CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
1385 8TH STREET, SUITE 130
ARCATA, CA 95521
VOICE (707) 826-8950
FACSIMILE (707) 826-8960

W11a

Filed:	7/13/16
180th day:	1/12/17
Staff:	M. Kraemer-A
Staff Report:	7/22/16
Hearing Date:	8/10/16

STAFF REPORT: REGULAR CALENDAR

Application No:	**1-16-0423**
Applicant:	**Humboldt County Public Works Dept.**
Location:	At river mile 7 on the lower Eel River on the "Worswick Bar" located off of 1300 Fernbridge Drive, approximately 1,500 feet upstream of Fernbridge, approximately 1 mile northwest of Fortuna, Humboldt County (APN 200-321-011).
Project Description:	Continued seasonal extraction of up to 25,000 cubic yards of river run aggregate (sand and gravel) per year for a period of nine (9) years from the dry river channel.
Staff Recommendation:	Approval with Conditions

SUMMARY OF STAFF RECOMMENDATION

The County of Humboldt proposes to conduct seasonal extraction of up to 25,000 cubic yards of gravel aggregate per year, for nine years, from the County-owned Worswick Bar located at river mile seven on the lower Eel River, in the Fernbridge/Fortuna area of Humboldt County. The Worswick Bar has been mined for sand and gravel by the County on an ongoing basis since approximately 1969. Gravel would be extracted using a variety of methods, including but not limited to traditional gravel bar skims, narrow skims, inboard skims, and wet trenching. The proposed annual extraction amount of 25,000 cubic yards is proposed as an upper limit, is consistent with the Programmatic Environmental Impact Report (PEIR) for the lower Eel River, and is based upon evaluation of data collected under the PEIR and Interim Management

Programs. In any given year, project extraction volumes, locations, and methods would be submitted by the project consultants for annual review and approval by local, state, and federal agencies, consistent with the terms and conditions of their prior authorizations. including the County of Humboldt, California Department of Fish and Wildlife, and the U.S. Army Corps of Engineers.

The major Coastal Act issue raised by this application is whether the proposed gravel extraction activities will be conducted in a manner that will protect environmentally sensitive habitat areas (ESHA) and riverine resources within and adjacent to the project site consistent with Sections 30230, 30231, 30233, and 30240 of the Coastal Act.

Staff believes that, with the recommended conditions described below, the proposed gravel extraction operation has been limited to ensure that: (i) no dredge or fill activities will occur within ESHA; (ii) only stream alterations that will improve fish habitat will be undertaken; and (iii) permissible development will avoid significant degradation of adjacent ESHA. The development as conditioned is consistent with limitations and protocols for lower Eel River gravel extraction projects developed by a multi-agency review team of local, state, and federal agencies pursuant to the U.S. Army Corps of Engineers approval process. The limitations and protocols are based in part on information and recommendations from the National Marine Fisheries Service and U.S Fish & Wildlife Service developed as part of the formal consultation process on threatened and endangered species required by the Federal Endangered Species Act. Staff believes that the proposed project as conditioned is consistent with the requirements of Sections 30230, 30231, 30233, 30236, and 30240 of the Coastal Act, as well as all other applicable policies of the Coastal Act.

The motion to adopt the staff recommendation of approval of Coastal Development Permit Application No. 1-16-0423 with special conditions is found on page 4.

TABLE OF CONTENTS

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 1-16-0423 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. **Extraction Limitations.** Extraction of material shall occur within the date limitations prescribed by Special Conditions 4, 5, and 6, and shall be subject to the following limitations:

   (A) Consistent with the proposed project description, the permittee shall extract no more than 25,000 cubic yards of gravel annually from the project site;

   (B) The permittee shall only extract material by traditional skims, horseshoe skims, inboard skims, narrow skims, alcove extractions, wetland pits, wet trenches for salmonid habitat improvement purposes only, and/or dry-trenches in the manner described in the U.S. Army Corps of Engineers (Corps) "Letter of Permission Procedure 2015-1 for Gravel Mining and Excavation Activities within Humboldt County" issued September 18, 2015. If wet trenching methods for salmonid habitat improvements are used, the trenching within the wet channel shall be limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat. If dry trenching methods are used, a barrier such as silt fencing, or a gravel berm shall be constructed and maintained during trenching along the entire length of the excavated area to prevent turbid water from entering the flowing river. After completion of gravel extraction operations, the permittee shall remove the berm to prevent the creation of fish traps;

