(A)(8)** which requires that, in the event that either criterion of the dual metric exposure criteria is met or exceeded, all pile-driving operations immediately stop and no further pile driving occurs until the Executive Director, in consultation with the fisheries biologists of CDFW and NMFS, authorizes recommencement of pile driving based on the resumption of hydroacoustic monitoring and the deployment of additional sound attenuation measures or other measures deemed likely by qualified technical experts to return the pile driving to conformance with the dual metric exposure criteria. In addition, **Special Condition No. 5(A)(9)** specifies that if after additional sound attention measures are deployed, sound exposure levels continue to be exceeded, pile driving will be stopped immediately and will not re-commence until or unless the Commission approves an amendment to CDP 1-14-0773 that proposes changes to the proposed project that prevent further exceedance of the dual metric exposure criteria.

On September 24, 2014, NMFS issued a concurrence letter (**Exhibit 10**) to the Army Corps for the Army Corps' review of the associated Section 404 permit for the Chevron Terminal dock repair project. The letter outlined the project's potential effects on marine species listed under the federal Endangered Species Act and "Essential Fish Habitat" (EFH) under the Magnuson-Stevens Fishery and Conservation Act. NMFS concluded that with the proposed avoidance, minimization, and monitoring measures, they do not expect the project to result in significant adverse impacts to federally threatened coho salmon, Chinook salmon, Steelhead, green sturgeon, or their critical habitats.

The Commission finds that based on: (1) the NMFS concurrence letter and its findings that the proposed project will not likely adversely affect sensitive fish species; (2) the proposed avoidance, minimization, and monitoring measures; and (3) the attachment of Special Conditions No. 2, 5, and 10, the proposed method of repair and maintenance will minimize adverse acoustic impacts on fish species.

b. Acoustic impacts from pile driving on marine mammals

Humboldt Bay supports a number of marine mammals including harbor seals (*Phoca vitulina*), harbor porpoises (*Phocoena phocoena*) and California sea lions (*Zalophus californianus*) that can also be impacted by the sounds generated by impact-pile driving. Based on information from the Fisheries Hydroacoustic Working Group, 180 dB is the underwater injury threshold for marine mammals. As described above in the previous subsection on fish impacts, pile driving activities in San Francisco Bay similar to those that are proposed for the subject project produced peak sound levels of 180 dB at a distance of 10 meters and thus could injure marine mammals. To insure injury does not occur to marine mammals, the Underwater Noise and Marine Mammal Monitoring Plan prepared for Chevron by H.T. Harvey & Associates (**Exhibit 6**) proposes hydroacoustic monitoring of the first five piles to be installed to determine the actual distance from pile driving at which underwater sound levels caused by pile driving reach 180 dB. If the sound threshold for injury to marine mammals is reached, the distance from the pile will be measured and a shutdown zone equal to that distance will be established around all subsequent piles being impact driven. According to the plan, if a shutdown zone needs to be established because sound levels caused by pile driving reach 180 dB, then the biological monitor present throughout all pile replacement activities will visually search for marine mammals in the project area and alert equipment operators as needed. The observer will visually scan the action area for the presence of marine mammals at least 30 minutes prior to and continuously throughout periods of impact pile-driving activities. If any marine mammal is about to enter or is observed within the shutdown zone during pile driving, the pile-driving activities will be shut down until the animal has moved outside the shutdown zone, or the animal is not re-sighted within 15 minutes for pinnipeds or 30 minutes for cetaceans. The Commission attaches **Special Condition No. 5(A)(10)**, which requires implementation of the proposed monitoring and mitigation measures for acoustic impacts to marine mammals. The Commission finds that the proposed method of repair and maintenance, as conditioned, will minimize adverse acoustic impacts on marine mammals.

c. Disturbance of eelgrass habitat

Native eelgrass (*Zostera marina*) grows in the project area north and south of the trestle from within 33 feet of the shoreline to the margin of the dredged channel. Eelgrass is essential to the health and productivity of the Humboldt Bay ecosystem as it provides many ecological benefits, including stabilization of bottom sediments, a substrate for epiphytic algae and invertebrates, foraging areas and shelter for young fish and invertebrates, food for migratory waterfowl, and spawning surfaces for invertebrates and fish. Chevron is proposing to replace a maximum of 19 trestle piles in areas of potential eelgrass habitat over a 5-year work period. Three of these 19 piles are proposed to be replaced in the first year of construction in 2015. To address any unexpected or inadvertent impacts to eelgrass from the project, Chevron has submitted an Eelgrass Mitigation and Monitoring Plan, dated January 21, 2015 and prepared by H.T. Harvey & Associates (**Exhibit 7**).

Eelgrass beds in Humboldt Bay are persistent all year, but they exhibit high variability in distribution and density, both seasonally and from year to year. Eelgrass at the project site exhibits an elevation range of -5 feet to 2 feet MLLW. A dense, continuous eelgrass bed

borders the channel, transitioning to moderately and sparsely covered zones higher in the intertidal. During the September 2013 inspection of the pier, 19 trestle piles located in suitable eelgrass habitat where identified as having minor to severe damage and thus potentially in need of replacement. These piles are listed in the table below. Piles are numbered from east to west, with the lowest numbers occurring near the shoreline. Letters signify whether the piles occur on the north or south side of the trestle or in its middle section.

Table 1. Location and Damage of Trestle Piles Proposed for Potential Replacement.

	Description of Pile Damage			
Trestle Location	**Severe**	**Major**	**Moderate**	**Minor**
North Side	4N	10N		2N; 12N; 15N; 18N; 21N
Middle Section			3M	2M; 12M; 16M; 18M; 19M
South Side	4S		3S	7S; 17S; 22S; 23S

In a preliminary eelgrass survey conducted during July 2014, eelgrass was observed growing immediately adjacent to piles on the south side of the trestle at suitable elevations, but very little eelgrass was observed near piles on the north side of the trestle because of shading from the trestle. Eelgrass was not observed growing in the immediate vicinity of the three piles in suitable eelgrass habitat scheduled for replacement in 2015 (Piles 4N, 4S, and 10N).

Piles and other elements of the dock will be removed and installed by a crane mounted on a barge that will access the trestle from the south side, and be positioned perpendicular to the trestle about 10 feet away. The crane can reach across the dock, enabling work to be performed on both sides of the dock from a single location. The barge will be anchored by placing two spud poles at each location where repairs are needed. The spuds are steel pipes 28 inches in diameter with a tapered point, and they penetrate the bay mud 3-10 feet.

Two project actions, pile replacement and barge anchoring, could inadvertently uproot or crush eelgrass turions and/or temporarily disturb small, localized areas of substrate located in eelgrass habitat. Chevron has incorporated a number of measures into the project to minimize or avoid these impacts. According to Chevron's eelgrass mitigation and monitoring plan, the impacts of pile replacement on eelgrass will be minimized by pulling old piles straight out of the substrate and inserting new piles into existing holes if possible or immediately adjacent to the existing holes. The impacts of barge anchoring will be minimized by limiting the area of substrate disturbance to the placement of two 28-inch-diameter spud poles at each barge work location. In areas with a patchy eelgrass distribution, attempts will be made to place the barge spud poles in between eelgrass patches on mudflat devoid of eelgrass. In addition, to avoid grounding of the barge or propeller scarring, work in eelgrass habitat will be scheduled to occur at tides high enough to allow the barge to remain afloat. Depth-sounding equipment will be used to help alert the barge operator as tide levels recede and the barge will be moved into deeper water before becoming grounded on the mudflat. Finally, a biological monitor will be present on

site while work is being performed in eelgrass habitat to ensure that these avoidance and minimization measures are implemented.

To determine whether project actions result in impacts to eelgrass, Chevron proposes to conduct pre- and post-construction eelgrass monitoring at the project site and a reference site for each year of work that involves pile replacement in suitable eelgrass habitat. Each year monitoring surveys will be conducted in July during the active eelgrass growing season. The July 2015 eelgrass survey will provide pre-construction data for work proposed during the August 1-October 15, 2015 work window. Thereafter, the data collected in July may represent both post-construction conditions for the prior work year and/or pre-construction conditions for the following year's work window.

Surveys will be conducted at the project site in areas where proposed project actions may reasonably be expected to impact eelgrass; specifically, monitoring will be conducted within two 33-foot-wide strips on either side of the trestle and one 33-foot-wide strip 115-148 feet south of the trestle where spud poles will be anchored. Surveys will also be conducted at a 33-foot-wide reference site located 246-279 feet south of the trestle. This reference site is part of the same eelgrass bed, but is far enough away to be unaffected by the project. These four 33-foot-wide survey areas will extend from the highest to the lowest extent of eelgrass occurrence (See **Exhibit 7, pg. 17** for a map of the survey areas). Each July, eelgrass beds in these survey areas will be remapped and eelgrass spatial distribution, areal extent, percent vegetated cover, and turion density will be sampled as outlined in Chevron's January 2015 Eelgrass Mitigation and Monitoring Plan. Photographs will be taken to represent different survey areas and eelgrass density classes. Survey results will be compared between project and reference sites to help determine whether changes in eelgrass characteristics are attributable to natural variability or project actions.

In addition to the post-construction surveys conducted during the following year's eelgrass growing season in July, Chevron proposes to inspect the project site as soon as feasible following construction to help document the extent of substrate disturbance caused by both pile replacement and spud pole placement, as this may be difficult to see by the following growing season. As previously mentioned, a biological monitor will be present on-site while work is being performed in areas that may impact eelgrass habitat. The biological monitor will take georeferenced, time-stamped photographs showing all locations where spud poles are anchored and where piles are replaced. These areas will be photographed again immediately following construction and during the following July survey. This georeferenced photo documentation will be used to compare pre- and post-construction conditions in order to detect any visible scarring. If visible scarring is evident as a result of project actions, then the extent of this area will be measured directly in the field. A visible scar is defined as an area that is devoid of eelgrass cover where a project action is known to have occurred during the previous construction year and where eelgrass occurred during the previous growing season.

In cases where the temporary substrate disturbance associated with either pile replacement or spud pole placement results in unavoidable uprooting or crushing of eelgrass turions, it

is expected that eelgrass will be able to revegetate by natural means. The localized areas of disturbance associated with project actions are relatively small, and there are abundant eelgrass propagules available at the site. However, while it is expected that eelgrass will reestablish, it is unknown if or how quickly this will occur. Delays in recovery constitute a temporal loss of eelgrass habitat. Therefore, if there is any visible scarring or detectable decline in eelgrass areal extent, cover, or turion density the first growing season following each construction year and the decline or scarring can be attributed to project actions, compensatory mitigation will be implemented.

Each year, the amount of mitigation required will be determined based on evidence of visible scarring and/or detectable losses in eelgrass areal extent, percent cover, or turion density that are determined to be attributable to project actions based on comparison to the reference survey site. If a decrease in aerial extent is detected through calculations based on mapping, the amount of this area will require compensatory mitigation. If the direct measurement of visible scarring is higher than the area detected by mapping, then the higher value will be used as a basis for mitigation. In addition, within vegetated areas, if a decrease (defined as a greater than 25% reduction) in either mean percent cover or mean turion density is detected relative to the reference site, the decline will require compensatory mitigation. If a decline in both percent cover and turion density can be detected, then the higher value will be used as a basis for mitigation. The magnitude of the impact will be equivalent to the proportion of the decrease. For example, a 25% reduction in eelgrass cover within a 10-square-foot area would constitute a 2.5 square-foot loss.

As noted previously, it is unknown whether any impacts requiring compensatory mitigation will occur. However, a maximum area of disturbance can be estimated for the first year of construction by assuming: 1) eelgrass exists immediately adjacent to each of the 3 piles proposed to be replaced in suitable eelgrass habitat; 2) eelgrass within 3.3 feet (1 meter) of each pile is permanently impacted by the construction work; 3) each pile replacement requires repositioning the barge three times, resulting in 18 spud pole anchorings (3 pile replacements X 3 barge positions X 2 spud pole anchors per barge position); and 4) eelgrass cannot be avoided and is permanently impacted over the 4.3 square-foot area of each spud pole anchoring. The resulting maximum area of potential disturbance to eelgrass from the first year of construction is approximately 221 square-feet.

Chevron proposes to mitigate for potential losses to eelgrass habitat in 2015 prior to impacts to avoid temporal loss. In most cases in-kind mitigation is the preferred option to compensate for impacts to eelgrass. According to NMFS' October 2014 California Eelgrass Mitigation Policy and Implementing Guidelines, in-kind compensatory mitigation is the creation, restoration, or enhancement of habitat to mitigate for adverse impacts to the same type of habitat. Typically, in-kind eelgrass mitigation involves transplanting or seeding of eelgrass into unvegetated habitat. Eelgrass mitigation by transplanting has been attempted four times in Northern California (from the mouth of the San Francisco Bay to the Oregon border) over the past 25 years with a 75 percent failure rate.[10] Because of the lack of success of past eelgrass transplanting projects in Northern

[10] National Marine Fisheries Service, 2014.

California, CDFW and Commission staff have been encouraging eelgrass mitigation in Humboldt Bay through debris removal. Removing debris is generally considered in-kind mitigation when 1) the debris is in an area suitable for eelgrass; 2) the debris is precluding eelgrass growth; and 3) when the debris is removed, eelgrass becomes established in its place.

Chevron proposes to perform both in-kind mitigation through the removal of an abandoned structure south of the trestle, and out-of-kind mitigation through the removal of four floating concrete dock sections that are scattered around Humboldt Bay and have been identified as hazardous marine debris. The derelict structure south of the trestle includes a segment of a catwalk, a number of individual piles, and a dolphin, and covers approximately 152 square feet of potential eelgrass habitat. Chevron proposes to remove the structure in conjunction with terminal repairs during the August 1st – October 15th 2015 work window, utilizing the same methods and construction Best Management Practices (BMPs) as required for the removal of the dock piles. The barge will access the structure from the west and anchor in an area that is too deep to support eelgrass, avoiding potential spud pole impacts to eelgrass. Once removed, it is expected that natural colonization by eelgrass will be sufficient to restore the areas to levels of eelgrass cover similar to surrounding areas. During the July 2015 eelgrass monitoring survey, the eelgrass surrounding the structure will be mapped, photographed, and characterized in terms of aerial extent, percent cover, and turion density to establish baseline conditions. In subsequent years, the mitigation area will be monitored each July in conjunction with pre- and post-construction monitoring. If eelgrass has not established within three years of removing the structures, then the reasons for insufficiency will be assessed and remedial measures will be taken. The mitigation area will continue to be monitored yearly for five years, or less if it can be demonstrated sufficiently to the Executive Director that the restored area is sustaining eelgrass growth at levels comparable to the reference site at similar elevations. The actual area of debris removal and eelgrass establishment achieved will be documented in the eelgrass monitoring reports submitted to the Commission as described below.

Chevron is also proposing to remove four abandoned floating concrete dock sections from Humboldt Bay in 2015 prior to the first year of potential project impacts. Seventeen other floating concrete dock sections have already been removed by the Harbor District as part of the Wiyot Marine Debris Removal Project. Four known concrete dock sections remain; two of the concrete dock sections are beached at Stinky Beach south of the mouth of Elk River, one is submerged in mud in South Bay, and one is wedged into a slough on the northeast tip of Indian Island. The concrete dock sections at Indian Island and in South Humboldt Bay currently occur in suitable eelgrass habitat, and if remobilized, all of the concrete dock sections have the potential to scour eelgrass habitat and/or become lodged in eelgrass beds. The concrete dock sections also pose a risk of damaging structures in the bay, including the Chevron Terminal, which could result in dangerous fuel spills impacting eelgrass habitat. Additionally, the concrete dock sections are regarded as serious navigational hazards and pose a collision risk to boaters. The concrete dock sections floats vary in size, but are each approximately 172-183 square feet and have the potential to damage a much larger area of eelgrass habitat. The actual surface area of the

concrete dock sections will be measured following removal and documented in the eelgrass monitoring reports submitted to the Commission as described below. Because the removal of the concrete dock sections is being proposed as out-of-kind mitigation, no mitigation monitoring for eelgrass colonization is required.

Chevron has submitted a plan for the removal of the four concrete dock sections, titled "Chevron Eureka Terminal MOTEMS Inspection Repair Project Proposed Eelgrass Mitigation" and dated January 15, 2015 (**Exhibit 8**). During an especially high tide when the concrete dock sections are submerged in water, a rope will be attached to each concrete dock section and tied off to a Harbor District boat. The boat will then be used to break the concrete dock sections loose from the mud, allowing them to float. Once the concrete dock sections are dislodged from the ground and again floating in the water, the boat will tow them to Fields Landing Boat Yard, where the Harbor District's travel lift will be used to hoist them onto a flatbed trailer for transport to Kernen Construction's Blue Lake facility where they will be crushed for reuse as base rock.

Overall, Chevron is proposing to remove approximately 324-335 square feet of debris from Humboldt Bay during 2015. Chevron proposes a 1:1 eelgrass creation to eelgrass impact ratio for in-kind debris removal performed prior to project impacts, a 1.2:1 eelgrass creation to eelgrass impact ratio for in-kind mitigation that is performed within one year after the determination of impacts, and a 2:1 ratio for out-of-kind debris removal (meaning that for each 2 square feet of area uncovered by removal of an abandoned concrete floating dock, the applicant will be credited as mitigating for project impacts to 1 square foot of eelgrass habitat). Based on these mitigation ratios, the proposed 2015 mitigation results in approximately 236 square feet of mitigation credit. This mitigation credit is larger than the 221-square-foot estimated maximum area of potential disturbance to eelgrass from the first year of construction.

During the course of the project, if impacts occur in excess of this mitigation credit, Chevron proposes to perform additional mitigation. If additional mitigation is necessary, Chevron proposes to remove another on-site abandoned dock structure north of the trestle. In addition, further opportunities for mitigation exist just north of the project site associated with the City of Eureka's Parcel 4, where remnants of numerous abandoned piles occur scattered within a 24,219 square-foot area. Any such removal of additional structural debris, either at the on-site abandoned dock structure north of the trestle, the site near the City of Eureka's Parcel 4, or elsewhere within coastal waters would require additional coastal development permit authorization.

Chevron proposes to submit eelgrass monitoring reports to permitting agencies by November 15th of every year from 2016-2019 presenting the results of that year's pre-construction, post-construction, and/or mitigation monitoring. These survey reports will include eelgrass maps and information on the spatial distribution, areal extent, percent cover, and turion density of eelgrass at the project and reference sites within defined survey areas and within mitigation areas. The reports will also include: (1) a summary of work operations relevant to post-construction assessment of work performed the previous year, including the dates work was performed in eelgrass habitat, the number of times the

barge was moved, and the location of spud pole placements; (2) photo documentation of pre- and post-construction site conditions and areas of substrate disturbance; (3) an impact analysis, including a quantitative assessment of any impacts on eelgrass that may have occurred as a result of project actions during the previous year; and (4) a calculation of the area required for compensatory mitigation if needed and a description of how mitigation requirements have or will be met. In addition, a final report summarizing the full set of eelgrass results will be submitted within three months of completing all pre-construction, post-construction, and/or mitigation monitoring associated with the project.

The Commission Staff Ecologist as well as CDFW, Regional Board, and NMFS staff have reviewed Chevron's eelgrass mitigation and monitoring plan and concur with the proposed monitoring, mitigation, and reporting regime as providing adequate mitigation for potential impacts to eelgrass. The Commission attaches **Special Condition No. 6** to ensure the aforementioned avoidance and minimization measures are implemented, eelgrass is monitored, and compensatory mitigation is provided consistent with the proposed plan. The Commission finds that as conditioned, the proposed method of repair and maintenance, as conditioned, will minimize its adverse environmental effects on eelgrass.

d. Loss of intertidal mudflat

As discussed above, the proposed dock repair work involves temporary fill from the in-kind replacement of up to 100 16-inch diameter piles and temporary fill of bay substrate from the anchoring of a barge used to access the dock during project construction. Some of this replacement fill and temporary fill will occur in mudflat habitat. Mudflats in the area support a variety of worms, mollusks, and other benthic organisms which are important prey for many fish and birds in the Humboldt Bay area. The applicant proposes to remove the old piles in their entirety and to place the new piles in the footprints of the old piles or as close to the original pile location as possible. In addition, the Commission attaches **Special Condition No. 4** to ensure that all existing piles that cannot be removed in their entirety are cut off one-foot below the mudline. Cutting off the piles at least one foot below the mudline will allow the area of the removed piles to silt over and provide habitat to benthic organisms above the broken piles. Thus, as the piles will be replaced in-kind and impacts from spud pole placement will be temporary, the proposed method of repair and maintenance, as conditioned, will result in no permanent net loss of mudflat and will minimize adverse environmental effects on mudflat habitat.

e. Impairment of Water Quality

The installation of new piles and other structural components of the dock and the removal of existing dock components could have an adverse impact on water quality if treated-wood were to leach contaminants into the marine environment, or if construction debris or hazardous materials were to enter bay waters.

As previously mentioned, the applicant proposes to use ACZA pressure-treated wood piles. Chemicals in the wood preservative such as copper and arsenic could potentially leach out of the piles and into the water column where they could be absorbed by fish and other aquatic organisms with potentially adverse consequences. In recent years, the Commission has required that wood piles with metal arsenate treatment be encapsulated

by a durable and inert wrapping or coating to prevent chemicals from leaching into the marine environment. To prevent chemical leaching from the new piles, the applicant proposes to seal the piles with a polyurea coating (Specguard's Marine Grade polytetramethylene ether glycol coating, E-375-08) from the top of the piles to 5 feet below the mudline. The coating will be applied and allowed to cure prior to being shipped to the storage site at Schneider Dock. This polyurea coating has been approved by the Commission for use in a number of recent projects along the California coast including the local Trinidad Pier reconstruction project (CDP No. 1-07-046). In its September 2014 Concurrence Letter (page 10 of **Exhibit 10**), NMFS indicated that it expect the proposed polyurea sealant will minimize chemicals such as copper from leaching into the marine environment so that the leaching of contaminants from the new treated piles will have a discountable effect on individual salmon and steelhead.

In addition to the placement of new ACZA-treated, polyurea-wrapped piles, the project involves the removal of up to 100 creosote-treated or unwrapped, ACZA-treated piles as well as the replacement of various other pressure-treated timber elements of the dock. The applicant proposes a number of measures to minimize water quality impacts from the removal of old treated piles and the treatment, storage, and use of pressure-treated wood during construction. These measures include the removal of the old creosote-treated or unwrapped ACZA-treated piles and disposal at a landfill authorized to accept such chemically treated waste in Anderson California. Other measures proposed by the applicant include specifying that use of ACZA-pressure-treated wood in the project shall: (a) adhere to the American Wood Protection Association's (AWPA) wood preservative standards; (b) be treated to the proper preservative retention standard (i.e., amount of preservative) specified by the AWPA for the appropriate AWPA Use Category; (c) be inspected on-site to assure it is free of visible surface residues or bleeding of preservatives and shall not be used if ACZA pressure-treated wood has a noticeable ammonia odor; (d) be stored in a contained area within a continuous, plastic-lined berm both on the barge and at the Schneider dock staging area and covered if there is a chance of precipitation; and (e) only be cut or drilled at locations that area a minimum of 100 feet away from the water whenever possible. The Commission attaches the applicant's proposed BMPs for use of pressure-treated wood as **Special Condition No. 7**. Given that (1) the project as conditioned will result in the permanent removal of up to 100 creosote-treated or unwrapped, ACZA-treated piles; (2) new pressure-treated piles will be treated and sealed with a durable, inert coating; and (3) best management practices will be utilized in selecting, treating, storing, cutting, and drilling pressure-treated wood, the use of pressure-treated wood is not expected to have an adverse impact on the water quality of Humboldt Bay. Thus the Commission finds that the proposed method of repair and maintenance, as conditioned, provides feasible mitigation measures to minimize potential adverse impacts of treated wood in the marine environment.

Potential adverse impacts to the water quality of Humboldt Bay could also occur during the construction process if hazardous materials or construction debris were to enter coastal waters. To ensure that adverse water quality impacts associated with project debris are minimized, the applicant proposes to place project debris onto the barge or dock, and to use floating containment booms to catch any debris that enters the bay. In addition, the

applicant proposes to hold all debris generated during the project in a containment area on the barge until transferred to the staging area at Schneider Dock, where the debris will be placed in water-tight containers. Covers will be provided during rain events to prevent water from entering the containers, and absorbent pads or booms will be placed in each container to soak up any free water that accumulates. When the containers are full, they will be transported to a landfill in Anderson, California. To ensure that adverse water quality impacts associated with hazardous material spills are minimized, the applicant proposes to place spill containment trays around construction equipment on the barge deck, and to maintain spill kits on the barge and the dock with contents appropriate for the types and volumes of hazardous materials present. Finally, the applicant proposes to utilize biodiesel and vegetable-based hydraulic oil for all equipment used over water except for the crane. To ensure that the applicant complies with the aforementioned BMPs, the Commission attaches the BMPs as part of **Special Condition No. 3**.

Chevron has also included a number of construction BMPs in their eelgrass mitigation debris removal plan, including: (1) limiting fueling of construction to offsite areas at least 100 feet from the Mean Higher High Water line of Humboldt Bay; (2) ensuring hazardous materials management equipment, including oil containment booms and absorbent pads, will be available immediately on-hand; (3) ensuring a registered first-response, professional hazardous materials clean-up/remediation service will be locally available on call to respond to a spill; (4) providing for the rapid containment and clean up of any accidental spill; (5) ensuring construction equipment will be free of leaks and in good working order; (7) storing and/or containing all construction materials and debris originating from the project in a manner that precludes uncontrolled entry and dispersion to the waters of Humboldt Bay; (8) immediately recovering any debris from construction activities that inadvertently enters the bay; and (9) requiring proper disposal of all removed material. To ensure compliance with the concrete dock section removal plan, the Commission attaches **Special Condition No. 6(A)(13)**.

The Commission finds that the proposed method of repair and maintenance, as conditioned, provides feasible mitigation measures to minimize potential adverse environmental impacts of construction on water quality.

Conclusion

In conclusion, the Commission finds that the method of proposed repair and maintenance as conditioned herein (1) uses the least environmentally damaging feasible alternative; (2) provides feasible mitigation measures to minimize adverse environmental effects; and (3) protects the biological productivity and the quality of coastal wetlands and waters, consistent with Sections 30230, 30231, and 30233 of the Coastal Act.

G. Visual Resources

Section 30251 of the Coastal Act states that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. The Section requires, in applicable part, that permitted development be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, and to be visually compatible with the character of surrounding areas.

The proposed project is located on a waterfront property on Humboldt Bay and is visible from many vantage points in and around the bay. While the site can be seen from many public vantage points, it is located near similar port facilities and blends with the visual character of the surrounding industrial area. The dock has existed at the site since the early 1900s, and the proposed project will not result in any expansion of the facility. Any visual impact from the proposed repairs of damaged and deteriorated components of the dock will be positive. Therefore the proposed method of repair and maintenance, as conditioned, will be consistent with Section 30251 of the Coastal Act.

H. PUBLIC ACCESS

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 where adequate access exists nearby. Section 30211 of the Coastal Act 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, 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 existing or potential access.

The proposed dock repairs would not adversely affect public access. The repairs would not displace any existing public access facilities, as the project would simply maintain an existing dock facility that is located in a secured area where no public access currently exists. In addition, the project would not increase the demand for public access facilities, as it would involve no expansion of use, would not increase population density in the area, and would not otherwise draw more people to the waterfront. Therefore, the Commission does not find it necessary to require that public access be provided as a result of the proposed project. Furthermore, lateral access on the subject industrial parcel would be inconsistent with public safety needs and the security and operational needs of the oil storage facility.