   (C) Excavation shall not occur in the active channel (area where water is flowing unimpeded through the river channel);

   (D) Extraction quantities shall not exceed (i) the proposed cubic yards per year of gravel extraction, (ii) any specific allocation limit required by the Corps, and (iii) the long-term average sustained yield based on estimates of mean annual recruitment, as utilized by the County of Humboldt Extraction Review Team (CHERT);

   (E) Gravel extraction operations shall not disturb or remove any of the riparian vegetation on the river banks;

   (F) Gravel extraction operations shall not disturb or remove any of the riparian vegetation on the gravel bar that is either: (i) part of contiguous riparian vegetation complex 1/16-acre or larger, or (ii) one-inch-in-diameter at breast height (DBH) or greater;

   (G) Horseshoe extractions shall (1) be no lower than the 35% exceedance flow elevation; (2) be left with 2:1 (horizontal: vertical) cut slopes except along the upstream side at the head-of-buffer bar where a 6:1 slope shall be established; (3) maintain a minimum

15-foot buffer from the bank; and (4) daylight along the downstream one-third to one-fifth of the bar to facilitate drainage following high runoff events;

(H) Dry trench extractions shall be breached on the downstream end and connected to the river to prevent fish stranding after excavation when the sediment in the trench has settled;

(I) Alcove extractions shall be (1) located on the downstream end of gravel bars where naturally occurring alcoves form and provide velocity refuge for juvenile salmonids; (2) regularly shaped or irregularly shaped to avoid riparian vegetation; (3) open to the low flow channel on the downstream end to prevent fish stranding; and (4) extracted to a depth either above or below the water table;

(J) Any bar-skimming extractions that are consistent with subsection (B) above that are proposed adjacent to the low flow channel shall have a minimum skim floor elevation at the elevation of the 35% exceedance flow;

(K) The upstream end of the bar (head) shall not be mined or otherwise altered by gravel extraction operations. The minimum head of the bar shall be defined as that portion of the bar that extends from at least the upper third of the bar to the upstream end of the bar that is exposed at summer low flow; and

(L) The location of wetland pits shall be above the two-year flood frequency elevation.

2. Seasonal Crossings. No seasonal river crossings of any kind are authorized by this coastal development permit. Any proposed channel crossings shall require a coastal development permit amendment.

3. Annual Gravel Extraction Plan.

(A) PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee shall submit, for the review and written approval of the Executive Director, a final gravel extraction plan for that gravel extraction season consistent with the terms and conditions of this permit and that contains the following:

1. A gravel extraction plan of the annual gravel extraction operation containing cross-sections, maps, and associated calculations that accurately depict the proposed extraction area, demonstrates that the proposed extraction will be consistent with the extraction standards and limitations specified in Special Conditions 1, 2, 4, 5, 6, and 7 and is prepared in conformance with the requirements of the U.S. Army Corps of Engineers (Corps) "Letter of Permission Procedure 2015-1 for Gravel Mining and Excavation Activities Within Humboldt County" issued September 18, 2015;

2. A pre-extraction vertical rather than oblique aerial photo of the site taken during the spring of the year of mining at a scale of 1:6,000 and upon which the proposed extraction activities have been diagrammed;

3. A botanical survey prepared by a qualified biologist with experience in riparian and wetland vegetation mapping, for the review and approval of the Executive Director, that maps all vegetation found in potential extraction areas of the site and highlights the location and extent of all vegetated areas containing woody riparian vegetation that is either (a) part of a contiguous riparian vegetation complex 1/16-of-an-acre or larger or (b) one-inch-in-diameter at breast height (DBH) or greater. If the areas proposed for extraction are devoid of vegetation, the applicant may substitute the submittal of photographs (including aerial) that are sufficient in the opinion of the Executive Director to demonstrate that no vegetation exists in the proposed extraction areas in lieu of the botanical survey;

4. A copy of the gravel extraction plan recommended by CHERT for the subject year, unless review by CHERT is not required by the County, and evidence that the final gravel extraction plan is consistent with the recommendations of CHERT as well as consistent with all standard and special conditions of this permit;

5. A post-extraction survey of the prior year's mining activities (if any) conducted following cessation of extraction and before alteration of the extraction area by flow following fall rains, that includes the amount and dimension of material excavated from each area mined and is prepared in conformance with the requirements of the Corps "Letter of Permission Procedure 2015-1 for Gravel Mining and Excavation Activities Within Humboldt County" issued September 18, 2015;

6. The results of biological monitoring report data required by the Corps "Letter of Permission Procedure 2015-1 for Gravel Mining and Excavation Activities Within Humboldt County" issued September 18, 2015;

7. A plan for run-off control to avoid significant adverse impacts on coastal resources. The runoff control plan shall include, at a minimum, the following components;

   (a) Provisions demonstrating that:

      i. Run-off from the gravel mining extraction and stockpiling sites shall not increase sedimentation in coastal waters;

      ii. Run-off from the gravel mining extraction and stockpiling sites shall not result in pollutants entering coastal waters;

      iii. Best Management Practices (BMPs) shall be used to prevent entry of polluted stormwater runoff into coastal waters during the transportation and storage of excavated materials, including but not limited to:

      iv. A suite of the following temporary erosion and runoff control measures, as described in detail within in the "California Storm Water Best Management Commercial-Industrial and Construction Activity Handbooks, developed by Camp, Dresser & McKee, et al. for the Storm Water Quality Task Force, shall be used during mining: Spill Prevention

and Control (CA12), Vehicle and Equipment Fueling (CA31), Vehicle and Equipment Maintenance (CA32), Employee/Subcontractor Training (CA40), and Dust Control (ESC21);

(b) A narrative report describing all temporary runoff control measures to be used during mining;

(c) A site plan showing the location of all temporary runoff control measures; and

(d) A schedule for installation and removal of the temporary runoff control measures; and

8. Evidence demonstrating that any proposed wet trenching proposed for instream salmonid habitat restoration purposes is limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat, including, but not limited to, written approval of the proposed wet trenching from NMFS and/or CDFW.

(B) The permittee shall undertake development in accordance with the approved final plan. Any substantial changes to the plan require a permit amendment from the Commission. More minor changes to restoration plans may be approved by the Executive Director if it is determined that no amendment is legally required.

4. Protection of Western Snowy Plover.

(A) Extraction-related activities shall occur no earlier than July 22nd, and any extracted-related activities occurring prior to September 15th may only occur provided that appropriate surveys for western snowy plover are conducted prior to commencement of gravel extraction operations consistent with the methods, protocols, and directives detailed in plover Conservation Measures 2, 3, 4, 5, 6, and 10 listed in the September 3, 2015 Biological Opinion of the U.S. Fish and Wildlife Service for LOP 2015-1. Survey results shall be submitted to the Executive Director prior to commencement of gravel extraction operations.

(B) If surveys result in the detection of any adult plovers, broods, chicks, or nests within 1,000 feet of a planned extraction site or haul route, extraction activities shall only be performed and continue consistent with subsections 1-2 below:

1. If plovers or an active plover nest is within the area of planned operations or a 1,000-foot buffer area, activities within 1,000 feet of the plovers or nest shall be delayed until the nest has hatched and the plovers have moved to a distance greater than 1,000 feet away (hazing is not authorized).

2. Extraction activities within 1,000 feet of plover habitat may only occur if three consecutive days of FWS-approved plover surveys conducted by a FWS-approved biologist are completed with no detections of plovers or nests. Operators must ensure that extraction activities do not occur when plovers or nests are within 1,000 feet of the extraction site.

(C) Vehicle use in suitable plover habitat shall be consistent with the methods, protocols, and directives detailed in plover Conservation Measure No. 7 listed in the September 3, 2015 Biological Opinion of the U.S. Fish and Wildlife Service for the Corps Letter of Permission (LOP) 2015-1.