The proposed project involves the removal of numerous piles from the bay. If the piles are only partially removed, or broken off during removal and left in the water, they could pose a safety and navigation hazard to boaters and other bay users. Therefore, to avoid adverse impact to public access and recreation on the bay from hazardous piles, the Commission attaches **Special Condition No. 4** to ensure that all piles that cannot be removed in their entirety are cut off one-foot below the mudline. The Commission thus finds that the proposed method of repair and maintenance, as conditioned, will not have any significant adverse effects on public access, and is consistent with the requirements of Coastal Act Sections 30210, 30211, 30212, and 30214.

I. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The Humboldt Bay Harbor, Recreation and Conservation District served as the lead agency for the project for CEQA purposes. The Harbor District filed a notice of exemption for the project on

August 18, 2014 pursuant to Section 15301 of the CEQA Guidelines (Existing Facilities) which exempts the repair of existing structures involving negligible or no expansion of use. Section 13906 of the Commission's administrative regulation requires Coastal Commission approval of CDP applications to be supported by a finding showing the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Coastal Commission's review and analysis of CDP applications has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. As a responsible agency, the Commission conducted its analysis of the potential impacts of the proposed development that the Commission is authorized by the Coastal Act to review. The Commission has reviewed the relevant coastal resource issues associated with the proposed project and has identified appropriate and necessary conditions to assure protection of coastal resources consistent with the requirements of the Coastal Act. The staff report discusses the relevant coastal resource issues with the proposed development. All public comments received to date have been addressed in the staff report, including staff's oral presentation and the findings adopted by the Commission. The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As conditioned, there are no additional feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse environmental effect that approval of the proposed project, as modified, would have on the environment. Therefore, the Commission finds that the proposed repair and maintenance project can be found to be consistent with the Coastal Act and CEQA Section 21080.5(d)(2)(A).

APPENDIX A

SUBSTANTIVE FILE DOCUMENTS

Application File for Coastal Development Permit No. 1-00-013.

Application File for Coastal Development Permit Waiver No. 1-14-1587-W.

Application File for Coastal Development Permit No. 1-14-0773.

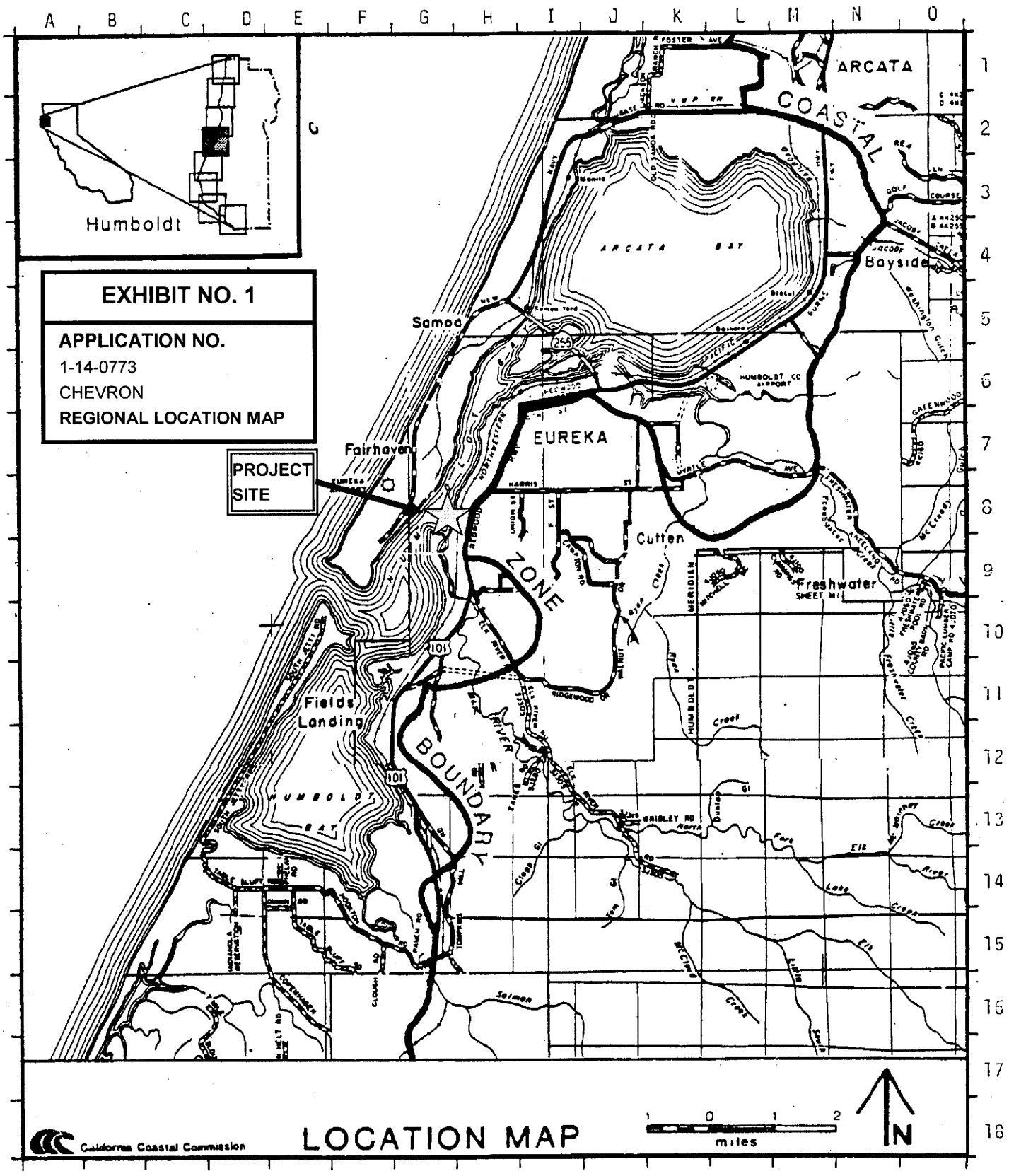
California Department of Transportation. (2007, September 27). Compendium of pile driving sound data. Sacramento, CA: Illinworth & Rodkin.

California Department of Transportation. (2009, February). Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish. Sacramento, CA: ICF Jones & Stokes, Illinworth & Rodkin.

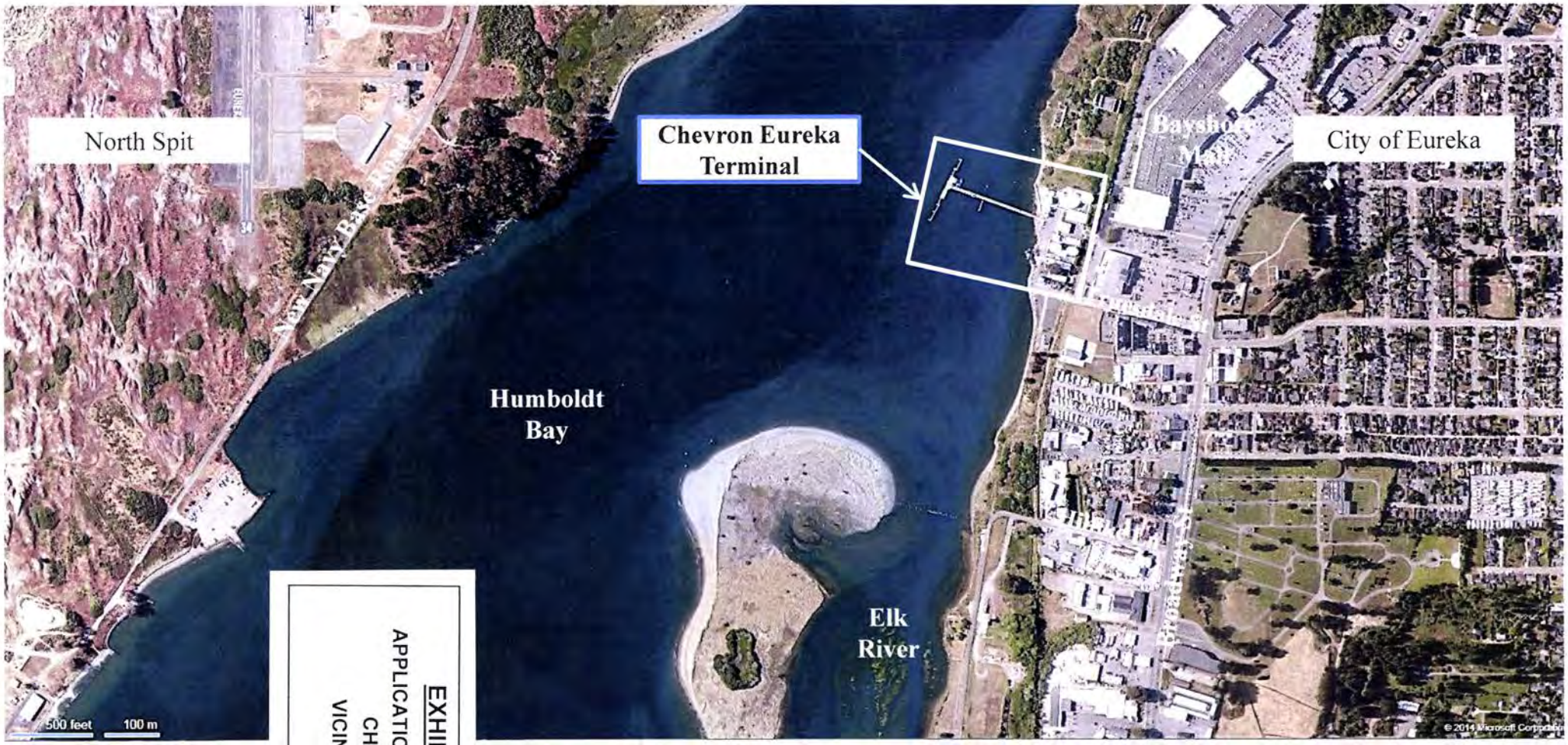
Fisheries Hydroacoustic Working Group. (2008, June 12). Agreement in principal for interim criteria for injury to fish from pile driving activities. Available online at: http://www.dot.ca.gov/hq/env/bio/files/fhwgcriteria_agree.pdf.

Hastings, M. C. and A. N. Popper. (2005, January 28). Effects of Sound on Fish. Prepared for the California Department of Transportation. Sacramento, CA.

National Marine Fisheries Service. (2014, October). California Eelgrass Mitigation Policy and Implementing Guidelines.



County of Humboldt



Vicinity Map
(Bing Maps)

EXHIBIT NO. 2
APPLICATION NO. 1-14-0773
CHEVRON
VICINITY MAP

PACIFIC AFFILIATES
CONSULTING ENGINEERS
990 W. WATERFRONT DRIVE, EUREKA, CA 95501 • TEL (707) 445-3001 FAX (707) 445-3003

Chevron Eureka Terminal
MOTEMS Inspection Repairs

Date:	January 26, 2015
Subject:	Revised Project Scope of Work
Project Manager:	Zach Pecor, Chevron
Terminal Manager:	Scott Parsons, Chevron
Contractor:	West Coast Contractors, CSLB #511500 A,B
Agent:	Corey Matson, Pacific Affiliates

Introduction

In September 2013, above and below water inspections were performed to assess the condition of the timber trestle and wharf at the Chevron Eureka Terminal. Inspections were performed in accordance with California Code of Regulations Title 24 Part 2 Chapter 31F Marine Oil Terminals, the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) Audit Manual, and the ASCE Underwater Investigation Standard Practice Manual. Damage to individual elements of the structure was rated from minor to severe. The findings of the inspections were summarized in Above Water and Underwater Structural Inspection Reports prepared by Moffatt & Nichol (M&N). Based on the inspection results, Chevron is seeking permits to perform necessary repairs to the dock.

M&N has an ongoing project with Chevron in which they are evaluating the structure (as a whole as well as individual elements and connections) and its' ability to withstand a significant seismic event. One major concern is the potential for loose surface sediments to liquefy during seismic shaking, causing the soil mass under the dock to move. The piles must be able to withstand such an event or the dock, and the fuel transfer lines, will fail. Seismic modeling of the scenario, based on the limited knowledge about the piles, indicates this is a possibility, though unlikely.

Permits

An interagency meeting, hosted by the Army Corps, was held on March 12, 2014 to present the project to all interested agencies and gather preliminary comments to assist in preparing the permit applications. Chevron has been issued permits from the following agencies to complete structural repairs to their timber trestle and wharf:

City of Eureka: Permit No. B14-0371
Humboldt Bay Harbor, Recreation and Conservation District: Permit No. 2014-03
North Coast Regional Water Quality Control Board: WDID No. 1B14050WNHU
U.S. Army Corps of Engineers: File No. 2014-00292N

Chevron is seeking permission from the California Coastal Commission to complete the project.

A Categorical Exemption from California Environmental Quality Act (CEQA) was granted by the Harbor District for the project per CEQA Guidelines §15301, which allows for the repair of existing private structures involving negligible or no expansion of use. Attached is a copy of the Notice of Exemption, dated August 18, 2014.

A term of four years, beginning in 2015, is being requested which will allow Chevron to make repairs to the dock through 2018, addressing the most critical areas first. The goal of the project is to repair all damaged areas of the dock by the expiration of the permits. However, further repairs or modification may be necessary pending future inspections and the completion of the M&N structural analysis as mentioned above.

A portion of the most critical repairs were completed in 2014 under a Coastal Development Permit waiver issued by the Coastal Commission (CDP Waiver #1-14-1587-W). These repairs included replacement of five piles in the wharf section of the dock. For a complete discussion of these limited repairs, see the *Waiver for Limited Dock Repairs in 2014* by Pacific Affiliates, September 5, 2014[6] and Sheets C-1 to C-3 of the project plans for the waiver work by Pacific Affiliates with a revision date of September 5, 2014[7].

Project Location

The Chevron Eureka Terminal is located in the City of Eureka on the northern California coast in Humboldt County, approximately 270 miles north of San Francisco. From Highway 101/Broadway in Eureka, turn west on the unnamed road at the entrance to the Bayshore Mall (at the stop light between McDonald's and the Bayshore Mall), then continue west to the security gate at the Chevron Terminal, 3400 Christie Street (APN 007-071-08). The terminal's trestle and wharf (APN 007-071-13) extend 645 feet from shore into Humboldt Bay, which is where the proposed construction will take place. See Sheet C-1 of the attached plans for location and vicinity maps.

Facility Description

The Chevron Eureka Terminal consists of a timber dock situated on the tidelands of Humboldt Bay and the bulk fuel storage facility on the adjacent upland parcel. The dock is 'T' shaped with an approximately 600 ft long trestle, approximately 150 ft long wharfhead, and five mooring/breasting dolphins connected by timber catwalks, as shown on Sheet C-2. Believed to have been originally constructed in the early 1900's, the facility has been expanded, upgraded, and repaired numerous times since. The Eureka Terminal services fuel barge traffic only, with barges typically arriving once every 10-12 days to deliver fuel to the landside bulk storage terminal. Barges provide hoses and pumps; therefore the terminal does not have any equipment, rack, towers, or loading arms on the wharf. Approximately 80% of the fuel used by the greater Eureka area is delivered via barge to the Chevron Terminal.

The 594 foot long trestle extends from the shoreline and consists of an approximately ten foot wide roadway and nine foot pipeway supporting five pipelines of diameters varying between six and ten inches. The wharfhead at the end of the trestle is approximately 152 feet long by 22 feet

to 36 feet wide and supports a containment area and the operators shack. Catwalks connect the wharf to three dolphins to the south and two to the north.

Construction of the trestle and wharf are typical of a timber structure. Wood piles driven in rows are connected with a 12"x12" timber cap. Stringers span between pile caps and are covered with 4"x12" decking. Piles are primarily creosote treated, but a number of pressure treated piles have been installed over the years during repairs. A more detailed description of the terminal construction can be found in the structural inspection reports by M&N[3,4]. These reports are available upon request.

Project Description

In order to maintain operations at the terminal into the future, repairs to the structure must be made. The docks sole use is the transfer of fuel from the barge to the storage facility, so it is imperative that the dock structure be maintained considering the potential environmental consequences of a failure of the structure. According to the M&N reports, minor and moderate damage noted in the field survey is considered allowable and should be closely monitored in future inspections. Those elements of the structure that were characterized as having major or severe damage will be replaced. In total, eight piles with major damage and 15 piles with severe damage were discovered (22 total, one pile has major damage above water and severe damage below water, so it was counted twice). These damaged creosote treated piles are proposed to be replaced with new coated timber piles during the initial effort scheduled for 2014. Hardware, bracing, decking and other above water elements of the dock will be replaced as necessary as well. Sheet C-2 of the plans shows a plan view of the dock and calls out the areas of the dock with major and severe damage to be repaired in 2015, as well as those areas repaired in 2014.

In addition to replacing piles, there are other elements of the dock identified as needing replacement. These items are noted on Sheet C-2 as well and include corrosion of metal handrails and walkway grating, timber fender lagging, bracing, beams and blocking and delaminating of a containment membrane along the west side of the dock. It should be noted that there will be no expansion of the existing structure, only in-kind replacement of existing elements of the dock.

The California State Lands Commission has recently required inspections of the dock structure to be performed annually. Specifically, those areas of the structure having been identified as having minor or moderate damage will be re-inspected annually. Should conditions worsen, or if other damage is discovered that warrants repair, Chevron may elect to repair the structure during the annual work window established as part of this project. Based on the results of the inspection, Chevron will provide all permitting agencies a written update annually, including any plans to make repairs to the dock, a summary of previous years work and a balance sheet of impacts and mitigation completed to date.

In order to have the flexibility to make repairs that are not specifically identified during permitting, Chevron is seeking a four year permit to perform maintenance to the structure through the 2018 work window. When portions of the dock are deconstructed during construction, Chevron may elect to replace additional elements of the dock depending on their condition. A maximum of 100

piles will be replaced over the lifetime of the permits and up to 25 piles during any single year. Hardware, bracing, decking and other above water elements of the dock damaged during construction or deemed unfit to be reused (split, rotten, etc.) will be replaced in-kind.

Inspection Findings

A total of 472 piles support the trestle, wharf, dolphins and catwalks. For the above water inspection, 35 (7%) were not inspected, 321 (68%) had no reportable damage, 84 (18%) had minor damage, 16 (3%) had moderate damage, 7 (1%) had major damage, and 9 (2%) had severe damage. The superstructure framing, equipment, and hardware were also examined, with isolated damage being reported. Typical damage consisted of degraded bracing and rusted grating and connections. Superstructure framing typically did not have reportable damage, though there are a few areas noted as having rotten or sagging members.

For the underwater inspection, 42 piles (9%) were not inspected (inspected to mudline as part of above water inspection), 393 (83%) had no reportable damage, 16 (3%) had minor damage, 7 (1%) had moderate damage, 1 (0%) had major damage, and 13 (3%) had severe damage. Bracing below +3 ft mean lower low water (MLLW) was examined as part of this effort, and with one exception was found to have no reportable damage. Tables 1 and 2 below were taken from the M&N reports and summarize significant deficiencies noted during inspection. Pile labels and photos reference the notation contained in the M&N reports.

Table 1 - Summary of significant deficiencies (major and severe damage) from above water inspection[3]

Pile Bent #	Pile Label or Nearest Pile	Above Water		
		Rating	Comments	Photo
112	E-KP11	MJ	ND to timber pile. Steel shell major corrosion, maybe half section loss pile appears ok	Photo 5
113	W-D	SV	Missing	
114	M	SV	Missing, only pin visible	Photo 6
116	W-A	SV	Hollowed out 8 ft from top, not accessible from under wharf	Photo 7
118	W-E	SV	Pile missing, bolted connection visible	Photo 8
121	E-AA	SV	Severely hollowed out	Photo 9
113-117	W-A	SV	Rotten / broken / missing fender lagging	Photo 10
117-120	W-A	MJ	Containment membrane cracked and delaminating	Photo 11
4	N	SV	Split / hole at 4 ft from top	Photo 14
4	S	SV	Split / hole at 4 ft from top	Photo 15
10	N	MJ	No brace connection, hollowed, sistered to M1 pile	Photo 16
32	S2	MJ	Inner pile, free headed but no visual damage; therefore likely not pinned. Can be moved by hand.	Photo 17
33	S	SV	4 in. diameter 12 in. deep hole in west face 6 ft below top of pile	Photo 18
16	S	MJ	Major rot on adjacent pilecap	Photo 21
23	S	SV	Adjacent brace top connection has little edge distance. South brace on the east side is rotted to nothing at the bottom connection	Photo 22
25	S	SV	Curb at pipeway is severely rotted	Photo 25
D3	A3	MJ	Large split and hollow inside	Photo 26
D3	A5	SV	DNE, cut near top	Photo 27
D3	D1	MJ	Hollow sound and crushing on 'backside	Photo 28
D8	C1	MJ	Splitting and 2 in. diameter hole, top connection moderately rusted	Photo 29
D8	F2	MJ	Visually moving, cut slot at the connection where the wood is soft and sounds hollow	
D8	F3	MJ	Cut slot at the connection where the wood is soft and sounds hollow	
D2	E1	SV	Hollow blocking 8 ft below top of piles	Photo 30
109-110	W	MJ	Coating failure on metal railing	Photo 31
128-130	W	MJ	Coating failure on metal railing	Photo 31 Similar
137	W	SV	Severe corrosion of metal grating deck at dolphin gangplank landing	Photo 32
143	W	SV	Severe corrosion of metal grating deck at dolphin gangplank landing	Photo 33

Table 2 - Summary of significant deficiencies (major and severe damage) from underwater inspection[4]

Pile Bent #	Pile Label	Below Water			
		Inspection Effort Level	Rating	Comments	Photo
113	W-D	I	SV	Missing	
114	M	I	SV	Missing	
118	W-E	I	SV	Missing, top of stub at -7 ft MLLW. -22 ft MLLW mudline	
119	F-AA	I	SV	85% section loss at 3 ft high by 15 in. wide area at -7 ft MLLW on side 2 and 3. No obvious borer indications, but hollowed out void is typical of Teredo. No active borders	Photo 4
121	E-AA	I	SV	100% rotted	
124	W-A	I,III	MJ	30% section loss at 18 in. high by 12 in. wide by up to 3 in. deep deterioration at and near bolt / wale connection. Deterioration due to marine borers.	Photo 5 Photo 6
124	M	I	SV	Greater than 50% section loss at 1/2 in. diameter by 10 in. deep hole at 5 ft MLLW. 1/2 in. diameter by 2 in. deep hole at 3 ft MLLW with interior void of 7 in. wide by 8 in. high by 8 in. deep.	
127	W-A1	I,III	SV	90% section loss at 9 in. long by 10 in. wide by 12 in. deep hole at notch cut at 4 ft MLLW on side 1.5. Partially concealed by wale. No apparent active borers.	
127	E-D1	I	SV	Broken at -11 ft MLLW. Was a batter pile, but is now hanging vertically from the top due to a break near the mudline. Hollowed out 6 ft length above break, lots of marine growth. Possible previous borer activity, but apparently inactive now. -14 ft MLLW mudline.	
33	S	I	SV	70% section loss at 3 in. high by 2 in. wide by 12 in. deep void at 1 MLLW on side 1. The inside of the void is larger and probably due to marine borers.	
34	M	I	SV	80% section loss at hole completely through the pile at -11 ft MLLW on side 1 and 3. Section loss is 36 in. high by 4 in. wide on the exterior and 36 in. high by 12 in. wide on the interior.	
D3	A5	I	SV	Does not exist, cut near top	Photo 7
D3	C5	I	SV	90% section loss at 4 to 5 ft MLLW. Does not appear to be due to borers	Photo 8
D8	F3	I,II,III	SV	60% section loss in a 7 ft high by 1 to 6 in. wide void section between -1 and -8 ft MLLW on side 3. Appears to be inactive borer damage.	

According to the M&N reports, minor and moderate damage noted in the field survey is considered allowable and should be closely monitored during future inspections. Sheet C-2 of the project plans provides a plan view of the dock and identifies areas of major and severe damage as reported

by M&N that are scheduled to be repaired. The M&N reports are available upon request and contain a more complete discussion of the inspections and findings.

Construction

Construction materials will be staged at Schneider Dock, located on the eastern side of Humboldt Bay 1.4 miles north of the Chevron Dock, or Fairhaven Terminal, located on the western side of Humboldt Bay 0.7 miles north of Chevron. The staging area used will be contingent on ship traffic at the time of construction. New piles will be delivered to the staging area and stored as described in the section below, Storage of Materials.

All work will be performed from the Moondoor II barge, which measures 78 feet wide by 114 feet long and will be maneuvered by the Joseph George tugboat. The barge will be used to transport waste material and new timbers between the Chevron Dock and the staging area. During construction, the barge will be positioned adjacent to the dock and tied to the mooring dolphins. A Kobelco CK1000-III Crawler Crane with a 120 foot boom positioned on the barge will be used to remove and install elements of the dock. Equipment used over the water will utilize biodiesel and vegetable based hydraulic oil. All equipment specifications were previously provided and are available upon request.

There are a few piles, bracing and beams in toward the shoreline in the tidal zone that require replacement. This work will take place during high tides to allow the barge to float over any eel grass that may be in the area. A tide of at least five feet above MLLW is required to ensure there is enough water to clear the five foot loaded draft depth of the barge. Work in shallow depths will only take place when tides permit the barge to float, thus avoiding any impacts to marine plants or animals. Under no circumstance is the barge, excluding the spuds, allowed to contact the ground surface.

Where piles are to be replaced, the dock will be deconstructed as necessary to access the pile(s). The bull rail, decking and equipment attached thereto will be removed and set aside on the dock to expose the stringers and pile cap, which will also be removed and set aside. The crane fitted with a vibratory hammer will attach to the pile to be removed and subsequently vibrate and pull the pile out of the ground. In the event a pile is not able to be removed in its entirety, it will be cut off one foot below the existing mudline. It is not anticipated that piles will be unable to be removed, so once removed, the pile will be placed on the barge in the containment area as described below and in the previously submitted Chevron Dock Repair Information document provided by WCC. The new pile will then be hoisted and placed as close to the original pile location as possible. An impact hammer will be used to drive the pile to depth. Once the pile is in place, the pile cap, stringers and decking will be replaced. Any elements of the dock that are damaged during construction will be replaced in kind. All damaged elements of the dock removed during construction will be stored in the containment area on the barge until they are transported to the staging area where they will be offloaded and stored for future disposal. Waste Management will be commissioned to transport all waste from the staging area to their landfill in Anderson, CA.

Storage of Materials

Schneider Dock will be used as the primary staging area for construction materials during the project. In the event that Schneider Dock is occupied by a ship during construction, materials will be staged at the Fairhaven Terminal. New timber members will be stored on an asphalt paved area cleaned of dirt and debris and protected by a layer of 10 mil (minimum) plastic. Absorbent booms will be laid around the perimeter of the storage area, underneath the plastic to create a pool effect. Lumber or small timbers will be placed beneath the piles to minimize the risk of tearing the plastic liner during handling. In the event of rain, the storage area will be covered with 6 mil (minimum) plastic sheeting. The sheeting will be run over the absorbent booms and held in place with sandbags. See detail on Sheet C-3 of the plans.

Materials stored on the barge will be handled in a similar fashion as described above. WCC will create a continuous berm, made of timbers laid out in a rectangular pattern, on the deck of the barge. Plastic sheeting will line the area and overlap the timbers to create a pool effect. The pool will be monitored daily for liquids and cleaned as deemed necessary to avoid any leakage onto the barge deck or into the waters of Humboldt Bay. If necessary, the materials will be covered with plastic held in place with sandbags during weather.

All materials removed from the dock and debris generated during the project will be held in the containment area on the barge until transferred to the land side storage area where they will be placed in roll-off containers provided by Waste Management. When the containers are full, they will be transported to Waste Management's landfill in Anderson, CA. The containers are water tight, so no leakage will occur and covers will be provided during rain events to prevent water from entering the container. Absorbent pads or booms will be placed in each container to soak up any free water that accumulates.

New Timbers

All new timbers installed (piles, beams, bracing, etc.) will be preservative treated Douglas fir and will be in-kind replacements of the existing elements. The preservative treatment will be Ammoniacal Copper Zinc Arsenate (ACZA), commonly known as Chemonite. The minimum retention of the treatment shall be 1.5 pounds per cubic foot (pcf) with a minimum penetration of 0.5 inches. Treatment and handling of the wood shall be in accordance with the American Wood Protection Association's (AWPA) Wood Preservative Standard U1[9] as well as the Best Management Practice guide published, in part, by the Western Wood Preservers Institute (WWPI)[5].

Piles will be 16 inches in diameter at the butt and 65 feet in length, except dolphin piles will be 70 feet and piles for bents 1-20 will be 45 feet, with approximately 20 feet driven into the ground. Those portions of the new piles that will be in direct contact with bay water will be sealed with Specguard's Marine Grade Polyurea coating (E-375-08). E-375-08 is a slow cure Polytetramethylene ether glycol (PTMEG) based Polyurea system suitable for continuous emersion in marine environments. This system has been used successfully on a number of projects along the California coastline involving preservative treated wood piles. The coating cures to a smooth, continuous finish encapsulating the wood preservative to prevent chemicals from leaching into the

environment. The piling supplier will apply a 200 mil thick, black Polyurea coating over the treated wood piles and allow it to cure before shipping to the site. The minimum coating area on the piles will extend from the top of the pile to five feet below the mudline. The MSDS and additional product information for the Polyurea coating was previously submitted and is available upon request.

Environmental Considerations

Eelgrass

Humboldt Bay contains a number of Environmentally Sensitive Habitat Areas (ESHA), including the eelgrass beds located near the shoreline along the terminal. Impacts to eelgrass will be mitigated by using vibratory equipment to remove piles and an impact hammer during pile installation to minimize turbidity. Below water work will also be coordinated with low tides to avoid the eelgrass. When work is required in the shallow intertidal waters, the work will take place during high tides to allow the barge to float above the eelgrass. Based on visual observations, eelgrass appears to extend out approximately 375 feet from the shoreline, near the abandoned piling from the old dock. Sheet C-2 shows the approximate boundary of the eelgrass in relation to the dock.

An Eelgrass Mitigation and Monitoring Plan was prepared specifically for the project by H.T. Harvey & Associates[8]. Included in the plan is a discussion of potential impacts to eelgrass, monitoring requirements, mitigation measures, and pre- and post-construction survey requirements. In summary, a biological monitor will be present on the site during all construction in the shallow, intertidal zone where impacts to eelgrass are possible. All activities will be monitored and those areas impacted by construction activities will be subsequently surveyed. Mitigation for the impacted area will be accomplished by removing debris from Humboldt Bay tidelands, preferably in the vicinity of the Chevron Dock. See the Eelgrass Mitigation and Monitoring Plan for a complete discussion of impacts, monitoring and mitigation.

Fish

Chinook (*Oncorhynchus tshawytscha*) and coho (*Oncorhynchus kisutch*) salmon and steelhead trout (*Oncorhynchus mykiss*), all of which are federally listed as threatened, travel through Humboldt Bay as juveniles when out-migrating to the ocean and as adults when migrating back to their natal streams for spawning. Longfin smelt (*Spirinchus Thaleichthys*), which is also a listed species, have a sustained population within Humboldt Bay and migrate up streams tributary to the bay to spawn. Seasonal implementation of underwater construction activities is proposed in an effort to minimize disturbances to migrating fish. A work window from August 1st to October 15th of each year is proposed for underwater work.

Hydroacoustics

A vibratory hammer will be used to remove the existing piles, however since the piles are being pulled and not driven, resulting sound levels will not be of concern. A diesel impact hammer will be used to drive the new timber piles to depth. It is estimated that at a hammer energy of 30,000 ft-lb, the piles will require a maximum of six blows per foot and approximately 50 blows per pile. With four piles being placed per day, the total number of blows per day will be approximately 200. Water depths will range from a few feet in the tidal zone to approximately 30 feet adjacent to the

face of the dock. Specifications for the hammers to be used were previously submitted and are available upon request.

Impact driving wood piles does not typically generate sound levels that cause injury to mammals and fish, but it is possible. The piles will also have the 200 mil polyurea coating which may dampen the sound generated. H.T. Harvey & Associates has prepared an Underwater Noise and Marine Mammal Monitoring Plan[10] which includes noise minimization measures and hydroacoustic monitoring criteria for the project. Below is a summary of these items.

In an effort to mitigate potential hydroacoustic effects, a soft start approach (slowly ramping up the energy of the hammer) will be used during impact pile driving. Because fish are highly mobile and capable of moving quickly, the soft start will allow fish time to travel beyond the sphere of influence before the acoustics generated approach levels that could cause injury. Additionally, wood, plastic and/or rubber cushion blocks will be used between the hammer and pile to dampen the noise generated by the impact hammer.

Underwater noise monitoring will be provided for the first five piles installed using an impact hammer. The results of this monitoring will be evaluated and used to determine monitoring requirements for the remainder of the project. If the sound threshold for injury to marine mammals (180 dB re: 1μPa)[1] is reached, the distance from the pile will be measured and a shut-down zone equal to that distance will be established around all subsequent piles being impact driven. A biological monitor will be present to visually observe the project area for marine mammals during all pile driving activities.

Spill Prevention

Chevron and West Coast Contractors each have existing Spill Prevention, Control and Countermeasure (SPCC) plans that will be altered, if necessary, specifically for this project. Spill kits with contents appropriate for the types of hazardous materials present will be maintained on the barge and the dock. Kits shall be equipped with enough material to provide preliminary containment for a volume of material that can reasonably be expected to spill. Booms will be available to contain any materials spilled in the water.

Attachments

Chevron U.S.A. Inc., Eureka Marine Terminal, MOTEMS Inspection Repair Plans, Sheets C-1 to C-4, Revision Date: November 18, 2014

Humboldt Bay Harbor, Recreation and Conservation District, California Environmental Quality Act Notice of Exemption, August 18, 2014

California Coastal Commission, Waiver of Coastal Development Permit Requirement/De Minimis Developments-Section 30624.7 of the Coastal Act, September 5, 2014

References

1. *Guidance Document: Sound Propagation Modeling to Characterize Pile Driving Sounds Relevant to Marine Mammal.* National Marine Fisheries Service Northwest Region and Northwest Fisheries Science Center, January 31, 2012.
2. *Concurrence and General Instruction on Use of the Underwater Noise Monitoring Template.* Fisheries Hydroacoustic Working Group, August 28, 2013.
3. *Chevron Eureka Terminal, September 2013 MOTEMS Inspection, Section 3102F, Above Water Structural Inspection Report.* Moffat & Nichol, December 6, 2013.
4. *Chevron Eureka Terminal, September 2013 MOTEMS Inspection, Section 3102F, Underwater Structural Inspection Report.* Moffat & Nichol, December 6, 2013.
5. *Best Management Practices, For the use of treated wood in aquatic and wetland environments.* Western Wood Preservers Institute, Wood Preservation Canada, Southern Pressure Treaters' Association, Souther Forest Products Association, November 1, 2011.
6. *Chevron Eureka Terminal, MOTEMS Inspection Repairs, Waiver for Limited Dock Repairs in 2014.* Pacific Affiliates, September 5, 2014.
7. *Chevron U.S.A. Inc., Eureka Marine Terminal, MOTEMS Inspection Repairs.* Project plans, Sheets C-1 to C-3. Pacific Affiliates, Revision date: September 5, 2014.
8. *Chevron Eureka Terminal, Inspection Repairs Project: Eelgrass Mitigation and Monitoring Plan.* H.T. Harvey & Associates, January 21, 2015.
9. *AWPA Standard U1-14.* American Wood Protection Association, 2014.
10. *Chevron Eureka Terminal, Underwater Noise and Marine Mammal Monitoring Plan.* H.T. Harvey & Associates, October 24, 2014.

CHEVRON U.S.A. INC.
EUREKA MARINE TERMINAL
MOTEMS INSPECTION REPAIRS

PROJECT INFORMATION

PROJECT DESCRIPTION

SHEET INDEX

ABBREVIATIONS

SITE PLAN

EUREKA

HUMBOLDT COUNTY

CALIFORNIA

GENERAL NOTES

SPECIAL INSPECTIONS

FOR PLAN REVIEW ONLY - NOT FOR CONSTRUCTION

HALF SCALE

REVISIONS	BY
8-8-14	CM
9-11-14	CM
11-18-14	CM

PACIFIC AFFILIATES
CONSULTING ENGINEERS
990 W. WATERFRONT DRIVE, EUREKA, CA 95501

TITLE SHEET

CHEVRON EUREKA TERMINAL
MOTEMS INSPECTION & REPAIRS

Date: April 21, 2014
Scale: As Noted
Drawn by: CM

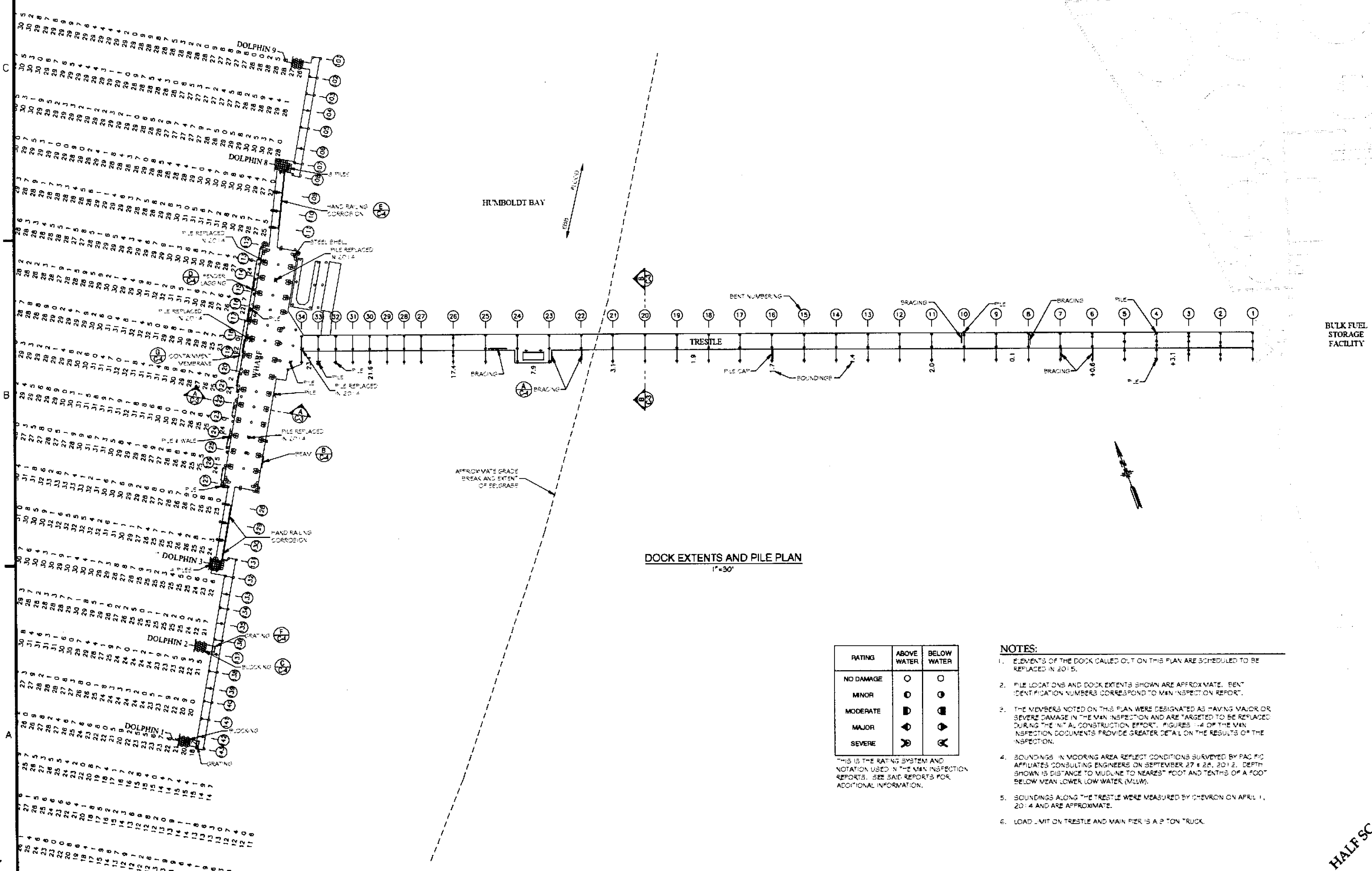
SHEET NUMBER C-1

JOB NUMBER 14-1669

12 of 15

FOR PLAN REVIEW ONLY - NOT FOR CONSTRUCTION

HALF SCALE



DOCK EXTENTS AND PILE PLAN

1"=30'

RATING	ABOVE WATER	BELOW WATER
NO DAMAGE	○	○
MINOR		
MODERATE		
MAJOR		
SEVERE		

THIS IS THE RATING SYSTEM AND NOTATION USED IN THE M&N INSPECTION REPORTS. SEE SAID REPORTS FOR ADDITIONAL INFORMATION.

NOTES:

1. ELEMENTS OF THE DOCK CALLED OUT ON THIS PLAN ARE SCHEDULED TO BE REPLACED IN 2015.
2. PILE LOCATIONS AND DOCK EXTENTS SHOWN ARE APPROXIMATE. BENT IDENTIFICATION NUMBERS CORRESPOND TO M&N INSPECTION REPORT.
3. THE MEMBERS NOTED ON THIS PLAN WERE DESIGNATED AS HAVING MAJOR OR SEVERE DAMAGE IN THE M&N INSPECTION AND ARE TARGETED TO BE REPLACED DURING THE INITIAL CONSTRUCTION EFFORT. FIGURES 1-4 OF THE M&N INSPECTION DOCUMENTS PROVIDE GREATER DETAIL ON THE RESULTS OF THE INSPECTION.
4. SOUNDINGS IN MOORING AREA REFLECT CONDITIONS SURVEYED BY PACIFIC AFFILIATES CONSULTING ENGINEERS ON SEPTEMBER 27 & 28, 2012. DEPTH SHOWN IS DISTANCE TO MUDLINE TO NEAREST FOOT AND TENTHS OF A FOOT BELOW MEAN LOWER LOW WATER (MLLW).
5. SOUNDINGS ALONG THE TRESTLE WERE MEASURED BY CHEVRON ON APRIL 1, 2014 AND ARE APPROXIMATE.
6. LOAD LIMIT ON TRESTLE AND MAIN PIER IS A 2 TON TRUCK.

REVISIONS	BY
8-8-14	CM
9-11-14	CM
11-18-14	CM

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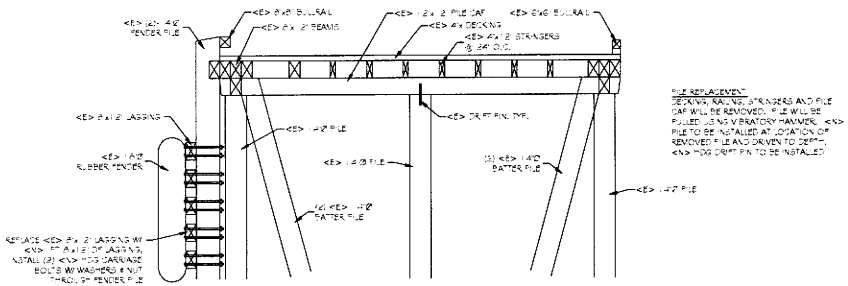
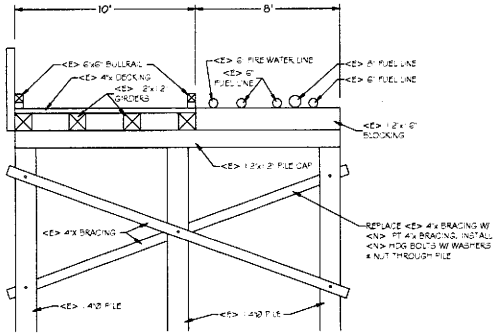
CHEVRON DOCK PLAN

CHEVRON EUREKA TERMINAL
MOTEMS INSPECTION & REPAIRS
3400 CHRISTIE STREET
EUREKA, CALIFORNIA 95501

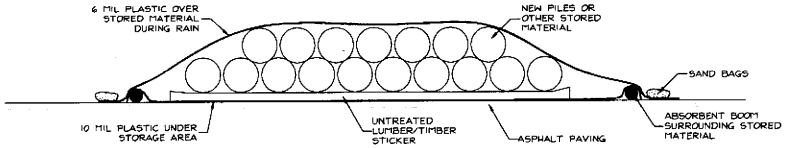
Date: April 21, 2014
Scale: As Noted
Drawn by: CM
SHEET NUMBER C-2
JOB NUMBER 14-1669



A-A TYPICAL WHARF SECTION
NOT TO SCALE



B-B TYPICAL TRESTLE SECTION
NOT TO SCALE



MATERIAL STORAGE CONTAINMENT
NOT TO SCALE

NOTE:
LANDSIDE MATERIAL STORAGE WILL BE LOCATED AT SCHNEIDER DOCK INTERMODAL FACILITY (FAIRHAVEN TERMINAL WILL BE THE ALTERNATIVE FACILITY).

MATERIALS

PILES
MATERIAL: DOUGLAS-FIR
SIZE:
- BUTT DIAMETER: 12" MIN.
- LENGTH: 40 FEET (BENTS 1-20); 65 FEET (ALL OTHER LOCATIONS); 70 FEET (DOLPHINS)
- TAPER: 1/4" PER 1' FROM MIN. DIA.
- PRESSURE TREATMENT: AMMONIACAL COPPER ZINC ARSENATE (ACZA)
- RETENTION: 0.6 LBS/CF*
- PENETRATION: 0.5 INCH
- COATING: SPEEDGUARD MARINE GRADE POLYUREA COATING (EA375-GB)
- COVERAGE: 5 FEET BELOW MUDLINE TO TOP OF PILE
- THICKNESS: 200 MIL AVERAGE, ±20% TOLERANCE
- COLOR: BLACK

HARDWARE
MATERIAL: MILD STEEL, TYPE 304 OR 316 STAINLESS STEEL MATCH EXISTING
SIZE: MATCH EXISTING
COATING: HOT DIPPED GALVANIZED PER ASTM A-153 (NOT REQUIRED FOR STAINLESS)

NOTE: VALUES SHOWN ARE MINIMUMS

PERMIT CONDITIONS

NOTE: THIS IS NOT INTENDED TO BE AN ALL INCLUSIVE LIST OF PERMIT CONDITIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW THE CONDITIONS OF ALL PERMITS PRIOR TO COMMENCING CONSTRUCTION.

GENERAL
1. UNDERWATER WORK SHALL BE PERFORMED BETWEEN AUGUST 1 AND OCTOBER 15 OF EACH YEAR COVERED IN THE PROJECT PERMITS.
2. AN EFFORT SHALL BE MADE TO REMOVE AND INSTALL PILES DURING LOW TIDES. PILES TO BE REPLACED IN SHALLOW INTERTIDAL AREAS SHALL BE WORKED ON DURING HIGH TIDES TO ALLOW BARGE TO FLOAT ABOVE GROUND LEVEL.
3. A MAXIMUM OF 24 PILES ARE ALLOWED TO BE REPLACED PER YEAR, AND A MAXIMUM OF 100 PILES OVER THE FIVE YEAR LIFE OF THE PERMIT ARE ALLOWED TO BE REPLACED.
4. EQUIPMENT USED OVER THE WATER WILL UTILIZE BIODIESEL AND VEGETABLE BASED HYDRAULIC OIL.

PILE DRIVING
1. PILES SHALL BE REMOVED BY VIBRATORY HAMMER. IF A PILE IS NOT ABLE TO BE REMOVED, IT WILL BE CUT OFF ONE-FOOT BELOW THE MUDLINE. THE NEW PILE SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE CUT OFF PILE.
2. PROVISIONS OF UNDERWATER NOISE AND MARINE MAMMAL MONITORING PLAN, BY H.T. HARVEY & ASSOCIATES, DATED SEPTEMBER 11, 2014 (OR LATEST REVISION), SHALL BE FOLLOWED AT ALL TIMES.
3. NEW PILES TO BE INSTALLED USING "SOFT START" APPROACH (SLOWLY RAMPING UP THE ENERGY OF THE HAMMER) SHALL BE USED DURING IMPACT PILE DRIVING TO ALLOW FISH TIME TO TRAVEL BEYOND THE SPHERE OF INFLUENCE BEFORE THE HAMMER IS RUN AT FULL ENERGY.
4. A WOOD, PLASTIC AND/OR RUBBER CUSHION BLOCK(S) SHALL BE USED BETWEEN THE HAMMER AND PILE TO DAMPEN THE NOISE GENERATED BY THE IMPACT HAMMER.

EELGRASS
1. ALL CONDITIONS OF THE EELGRASS MITIGATION AND MONITORING PLAN, BY H.T. HARVEY & ASSOCIATES, DATED AUGUST 26, 2014 (OR LATEST REVISION), SHALL BE IMPLEMENTED AT ALL TIMES WHEN WORK IN POTENTIAL EELGRASS HABITAT IS PERFORMED.
2. A BIOLOGICAL MONITOR WILL BE PRESENT DURING WORK IN THE SHALLOW INTERTIDAL AREA TO OBSERVE ANY IMPACTS TO EELGRASS HABITAT, DOCUMENT SPUD PLACEMENT LOCATIONS.
3. WHERE POSSIBLE, BARGE SPUDS SHALL BE DEPLOYED IN AREAS VOID OF EELGRASS.

CONSTRUCTION NOTES

1. CONSTRUCTION AND DEMOLITION ACTIVITIES ARE TO BE COMPLETED IN COMPLIANCE WITH THE CONDITIONS OF THE PROJECT PERMITS. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW THE CONDITIONS OF ALL PERMITS PRIOR TO COMMENCING CONSTRUCTION.
2. ALL WORK TO BE CONDUCTED IN ACCORDANCE WITH CHEVRON HEALTH AND SAFETY PLAN REQUIREMENTS. CHEVRON AND CONTRACTOR ARE RESPONSIBLE FOR MAINTAINING SPILL RESPONSE PLANS AND SPILL KITS ON SITE FOR DURATION OF PROJECT.
3. WHEN NOT IN USE, THE BARGE SHALL BE MOORED IN DEEP WATER, AWAY FROM POTENTIAL EELGRASS HABITAT.
4. UNDER NO CIRCUMSTANCE SHALL THE BARGE (EXCLUDING THE SPUDS) BE ALLOWED TO MAKE CONTACT WITH THE GROUND SURFACE.
5. CONTRACTOR SHALL MAKE ALL REASONABLE EFFORTS TO DIRECT DEBRIS GENERATED ONTO THE BARGE OR DOCK AND SHALL CLEAN THESE MATERIALS UP AS NEEDED TO KEEP THEM FROM ENTERING THE WATER. CONTRACTOR SHALL PROVIDE A CONTAINMENT BOOM AROUND PILES TO CATCH DEBRIS THAT DOES ENTER THE WATER. DEBRIS SHALL BE REMOVED AS NEEDED, BUT ON A DAILY BASIS AT MINIMUM.
6. PRESSURE TREATED MEMBERS SHALL BE STORED IN A CONTAINED AREA WHILE STORED ON SHORE AND WHILE ON THE BARGE. A COVERING SHALL BE PROVIDED DURING PRECIPITATION.
7. NEW PILES SHALL BE COATED WITH SPEEDGUARD MARINE GRADE POLYUREA COATING PER THE SPECIFICATIONS IN THE MATERIALS SECTION OF THESE PLANS.
8. NEW CABLE WRAPS SHALL BE 3/4" GALVANIZED WIRE ROPE AND SHALL BE TENSION WRAPPED TEN TIMES AROUND THE PILE BUNDLE IN NEAT TIGHT ROWS. EACH CABLE SHALL BE STAPLED ON EACH PILE.
9. ALL BOLT HOLES SHALL BE CAREFULLY ALIGNED AND SHALL BE BORED FROM ONE SIDE ONLY. BOLT HOLES SHALL BE BORED TO A TIGHT CLEARANCE FIT AND SHALL NOT BE OVERSIZED.
10. ALL BOLTS SHALL BE HOT DIPPED GALVANIZED STEEL AND SHALL BE INSTALLED WITH GALVANIZED STEEL WASHERS (2 EACH) AND NUTS (1 EACH). BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND BETWEEN TWO AND FOUR BOLT DIAMETERS BEYOND THE NUT. CUT ENDS OF BOLTS SHALL BE TREATED TO RESIST CORROSION.
11. ALL BOLT HEADS THAT ARE EXPOSED TO THE FACE OF THE PIER WHERE THE BARGE MOORS SHALL BE CARRIAGE HEAD TYPE AND THE PILES SHALL NOT BE COUNTERSUNK.
12. ALL BOLT HOLES THAT ARE NOT USED (EITHER EXISTING HOLES THAT CAN NOT BE REUSED, OR HOLES BORED BY MISTAKE) SHALL BE FILLED WITH PRESSURE INJECTED EPOXY FROM THE BOTTOM OF THE HOLE TO THE TOP.
13. CONTRACTOR IS RESPONSIBLE FOR COLLECTION AND DISPOSAL OF ALL WASTE MATERIALS.