(D) Access roads owned, controlled, or used by the gravel operator shall be gated and locked when no active extraction and hauling is occurring, including at night, to deter recreational vehicles from impacting western snowy plover nesting habitat on gravel bars. However, gates shall be designed only to block vehicles and shall allow for pedestrian access to the river, unless the applicant obtains additional authorization from the Commission to block pedestrian access.

(E) All trash and food scraps in the work area shall be removed daily and secured in predator-proof receptacles. Feeding wildlife, including corvids and gulls, shall be prohibited.

5. Protection of Western Yellow Billed Cuckoo.

(A) Prior to commencement of gravel extraction operations in any given year, annual pre-activity surveys for western yellow-billed cuckoo shall be conducted consistent with the methods, protocols, and directives detailed in plover Conservation Measures 1 through 6 listed in the September 3, 2015 Biological Opinion of the U.S. Fish and Wildlife Service for the Corps Letter of Permission (LOP) 2015-1. Survey results shall be submitted to the Executive Director prior to commencement of gravel extraction operations.

(B) If surveys result in the detection of any cuckoos within 1,000 feet of a planned extraction site or haul route, extraction activities shall not commence until the nest has hatched or the fate of the nest has been determined in consultation with the U.S. Fish and Wildlife Service. Hazing is not authorized.

(C) Suitable habitat for the cuckoo shall not be cleared, cut, or removed, except for hand pruning of overhanging vegetation (stems smaller than 6 inches in diameter) along existing haul routes. As required by Special Conditions 1 and 7 of this coastal development permit, gravel extraction operations shall not disturb or remove any riparian vegetation on gravel bars that is either (i) part of a contiguous riparian vegetation complex 1/16-acre or larger or (ii) that is 1-inch-in-diameter at breast height (DBH) or greater.

6. Extraction Season and Reclamation.

(A) No gravel extraction operations shall occur prior to September 15th, except as may be allowed pursuant to pre-activity survey clearances detailed in Special Conditions 4 and 5 of this coastal development permit and the related Conservation Measures listed in the September 3, 2015 Biological Opinion of the U.S. Fish and Wildlife Service for LOP 2015-1. In no case shall gravel extraction operations occur prior to July 22nd.

(B) All extraction and reclamation must be completed by October 15th of each season. The Executive Director may approve up to a two-week extension of gravel extraction

and reclamation activities beyond that date to as late as November 1st if the permittee has submitted a request for an extension in writing, the Executive Director determines that dry weather conditions are forecast for the extension period, and any necessary extensions of time have been granted by the CDFW, the Corps, and NMFS. No extraction or reclamation activities shall occur after October 15th unless the permittee has first received approval of an extension of time in writing from the Executive Director. The permittee must have reclaimed all portions of the seasonal development area before an extension can be authorized.

(C) The seasonal development area must be reclaimed before October 15th, or by the extended date approved by the Executive Director pursuant to subsection (B) above. All other portions of the site must be reclaimed when extraction has been completed. Reclamation includes: (a) filling in depressions created by the mining that are not part of the approved extraction method; (b) grading the excavation site according to prescribed grade; and (c) removing all temporary fills from the bar. After October 15th, the development area must be reclaimed daily.

7. Resource Protection. The gravel extraction and processing operations shall not disturb or remove any of the established riparian vegetation habitats along the banks of the river, nor any of the riparian vegetation areas on the gravel bar limited by Special Condition 1. No new haul roads shall be cut through the habitat. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete, oil or petroleum products, or other organic or earthen material from any gravel extraction or reclamation activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into river waters.

8. Permit Termination Date. The gravel operations authorized by this permit are valid for five (5) gravel extraction seasons from the date of Commission approval (i.e., gravel extraction is authorized during the 2016 through the 2020 extraction seasons). One request for an additional four-year (4-yr.) period of development authorization may be accepted, reviewed, and approved by the Executive Director for a maximum total of nine (9) years of development authorization (i.e., the 2021 through the 2024 extraction seasons), which is coincident with the authorization period of LOP 2015-1 and the associated Biological Opinions, provided that the request would not substantively alter the project description and/or potentially require modifications of conditions due to new information or technology or other changed circumstances. The request for an additional four-year period of development authorization shall be made prior to July 22, 2020 (which is the start of the 5th extraction season authorized under this permit). If the request for an additional four-year period would substantively alter the project description and/or potentially require modifications of conditions due to new information or technology or other changed circumstances, an amendment to this permit will be necessary. All gravel operations proposed after December 31, 2024, or after 2020 if no additional four-year period of authorization has been granted by the Executive Director or amendment has been obtained, shall require a new coastal development permit.