PRESERVATIVE TREATED LUMBER BEST MANAGEMENT PRACTICES

1. PRESERVATIVE-TREATED WOOD USED IN CONSTRUCTION OF THE PROJECT MUST MEET THE AMERICAN WOOD PROTECTION ASSOCIATIONS (AWPA) WOOD PRESERVATIVE STANDARDS, SPECIFICALLY AWPA STANDARD U1, THE PRIMARY SPECIFICATION FOR PRESSURE-TREATED WOOD, AS WELL AS THE WESTERN WOOD PRESERVERS INSTITUTES (WWPI) BEST MANAGEMENT PRACTICES, FOR THE USE OF TREATED WOOD IN AQUATIC AND WETLAND ENVIRONMENTS.
2. ACZA PRESERVATIVE-TREATED WOOD SHALL BE TREATED TO THE PROPER PRESERVATIVE RETENTION STANDARD (I.E., AMOUNT OF PRESERVATIVE) SPECIFIED BY THE AWPA FOR THE APPROPRIATE AWPA USE CATEGORY. THE ACZA PRESERVATIVE-TREATED WOOD USED FOR THE PROJECT SHALL NOT HAVE A PRESERVATIVE RETENTION EXCEEDING THE MINIMUM SPECIFIED FOR THE APPROPRIATE USE CATEGORY, IN ORDER TO MINIMIZE THE AMOUNT OF PRESERVATIVE PRESENT IN TREATED WOOD ON-SITE THAT MAY SUBSEQUENTLY LEACH INTO THE MARINE ENVIRONMENT.
3. THE ACZA PRESERVATIVE-TREATED WOOD SHALL BE INSPECTED ON-SITE TO ASSURE IT IS FREE OF VISIBLE SURFACE RESIDUES OR BLEEDING OF PRESERVATIVES. IF ACZA PRESERVATIVE-TREATED WOOD HAS A NOTICEABLE AMMONIA ODOR, THEN IT HAS NOT BEEN PROPERLY PROCESSED OR AGED, AND THE PRESERVATIVE MAY THUS NOT BE PROPERLY FIXED, THEREFORE THE LUMBER SHALL NOT BE USED.
4. THE ACZA PRESERVATIVE-TREATED WOOD SHALL BE STORED AWAY FROM THE WATER UNTIL IT IS NEEDED FOR INSTALLATION. THE WOOD SHALL BE STACKED ABOVE THE GROUND, AND THE AREA SHALL HAVE ADEQUATE DRAINAGE TO PREVENT THE WOOD FROM BEING SUBJECTED TO STANDING WATER. IF THERE IS A CHANCE OF PRECIPITATION, THE WOOD SHALL BE STORED UNDER A COVERED AREA OR TARP TO MINIMIZE EXPOSURE TO PRECIPITATION.
5. WHENEVER POSSIBLE, CUTTING OR DRILLING OF ACZA PRESERVATIVE-TREATED WOOD SHALL BE PERFORMED AT A SITE A MINIMUM OF 100 FEET AWAY FROM THE WATER, TO MINIMIZE TRANSPORT OF SAWDUST BY WIND. THE RESULTING SAWDUST, DRILL SHAVINGS, AND WOOD SCRAPS SHALL BE CONTAINED AND COLLECTED, IN ORDER TO PREVENT THE DISCHARGE OF PRESERVATIVE-TREATED WOOD TO THE MARINE ENVIRONMENT. IF IT IS ESSENTIAL THAT TREATED WOOD BE CUT OR DRILLED IN PLACE ON THE DOCK, ALL SAWDUST, SHAVINGS, AND WOOD SCRAPS GENERATED DURING CONSTRUCTION MUST BE COLLECTED AND PREVENTED FROM ENTERING THE WATER BELOW.
6. THE PROCEDURES OUTLINED IN AWPA STANDARD M4, STANDARD FOR THE CARE OF PRESERVATIVE-TREATED WOOD PRODUCTS, SHALL BE FOLLOWED WHEN APPLYING A TOPICAL (NON-PRESSURE TREATED) PRESERVATIVE TO THE CUT ENDS OF TREATED WOOD. WHENEVER POSSIBLE, APPLICATION OF A TOPICAL PRESERVATIVE TO TREATED WOOD SHALL BE PERFORMED AT A SITE A MINIMUM OF 100 FEET AWAY FROM THE WATER, EQUIPPED WITH CONTAINMENT FOR POTENTIAL DRIPS AND SPILLS, IN ORDER TO PREVENT DISCHARGE OF THE PRESERVATIVE TO THE ENVIRONMENT. THE TOPICAL PRESERVATIVE SHALL NOT BE APPLIED IN THE RAIN. ANY EXCESS TOPICAL PRESERVATIVE SHALL BE WIPED OFF, AND THE PRESERVATIVE MUST BE ALLOWED TO FULLY DRY BEFORE THE WOOD IS USED IN CONSTRUCTION. IF A SMALL AMOUNT OF TOUCH-UP PRESERVATIVE APPLICATION MUST BE PERFORMED OVER WATER, THEN TARPS OR CONTAINERS MUST BE USED TO CAPTURE ANY POTENTIAL SPILLS OR DRIPS.

HALF SCALE

FOR PLAN REVIEW ONLY - NOT FOR CONSTRUCTION

REVISIONS	BY
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9-11-14	CM
11-18-14	CM

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DETAILS & NOTES

CHEVRON EUREKA TERMINAL
MOTEMS INSPECTION & REPAIRS
3400 CHRISTIE STREET
EUREKA, CALIFORNIA 95501
APNs: 007-071-013

Date: April 21, 2014
Scale: As Noted
Drawn by: CM

SHEET NUMBER C-3

JOB NUMBER 14-1669

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REVISIONS
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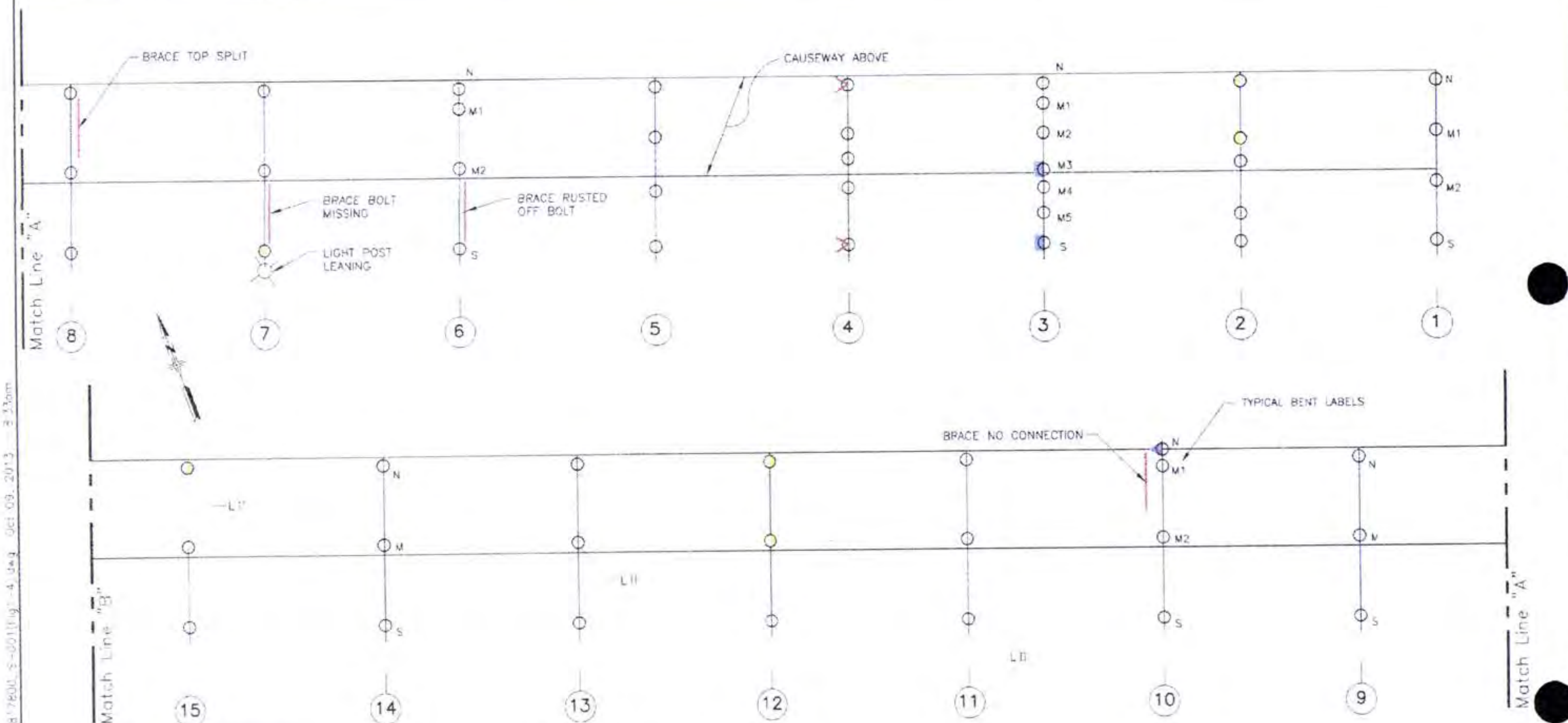
11-18-14 CM
DOCK PHOTOS
CHEVRON EUREKA TERMINAL
MOTEMS INSPECTION & REPAIRS
1000 CHESTNUT STREET
EUREKA, CALIFORNIA 95501
APN: 002-021-013
Date: April 21, 2014
Scale: As Noted
Drawn by: CM
SHEET NUMBER C-4
JOB NUMBER 14-1(669)
A. BRACING AT TRESTLE N.T.S.
B. SAGGING BEAM AT WHARF N.T.S.
C. BLOCKING AT DOLPHIN 2 N.T.S.
D. FENDER LAGGING AT WHARF N.T.S.
E. METAL HANDRAIL AT CATWALK N.T.S.
F. CATWALK GRATING AT DOLPHIN 1 N.T.S.
G. CONTAINMENT MEMBRANE N.T.S.



TRESTLE PLAN
SCALE 1"=10'

0 10' 20'
SCALE: 1"=10'

LEGEND - PILE CONDITION

RATING	ABOVE WATER	BELOW WATER
NO DAMAGE	○	○
MINOR	○	○
MODERATE	◐	◐
MAJOR	◐	◐
SEVERE	⊗	⊗

L # = PILE WITH UNDERWATER LEVEL II AND/OR III INSPECTION EFFORT

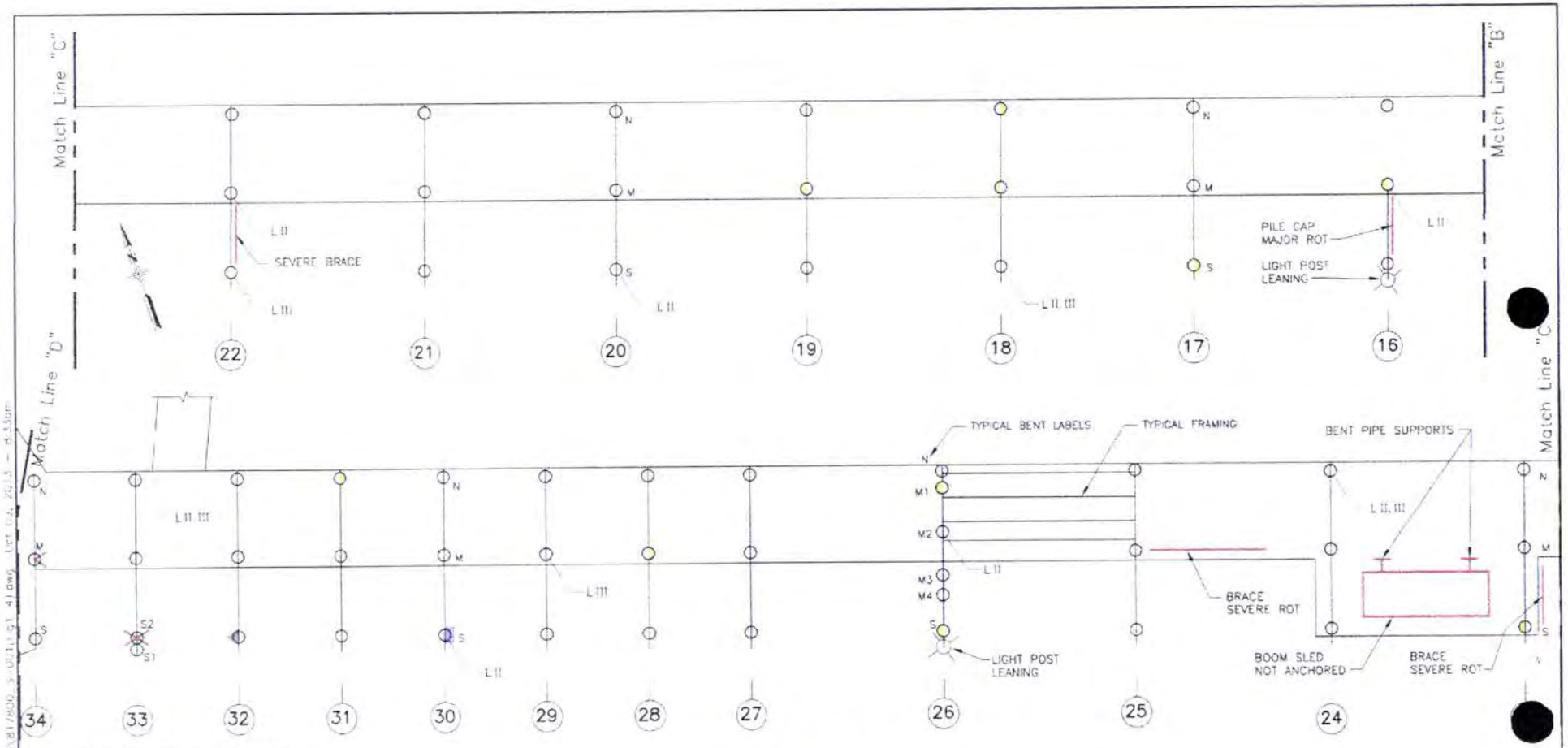
KEY PLAN

EXHIBIT NO. 4
APPLICATION NO. 1-14-0773
CHEVRON
Dock Inspection Findings
1 of 4

NOTES:

1. TRESTLE BENTS 1 TO 10 INSPECTED DURING ABOVE WATER INSPECTION ONLY.
2. FRAMING NOT SHOWN THROUGHOUT FOR CLARITY.

moffatt & nichol 1185 N. California Blvd., Suite 500 Walnut Creek, CA 94596	CHEVRON EUREKA MOTEMS ABOVE AND BELOW WATER INSPECTION FINDINGS TRESTLE PLAN	Date: 10/09/13 Figure: 1



LEGEND - PILE CONDITION

RATING	ABOVE WATER	BELOW WATER
NO DAMAGE	○	○
MINOR	○	○
MODERATE	◐	◐
MAJOR	◐	◐
SEVERE	⊗	⊗

L # = PILE WITH UNDERWATER LEVEL II AND/OR III INSPECTION EFFORT

KEY PLAN

TRESTLE PLAN
SCALE 1"=10'

NOTE:

FRAMING NOT SHOWN THROUGHOUT FOR CLARITY.

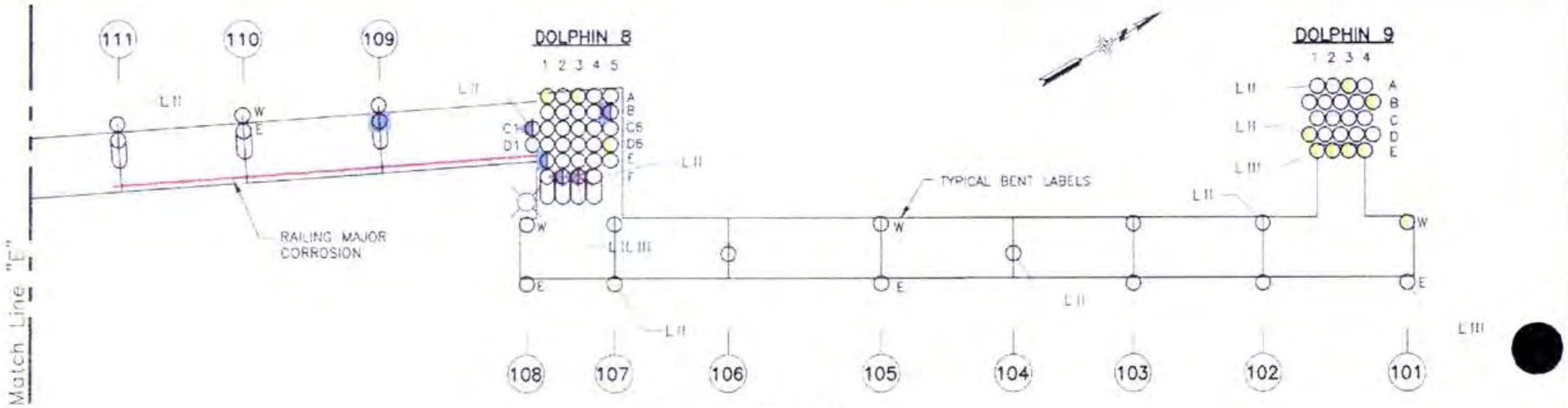
10' 0 10' 20'
SCALE: 1"=10'

moffatt & nichol
2185 N. California Blvd., Suite 500
Walnut Creek, CA 94596

CHEVRON EUREKA MOTEMS
ABOVE AND BELOW WATER INSPECTION FINDINGS
TRESTLE PLAN

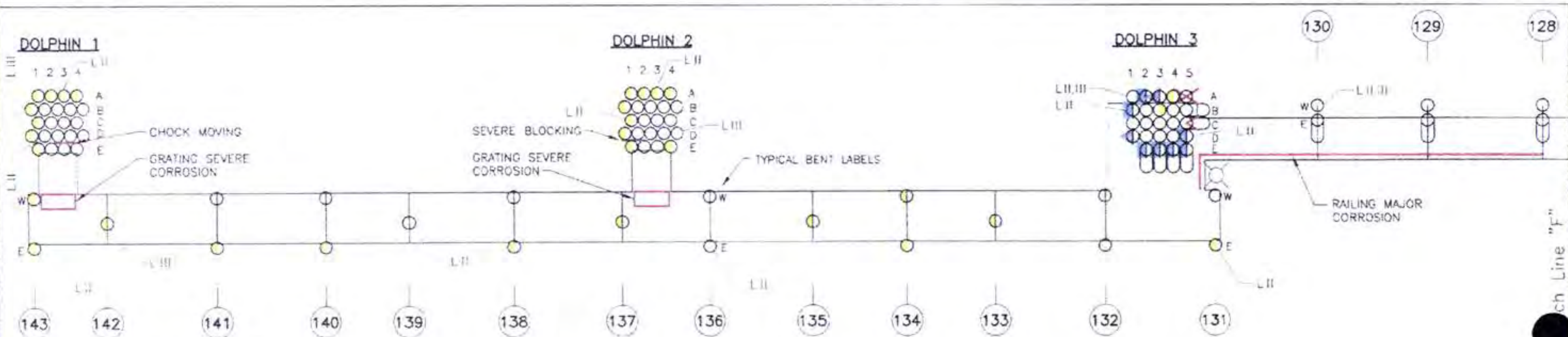
Date: 10/09/13
Figure: 2

2 of 4



NORTH WALKWAY PLAN

SCALE 1"=10'



SOUTH WALKWAY PLAN

SCALE 1"=10'

LEGEND - PILE CONDITION

RATING	ABOVE WATER	BELOW WATER
NO DAMAGE		
MINOR		
MODERATE		
MAJOR		
SEVERE		

L # = PILE WITH UNDERWATER LEVEL II AND/OR III INSPECTION EFFORT

NOTE:

FRAMING NOT SHOWN THROUGHOUT FOR CLARITY

10' 0 10' 20'

SCALE: 1"=10'

moffatt & nichol
2185 N. California Blvd., Suite 500
Walnut Creek, CA 94596

CHEVRON EUREKA MOTEMS
ABOVE AND BELOW WATER INSPECTION FINDINGS
NORTH AND SOUTH WALKWAY PLANS

Date: 10/09/13
Figure: 4

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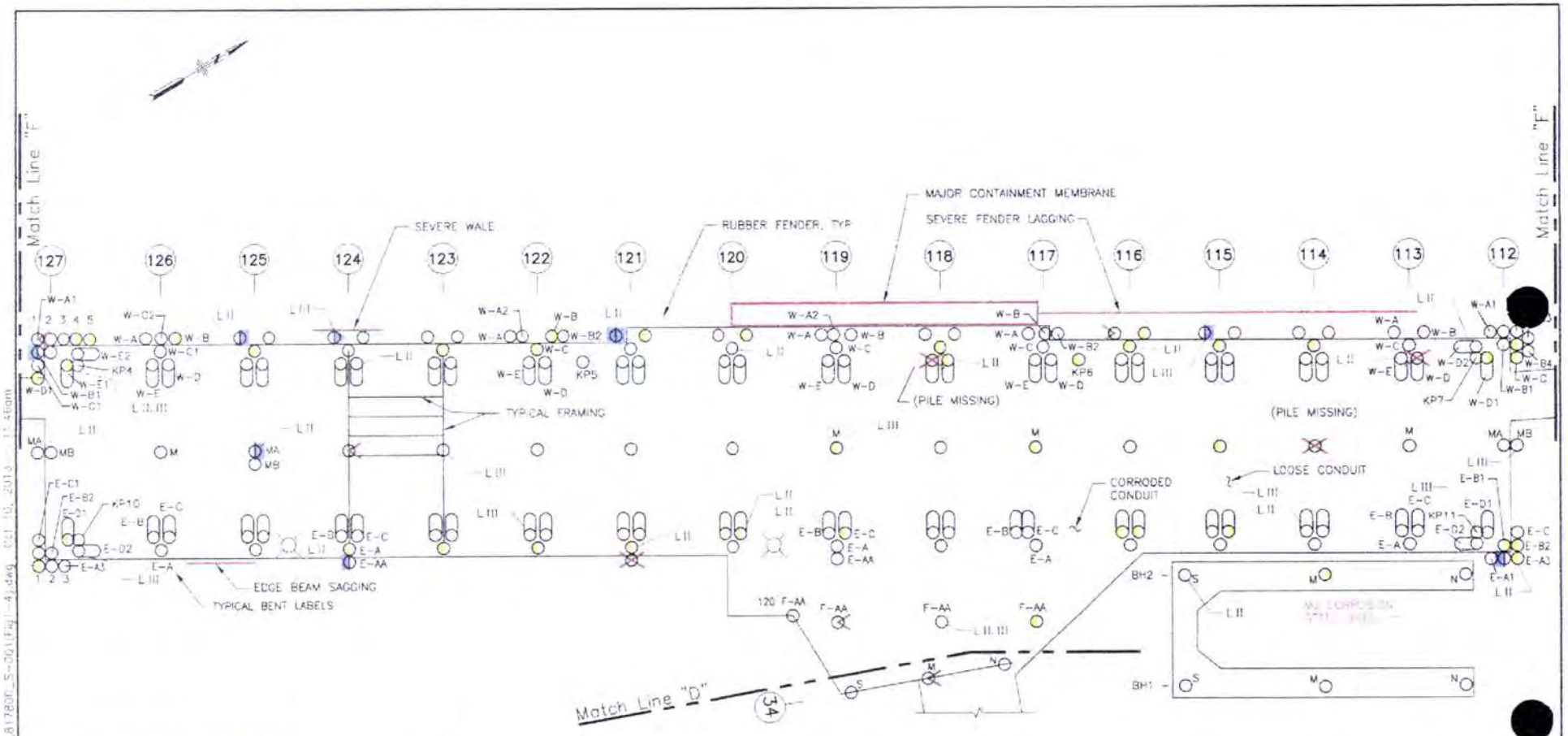
3 of 4



LEGEND - PILE CONDITION

RATING	ABOVE WATER	BELOW WATER
NO DAMAGE	○	○
MINOR	○	○
MODERATE	○	○
MAJOR	○	○
SEVERE	⊗	⊗

L # = PILE WITH UNDERWATER LEVEL II AND/OR III INSPECTION EFFORT

KEY PLAN

WHARF PLAN

SCALE 1"=10'

NOTE:

FRAMING NOT SHOWN THROUGHOUT FOR CLARITY

10' 0 10' 20'

SCALE 1"=10'

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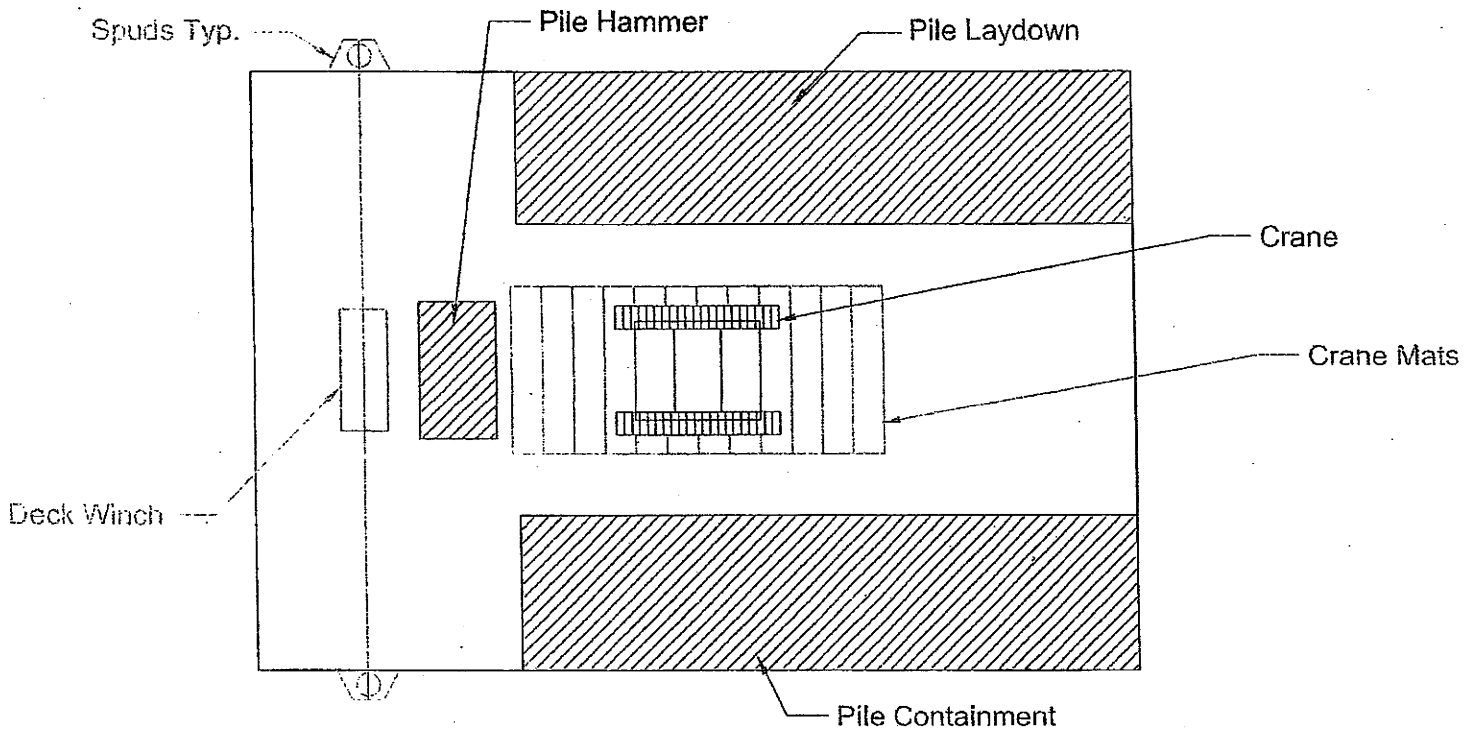
2185 N. California Blvd., Suite 500
Walnut Creek, CA 94596

CHEVRON EUREKA MOTEMS	Date: 10/09/13
ABOVE AND BELOW WATER INSPECTION FINDINGS	Figure: 3
WHARF PLAN	

4 of 4

EXHIBIT NO. 5
APPLICATION NO. 1-14-0773
CHEVRON
Barge Plan



Chevron Eureka Terminal
UNDERWATER NOISE AND MARINE MAMMAL MONITORING PLAN

Prepared by:

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January 27, 2015

INTRODUCTION

The Chevron Eureka Terminal (Terminal) consists of a timber dock situated on the tidelands of Humboldt Bay in Eureka, CA, and a bulk fuel storage facility on an adjacent upland parcel (Attachment 1, Project Description). The dock is 'T' shaped with an approximately 600 foot (ft) long trestle, 150 ft long wharfhead, and five mooring/breasting dolphins connected by timber catwalks. In September 2013, above and below water inspections were performed to assess the condition of the timber trestle and wharf. Based on these inspections, Chevron proposes to repair damaged and failing components of the trestle and wharf structure (the "Project"). This document was developed at the request of the California Coastal Commission and describes minimization measures, hydroacoustic monitoring and biological monitoring that will be implemented during repairs in order to minimize the potential for hydroacoustic effects to marine mammal and fish species.

PROJECT AREA

The Terminal (Lat. 40° 46.652, Lon. 124° 11.655) is located in Humboldt Bay on the northern California coast in the City of Eureka, Humboldt County. The terminal trestle and wharf extend from shore into the waters of Humboldt Bay approximately 400 meters north of the present mouth of Elk River. The trestle and wharf extend westward from shore through shallow intertidal areas to the margin of the dredged North Bay Channel (see Attachment 1).

PILE INSTALLATION

A maximum of 100 wooden piles will be replaced over the course of five years, with a maximum of 25 piles replaced per year and 4 piles replaced per day. Hardware, bracing, decking and other above water elements of the wharf and trestle will also be replaced as necessary. Project details are further described in Attachment 1.

The timbers used for piles will be pressure treated and sealed (Specguard's Marine Grade Polyurea coating (E-375-08)) Douglas fir. Piles will be 16 inches in diameter at the butt and 70 ft in length. Each pile will be driven approximately 20 ft into the substrate with an I.C.E. single acting diesel hammer (Model: 42S) in combination with Plasticized Blue Nylon cushion (Model: MC904P) and pile cap (Model: DCB-1, DCP-24).

UNDERWATER NOISE - MINIMIZATION MEASURES FOR FISH SPECIES

In-water sound thresholds for injury to fish species have been identified by the Fisheries Hydroacoustic Working Group (FHWG, [FHWG 2008]) (Table 1).

Table 1. Underwater sound threshold levels for disturbance/injury to fish (FHWG 2008)

Interim Criteria for Injury	Underwater Noise Threshold
Peak	206 dB re: 1μPa (for all size of fish)
Cumulative SEL	187 dB re: 1μPa2-sec – for fish ≥ 2 grams 183 dB re: 1μPa2-sec – for fish <2 grams

Based on information compiled by the California Department of Transportation (2007), an impact pile driving project in San Francisco Bay involving installation of 12-14 inch timber piles generated peak sound levels of 180 dB re: 1μPa at a distance of 10m and 170 dB re: 1μPa at a distance of 20m. This sound level is well below the peak level identified by FHWG (2008) as potentially resulting in injury to fish (Table 1) and the Project is not expected to reach this peak level.

The Sound Exposure Level (SEL), identified by the same project in San Francisco Bay (FHWG 2008), was 160 dB re: 1μPa^2-sec at 10 meters. Based on the Project's estimated 200 blows per day (Appendix 1), this would result in a cumulative SEL of 183 dB re: 1μPa^2-sec at 10 meters. Based on the FHWG (2008) criteria (Table 1), this could potentially result in injury to fish in close proximity to pile driving (e.g., within 15 meters).

To minimize the potential for injury to fish, the following minimization measures will be taken:

- In-water pile driving and other underwater noise generating activities will be limited to the period of August 1 to October 15, when potentially affected sensitive fish species (e.g., salmonids) are least likely to be present in the area.
- All impact pile driving activities will incorporate a "soft start" approach whereby the piles are lightly tapped before the full hammer strength is applied. The first few taps of the hammer on the pile should deter fish away from the piles before full impact hammer strength is applied, reducing the potential for fish to be present and exposed to potential injury during full hammer strikes.
- When driving piles, a pile cap and cushion will be used to minimize underwater noise generated by hammer strikes.
- Hydroacoustic testing of pile driving will be conducted and if the peak criteria threshold (Table 1) is reached then pile driving will cease and a bubble curtain or other sound attenuation system will be implemented and tested to ensure the peak criteria is not again reached, and
- If the hydroacoustic testing indicates that the cumulative SEL threshold (Table 1) may be reached then a sound attenuation system will be implemented and/or the number of pile strikes per day will be limited so as to ensure the cumulative SEL threshold is not reached.

Any exceedance of the criteria in Table 1 will be reported to the Coastal Commission within 24 hours.

UNDER WATER NOISE - MONITORING AND MINIMIZATION MEASURES FOR MARINE MAMMAL SPECIES

Table 2 depicts underwater sound thresholds identified by NMFS (2012a) related to potential disturbance or injury to marine mammals based on peak sound generation during pile driving.

Table 2. Underwater sound threshold levels for disturbance/injury to marine mammals (NMFS 2012a)

	Underwater Noise Threshold (dB re: 1µPa)		
Species	Vibratory Pile Driving Disturbance Threshold	Impact Pile Driving Disturbance Threshold	Injury Threshold
Pinnipeds and sea otters	120 dB_{RMS}	160 dB_{RMS}	190 dB_{RMS}
Cetaceans	120 dB_{RMS}	160 dB_{RMS}	180 dB_{RMS}

As described above, similar pile driving activities in San Francisco Bay produced peak sound levels of 180 dB re: 1µPa at a distance of 10m and 170 dB re: 1µPa at a distance of 20m. To insure injury does not occur to marine mammals, hydroacoustic monitoring will be conducted to determine the distance from pile driving at which underwater sound levels caused by pile driving reach 180 dB re: 1µPa occurs (assuming it does). If this sound level is reached, then a shut-down zone equal to that distance will be established around each pile being driven and pile driving operations will be shut down if a marine mammal is within that zone. If a shut-down zone needs to be established because sound levels caused by pile driving reach 180 dB re: 1µPa, then a qualified biological monitor will be present throughout all pile driving activities to visually search for marine mammals in the shut-down zone and to alert equipment operators as needed. If 180 dB re: 1µPa is not reached, a biological monitor will not be required to be present for the remainder of the project. Hydroacoustic and marine mammal monitoring are described in more detail below.

Marine Mammal Monitoring

If shutdown zones are established because the 180 dB re: 1µPa threshold is reached, then a marine mammal observer will be present during all impact pile driving for the duration of the Project. The observer will visually scan the action area for the presence of marine mammals at least 30 minutes prior to and continuously throughout periods of impact pile driving activities. If any marine mammal is sighted within the shutdown zone prior to pile-driving, the operator (or other authorized individual) will delay pile driving activities until the animal has moved outside the shutdown zone or the animal is not re-sighted within 15 minutes for pinnipeds or 30 minutes for cetaceans. If any marine mammal is about to enter or is observed within the shutdown zone during pile driving, the pile driving activities will be shut down until the animal has moved outside the shutdown zone, or the animal is not re-sighted within 15 minutes for pinnipeds or 30 minutes for cetaceans.

HYDROACOUSTIC MONITORING

At a minimum, hydroacoustic monitoring will be conducted for five piles. After monitoring for these piles is complete, the monitoring results will be provided to the Coastal Commission and a recommendation will be made as to whether (1) hydroacoustic monitoring should continue in order to further identify sound levels and inform Project implementation, or (2) hydroacoustic monitoring can be discontinued. For example, if measured sound levels are substantially lower than predicted, a recommendation would be made that the Project can proceed without further hydroacoustic monitoring, with little risk to fish and marine mammal species. However, if measured sound levels approach thresholds depicted in Tables 1-2 then a recommendation would be made to continue hydroacoustic monitoring to ensure that these thresholds are not reached. Coastal Commission staff will review the data and recommendation and provide a determination as to whether further hydroacoustic monitoring will be required. Hydroacoustic monitoring of each pile being driven will continue until Coastal Commission staff determines that it is no longer required.

Five piles proposed to be monitored are located on dolphins approximately 150 ft from intertidal mudflats and 500-600 ft from shore (Table 3, Figure 1). However, if tides and conditions allow, only three of these piles will be monitored, along with two piles from a more shallow area. This would provide a more representative sample. The substrate at this location, and all sites where piles will be replaced, is composed of sand and silt.

Table 3. Piles to be Monitored during Hydroacoustic Monitoring

Structure	Water Depth (MLLW[1])	Structural Components to be Installed
Chevron Eureka Terminal – wharf, Dolphin 8	28 ft	3, 16-inch diameter pressure-treated Douglas fir timbers
Chevron Eureka Terminal – wharf, Dolphin 3	24 ft	2, 16-inch diameter pressure-treated Douglas fir timbers

[1] Mean lower low water

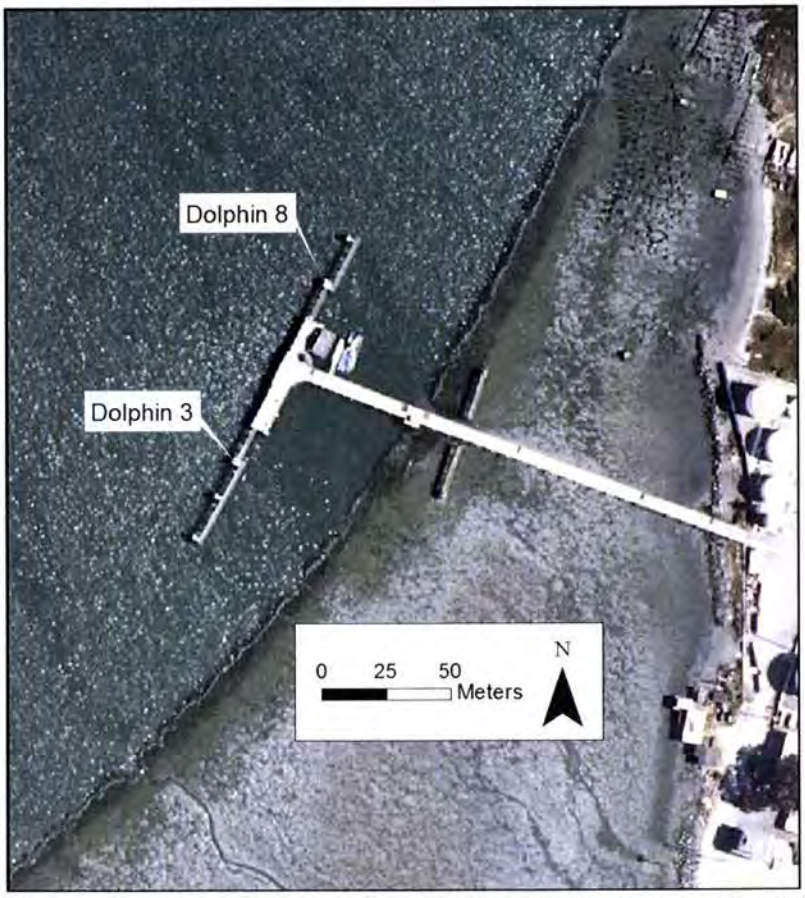

Figure 1. Initial sound testing will be conducted for Dolphin 3 and Dolphin 8 piles. One hydrophone will be placed at 10 meters from each pile being driven and a second hydrophone will be placed at varying distances in order to determine the distance (if any) that the thresholds depicted in Tables 1 and 2 may be reached.

Sound level measurements will be taken with Larson-Davis 831 integrating- data logging sound level meters (SLM) and Reson TC4013 hydrophones. The SLM will be set to record at 1 second histogram intervals. The hydrophone calibration will be performed using a standard calibration tone provided by a GRAS 42AA calibration piston phone and hydrophone adapter. The hydrophone will be placed mid-depth of the water depth.

Two hydrophones will be used. One will be placed at 10 meters from each pile being driven during sound testing. The second will be placed at varying distances to establish the maximum distance at which the thresholds depicted in Tables 1 and 2 could be reached; identify the shutdown zone described above (if needed); and determine the relationship between sound levels and distance from the piles. A weighted tape measure will be used to determine the depth of the water. The hydrophones will be attached to a nylon cord, a steel chain, or other proven anti-strum features if the current is swift enough to cause strumming of the line. The nylon cord or chain will be attached to an anchor that will keep the line the appropriate distance from each pile. The nylon cord or chain will be attached to a float or tied to a static line at the surface. Distances between hydrophones and pile driving will be measured by a tape measure, where possible, or a range-finder. The acoustic path (line of sight) between the pile and the hydrophone(s) will be unobstructed in all cases.

If tidally-influenced currents are present during sound measurement collection, appropriate measures will be taken to ensure that the flow-induced noise at the hydrophone will not interfere with the recording and analysis of the relevant sounds (NMFS 2012b). As a general rule, current speeds of 1.5 meters/second (2.9 knots) or greater are expected to generate significant flow-induced noise, which may interfere with the detection and analysis of low-level sounds, such as the sounds from a distant pile driver or background sounds. If it becomes necessary to reduce the flow-induced noise at the hydrophone, a flow shield will be installed around the hydrophone to provide a barrier between the irregular, turbulent flow and the hydrophone. A flow shield will be used when the tidal flow is expected to approach 1.5 meters/sec (2.9 knots). If no flow shield is used, the current velocity will be measured and a correlation between the levels of the relevant sounds (background or pile driving) and current speed will be made to determine whether the data is valid and can be included in the analysis.

The onsite inspector/contractor will inform the acoustics specialist when pile driving is about to start to ensure that the monitoring equipment is operational. Underwater sound levels will be continuously monitored during the entire duration of each pile being driven during hydroacoustic monitoring with a minimum one-third octave band frequency resolution. Peak and Root-Mean-Square (RMS) pressures will be reported in dB (re:1 μPa). The SEL will be reported in dB (re: 1 $\mu Pa^2 \cdot sec$).

Prior to, and during, acoustic monitoring for pile driving, environmental data will be gathered, such as water depth and tidal level, wave height, and other factors that could contribute to influencing the underwater sound levels (e.g., aircraft, boats, etc.). Start and stop time of each pile driving event will be logged.

REPORTING

As described above in the Hydroacoustic Monitoring section, an initial report depicting hydroacoustic monitoring results will be submitted to the Coastal Commission. Additionally, a draft report including data collected and summarized from all monitoring locations and times will be submitted to the Coastal Commission within 90 days of the completion of hydroacoustic monitoring. The results will be summarized in graphical form and include summary statistics and time histories of impact sound values for each pile. A final report will be prepared and submitted within 30 days following receipt of comments on the draft report from the Coastal Commission. The report shall include:

1. The distance at which any of the thresholds identified in Tables 1 and 2 are exceeded (if any are).
2. The total number of strikes to drive each pile and the total number of strikes during each 24 hour period when pile driving occurs.
3. Size and type of piles.
4. The distance between hydrophones and piles being driven.
5. The depth of the hydrophones and depth of water at hydrophone locations.
6. The distance from the pile being driven to the water's edge.
7. The depth of water in which the piles were driven.
8. The depth into the substrate that the piles were driven.
9. The physical characteristics of the bottom substrate into which the piles were driven.
10. The results of the hydroacoustic monitoring.
11. The distance at which peak values exceed the respective threshold values.
12. A description of any observable fish and marine mammal behavior in the immediate area.

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NMFS, 2012a. Guidance Document: Sound Propagation Modeling to Characterize Pile Driving Sounds Relevant to Marine Mammals. Memorandum: NMFS Northwest Fisheries Science Center – Conservation Biology Division and Northwest Regional Office – Protected Resources Division, January 31, 2012.

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H.T. HARVEY & ASSOCIATES

Ecological Consultants

Chevron Eureka Terminal Inspection Repairs Project: Eelgrass Mitigation and Monitoring Plan

Final Report

HTH Project No. 3606-01

Prepared for:

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EXHIBIT NO. 7
APPLICATION NO. 1-14-0773
CHEVRON
Excerpts from Eelgrass Mitigation & Monitoring Plan
1 of 41

Revised 21 January 2015

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Executive Summary

This document has been prepared to provide a means for assessing the impacts on eelgrass habitat of proposed repairs to the Chevron Eureka Terminal and for defining appropriate mitigation measures and monitoring requirements. The terminal is located in Eureka, California, on the eastern shoreline of Humboldt Bay in the Entrance Bay channel. Mudflats north and south of the terminal's trestle support native eelgrass (*Zostera marina*). Eelgrass provides important ecological and economic benefits, and is protected by California and federal regulations. Any loss of eelgrass habitat, including temporal loss, attributable to project actions requires compensatory mitigation under these regulations.

Chevron is proposing to perform necessary structural repairs to the timber trestle and wharf over a 5-year period. In 2014, work was initiated on the wharf in subtidal regions too deep to support eelgrass. Work on the trestle in shallower regions that support eelgrass is proposed for 2015–2018. All work will be conducted during a work window of 1 August–15 October. There will be no expansion of the existing structure. In areas containing eelgrass habitat, a maximum of 19 trestle piles might be replaced. Pile replacement and associated work on the trestle will be performed from a barge that will access the trestle from the south side, and be positioned perpendicular to the trestle. In eelgrass habitat, work will take place only when tides permit the barge to float. The barge will be anchored by placing two spud poles at each location where repairs are needed.

Direct and indirect impacts on eelgrass habitat that could result from project actions are discussed in this plan. Two project actions, pile replacement and barge anchoring, could temporarily disturb small, localized areas of substrate located in eelgrass habitat. The actions are not expected to render the substrate unsuitable for eelgrass growth. If small areas of eelgrass turions are inadvertently uprooted or crushed, it is expected that eelgrass will recover sufficiently through natural vegetative expansion and seedling recruitment; however it is unknown how much time will be needed to achieve recovery. Delays in recovery constitute a temporal loss of eelgrass habitat. Therefore, if there is any detectable decline in eelgrass areal extent, cover, or turion density the first growing season following each construction year and the decline can be attributed to project actions, compensatory mitigation will be implemented.

Monitoring of the project site and a nearby reference site will be conducted to help determine whether project actions result in impacts requiring compensatory mitigation. Pre- and post- construction monitoring surveys will be conducted as needed in 2015–2019, a period that includes one year of post-construction monitoring. Surveys will be conducted in July (during the active eelgrass growing season) and may represent both post-construction conditions for the prior work year and pre-construction conditions for the current year. For each year in which a pre- and/or post-construction season survey will be needed, eelgrass beds will be remapped and eelgrass parameters will be resampled. Survey results will be compared between project and reference sites to help determine whether changes in eelgrass characteristics are attributable to natural variation or were caused by project actions. To further assess potential impacts associated with pile

replacement and barge anchoring actions, the project site will be inspected as soon as feasible (depending on tides and other factors) following construction. These post-construction inspections, which will include georeferenced photodocumentation, will help determine the extent of substrate disturbance caused by both pile replacement and spud pole placement, as this may be difficult to see by the following growing season.

Avoidance and minimization measures will be used during the project to avoid impacts to the extent possible. Each year, the amount of mitigation required will be determined based on evidence of visible scarring and/or detectable losses in eelgrass areal extent, percent cover, or turion density that are determined to be attributable to project actions. Also, a mechanism is provided in this plan for addressing any unanticipated significant impacts that may occur.

To the extent possible, Chevron will mitigate for potential losses to eelgrass habitat prior to impacts to avoid any temporal loss. Some mitigation measures will be conducted in 2015 and mitigation monitoring will be conducted concurrent with project implementation. During the course of the project, if there is an anticipated need for additional mitigation, then mitigation measures will be performed prior to impact if possible. If at any time, impacts occur in excess of mitigation already performed, then mitigation measures will be performed within one year of impact determination. Mitigation will be accomplished by debris removal. The mitigation ratio applied will vary from 1:1 to 2:1 depending on the type of mitigation and whether mitigation is performed prior to or after impacts. In 2015, on-site abandoned structures south of the trestle will be removed. Additionally in 2015, four concrete floats considered to be hazardous marine debris will be removed from Humboldt Bay. If additional mitigation is needed in the future, on-site abandoned structures north of the trestle will be removed. Further opportunities for mitigation exist just north of the project site associated with the City of Eureka's Parcel 4, and these opportunities will be explored in more detail should the need arise. Using an adaptive approach, alternate forms of mitigation may be used if mutually agreed upon by Chevron and all permitting agencies involved at any time during the course of the project.

Eelgrass monitoring reports will be submitted to permitting agencies 15 November every year 2016–2019 presenting the results of monitoring conducted the previous year (including pre-construction, post-construction and/or mitigation monitoring as needed). Construction update reports describing specific plans for the current construction year and highlighting any work potentially affecting eelgrass habitat will be submitted to permitting agencies every 15 February. A final report summarizing the full set of eelgrass results will be submitted within three months of completing all pre-construction, post-construction and/or mitigation monitoring associated with the project.

Section 1.0 Introduction

In 2014, Chevron initiated a 5-year project to perform needed structural repairs on the Chevron Eureka Terminal timber trestle and wharf in Eureka, California, as described by Pacific Affiliates (2014). The terminal is located on the eastern shoreline of Humboldt Bay in the Entrance Bay channel. The project was initiated with authorization to proceed from the California Coastal Commission; the North Coast Regional Water Quality Control Board; the U.S. Army Corps of Engineers; and the Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD). All 2014 work was performed in subtidal regions too deep to support eelgrass (*Zostera marina*); however, proposed trestle repairs in 2015–2018 include working in shallower habitats that support eelgrass. This eelgrass mitigation and monitoring plan is needed prior to initiation of work that may impact eelgrass habitat.

Eelgrass provides important ecological and economic benefits, including stabilization of bottom sediments, a substrate for epiphytic algae and invertebrates, food for waterfowl, and rearing habitat for many species of fish and shellfish (Phillips 1984, Moore and Short 2006). To prevent further loss or degradation of this important habitat, eelgrass beds are protected by California and federal regulations. Vegetated shallows that support eelgrass are considered special aquatic sites under the Clean Water Act (CWA) Section 404(b)(1) guidelines (Title 40, Code of Federal Regulations, Section 230.43). Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, eelgrass is designated as Essential Fish Habitat (EFH) for various federally managed fish species by the *Pacific Coast Groundfish* and *Pacific Coast Salmon Fisheries Management Plans* (FMPs) (PFMC 2008). Eelgrass is also considered a habitat area of particular concern for various species within the Pacific Coast Groundfish FMP. This designation is a subset of EFH designation; such areas are rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) developed a statewide policy to establish and support a goal of protecting eelgrass and its habitat functions, including spatial coverage and density of eelgrass habitats (NMFS 2014). The NMFS (2014) policy is congruous with the approach taken in the federal CWA guidelines and in the State of California Wetland Conservation policies.

The purpose of this document is to provide a means for assessing the impacts on eelgrass habitat of the proposed Chevron Eureka Terminal repair project and defining appropriate mitigation measures and monitoring requirements. The plan is needed to receive regulatory authorization prior to performing work in areas supporting eelgrass. The proposed methods are generally consistent with NMFS (2014) guidelines, with modifications as recommended by with local permitting/advisory agency staff John Dixon and Cristin Kenyon (California Coastal Commission), Gil Falcone (North Coast Regional Water Quality Control Board), and Rebecca Garwood (California Department of Fish and Wildlife [CDFW]).

1.1 Report Organization

This *Eelgrass Mitigation and Monitoring Plan* is organized as follows:

- The remainder of Section 1 describes the proposed project and its environmental setting.
- Section 2 discusses direct and indirect impacts on eelgrass habitat that could result from project actions. Potential impacts associated with two project actions, pile replacement and barge anchoring, are described in detail.
- Section 3 of this report prescribes monitoring protocol. Survey areas at the project site and a nearby reference site are defined; methods for mapping eelgrass are specified; survey parameters are described; and a monitoring schedule is presented.
- Section 4 describes the avoidance and minimization measures that will be used during the project to avoid impacts. Also, a mechanism is provided for determining the amount of mitigation required each year; the mitigation ratios are defined, and the type of mitigation to be performed is described.
- Section 5 lists the reporting requirements of this plan.
- Section 6 provides the references cited in this plan.

1.2 Proposed Project

The Chevron Eureka Terminal is located in the City of Eureka, on the eastern shore of Humboldt Bay in the Entrance Channel, just north of the mouth of the Elk River (Figure 1). The terminal is used for transferring fuel from barges to a storage facility. It is important to maintain the structure of the terminal to help prevent fuel spills and associated adverse environmental impacts. Structural components in need of repair were identified during September 2013 inspections performed in accordance with Title 24 of the California Code of Regulations, Part 2, Chapter 31F, "Marine Oil Terminals and the Marine Oil Terminal Engineering and Maintenance Standards" (Moffat and Nichol 2013) (Appendix A). Chevron is proposing to perform the structural repairs needed to the timber trestle and wharf over a 5-year period, 2014–2018 (Pacific Affiliates 2014). All work will be conducted during a seasonal work window of 1 August–15 October.

N:\Projects3600\3606-01\Reports\Figure 1 Vicinity Map.mxd

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Figure 1. Location of Chevron Eureka Terminal Project

Chevron Eureka Terminal Inspection Repairs Project: Eelgrass Mitigation and Monitoring Plan (3606-01)

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The trestle is 181 m long and 5 m wide. There will be no expansion of the existing structure. A maximum of 19 trestle piles proposed for potential replacement occur in locations that may impact eelgrass habitat (Table 1, Appendix A). Piles are numbered from east to west, with the lowest numbers occurring near the shoreline, and letters signify whether the piles occur on the north or south side of the trestle or in the middle section. Most of the piles proposed for potential replacement were classified as having minor damage (Table 1) (Moffat and Nichol 2013). To see the location of all piles proposed for potential replacement and their level of damage, refer to Appendix A. The highest priority for replacement are the piles with the most severe damage, and in general these will be targeted first. Three trestle piles are proposed for replacement in 2015, with damage level described as severe (piles 4N and 4S) or major (pile 10N). For construction plans showing the location of pile replacement scheduled for 2015, refer to Appendix B.

Table 1. Location and Damage of Trestle Piles Proposed for Potential Replacement

	Description of Pile Damage*			
Trestle Location	**Severe**	**Major**	**Moderate**	**Minor**
North Side	4 N**	10 N**		2 N; 12 N; 15 N; 18 N; 21 N
Middle Section			3 M_3	2 M_1; 12 M; 16 M; 18 M; 19 M
South Side	4 S**		3 S	7 S; 17 S; 22 S; 23 S

* Source: Moffat and Nichol 2013

** Scheduled for removal in 2015

Pile replacement and associated work on the trestle will be performed from the Moondoor II barge (measuring 34.7 m by 23.8 m), maneuvered by the Joseph George tugboat. The barge will access the trestle from the south side, and be positioned perpendicular to the trestle about 3 m away, moving as needed to each work location (Smith pers. comm.). A Kobelco CK1000-III Crawler Crane with a 36.6-m boom positioned on the barge will be used to remove and install elements of the dock. The crane is able to reach across the dock, enabling work to be performed on both sides of the dock from a single location. In eelgrass habitat, work will take place only when tides permit the barge to float. The barge has a flat bottom with a 1.5-m vertical draft when loaded. The barge will be anchored by placing two spud poles at each location where repairs are needed (Smith pers. comm.).

Where piles are to be replaced, the dock will be deconstructed as necessary to access the pile(s). The crane, fitted with a vibratory hammer, will attach to the pile to be removed and subsequently vibrate and pull the pile out of the ground. In the event that a pile cannot be removed in its entirety, it will be cut off 0.3 m below the existing mudline. Once removed, piles will be placed on the barge in a containment area. The new pile will then be hoisted and placed as close to the original pile location as possible. An impact hammer will be used to drive the pile to depth. Once the pile is in place, the pile cap, stringers, and decking will be replaced. Any elements of the dock that are damaged during construction will be replaced in kind (Pacific Affiliates

2014). It is not known how long it will take to perform these pile replacement procedures (Smith pers. comm.). However, because the work will occur only during high tides, the barge will not be in any given positon long enough to affect eelgrass through shading.