9. Annual Approvals of Other Agencies. PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee shall provide to the Executive Director copies of permits or other required approvals issued by the Corps, the Regional Water Quality Control Board, the State Lands Commission, and/or the California

Department of Fish and Wildlife granting approval for that year's gravel extraction season, which is/are consistent with all terms and conditions of this coastal development permit, or evidence that no seasonal authorization(s) is/are required. The permittee shall inform the Executive Director of any changes to the project required by the Corps, the regional water board, and/or the CDFW. Such changes shall not be incorporated into the project until the permittee obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. PROJECT LOCATION & DESCRIPTION

The project site is located at river mile 7 on the lower Eel River on the County-owned "Worswick Bar" located off of Fernbridge Drive approximately 1,500 feet upstream of Fernbridge (Exhibits 1 and 2). However, the proposed action involves the extraction of up to 25,000 cubic yards annually for a permit term that coincides with the U.S. Army Corps of Engineers (Corps) "Letter of Permission Procedure 2015-1 for Gravel Mining and Excavation Activities within Humboldt County" issued September 18, 2015 (LOP 2015-1), which authorizes gravel extraction on various gravel bars, including the subject site, until December 31, 2024.

Gravel has been extracted on an occasional (annual or less frequent) basis from Worswick Bar since approximately 1969. The total area of the Worswick Bar subject to potential gravel removal and associated activities covers approximately 230 acres. Typically, approximately 10 acres are temporarily disturbed by annual aggregate extraction activities, as described below (and see Exhibits 3-4). The actual volume of aggregate material removed and the specific areas of extraction within the Worswick Bar vary annually based on seasonal replenishment. The proposed annual extraction amount of 25,000 cubic yards is proposed as an upper limit, is consistent with the Humboldt County Programmatic Environmental Impact Report (PEIR) for the lower Eel River, and is based upon evaluation of information and data that has been collected under the PEIR and existing Interim Management Programs.

In any given year, project extraction volumes, locations, and methods would be submitted by the applicant for approval by local, state, and federal agencies including the County of Humboldt Extraction Review Team (CHERT), California Department of Fish and Wildlife (CDFW), and the Army Corps of Engineers (Corps). Annual assessments and site evaluations would be used to determine (i) where aggregate could be excavated without causing long-term river-bed degradation, (ii) the levels and volume of recruitment, and (iii) appropriate extraction volumes. No mining would occur at any location until after specific mining and reclamation plans are developed and approved on the basis of annual environmental assessments and monitoring of the proposed project site. Proposed gravel extraction operations would utilize several different kinds of extraction methods, including traditional skimming, narrow skims, horseshoe skims, wetland pits, alcoves, and potentially trenching for the purpose of salmonid habitat enhancement (see Appendix C for an excerpt of the NMFS Biological Opinion, which includes detailed extraction methods allowed on the subject site). The annual mining would include one or more of the above

methods, depending on factors such as extraction site location, salmonid habitat enhancement needs, annual replenishment of aggregate, and other environmental factors.

River-run aggregate typically is removed using scrapers, dozers, excavators, loaders, and dump trucks. After the applicant has removed the aggregate to the approved extraction design lines and grades, the extraction area is graded as necessary to leave no depressions or berms that may potentially trap fish or cause impacts to surrounding habitats. After the surfaces of the site are graded for seasonal reclamation, the natural reclamation process occurs during the high flow events of the following winter.

Numerous mitigation and impact avoidance measures are proposed to be implemented during the aggregate extraction process and are required to be implemented by the Corps' LOP 2015-1, including, but not limited to, the following:

- Skimming is the preferred extraction method for Worswick Bar. Traditional skimming extraction areas typically would be located on the inside of meanders, on point bars or side channel bars. The head of the bar, upstream riffle, and channel cross-over would be preserved by locating extractions on the lower two-thirds of the bar, downstream of such features. Minimum extraction floor elevations would be designed to maintain at least 20-inches of depth over riffles.

- Extraction activities in areas containing riparian vegetation would be managed to protect vegetation from removal or disturbance by the extraction processes or low to moderate flow events. This would be achieved by adjusting extraction boundaries to avoid vegetation and by maintaining horizontal buffers around vegetation patches in a manner that would reduce erosion.

- The extraction area is confined to the elevation of the 35 percent exceedance flow of the Eel River in order to maintain confined stream depth for migrating salmonids (coho salmon, Chinook salmon, and steelhead trout), as is required by LOP-2015 and the terms and conditions of NOAA-Fisheries (National Marine Fisheries Service, or NMFS) Biological Opinion (BO) completed for gravel extraction operations in Humboldt County.

- On-bar stockpiling of aggregate would occur in designated areas that would be delineated during the pre-extraction agency site visits. Any on-bar stockpiling would be temporary until transport to the processing facility could be coordinated.

- Extraction operations conducted after October 15th in any given mining year would maintain reclaimed conditions at the end of each working day and temporary stockpiles would be no larger than the volume of aggregate that could be removed from the bar surface during the current work day.

- During any given extraction year, gravel mining would not occur until after July 22nd, consistent with U.S. Fish and Wildlife Service's (FWS) recommendations for minimizing disturbance of the western snowy plover (*Charadrius nivosus nivosus*) and

the western yellow-billed cuckoo (*Coccyzus americanus*) during their breeding seasons, as recommended in the FWS BO completed for gravel extraction operation in the area under the Corps' LOP 2015-1 (see Exhibit 5).

- Extraction operations would be completed in any given mining year by October 31st at the latest. This involves grooming and smoothing the extraction areas to prevent potential fish stranding and to promote a predictable flow pattern over the site upon inundation.

- Following final reclamation each year, all equipment and vehicles would be removed from the bank full channel by November 1st or earlier if declared by the Corps, NMFS, and/or CDFW. This coincides with the onset of the rainy season and rise in the river, which likely will inundate the extraction areas and/or prompt the upstream migration of adult salmonids.

B. ENVIRONMENTAL SETTING

The lower Eel River from the city of Rio Dell downstream to the estuary is a depositional reach bordered by open pastures and some urban development. The average channel width of the lower Eel in the project area is 1,900 feet, and summer fog influences river water temperatures. Historically, the channel in much of the project area was significantly deeper than it is currently, and through the first half of the 20th-century the river was navigable by shallow drift boats for commercial shipping. Historical analyses of gradient and riffle conditions in the lower Eel provides additional evidence that the river is severely aggraded relative to historic conditions. The lower Eel River at its confluence with the Van Duzen River (several miles upstream of the project site) is aggraded to the point that, in some years (e.g., 1994 and 2001), salmonids holding in the lower Eel River cannot migrate upstream in late fall due to subsurface flows. This same situation has occurred just below the Sandy Prairie levee approximately three miles upstream of the project site.

Bank protection and levee structures placed in the lower Eel River have limited the river's ability to migrate and overflow its banks. The river's meandering ability during high flows has been influenced by the past land uses in the area, including construction of the Sandy Prairie levee in 1959, the Grizzly Bluff levee following the 1964 flood, plus the cutting of the old original channel sometime in the 1860's at Fernbridge (immediately downstream of the project site). Levees separate potential overflow areas from the main channel and concentrate the high flow energy of floods to a narrower part of the river bed, thereby moving more bedload material through the project area. When available sediment exceeds the channel carrying capacity sediment deposition (channel aggradation) occurs.

Currently, six other gravel operators are located in the coastal zone along an approximately 9-river-mile reach of the lower Eel River, all of which extract sand and gravel from the rivers. Additionally, three other gravel operations are located upstream of the project site on the Van Duzen River, one of which is within the short section of the Van Duzen River that is within the coastal zone. Appendix B summarizes the permitting and gravel extraction history of the lower Eel River, including the subject site, over the years.