The new piles will be the same diameter as the existing piles (0.4 m at the butt), driven into the ground 6 m. New piles will be pressure-treated Douglas-fir. The portions of the new piles that will be in direct contact with bay water will be sealed with Specguard's Marine Grade polytetramethylene ether glycol coating (E-375-08). The minimum coating area on the piles will extend from the top of each pile to 1.5 m below the mudline. For more project details, please refer to Pacific Affiliates (2014).

1.3 Environmental Setting

Narrow eelgrass beds fringe the main channel in Entrance Bay, where the Chevron Eureka Terminal is located, about 400 m north of the mouth of Elk River (Figure 2). The eelgrass map shown in Figure 2 was based on photointerpretation of high-resolution (0.5-m) aerial imagery, acquired 27 June 2009 at low tide (NOAA 2010). The mapping unit depicted in the map was classified as "continuous eelgrass," defined as having >85% cover by eelgrass.

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Figure 2: Eelgrass Beds in the Vicinity of the Project Site (NOAA 2010)
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In Humboldt Bay, eelgrass occurs in extensive meadows in the basins of the North and South Bays. The upper and lower limits of eelgrass distribution vary from site to site, with a maximum elevation range during the growing season of -2.1 m to 1.4 m mean lower low water (MLLW) (Gilkerson 2008). Eelgrass beds in Humboldt Bay are persistent all year, but they exhibit high variability in distribution and density, both seasonally and from year to year. The fluctuations may be related to seasonal rainfall patterns, currents, frequency of turbidity events, freshwater flows, grazing by black brant (*Branta bernicla nigricans*), and changes in nutrient levels. The eelgrass beds near the mouth of Elk River have been noted as being especially dynamic (Schlosser and Eicher 2012).

We compared the NOAA (27 June 2009) imagery, in true color and color infrared, with Google Earth imagery from 2003–2012, which is available for each growing season except 2007–2008, with the timing of the imagery ranging from May to August (NOAA 2009). Variability in eelgrass distribution at this location is evident from a review of the photographs, although low-imagery resolution and high-tide coverage at the time of photograph acquisition in some years limits the amount of information that can be derived. In general, eelgrass around the project site appears to have a narrower distribution close to the channel early in the growing season (May–June); also, in some years (but not consistently), eelgrass expands its distribution shoreward later in the growing season (July–August). The deepwater channel margin of the eelgrass bed appears to remain fairly constant. This pattern is consistent with field observations of the area.

In July 2014, eelgrass was observed growing on mudflats at the project site on both the north and south sides of the trestle. Dense eelgrass bordered Entrance Channel, as mapped in 2009 (Figure 2) (NOAA 2010). Additionally, moderate to patchy eelgrass cover extended higher on the mudflat, with decreasing density at higher elevations, and with scattered individual plants occurring within 10 m from the riprap shoreline. Dense macroalgae, primarily sheet *Ulva* sp., was observed growing with eelgrass in mid to high regions of the mudflat. (see Photos 1–5, Appendix C). Eelgrass was observed growing immediately adjacent to piles on the south side of the trestle at suitable elevations, but very little eelgrass occurred close to piles on the north side of the trestle, because of the shade provided by the trestle. Eelgrass was not observed growing in the immediate vicinity of piles scheduled for replacement in 2015 (piles 4N, 4S, and 10N) (see Photos 6–8, Appendix C). No invasive dwarf eelgrass (*Zostera japonica*) was observed.

Section 2.0 Impacts

2.1 Impacts Requiring Avoidance and Minimization

The following types of impacts could result from the proposed project:

1. Substrate disturbance/direct uprooting or crushing of eelgrass turions, which could be caused by:

   1a. pile replacement,

   1b. barge anchoring, or

   1c. barge or propeller scarring

2. Water quality effects, such as:

   2a. chemical leaching from new piles or

   2b. chemical spills (e.g., of fuel or hydraulic fluid)

3. Turbidity

4. Shading

The project's potential effects on water circulation patterns and nutrient loading were also considered, but it was determined that such impacts would not occur because the project would not change circulation or nutrient loads.

Most of the potential impacts listed above will be avoided through implementation of the project's avoidance and minimization measures (listed in Section 5). However, two project actions were evaluated in more depth: pile replacement on the trestle in the zone of eelgrass habitat (1a) and anchoring of the working barge (1b). Because both these actions will require disturbance of the substrate, they could cause longer-term impacts on eelgrass, and could require additional mitigation. These impacts and their mechanisms are discussed in further detail below.

2.2 Impacts Potentially Requiring Additional Mitigation

There are two ways that substrate disturbance could affect eelgrass:

1. Actions could alter the substrate in such a way that it is no longer suitable to support eelgrass. Even if eelgrass is not present at the time the action occurs, this still represents an impact if the action occurs in an area known to support eelgrass. This type of impact is not expected to occur.

2. Project actions could uproot or crush eelgrass turions. Assuming that the substrate is in suitable condition following the action, eelgrass may revegetate the area naturally; however, if recovery is not achieved by the growing season following construction, the impact constitutes a temporal loss of eelgrass. In areas with a patchy distribution of eelgrass, it may be possible to avoid this impact by conducting the action in between patches of eelgrass.

Neither the pile replacement nor the barge anchoring actions are expected to alter the substrate in a way that would make it unsuitable for eelgrass growth in areas that currently support eelgrass. In cases where the temporary substrate disturbance associated with either pile replacement or spud pole placement results in unavoidable uprooting or crushing of eelgrass turions, it is expected that the eelgrass will be able to revegetate by natural means, although it is difficult to predict how rapidly this might occur because of inherent natural variability in growth patterns. The localized areas of disturbance associated with project actions are relatively small, and there are abundant eelgrass propagules available at the site. Eelgrass can revegetate the disturbed areas either by vegetative expansion via rhizome expansion or by seedling recruitment the following spring. At the project site, rhizome expansion is most likely to occur in the dense eelgrass, whereas recolonization of disturbed areas by seedling recruitment is likely to be more important in the higher intertidal zone where eelgrass occurrence is patchy. The success of seedling recruitment is unpredictable for any one year. In permanent study plots in Entrance Bay monitored from 2001 through 2008, eelgrass seedling density varied widely from year to year (Schlosser and Eicher 2012).

Areas less than several meters wide have been noted to recolonize by rhizome extension much more rapidly than larger areas (Fonesca et al. 1998). Boese (2002) simulated clam digging activities within 1-m^2 study plots in Yaquina Bay, Oregon, by excavating 0.25 m^2 in one section of the plot and depositing the material in another section of the same plot. He found no significant difference in eelgrass cover or biomass in study plots as compared to control plots ten months following treatment. In other scientific investigations involving destructive sampling in eelgrass beds, study plots less than 1 m^2 have been observed to recover from the disturbance by the following growing season (Rumrill pers. comm.).

2.2.1 Pile Replacement Impacts

A maximum of 19 piles occurring in eelgrass habitat will be replaced as part of the proposed project. Some piles, especially along on the north side of the trestle and at higher elevations on both sides of the trestle, have no eelgrass growing in close proximity. Where eelgrass is growing immediately adjacent to piles, some plants may be uprooted or crushed during the process of pile replacement. It is expected that eelgrass will re-establish, but it is unknown if or how quickly this will occur.

2.2.2 Barge Anchoring Impacts

The trestle will be accessed by barge for the pile replacement work. Alternative access from the shore is not considered feasible (Smith pers. comm.). The barge will be positioned adjacent to the trestle and temporarily anchored at each work location by placing down two spud poles that penetrate the substrate at the stern of

the boat. The spuds are steel pipes 0.71 m in diameter, with a tapered point, and they penetrate the bay mud 1–3 m. They are lowered into the ground using a winch mounted on the barge and are set in place using gravity. The maximum time that the barge will be positioned at any one location is one tidal cycle. The spud poles will be placed approximately 40 m south of the trestle. Where eelgrass is patchy, attempts will be made to place the barge spud poles in between eelgrass patches on mudflat devoid of eelgrass. In dense eelgrass, it may not be possible to find open spots; therefore, some eelgrass turions may inadvertently be crushed or uprooted. Within these localized areas of temporary substrate disturbance, it is expected that eelgrass will re-establish, but it is unknown if or how quickly this will occur.

2.2.3 Inadvertent Impacts

Inadvertent impacts, such as grounding of the barge or chemical spills, are not expected, but could occur. Pre- and postconstruction monitoring will provide data on eelgrass parameters in the project survey area. These data, compared to data for the reference survey area, will allow for assessment of the level of any impacts and setting target goals for onsite recovery and/or offsite mitigation as needed. In the event of barge grounding, permitting agencies will be notified immediately. Areas impacted will be photodocumented, and the most direct method possible will be used for calculating the area damaged (i.e., the area of substrate disturbed will be measured as soon as possible following the incident), and determining the amount of compensatory mitigation required.

Section 3.0 Monitoring

Monitoring of the project site and a nearby reference site will be conducted to determine whether project actions result in impacts requiring compensatory mitigation. Monitoring will include: 1) pre- and post-construction eelgrass mapping and surveys, conducted during the active eelgrass growing season; 2) construction monitoring, conducted whenever construction occurs in areas that may impact eelgrass habitat; and 3) post-construction inspections, conducted soon after construction.

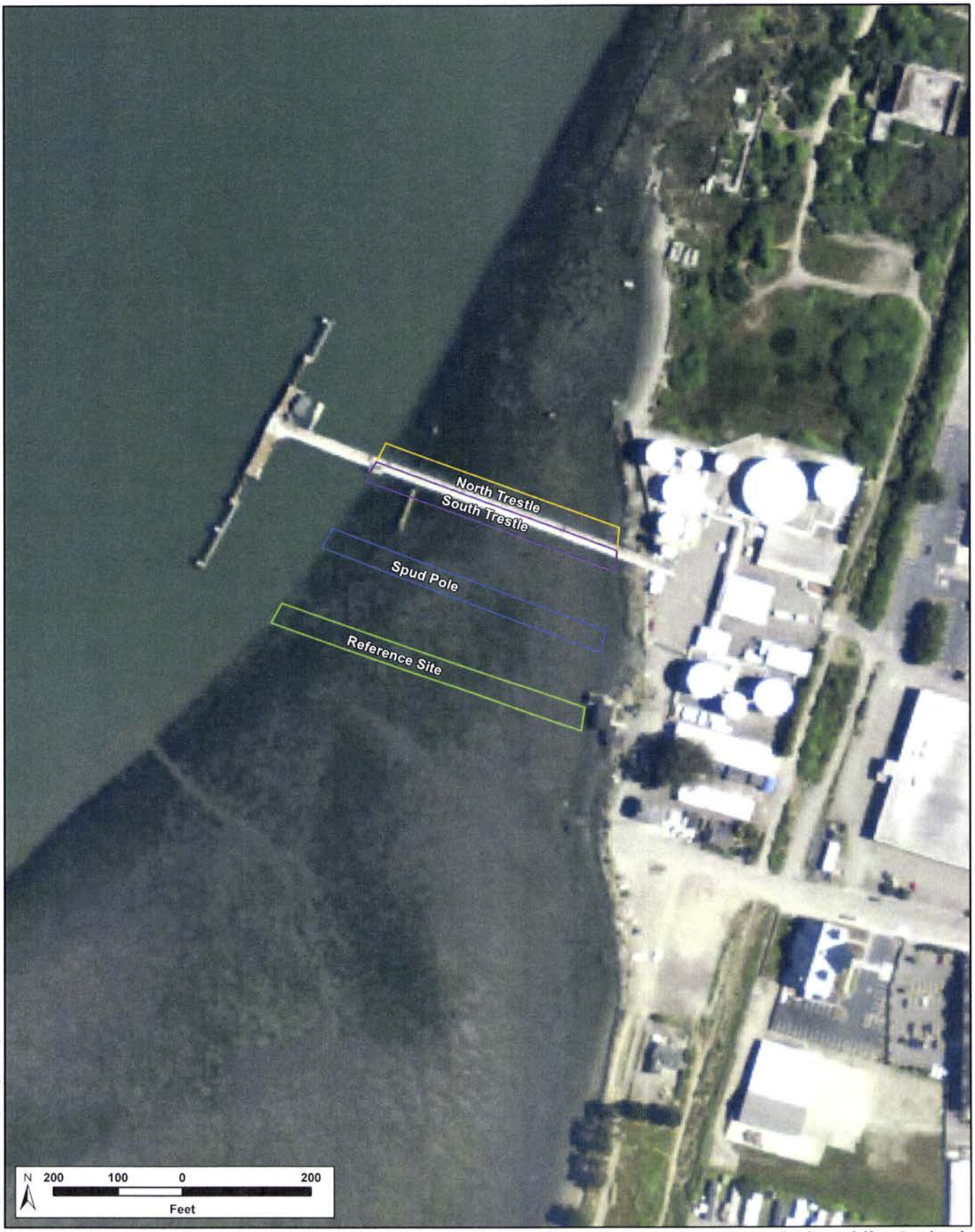
3.1 Survey Areas

3.1.1 Project Site

At the project site, surveys will be conducted in areas containing eelgrass habitat in which proposed project actions may reasonably be expected to result in direct or indirect impacts on eelgrass. Specifically, these are the areas adjacent to the trestle where piles are proposed for replacement and the area where spud poles will be anchored south of the trestle. Since eelgrass growth characteristics are different north of the trestle than south of the trestle, these two areas will be considered separately. All survey areas will extend from the lowest to the highest extent of eelgrass occurrence and will be 10 m wide (Table 2, Figure 3).

Table 2. Survey Area Boundaries at the Project Site and at the Reference Site

	Boundaries	
Survey Area	**North–South**	**West–East**
Project Site		
North Trestle	from trestle midline to 10 m north	from lowest to highest extent of eelgrass
South Trestle	from trestle midline to 10 m south	from lowest to highest extent of eelgrass
Spud Pole	35–45 m south of trestle	from lowest to highest extent of eelgrass
Reference site		
	75–85 m south of trestle	from lowest to highest extent of eelgrass



N:\Projects3600\3606-01\Reports\Figure 3 Project Site.mxd

Figure 3: Eelgrass Survey Area Boundaries at the Project Site and at the Reference Site

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3.1.2 Reference Site

In addition to project site survey areas, a reference site will be surveyed in a similar fashion to help determine whether observed changes are attributable to natural variability or are a response to project actions. Natural spatial and temporal variability in eelgrass characteristics is high, and this variability can confound the evaluation of eelgrass response to project actions, necessitating comparison of observed changes between project and reference sites. The reference site will be located 75–85 m south of the trestle and will extend from the lowest to the highest extent of eelgrass occurrence (Figure 3). This reference site is part of the same eelgrass bed that occurs at the project site, but it is located far enough away to be unaffected by the project. In 2014, the area proposed as a reference site was observed to have similar environmental conditions and eelgrass characteristics as the project site.

3.2 Eelgrass Mapping

Within the survey areas defined above, vegetated eelgrass cover will be delineated by using a global positioning system (GPS) with sub-meter accuracy. Vegetated eelgrass cover is defined as eelgrass plants occurring within 1 m of other eelgrass plants (NMFS 2014). Using geospatial software, a 5 m area will be added around all vegetated eelgrass cover to define the full extent of eelgrass habitat, per NMFS (2014). An eelgrass map will be prepared for the project site and reference site survey areas clearly showing all vegetated eelgrass cover within the larger boundaries of eelgrass habitat. The map will show bathymetric contours at a 0.3-m contour interval adjusted to a local MLLW datum using available data (NOAA 2013, NHE 2014, NOAA 2014).

3.3 Survey Parameters

Each time a growing season survey is conducted, we will sample four parameters that have been identified for use in eelgrass habitat surveys and assessment of effects of an action on eelgrass (NMFS 2014). These parameters are: 1) spatial distribution, 2) areal extent, 3) percent vegetated cover, and 4) turion (shoot) density.

Fieldwork will be conducted at tides low enough to sufficiently expose the eelgrass beds for traversing by foot. Spatial distribution and areal extent will be based on field mapping and geospatial analysis. Percent cover and turion density will be based on quantitative plot-based field sampling within vegetated eelgrass cover. Sample plots will be spatially stratified and plot location will be determined by randomly generating points using geospatial software. Strata will be defined both by survey area (Table 2, Figure 3) and by 2–3 eelgrass density classes along the elevation gradient (TBD based on field mapping as described below).

Each monitoring year, a minimum of 30 plots per survey area will be sampled. The number of plots collected and sample plot size may vary between eelgrass density classes, with plot size ranging from 0.0625 m^2 to 1 m^2. SeaGrass Net sampling protocol uses 0.25 m^2 quadrats to estimate seagrass cover, and a 0.0625 m^2 quadrats to measure turion density (Short et al. 2006). The Humboldt Bay Cooperative Eelgrass Project (UCSGE

2001-2003) found no statistically significant difference between using 0.1 m^2, 0.5 m^2 and 1 m^2 to measure eelgrass turion density, shoot length, or biomass in across-gradient sampling of eelgrass beds in Humboldt Bay. The use of fewer, smaller plots in dense, relatively homogenous eelgrass zones and more, larger plots in sparse/patchy zones is a sound and efficient method for addressing differences in spatial variability between density classes (Thompson 2002, Shaughnessy pers. comm.). This sampling strategy also allows for a higher number of replicate measurements to be taken in the regions having the most inherent natural variability. High temporal and spatial variation in eelgrass density can dramatically increase the sample size necessary to reliably detect changes in eelgrass density (Krueger et al. 2007).

In addition to natural variation at the site, recreational clamming activities cause substrate disturbances that could confound assessment of changes in eelgrass density in relation to project actions. During every low tide when fieldwork was conducted at the project site, clamming activity was observed (see Photos 9 and 10, Appendix C).

3.3.1 Spatial Distribution

The spatial distribution of eelgrass habitat, as depicted in the eelgrass maps, will extend 5 m around all vegetated eelgrass cover and therefore can include interior unvegetated gaps in cover up to 10 m. The boundary delineating eelgrass habitat will not extend into areas where depth or substrate are unsuitable to support eelgrass, or where eelgrass establishment is precluded by the presence of existing structures (NMFS 2014).

3.3.2 Areal Extent

Areal extent will be calculated for eelgrass habitat as defined above, and will be broken down to show the extent of both vegetated eelgrass cover and unvegetated gaps. Areal extent will be determined using commercially available geospatial analysis software and reported in square meters.

3.3.3 Percent Vegetated Cover

Percent vegetated cover is defined by NMFS (2014) as the amount of vegetated cover relative to the total extent of eelgrass habitat. This calculation will be used to help stratify the survey areas into 2–3 density classes along the elevation gradient. Vertical zonation is apparent at the project site and reference site, with dense eelgrass at the channel edge transitioning to sparse and very sparse zones higher in the intertidal. To better enable detection of potential small, localized impacts, a secondary measure of percent cover will be made per CDFW recommendations (Garwood pers. comm.) based on quantitative plot-based field sampling within vegetated eelgrass cover. Sample plots will be spatially stratified by survey area and density class, and plot location will be determined by randomly generating points using geospatial software as described above. Within each sample plot, percent cover will be visually estimated to the nearest 5%. Percent cover will be reported as a mean ± the standard deviation of replicate measurements. Recognizing that vegetated eelgrass cover can include small unvegetated gaps <1 m, values of 0% cover are possible and will be included in the estimation of mean percent cover to better enable the detection of small, localized impacts.

3.3.4 Turion Density

Turion density will be sampled using the same plots as used for assessing percent cover. The number of eelgrass turions occurring in each sample plot will be counted. Turion density will be reported as a mean ± the standard deviation of replicate measurements. Recognizing that vegetated eelgrass cover can include small unvegetated gaps <1 m, values of 0% turion density are possible and will be included in the estimation of mean turion density to better enable the detection of small, localized impacts.

3.4 Photodocumentation

Photographs will be used to document site conditions. The photographs will be georeferenced so that they can be taken in the same locations before and after construction. Photographs will be taken at each location where substrate disturbance is likely to occur or has occurred, including the locations of pile replacement and spud pole anchoring. Photographs will also be taken to represent different survey areas and eelgrass density classes.

Pre-construction photographs will be taken during the July survey prior to work performed and post-construction photos will be taken the following July. During construction, photographs will be taken showing the locations where spud pole anchoring occurs and where piles are replaced. Additionally, photographs will be taken as soon as possible following construction to document the location and extent of substrate disturbance associated with construction activities.

3.5 Monitoring Schedule

3.5.1 Eelgrass Mapping and Surveys

Eelgrass mapping and surveys will be conducted in July, during the active growth period for eelgrass. NMFS (2014) has identified the period of May through September as the active eelgrass growing season for northern California. Within this active growing season, there is evidence at the project site to suggest that eelgrass may expand its distribution and increase abundance substantially between May and July. The July 2015 eelgrass survey will provide pre-construction data for work proposed during the 1 August–15 October 2015 work window. Thereafter, the data collected in July may represent both post-construction conditions for the prior work year and/or pre-construction conditions for the current year. Since the surveys are for the purpose of pre- and/or post-construction monitoring, they will not be conducted if construction did not occur during the previous work window and will not occur during the following work window. Scheduling the monitoring in July will yield consistent data, facilitating reliable comparisons between years. This schedule represents a variance from NMFS (2014) guidelines, which require that the post-construction monitoring occur within 30 days of the start of the next growing season. This would place the monitoring in May; however, since it appears that eelgrass abundance at the project site may increase between May and July, sampling in May could undermine the comparison of monitoring data with pre-construction conditions.

3.5.2 Construction Monitoring

A biological monitor will be present on-site while work is being performed in areas that may impact eelgrass habitat. The biological monitor will only be present when work is being conducted in eelgrass habitat, which may vary from year to year within the 1 August–15 October work window. The biological monitor will take georeferenced, timestamped photographs showing all locations where spud poles are anchored and where piles are replaced.

3.5.3 Post-Construction Inspections

In addition to the growing season surveys, the project site will be inspected as soon as feasible (depending on tides and other factors) following construction during each year that work is performed that may impact eelgrass habitat. The main purpose of the post-construction inspections will be to help document the extent of substrate disturbance caused by both pile replacement and spud pole placement, as this may be difficult to see by the following growing season. Georeferenced photodocumentation will be used to compare visible areas of disturbance with pre- and post- construction conditions. No other data will be collected during the post-construction inspections since construction will be completed during a time of year when eelgrass is not actively growing.

Section 4.0 Mitigation

4.1 Avoidance and Minimization Measures

Avoidance and minimization measures for potential project impacts are summarized in Table 3. These avoidance and minimization measures will be incorporated into the project and are anticipated to be effective in reducing most impacts to an insignificant level.

Table 3. Potential Impacts Considered and Proposed Avoidance and Minimization Measures

Potential Impact and Mechanism	Avoidance and Minimization Measures
1. Substrate disturbance/uprooting or crushing eelgrass	
1a. Pile replacement	1. The area of substrate disturbance will be minimized by pulling old piles straight out and inserting new piles into existing holes (if possible) or immediately adjacent to the existing holes. 2. Old piles will be placed in a containment area on the barge and not allowed to rest on the substrate surface. 3. A biological monitor will be present on site while construction is being performed in eelgrass habitat to observe pile replacement operations and ensure that items 1 and 2 above are implemented.
1b. Barge anchoring	1. The area of substrate disturbance will be limited to the placement of two 0.7-m-diameter spud poles per barge work location; no chains or other materials will be dragged on the substrate surface. 2. If possible, spud poles will be placed in areas of mudflat devoid of eelgrass. 3. The maximum duration of spud pole penetration at each work location will be one tidal cycle. 4. A biological monitor will be present on site while work is being performed in eelgrass habitat to document the number of times the barge is repositioned and to georeference and photograph spud pole placements.
1c. Barge or propeller scarring	1. Work in eelgrass habitat will be scheduled to occur at tides high enough to allow the barge to remain afloat. 2. Depth-sounding equipment will be used to help alert the barge operator as tide levels recede. 3. A biological monitor will be present on site while work is being performed in eelgrass habitat to document the timing and location of substrate disturbance if accidental barge grounding should occur.

Potential Impact and Mechanism	Avoidance and Minimization Measures
2. Water quality	
2a. Chemical leaching from new piles	1. New piles will be precoated and cured with a marine-grade polytetramethylene ether glycol coating, extending from the top of the pile to 1.5 m below the mudline.
2b. Chemical spills (fuel, hydraulic fluid)	1. Spill prevention, control, and countermeasure plans will be developed and implemented. 2. Only biodiesel and vegetable based hydraulic oil in equipment that will be used over the water 3. Spill kits with contents appropriate for the types of hazardous materials present will be maintained on the barge and the dock. 4. Booms will be available to contain any materials spilled in the water.
3. Turbidity	1. Work in eelgrass habitat will take place as quickly as possible. 2. Turbidity-generating activities will be limited to small, localized areas associated with pile replacement and spud pole placement.
4. Shading	1. No expansion of the existing structure will occur. 2. The maximum continuous period for which the barge will be located at a single work site will be one tidal cycle.
5. Water circulation patterns	No changes to water circulation patterns are expected to result from the proposed project.
6. Nutrient loading	No nutrient-loading impacts are expected to result from the proposed project.

4.2 Additional Mitigation Measures

4.2.1 Compensatory Mitigation Assessment

For each year that work is performed, the need for compensatory mitigation will be determined the following growing season. Mitigation assessments will be based on a combination of direct evidence of visible scarring and an analysis of the survey parameters sampled during the growing season. If visible scarring is evident as a result of project actions, then the extent of this area will be measured directly in the field and considered in determining the area needed for mitigation. For these purposes, a visible scar is defined as an area having all of the following elements:

- located where a project action is known to have occurred the previous growing season
- evidence that eelgrass occurred at the location the previous growing season
- devoid of eelgrass cover

Pre- and post-construction photographs will be used to help detect and document the presence of scarring. Since the piles occur at fixed locations, the pre- and post-construction photographs can be taken at the same georeferenced location. Since the precise locations of spud pole placement will not be determined until the time of construction, georeferenced pre-construction photographs will be taken of the general area where anchoring is expected to occur. These photographs will help document whether any eelgrass occurred the previous growing season in the general area and if so, whether eelgrass was dense, sparse, or patchy. The photographs can then be compared with photographs taken soon after construction and the following growing season at the locations where spud poles are placed to help detect scarring.

The survey parameters sampled during the growing season will be analyzed to detect changes between pre- and post-construction conditions in eelgrass areal extent, percent cover, or turion density. The results will be compared between project site and reference site survey areas to assess whether the changes are a result of natural variability or whether they can be attributed to project actions. Declines in eelgrass that can be attributed to project actions will require compensatory mitigation.

Impacts will be quantified as follows:

1. **Decrease in vegetated eelgrass cover.** If a decrease in areal extent is detected through calculations based on mapping, the amount of this area will require compensatory mitigation. If the direct measurement of visible scarring is higher than the area detected by mapping, then the higher value will be used as a basis for mitigation.

2. **Declines in eelgrass** cover **or density.** Within vegetated areas, if a decrease (defined as greater than 25% reduction) in either mean percent cover or mean turion density is detected relative to the reference site, the decline will require compensatory mitigation. The 25% density reduction threshold was suggested by NMFS (2014) as reasonable based on supporting information (Fonseca et al. 1998, WDFW 2008). If a decline in both percent cover and turion density can be detected, then the higher value will be used as a basis for mitigation. The magnitude of the impact will be equivalent to the proportion of the decrease. For example, a 25% reduction in eelgrass cover within a 10 m^2 area would require 2.5 m^2 mitigation.