The subject property stretches along approximately one-half mile of the river and extends from approximately the middle of the Eel River northeasterly to the North Coast Railroad Authority right of way. As mentioned above, the total project area is approximately 227 acres in size, a portion of which is within the current boundary of "ordinary high water." The area within the OHW boundary is subject to change based upon natural river processes (e.g., erosion, accretion, and meander). The bar is largely exposed during low river flow conditions during the dry season and submerged during high flow conditions in the winter. The northeasterly side of the parcel encompasses the riverbank and a narrow, approximately 50-foot-wide strip of upland area adjacent to the railroad right of way. This upland strip has been used previously and is proposed to be used again as part of the current application as an aggregate facility where processing activities occur, including sorting and crushing.

The gravel extraction areas on the subject bar are somewhat visible from Highway 101, from Fernbridge Drive, the highway frontage road, and from Highway 255 over Fernbridge. The principal public access use of the project site is for recreational fishing, though the prime fishing season occurs in the spring or wet season when gravel extraction is not occurring. Although the Humboldt County zoning for the property includes an archaeological combining zone (indicating the area is considered to have the potential for archaeological resources), no known archaeological resources exist at the site. Areas of gravel bars within the bank full channel are generally not considered conducive to the establishment or preservation of archaeological sites due to the high incidence of inundation and fluvial reworking.

Habitat Types & Special-Status Species in the Area. Habitat types that occur in the area include the exposed gravel bars, riparian habitat, and the low-flow river channel. The exposed gravel and cobble on the bar adjacent to the low-flow channels provides roosting and/or nesting habitats for at least two avian species, killdeer (*Charadrius vociferus*) and western snowy plover (*Charadrius nivosus nivosus*). The western snowy plover has been listed under the federal Endangered Species Act (ESA) as a threatened species since 1993. Plovers have in the past been observed nesting on gravel bars of the lower Eel and lower Van Duzen Rivers during April through early September. Unlike many avian species which nest in trees, plovers establish their nests on the open gravel bars.

In general, the riparian vegetation lining the lower Eel River is perhaps the single-most important element for the natural environment in the area, providing habitat for many birds and mammals. The presence of two different kinds of riparian habitat, riparian scrub and black cottonwood forest, provides habitat for a greater number of wildlife species than a more uniform and simple habitat structure would. Although none have been detected at the project site, riparian forest along the lower Eel River offers suitable habitat for a state-listed endangered species, the willow flycatcher (*Empidonax traillii*), as well as four "species of special concern," including black-shouldered kite (*Elanus caeruleus*), Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). In general, the riparian zone along the lower Eel River provides migration routes and breeding habitat for wildlife. Over 200 different species of birds and 40 different species of mammals have been observed in the Eel River Delta, most of which utilize portions of the riparian corridor. Riparian vegetation also is critical to the survival of salmonids residing in and migrating through the lower Eel River. In

addition to its habitat value, the riparian corridor also provides water quality protection, bank stabilization through root penetration, and flood protection.

The western yellow-billed cuckoo (*Coccyzus americanus*) was listed as a threatened species under the federal Endangered Species Act (ESA) in 2014 and is also listed as threatened under the California ESA. Critical habitat for the species was proposed by the FWS in 2014 and is not yet finalized. If designated, critical habitat in the Lower Eel River would comprise an 8-mile long continuous segment of willow-cottonwood riparian vegetation from west of the town of Fortuna (Sandy Prairie) through the project site downstream to the Eel River estuary. Proposed designated critical habitat for this species consists of riparian stands of more than 37 acres and more than 325 feet in width. The yellow-billed cuckoo may use the riparian areas adjacent to gravel mining operations and haul routes along the lower Eel River for breeding habitat.