4.2.2 Compensatory Mitigation Measures

It is unknown whether any impacts requiring compensatory mitigation will occur or what the magnitude of the impacts might be. To the extent possible, Chevron will mitigate for potential losses to eelgrass habitat prior to impacts to avoid any temporal loss. Some mitigation measures will be conducted in 2015 and on-site mitigation monitoring will be conducted concurrent with project implementation. During the course of the project, if there is an anticipated need for additional mitigation, then mitigation measures will be performed prior to impact if possible. If at any time, impacts occur in excess of mitigation already performed, then mitigation measures will be performed within one year of impact determination.

Mitigation will be accomplished by debris removal. Debris suitable for removal has been identified: 1) on the tidelands parcel leased by Chevron; 2) on the tidelands parcel leased by City of Eureka ("Parcel 4"), located to the north of Chevron; and 3) floating marine debris. Each of these mitigation measures are discussed in more detail below. The mitigation ratio applied will vary from 1:1 to 2:1 depending on the type of mitigation and whether performed prior to or after impacts (Table 4). In 2015, on-site abandoned structures south of the trestle will be removed. Additionally in 2015, four concrete floats considered to be hazardous marine debris will be removed from Humboldt Bay. If additional mitigation is needed in the future, on-site abandoned structures north of the trestle will be removed. Further opportunities for mitigation exist just north of the project site associated with the City of Eureka's Parcel 4. Using an adaptive approach, alternate forms of mitigation may be used if mutually agreed upon by Chevron and all permitting agencies involved at any time during the course of the project.

Table 4. Mitigation Ratios and Schedule for Performing Different Types of Mitigation

	Mitigation Ratio		
Mitigation Type	**Prior to Impacts**	**After Impacts***	**Schedule**
Structure Removal			
Project Site (South)	1:1	N/A	2015
Project Site (North)	1:1	1.2:1	as needed
Parcel 4	1:1	1.2:1	as needed
Floating Marine Debris Removal			
	2:1	N/A	2015

* Performed within one year of determination of impacts

4.2.2.1 Structure Removal at the Project Site

Debris located in suitable eelgrass habitat has been identified on the Chevron tidelands parcel (Figure 4). Structures adjacent and perpendicular to the trestle (see Photos 11–14, Appendix C) are no longer in use and could be removed to serve as mitigation. Once removed, it is expected that natural colonization by eelgrass will be sufficient to restore the areas to levels of eelgrass cover similar to surrounding areas, and this will be confirmed by monitoring. If sufficient eelgrass cover in mitigation areas is not achieved within three years of removing the structures, then the reasons for insufficiency will be assessed and remedial measures will be taken.

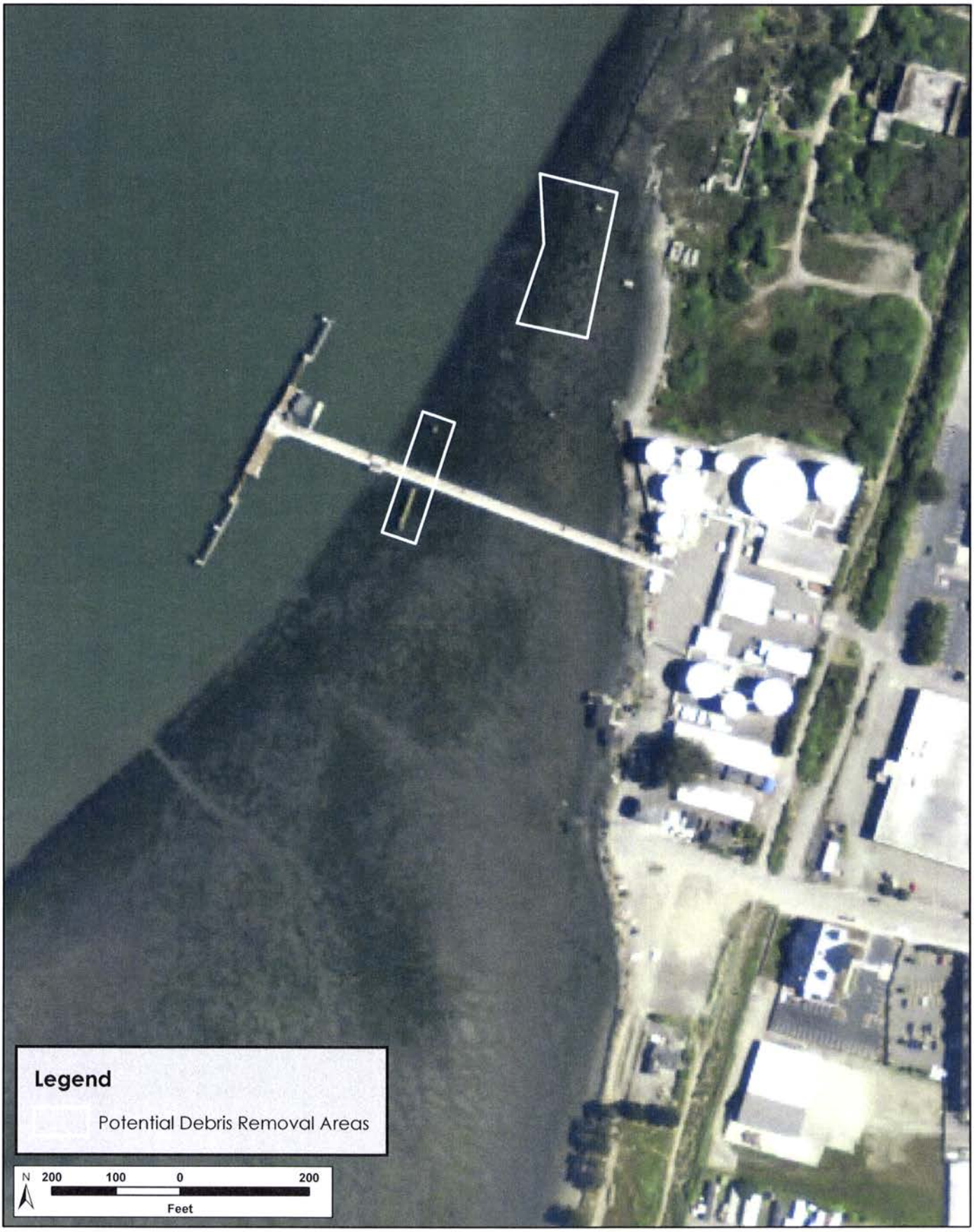

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Figure 4: Potential Debris Removal Areas Near Project Site
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In 2015, the structures on the south side of the trestle (Figure 4, Photos 11 and 12 in Appendix C) will be removed in conjunction with terminal repairs during the 1 August–15 October work window. The barge will access these structures from the west and anchor in an area that is too deep to support eelgrass, avoiding potential spud pole impacts to eelgrass during structure removal. During the July 2015 eelgrass survey, the eelgrass surrounding the structures will be quantified using the same parameters quantified in Section 3.3 of this report. The eelgrass will be mapped, photographed, and characterized in terms of areal extent, percent cover, and turion density. In subsequent years, the mitigation area will be monitored each July in conjunction with pre- and post-construction monitoring. Mitigation area and reference site monitoring will be performed each year (including years in which there may not be a need for pre- or post-construction monitoring) for five years, or less if it can be demonstrated sufficiently that the restored area is sustaining eelgrass growth at levels comparable to the reference site at similar elevations. It is estimated that these structures cover approximately 5–10 m^2 of surface area that could be colonized by eelgrass once removed, and this area will be quantified more precisely during the July 2015 growing season survey. The location of trestle pile removal scheduled in 2015 that may impact eelgrass habitat is shown in Figure 5. These three trestle piles (4N, 4S, and 10N) did not have eelgrass growing in close proximity when observed during the 2014 growing season (see Photos 6–8, Appendix C).

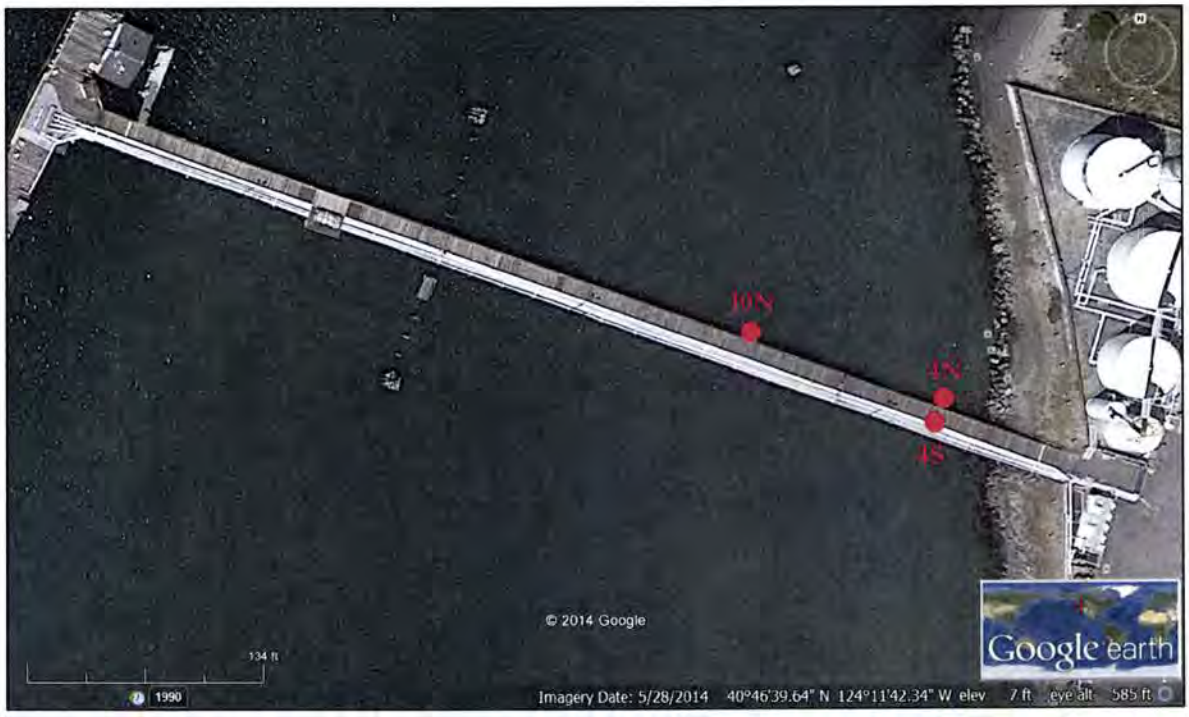

Figure 5. Location of Trestle Piles Scheduled for Removal in 2015

If it is determined that additional mitigation is required, abandoned structures occurring on the north side of the trestle (Figure 4, Photos 13–14 in Appendix C) will be removed as necessary. These structures can also be accessed by the barge from the west side, anchoring in an area too deep to support eelgrass. The structures on the north side cover an estimated 5–10 m^2 of surface area that could be colonized by eelgrass if they were

removed. This surface area will be quantified more precisely prior to removal, and mitigation monitoring will be performed each growing season thereafter for five years, or less if it can be demonstrated sufficiently that the restored area is sustaining eelgrass growth at levels comparable to the reference site at similar elevations.

4.2.2.2 Structure Removal at Parcel 4

Additionally, remnants of numerous abandoned piles occur scattered within a 2,250 m^2 area located on tidelands north of the trestle (Figure 4, Photo 14 [background] in Appendix C), associated with the City of Eureka's Parcel 4. These structures could potentially be removed as mitigation, and this opportunity will be explored and described in more detail if the need for additional mitigation arises. The restoration of adjacent tidelands would be compatible with Parcel 4 land use management. In 2008, the City of Eureka dedicated an open space easement to the Redwood Region Audubon Society over the 15-acre Parcel 4, which limits the use of this land to natural open space, habitat, and conservation purposes (SCC 2008).

4.2.2.3 Floating Marine Debris Removal

Floating concrete docks that were abandoned and are now scattered in Humboldt Bay have been identified as hazardous marine debris. Seventeen floats have already been removed by HBHRCD as part of the *Wiyot Marine Debris Removal Project* (Kullman pers. comm., Petrusha pers. comm.). Four known floats remain and are in need of removal. The concrete floats have been pushed around by weather and tides. Currently, two concrete floats are beached at Stinky Beach south of the mouth of Elk River, one is submerged in mud in South Bay, and one is wedged into a slough on the northeast tip of Indian Island (see Photo 15, Appendix C). The floats at Indian Island and in South Humboldt Bay currently occur in suitable eelgrass habitat. If re-mobilized, all of the floats have the potential to scour eelgrass habitat and/or become lodged in eelgrass beds. The floats pose a risk of damaging structures in the bay, including the Chevron Terminal, which could result in dangerous fuel spills impacting eelgrass habitat. Additionally, the floats are regarded as serious navigational hazards and pose a collision risk to boaters (Kullman pers. comm., Petrusha pers. comm.). HBHRCD's highly trained pilots have performed the removal thus far, including bringing them to shore via hoist (see Photo 16, Appendix C), and transporting them for re-use/recycle, following an appropriate Safety Plan. HBHRCD will be contracted by Chevron to remove remaining floats in 2015. Considering the current status of the four remaining floats, these removal efforts would likely need to be conducted at king tides. The floats vary in size, but are approximately 16–17 m^2 each (Petrusha pers. comm.) and have the potential to damage a much larger area of eelgrass habitat. The actual surface area of the floats will be measured following removal.

Regionally, the West Coast Governors' Alliance on Ocean Health prioritized marine debris as a concern within the states of California, Oregon, and Washington and has established the West Coast Marine Debris Alliance to execute the strategy for addressing marine debris as laid out under the Marine Debris Action Coordination Team Strategic Plan (MDACT 2013). The California Ocean Protection Council targeted the reduction of marine debris as a high priority issue in their 2012–2017 Strategic Plan (Laird et al. Unknown). HBHRCD (2007) identified the elimination of marine debris as an objective in their *Humboldt Bay Management Plan.*

Section 5.0 Reporting

Eelgrass monitoring reports will be submitted to permitting agencies 15 November every year 2016–2019 presenting the results of monitoring conducted the previous year (including pre-construction, post-construction and/or mitigation monitoring as needed). Construction update reports will be submitted to permitting agencies every 15 February describing specific plans for the current construction year and highlighting any work potentially affecting eelgrass habitat.

Each eelgrass monitoring report will present the following information on conditions during the growing season at the project and reference sites within defined survey areas and within mitigation areas:

- Eelgrass maps
- Spatial distribution of eelgrass habitat and vegetated eelgrass cover
- Areal extent calculated for eelgrass habitat and vegetated eelgrass cover
- Percent cover (mean and standard deviation) of eelgrass for each survey area
- Turion density (number of turions/m^2) for each survey area

Each report will also provide the following information addressing potential project impacts on eelgrass and the need for compensatory mitigation:

- A summary of work operations relevant to post-construction assessment of work performed the previous year, including the dates work was performed in eelgrass habitat, the number of times the barge was moved, and the locations of spud pole placements
- Photodocumentation of pre- and post-construction site conditions, work performed, and areas of substrate disturbance
- An impact analysis, including a quantitative assessment of any impacts on eelgrass that may have occurred as a result of project actions during the previous year
- If needed, a calculation of the area required for compensatory mitigation and a description of how mitigation requirements have or will be met

A final report summarizing the full set of eelgrass results will be submitted within three months of completing all pre-construction, post-construction and/or mitigation monitoring associated with the project.

Section 6.0 References

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Petrusha, T. Director of Harbor Operations/Bar Pilot, Port of Humboldt Bay. 14 November—email to A. Eicher of H. T. Harvey & Associates, with information about debris removal in Humboldt Bay.

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Shaughnessy, F. Marine Botany and Ecology Professor, Humboldt State University. 21 November 2014—conversation with A. Eicher of H. T. Harvey & Associates, discussing eelgrass sampling protocols.

Smith, T. Construction Manager, West Coast Contractors, Inc. 30 July 2014—email to A. Eicher of H. T. Harvey & Associates, and others, clarifying project details.

Appendix C. Relevant Photographs

Photo 1. Dense Eelgrass Cover at Project Site (25 July 2014)

Photo 2. Moderate Eelgrass Cover at Project Site (25 July 2014)

Photo 3. Patchy Eelgrass Cover at Project Site (25 July 2014)

Photo 4. Dense Macroalgae at Project Site (25 July 2014)

Photo 5. Close-up Showing Eelgrass Growing with Macroalgae

Photo 6. Pile 4S, Scheduled for Replacement in 2015

Photo 7. Pile 4N, Scheduled for Replacement in 2015

Photo 8. Pile 10N, Scheduled for Replacement in 2015

Photo 9. Recreational Clamming Activities around Trestle

Photo 10. Recreational Clamming South of Trestle

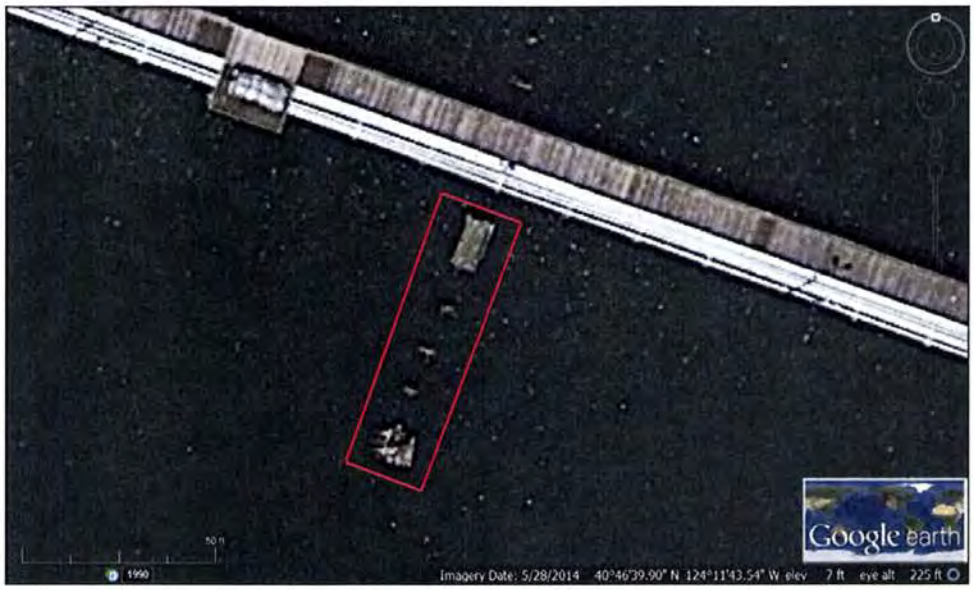

Photo 11. Aerial imagery Showing Structures South of the Trestle That Will Be Removed in 2015 as Mitigation

Photo 12. Structures South of the Trestle That Will Be Removed in 2015 as Mitigation (View Looking South from the Trestle)

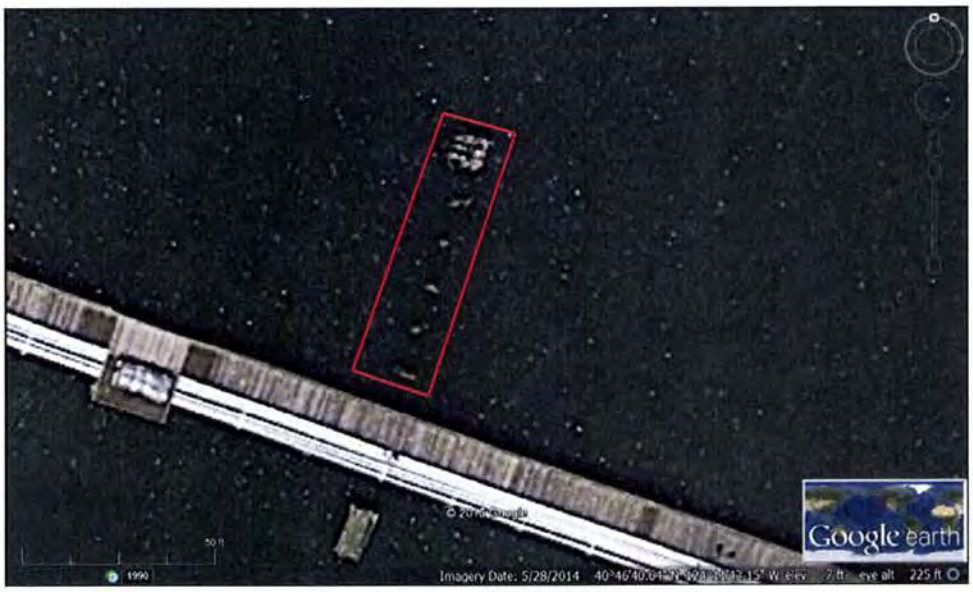

Photo 13. Aerial imagery Showing Structures Structures North of the Trestle That Could Be Removed as Mitigation

Photo 14. Structures North of the Trestle That Could Be Removed as Mitigation, and Additional Debris to the North Associated With Parcel 4 (View Looking North from the Trestle)

Photo 15. Concrete Float Marine Debris Wedged in Slough at Indian Island (Photograph Courtesy of Stephen Kullmann)

Photo 16. Concrete Float Hoisted Ashore (Photograph Courtesy of Stephen Kullmann)

PACIFIC AFFILIATES
CONSULTING ENGINEERS
990 W. WATERFRONT DRIVE, EUREKA, CA 95501 • TEL (707) 445-3001 FAX (707) 445-3003

Chevron Eureka Terminal
MOTEMS Inspection Repair Project
Proposed Eelgrass Mitigation

Project Description

January 15, 2015

As mitigation for potential impacts to eelgrass habitat caused by construction activities associated with the repair project at the Chevron Dock, Chevron is proposing to remove four known rogue concrete floats that are scattered throughout Humboldt Bay. Currently, there are two floats at Stinky Beach south of Elk River, one in South Bay and one in a slough on the northeast tip of Indian Island. All the floats were beached and have become lodged in the ground. When mobilized, the floats are a hazard to marine traffic, structures and could eventually become beached in sensitive habitat.

Figure 1 - Float beached at Stinky Beach

Figure 2 - Float beached at Stinky Beach

EXHIBIT NO. 8
APPLICATION NO. 1-14-0773
CHEVRON
Concrete Float Removal / Eelgrass Mitigation Plan
1 of 3

Float Removal

Float removal will take place during extreme high tides to utilize the buoyancy of the floats to aid in their removal. The floats are currently stuck in mud and once broken loose will float. A rope will be used to tie the float off to a Harbor District boat, which will be used to break the float loose from the mud allowing it to float. It will then be towed to the Fields Landing boat yard. The Harbor Districts' travelift will be used to hoist the floats out of the water and place them on a flatbed trailer for transport.

Figure 3 – Travelift at Fields Landing

Figure 4 - Fields Landing boat yard

Float Disposal

The floats will be transported to Kernen Construction's Blue Lake facility. According to Tim Petrusha (Harbor District), all the previous floats that have been removed from the bay have been of concrete construction (no foam for flotation). Kernen will crush the concrete for reuse as base rock.

Best Management Practices

The following BMP's are to be implemented during removal of the concrete floats:

- Fueling of construction equipment shall occur on shore, offsite, a minimum of 100 feet from the Mean Higher High Water line of Humboldt Bay.
- Fuels, lubricants, and solvents shall not be allowed to enter the waters of Humboldt Bay.
- Hazardous materials management equipment, including oil containment booms and absorbent pads, shall be available immediately. Equipment shall be kept on the vessel performing the work in an easily accessible location.
- A registered first-response, professional hazardous materials clean-up/ remediation service shall be locally available on call to respond within two hours of being notified of a spill.
- Any accidental spill shall be rapidly contained and cleaned up.
- All equipment shall be free of leaks and in good working order.
- All construction materials and debris originating from the project shall be stored and/ or contained in a manner that precludes their uncontrolled entry and dispersion to the waters of Humboldt Bay. Any debris from construction activities that should inadvertently enter the bay shall be removed from the bay waters immediately. All debris shall be properly disposed of and recycled if possible.

CALIFORNIA COASTAL COMMISSION

North Coast District Office
1385 Eighth Street, Suite 130
Arcata, California 95521
PH (707) 826-8950 FAX (707) 826-8960

EXHIBIT NO. 9
APPLICATION NO. 1-14-0773
CHEVRON
CDP Waiver No. 1-14-1587-W
1 of 2

September 5, 2014

SUBJECT: **Waiver of Coastal Development Permit Requirement/De Minimis Developments-Section 30624.7 of the Coastal Act**

Based on the project plans and information provided in your permit application for the development described below, the Executive Director of the Coastal Commission hereby waives the requirement for a Coastal Development Permit (CDP) pursuant to Section 13238.1, Title 14, California Code of Regulations. If, at a later date, this information is found to be incorrect or the plans revised, this decision will become invalid, and any development occurring must cease until a CDP is obtained or any discrepancy is resolved in writing.

WAIVER#: 1-14-1587-W

APPLICANT: Chevron (Attn: Scott Parsons)

LOCATION: At the Chevron Terminal dock, on the eastern shore of Humboldt Bay, on a tideland parcel adjacent to 3400 Christie Street, Eureka (APN 007-071-13).

PROPOSED DEVELOPMENT: Replace two missing piles and three severely damaged piles on the Chevron Terminal dock. The dock will be deconstructed as necessary to access the piles, including the removal of pile caps, stringers, bull rail, decking, and equipment attached thereto. Any of the structural elements detached to access the piles that are deemed unfit to be reused will be replaced in-kind. The old piles will be removed and the new piles installed using a vibratory hammer. If a pile is not able to be removed in its entirety, it will be cut off one-foot below the mudline. The new piles will be placed in the footprint of the old piles or as close to the original pile locations as possible. New piles will be composed of ammoniacal copper zinc arsenate (ACZA) pressure-treated wood and will be coated with Specguard's Marine Grade Polyurea coating. All work will be performed from a barge, maneuvered by a tugboat. A crane positioned on the barge will be used to remove and install elements of the dock. All materials removed from the dock and debris generated during the project will be held in a containment area on the barge until transferred to the staging area at Schneider Dock (990 W. Waterfront, Eureka), where they will be placed in water-tight containers. When the containers are full, they will be transported to a landfill in Anderson, CA.

RATIONALE: Approximately 80% of the fuel used by the greater Eureka area is delivered via barge to the Chevron Terminal dock. The proposed repairs are necessary to maintain the structural integrity of the dock, preventing the rupture of fuel transfer lines and other potential environmental impacts of dock failure. The piles to be removed will also be used in a study of the dock's ability to withstand a significant seismic event and potential resulting soil liquefaction. Work will be completed by October 15th of this year to minimize the number of listed fish species in Humboldt Bay during the project, and no impact pile driving will occur to avoid hydroacoustic impacts to marine life. In addition, no activity will take place along the portion of the dock where there is extensive eelgrass habitat and under no circumstance will the barge or tugboat enter the intertidal zone where there is the potential to impact eelgrass. Best Management Practices are proposed to avoid construction debris entering coastal waters, and booms will be used to contain any spilled debris. Spill containment trays will be placed around equipment on the barge deck and spill kits

with contents appropriate for the types of hazardous materials present will be maintained on the barge and the dock. Except for the crane, equipment used over the water will utilize biodiesel and vegetable-based hydraulic oil. Best Management practices will also be implemented to avoid water quality impacts from the use of treated wood in the marine environment. New piles will be coated with Specguard's Marine Grade Polyurea coating from the top of the pile to five feet below the mudline to avoid contact of treated wood with coastal waters. The project is an allowable use of fill in coastal waters pursuant to Coastal Act Section 30233(a)(1), because it is intended to rehabilitate an existing shipping terminal. For all of the above reasons, the proposed project is consistent with Chapter 3 of the Coastal Act.

This waiver will not become effective until reported to the Commission at their June 11, 2014 meeting and the site of the proposed development has been appropriately noticed, pursuant to 13054(b) of the California Code of Regulations. If four (4) Commissioners object to this waiver of permit requirements, a coastal development permit will be required.

CHARLES LESTER,
Executive Director

Cristin Kenyon
Coastal Program Analyst

cc: Commissioners/File
Pacific Affiliates (Attn: Corey Matson)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1655 Heindon Road
Arcata, California 95521-4573

SEP 24 2014

In response refer to:
WCR-2014-486

Ms. Jane Hicks
Chief, Regulatory Branch
U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, California 94103-1398

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Issuance of a U.S. Army Corps of Engineers Permit Authorizing Chevron to Implement the Chevron Terminal Dock Repair Project

Dear Ms. Hicks:

On August 14, 2014, NOAA's National Marine Fisheries Service (NMFS) received your request to initiate informal consultation for the U.S. Army Corps of Engineers (Corps) issuance of a Permit (File Number 2014-00292N) to Chevron, under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403), is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparation of letters of concurrence.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The concurrence letter will be available through NMFS' Public Consultation Tracking System https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts. A complete record of this consultation is on file at NMFS West Coast Region, Arcata, California office.

CONSULTATION HISTORY

Pre-consultation Activity

On June 10, 2014, the Applicant agreed via email to use Specguard Marine Grade Polyurea (E-375-08) coating to seal the pressure treated Douglas fir timber piles to minimize leaching of chemicals into Humboldt Bay.

On June 11, 2014, NMFS requested that the Applicant consider using a "soft start" approach to slowly increase the force of the impact hammer to allow listed species a chance to flee the area as pile driving begins. NMFS also requested that cushion blocks be used to attenuate acoustics generated during pile driving. On June 13, 2014, the Applicant agreed via email to employ the "soft start" approach and incorporate cushion blocks made of plastic, wood, and/or rubber to attenuate the acoustic effects.

On July 21, 2104, the Applicant agreed via email to reduce the number of piles to be replaced each year from an annual maximum of 40 piles to an annual maximum of 25 piles. The maximum number of piles to be replaced during the life of the Project was also reduced to 100 piles total (from 150 piles total).

Consultation Activity

On September 12, 2014, NMFS received a copy (via email) of the final Eelgrass Mitigation and Monitoring Plan prepared for the Chevron Terminal Repairs Project.

PROPOSED ACTION

Background

The Chevron Eureka Terminal is located in the City of Eureka in Humboldt County, California approximately 270 miles north of San Francisco. Chevron operates a pier and dock structure that provides a platform for off-loading petroleum from barges and into pipelines connected to the adjacent upland tank farm. The Chevron Eureka Terminal consists of a 'T' shaped dock made of timber. Believed to have been originally constructed in the early 1900's, the facility has been expanded, upgraded, and repaired numerous times since. The Eureka Terminal dock services barge traffic only, with barges typically arriving once every 10-12 days to deliver fuel to the landside bulk terminal. Barges provide hoses and pumps; therefore, the terminal does not have any equipment, rack, towers, or loading arms on the wharf. The 594 foot long trestle extends from the shoreline and consists of an approximately ten foot wide roadway and nine foot wide pipeway, which supports five pipelines of diameters varying between six and ten inches. The wharf at the end of the trestle is approximately 152 feet long by 22 feet to 36 feet wide and supports a containment area and an operators shack.

Construction of the trestle and wharf are typical of timber structures. Wood piles driven in rows are connected with a 12"x12" timber cap. A total of 472 piles support the trestle, wharf, and catwalks. Stringers span between pile caps and are covered with 4x12 decking. Pilings consist of a mixture of creosote and pressure treated timbers. In September 2013, above and below water inspections were performed to assess the condition of the timber trestle and wharf at the Chevron Eureka Terminal. Damage to individual elements of the structure was rated from minor to severe.

Based on the inspection results, Chevron is seeking permits to perform necessary repairs to the dock.

In order to maintain operations at the terminal into the future, repairs to the structure must be made. Those elements of the structure that were characterized as having major or severe damage will be replaced. In total, seven piles with major damage and 16 piles with severe damage (23 piles total) were discovered. The damaged creosote piles are proposed to be replaced with pressure treated timber piles during the initial effort scheduled for 2014. Other piles in need of replacement will be scheduled at a maximum rate of 25-piles per year with a maximum of 100 piles total over the life of the permit (5-years). Hardware, bracing, decking and other above water elements of the dock will be replaced as necessary as well. The existing structure will not be expanded in any way.

Portions of the dock will be opened up to provide access to the piling to be removed. Construction activities will be performed from a barge positioned adjacent to the dock. The barge will access the trestle from the south side, and be positioned perpendicular to the trestle about 3 m away, moving as needed to each work location. The barge will be positioned adjacent to the trestle and temporarily anchored at each work location by placing down two spud poles that penetrate the substrate at the stern of the boat. The spuds are steel pipes 0.71 meters in diameter, with a tapered point on the bottom. They are lowered into the ground using a winch mounted on the barge and are set in place using gravity. They penetrate the bay mud one to three meters.

A Kobelco CK1000-III Crawler Crane with a 36.6-meter boom positioned on the barge will be used to remove and install elements of the dock. The crane is able to reach across the dock, enabling work to be performed on both sides of the dock from a single location. Piles scheduled to be replaced in the shallow intertidal zone will be replaced only during a high tide, allowing the barge to float at least one foot above any eelgrass which might be present. Pile driving in deeper waters will be scheduled to occur during low tides, to minimize acoustic effects. A crane on the barge will be used to remove and install piling so that water jetting will not be required. Construction materials will be staged at Schneider Dock, located 1.4 miles north of the Chevron Dock.

Pile Removal

A vibratory hammer will be used to remove the damaged piling as completely as possible. Damaged piles will be removed and replaced in-kind with new piles (same diameter and location). Based on previous experience at this location, piles have been easily removed in their entirety. If a pile cannot be removed, the new pile will be positioned immediately adjacent to the old pile. Removing and replacing piles in their exact locations is the primary goal as it allows for easiest and most efficient reconstruction of the dock. The removed pilings will be transported to the Schneider Dock where they will be offloaded and stored until project completion. Trucks will be commissioned to transport the pilings to an approved disposal facility.

Pile Installation

New pilings will be trucked to the Schneider Dock and stored until the contractor is ready to install them. The barge will be used to transport the pilings from the Schneider Dock to the Chevron Dock. New pilings installed at the dock will be wood timbers treated with Ammoniacal Copper Zinc Arsenate (ACZA). Historically, chemically treated timber piles have been used in dock construction. Because these chemicals have the potential to leach into the surrounding water, which has been identified as Essential Fish Habitat (EFH) and critical habitat for a number of species, new piles will receive a 200-mil polyurea coating (Specguard Marine Grade polytetramethylene ether glycol coating, E-375-08) that encapsulates the wood preservative to prevent chemicals from leaching into the environment. This coating has been used with great success on a number of projects along the California coast. The coating will be applied and allowed to cure prior to being shipped to the storage site at the Schneider Dock. New piles will be 60-70 feet in length and have an average diameter of 16 inches (the same dimensions as the existing piles).

Installation of the new piling will be first attempted with the vibratory hammer. If vibration proves to be ineffective, an impact hammer will be used to complete the pile driving. A diesel impact hammer with hammer energy of 30,000 ft-lb will be used to drive the new timber piles to depth. It is estimated that the piles will require a maximum of six blows per foot and approximately 50 blows per pile. With four piles being placed per day, the total number of blows per day will be approximately 200. Water depths will range from a few feet in the intertidal zone to approximately 30 feet along the wharf.

In an effort to mitigate acoustic effects, a soft start approach (slowly ramping up the energy of the hammer) will be used during impact pile driving. Because fish and marine mammals are highly mobile and there is abundant suitable habitat elsewhere to flee into, the soft start will allow them time to travel beyond the sphere of influence before the acoustics generated approach levels that could cause injury if allowed to accumulate exposure. Additionally, wood, plastic and/or rubber cushion blocks will be used between the hammer and pile to dampen the noise generated by the impact hammer.

Minimization Measures

- Work will be limited to only August 1 to October 15 of each year.
- When replacing piles located adjacent to the deep water channel along the western edge of the dock, pile driving will occur during a low tide cycle to reduce the size of the sphere of acoustic influences and avoid exposing intertidal organisms to acoustics.
- When replacing piles in the intertidal zone, work will be conducted at only higher tides to ensure that the barge is floating at least one foot above the bottom of the bay where eelgrass might exist. The Applicant will monitor the water depth beneath the barge to ensure that a minimum 1-foot clearance is maintained between the bottom of the barge and the bottom of the bay.
- No water jetting will be allowed to reduce the extent and duration of turbidity and/or sedimentation.

- New pressure treated timber piles will be coated with 200-mil thick polyurea coating to minimize leaching of chemicals into the aquatic environment.
- A maximum of 25-piles per year will be replaced, and a maximum of 100 piles total over the life of the Project (5-years).
- A soft start approach will be used to slowly increase the intensity of the impact hammer to allow fish or mammals ample opportunity to flee into other suitable habitat before full strength pile driving begins. Rubber, plastic, and/or wood cushion blocks will be used to dampen the sound of the impact hammer.
- The first five piles installed with the impact hammer will be subject to acoustic monitoring. If sound levels of 180dB (the sound threshold for marine mammal injuries) are revealed, the distance from the pile will be measured to define the "shut down zone". The "shut down zone" will be the area monitored by a biologist for the presence of marine mammals. If a marine mammal is observed in the "shut down zone", pile driving will stop until the mammal has left the area.
- Eelgrass surveys will be conducted to identify the locations of eelgrass to enable the barge to deploy stabilizing spuds in areas without eelgrass.
- Chevron and their contractor (West Coast Contractors) each have existing Spill Prevention, Control, and Countermeasure (SPCC) plans with appropriate materials and tools to provide preliminary containment of materials that might be spilled.
- The area of substrate disturbance will be limited to the placement of two 0.7-m-diameter spud poles per barge work location as well as a small area (<1-meter) adjacent to each pile being replaced; no chains or other materials will be dragged on the substrate surface.
- If possible, spud poles will be placed in areas of mudflat devoid of eelgrass.
- The maximum duration of spud pole penetration at each work site will be one tidal cycle.
- A person with expertise in biology will be present on site while work is being performed in eelgrass habitat to help guide spud pole placement.
- Any eelgrass disturbed will be mitigated for according to the Eelgrass Monitoring and Mitigation Plan (HT Harvey and Associates, August 28, 2014).
- A person with expertise in biology will be present on site during pile driving activities to monitor for the presence marine mammals or other species within the "shut down zone" identified during acoustic monitoring efforts.

ACTION AREA

Under the ESA, the "action area" means all the areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). An analysis of the acoustics that are expected to be generated during pile driving activities indicates that (cumulative), there may be a behavior response of fish as far away as 215-meters from the pile that is being driven. Therefore, the action area is defined as the aquatic environment within 215-meters of the dock and wharf structures, not including area on dry land (see figure 1).

Figure 1: The Action Area is highlighted yellow and extends 215-meters from the Chevron Dock and does not include areas located on dry land.

Listed Species and Designated Critical Habitat in the Action Area

The following threatened species and designated critical habitat may be affected by the proposed action: (1) Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) Evolutionarily Significant Unit (ESU), listed on May 6, 1997 (62 FR 24588) and June 28, 2005 (70 FR 37160); (2) California Coastal (CC) Chinook salmon (*O. tshawytscha*) ESU, listed on September 16, 1999 (64 FR 50394); (3) Northern California (NC) steelhead (*O. mykiss*) Distinct Population Segment (DPS) , listed on June 7, 2000 (65 FR 36074); (4) North American green sturgeon (*Acipenser medirostris*), Southern DPS, listed on April 7, 2006 (71 FR 17757); and critical habitat for SONCC coho salmon (64 FR 24049, May 5, 1999); CC Chinook salmon (70 FR 52488, September 2, 2005); NC steelhead (70 FR 52488, September 2, 2005); and Southern DPS North American green sturgeon (74 FR 52300, October 9, 2009).

The estuarine critical habitat for salmon and steelhead in Humboldt Bay connects the freshwater habitat and the marine habitat of the Pacific Ocean. The essential habitat features of SONCC coho salmon critical habitat in the action area include adequate: (1) substrate, (2) water quality,

(3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food, (8) riparian vegetation, (9) space, and (10) safe passage conditions. The action area serves as a potential migratory corridor, as well as habitat for feeding, for outmigrating SONCC coho salmon smolts, prior to ocean entry. For CC Chinook salmon and NC steelhead, the essential primary constituent elements (PCE) of critical habitat in the estuarine action area support rearing and migratory corridor functions, namely areas free of obstruction and excessive predation with water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh-and saltwater; aquatic vegetation, and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation. The PCE in the action area provide the rearing and migratory corridor functions for CC Chinook salmon and NC steelhead, allowing for foraging and swimming through an area without expenditure of additional time and /or energy required.

The estuarine PCEs of green sturgeon critical habitat in Humboldt Bay that are essential to their conservation include: food resources; water flow; water quality; water depth; sediment quality; and migratory corridors to support feeding, migration, and aggregation and holding by green sturgeon adults and subadults. The invertebrate prey resources for green sturgeon are primarily found in the intertidal mudflats and subtidal channel margins; and include epibenthic and benthic invertebrates, Dungeness crab, and a variety of clams. Ghost shrimp are the preferred prey item for green sturgeon in Washington estuaries, comprising up to 50 percent of their diet (Dumbauld *et al.* 2008). The deep water channels in Humboldt Bay serve as a migratory corridor connecting the primary rearing and holding habitat in Arcata Bay (North Bay) with the Pacific Ocean.

Action Agency's Effects Determination

The Corps determined that the Project may affect, but would not adversely affect SONCC coho salmon, CC Chinook salmon, NC Steelhead, Southern DPS North American green sturgeon or their designated critical habitats based on discussions with agency staff, the information provided, and the amount of potential and occupied habitat to be impacted. The Corps predicts that turbidity caused by sediment disturbed during pile removal and placement will travel along the tidal currents, but will dissipate quickly to insignificant levels. Tidal currents are quicker in deeper water, which will carry turbidity further, but will also disperse the sediment more quickly. Tidal currents ebb and flow, so the area to the north and south can be impacted, depending on the tide. The Corps expects that turbidity will dissipate to an insignificant level within approximately 100-feet of its origin.

The Corps analysis concluded that acoustic impacts from pile driving are expected to be further reaching impacts. When the impact hammer is operated at its maximum, the Corps expects sound levels generated have the potential to injure fish within 17-feet (5-meters) of the pile and may cause behavior changes in fish up to 705-feet (215-meters) away. As such, the impact area was defined by the Corps to be 705-feet from the piles scheduled to be replaced. The Corps expects that the minimization measures implemented will reduce these impacts (such as the soft start).

The Corps expects that the use of polyurea coated piles minimizes toxic wood preservatives from leaching into the water and impacting listed species. Measures will be implemented to minimize sound impacts during construction, and construction would occur only during seasonal work

windows to reduce impacts to insignificant levels. The Corps does not anticipate direct or indirect impacts to critical habitat beyond sediment or turbidity discharges. The Corps expects discharge of material to be temporary, because the ebb and flow of currents would quickly disperse the suspended sediment to an insignificant level. The Corps does expect EFH to be adversely affected by turbidity from the action.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The effects of the Project are reasonably likely to include changes in the physical and biological attributes of the critical habitat including: temporary increase in turbidity from removal and installation of timber piles; temporary elevation of acoustics during impact hammer pile driving; and temporary increase in turbidity when the barge deploys stabilizing stubs. Although projects of this type have the potential to result in a reduction of the rearing and migratory corridor functions of the habitat, for reasons described below, the effects of this Project are expected to be insignificant.

Effects to Salmon and Steelhead Individuals

Adult SONCC coho salmon, CC Chinook salmon, and NC steelhead enter Humboldt Bay in the fall during migration to spawning tributaries (*e.g.*, Elk River, Freshwater Creek, Jacoby, and Salmon Creeks). The project is planned to occur from August 1 to October 15, which is when exposure to listed salmonids is least likely. The project will be implemented before the majority of the upstream adult spawning migrations and after the downstream migration of smolts has occurred. Based on survey data from lower Freshwater Creek Slough and lower Elk River (Wallace 2006, 2007; Wallace and Allen 2007), outmigrating and rearing salmon and steelhead smolts may be moving through the bay from January through mid –September. Acoustically tagged coho salmon smolts outmigrating from Freshwater Creek tended to move directionally with the tide, and were detected in deep channel and channel margin habitats in Humboldt Bay (Pinnix *et al.* 2008), and it is likely that outmigrating CC Chinook salmon and NC steelhead smolts occupy the deeper channel and channel margin water column habitats.

Pile Driving

NMFS currently uses a dual metric criteria of 206 dB peak SPL for any single strike, and a cumulative sound exposure level (cSEL) of 187 dB as thresholds to correlate physical injury to fish greater than 2 grams in size exposed to underwater sound produced during the installation of

piles with impact hammers (FHWG 2008). NMFS analysis concluded that the sound pressure levels likely to be generated by driving 14-inch timber piles will result in a peak of 180 dB, which is 26 dB lower than the NMFS peak dB threshold for physical injury. NMFS analysis also projects that a cSEL of 183 dB is expected within a radius of 5-meters from each of the four piles that are allowed to be driven each day, which is 4 dB less than NMFS threshold for injury resulting from cumulative sound exposure level. Installation of timber piles generally generates lower sound pressure levels per individual strike than steel or concrete piles. NMFS is not aware of, nor observed, any fish injury as a result of impact hammering of 14-inch concrete piles (Jacqueline Pearson-Meyer, personal communication, February 2014). Based on this analysis, injuries to listed salmonid species are not expected as result of exposure to underwater sound or pressure.

NMFS' threshold for behavioral effects on fish resulting from pile driving uses a root mean square (RMS) dB level of 150 RMS dB. NMFS analysis projects that the behavioral effects threshold of 150 RMS dB will be slightly exceeded within a 215-meter radius from each pile. Behavioral response by fish is not expected to interfere with their foraging, migration, or resting behaviors (Jacqueline Pearson-Meyer, personal communication, February 2014). The project will utilize a "soft start" approach where hammer strikes will begin at low pressure and slowly increase to full hammer strength. The soft start will allow listed species time to flee into suitable habitat elsewhere. Deep channels that are located outside of the sphere of acoustic influence are available into Elk River, North Bay, or the Entrance Bay allowing listed species suitable migratory habitat to find habitat elsewhere. Behavioral responses to the acoustics generated by pile driving will have an insignificant effect on listed salmonid species.

Turbidity

Turbidity may be caused by sediments which become suspended during pile replacement activities. Turbidity is expected to dissipate as it travels along with the tidal currents. Tidal currents are faster in deeper water, which will carry suspended sediments further from their place of origin than in shallower water. The faster tidal currents will assist in dispersing the sediment concentrations more rapidly. The Corps predicts that turbidity will dissipate to such low levels within 100-feet of each pile being replaced, that there will be an insignificant effect on listed salmonid species. Salmonids exposed to the small area (100-feet) of turbidity produced during pile replacement activities will not experience reduced feeding and have ample suitable habitat elsewhere in the Bay to forage, rest, or migrate.

Small forage fish (e.g., Pacific herring, northern anchovy) , as well as pelagic and planktonic invertebrates (e.g.crab zoeae and megalopae) and larval fish (e.g.Pacifc herring and northern anchovy) are important salmonid prey items; and are seasonally abundant in Humboldt Bay (Cole 2004, Ecological Analysts, Inc. 1983, Healey 1991, MacFarlane and Norton 2002). Adult Pacific herring enter Humboldt Bay to spawn from December to March, and larvae are present from January through May, and juveniles in spring, summer and fall (Barnhart et al. 1992, Ecological Analysts, Inc. 1983). Northern anchovy larvae and juveniles are present in Humboldt Bay throughout the year with peak larval abundance in January (Eldridge 1970). Distribution of small forage fish is a function of swimming ability as well as physical factors (e.g., tides, currents), whereas planktonic prey are distributed by the water currents. Therefore, turbidity generated during pile replacement is expected to have an insignificant effect on listed salmonids.

Leaching of Copper

The Project may also affect listed salmonids through leaching of copper from the preservative ACZA (ammoniacal copper zinc arsenate) used to treat the new timber piles to be installed. Copper in freshwater has been shown to affect the olfactory nerve function of salmonids at very low concentrations (NMFS 2009). Copper can be ubiquitous in freshwater environments from road runoff and other anthropogenic sources, and any increase above background levels can affect salmonids ability to detect and avoid predators, find prey, and even affect homing ability to natal streams. Despite the known impacts of dissolved copper in freshwater to the olfactory nerve of salmonids, recent research has shown that dissolved copper in saltwater has far less of an impact the ocean-going life history stages of salmonids (Baldwin 2012). To minimize leaching of copper, each pile will be treated and sealed with Specguard's Marine Grade Polyurea coating (E-375-08). E-375-08 is a slow curing sealant suitable for continuous immersion in marine environments. The sealant will minimize chemicals (such as copper) from leaching into the marine environment. The pile manufacturer will apply the sealant and allow it to cure prior to being shipped to the work sites. Therefore, NMFS expects that the leaching of copper, or other contaminants, from new treated piles will have a discountable effect on individual salmon and steelhead.

The minimization measures employed will minimize the exposure of individual salmon and steelhead to project activities. The Project will have an insignificant effect on salmon and steelhead individuals who are exposed to the effects of the Project, which are not expected to experience reduced growth or survival as a result. Therefore, the Project has an insignificant upon individual salmon and steelhead individuals.

Effects to Salmon and Steelhead Critical Habitat

The PCE's for CC Chinook and NC Steelhead in Humboldt Bay are focused on the rearing and migratory functions of the critical habitat. The essential habitat features of SONCC coho salmon critical habitat in Humboldt Bay also rely on the quality of the migratory and rearing habitat. As previously discussed, the negative effects of the Project have been minimized and are expected to have an insignificant effect on salmon and steelhead individuals. Given the small footprint of the action area in relation to Humboldt Bay, and the availability of deep water channels outside of the action area, the potential effects to foraging areas and migratory corridors is expected to be negligible. Because of the timing, location, limited spatial extent, short term duration of turbidity, and the abundance and accessibility of pelagic and planktonic prey in and adjacent to the action area, the potential negative effects of the Project to the rearing and migratory function of the critical habitat are likely insignificant.

Effects to North American Green Sturgeon Individuals

North American Southern DPS green sturgeon (green sturgeon) adults and sub-adults are temporary residents in Humboldt Bay from June through October, utilizing North Bay as summer-fall holding or feeding habitat, and the deeper waters of the North Bay Channel as a migratory corridor between the Pacific Ocean and Arcata Bay (Pinnix 2008). Pinnix (2008) used acoustic telemetry to document detections of 30 individual tagged green sturgeon in Humboldt Bay from 2006 to 2007. Data provided by Pinnix (2008) indicated that 92 percent of detections (131,411 of 142,362 detections) of green sturgeon were made in Arcata Bay.

Because the action area is centered in the shallow waters adjacent to the North Bay Channel (figure 1), and far from the feeding and holding habitat in Arcata Bay, the Project will have an discountable effect on the prey resources in Arcata Bay. Replacement of piles and the anchoring (via spud poles) and re-positioning of the barge are the only means of disturbance to benthic substrates in the action area that might affect prey resources of green sturgeon. The piles will be replaced in-kind and will not reduce the amount of benthic substrate available for prey habitat. Benthic habitat disturbed by the spud pole anchors will be recolonized within days. Because prey resources and habitat for prey will not be significantly reduced, the Project will have a discountable effect on the prey resources available to green sturgeon.

In San Francisco Bay, tagged green sturgeon exhibit both directional and non-directional movements (Kelly et al. 2007). Directional movements are characterized by continuous and steady swimming at a speed of approximately 1.8 ft per second, primarily within the top 6.5 ft of the water column. During non-directional movements, green sturgeon are either stationary, or move slowly near the bottom at an average speed of approximately 0.7 ft per second while making frequent changes of direction (Kelly et al. 2007). When green sturgeon swam near the bottom, they were in shallow, slow-flowing regions of the bay and were not oriented with respect to water currents. When near the surface, green sturgeon were swimming over deeper water in swift-flowing regions of the bay, and were oriented in the direction of the current. The green sturgeon in Humboldt Bay will likely exhibit similar behavior, and are expected to utilize the deeper waters of Entrance Bay and the North Bay Channel for migration to North Bay.

Based on the preponderance of detections in Arcata Bay it is likely that green sturgeon utilize the deeper waters of the North Bay Channel as a migratory corridor and travel rather quickly between the Pacific Ocean and Arcata Bay. Because exposure of individual green sturgeon is highly unlikely, the potential effects of the Project to individual green sturgeon are expected to be discountable. Therefore, the Project is not likely to reduce the growth or survival of green sturgeon.

Effects to North American Green Sturgeon Critical Habitat

The PCE's for green sturgeon in Humboldt Bay are focused on the rearing and migratory functions of the critical habitat. The migratory function of the North Bay Channel will be partially affected during replacement of those piles which are located at the western-most edge of the Chevron dock (along the deeper water portion of the dock). The sounds generated during pile replacement of the deep water pilings will have an insignificant effect on the migratory function of critical habitat, as the majority of the deep water channel will not be affected and remains available for migration between the Pacific Ocean and Arcata Bay. Therefore, the Project will have an overall insignificant effect on the migratory function of green sturgeon critical habitat. As previously discussed, the project is expected to have a discountable effect on the prey resources of the critical habitat.

Conclusion

Based on this analysis, NMFS concurs with the Corps' determination that the proposed project may affect, but is not likely to adversely affect federally threatened SONCC coho salmon, CC Chinook salmon, NC Steelhead, North American green sturgeon, and SONCC coho salmon, CC Chinook salmon, NC Steelhead, and North American green sturgeon critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Corps or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Under the MSA, this consultation is intended to promote the protection, conservation and enhancement of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10), and "adverse effect" means any impact which reduces either the quality or quantity of EFH (50 CFR 600.910(a)). Adverse effects may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

NMFS determined the proposed action would adversely affect EFH for species managed under the Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagics FMPs, as follows: (1) temporary reduction in water quality as a result of increased turbidity during pile replacement activities; and (2) temporary reduction in water quality as a result of increased turbidity during placement of spud poles.

As described in the Proposed Action section, the potential adverse effects are minimized to the extent practicable. The proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. Therefore, NMFS has no additional conservation recommendations. The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH. This concludes the MSA portion of this consultation.

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. The Corps also has the same responsibilities, and informal consultation

offers action agencies an opportunity to address their conservation responsibilities under section 7(a)(1).

Please direct questions regarding this letter to Mr. Matt Goldsworthy, Arcata, California, at (707) 825-1621 or via e-mail at Matt.Goldsworthy@noaa.gov .

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

cc: Carol Heisdeck, Corps of Engineers, San Francisco District, Eureka, CA
AR 151422WCR2014AR00050

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PERSONAL COMMUNICATIONS

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