The Eel River and its tributaries are ranked among the most significant anadromous fisheries in Northern California. Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*) are among the most important species with regard to commercial and sport fisheries. The Southern Oregon – Northern California Coasts Evolutionarily Significant Unit of coho salmon (SONCC coho) is currently listed as a threatened species in areas between Punta Gorda and the California-Oregon border under the both the Federal Endangered Species Act (ESA) and the state of California Endangered Species Act (CESA). SONCC coho salmon was listed by the federal government in May of 1997, with critical habitat designated in May of 1999. Additionally, California Coastal Chinook salmon was federally listed as "threatened" in September of 1999, with critical habitat designated in February of 2000. Finally, North Coast steelhead trout was listed as "threatened" in June of 2000. The lower Eel River, including the project area, is mainly utilized by anadromous fish as a migration route to and from the upstream spawning grounds. In addition, the lower Eel River provides summer rearing habitat for juvenile salmonids, especially steelhead yearlings and fall Chinook sub-yearlings, and holding areas for adult summer steelhead as well as spawning and nursery habitat for marine fishes and invertebrates. Other fish species in the river that are listed by the California Department of Fish and Wildlife as "species of special concern" include coastal cutthroat trout (*Oncorhynchus clarki*) and Pacific lamprey (*Lampetra tridentata*). The Northern population of Green sturgeon (*Acipenser medirostris*) is dually listed under CESA and the ESA.

The riverine habitat of the river channels on the project site and the occasional ponds that form under summer low-water conditions provide habitat not only for fish, but also for invertebrates, amphibians, invertebrate-eating birds, and various mammals including river otters, mink, and other mammals that come to the river to forage (e.g., deer and raccoon).

C. REGULATORY BACKGROUND

The lower Eel River has been used for gravel extraction since 1911. The subject site has been used for gravel extraction on an occasional (annual or less frequent) basis since 1969. Currently, six gravel operations are located along a 9-mile stretch of the Lower Eel River, and three additional operations are located on the lower reaches of the Van Duzen River, which flows into the Eel River near Alton. All of the operations along the Eel River and the portion of the lowest most operation on the Van Duzen River are within the coastal zone. All of the gravel operations on the Lower Eel and Van Duzen Rivers are interrelated in the sense that all of the gravel bars

derive their material from the same upstream sediment sources. The Eel River is considered to be a "hydraulically-limited" rather than "sediment-limited" river. This means that replenishment is more a factor of the size and duration of winter flows than the production of sediment in the watershed. Thus, over-extraction by all of the projects in the lower Eel River combined with multiple low winter flow years can contribute cumulatively to erosion of the bed and banks of the river, which in turn can erode adjacent riparian and other habitat areas, interfere with fishery resources, undermine bridge supports, and cause other significant adverse impacts if not properly managed.

The Commission previously granted five-year gravel extraction permits to the applicant in 2009 (CDP 1-09-014)[1], 2004 (CDP No. 1-04-024)[2], and 1996 (CDP No. 1-96-062),[3] and a one-year authorization to extract gravel in 2002 (CDP No. 1-00-055).[4] In addition, over the past two-plus decades, the Commission has issued at least 33 permits for gravel extraction operations on the lower Eel and lower Van Duzen Rivers, as summarized in Appendix C. In general, actual annual extraction volumes in the lower Eel River have been lower than the annual approved volumes over the last decade. Gravel extraction operations have historically varied with market demands and river conditions. Actual annual extracted volumes have consistently been lower than approved volumes. From 1997 through 2014, a total of 3,366,790 cubic yards of aggregate was extracted from the Lower Eel River (averaging 187,044 cubic yards annually), which is only 65 percent of the total approved volume of 5,193,634 cubic yards.

Gravel mining operations on the Eel River require the approval of a number of different local, state and federal agencies. The initiation of coordinated review of gravel mining began in 1991, when to comply with environmental review requirements under the California Environmental Quality Act (CEQA), Humboldt County prepared a PEIR that described and analyzed the potential environmental effects resulting from the ongoing gravel removal operations in the lower Eel and Van Duzen River watersheds. The PEIR was certified in July 1992 and is still used in the management of gravel extraction projects in the area today.

Subsequent to the adoption of the PEIR, the County began regulating gravel operations through a comprehensive monitoring and management strategy that was established to control the cumulative impacts of approved gravel operations on riverbed degradation and bank erosion. At the heart of the strategy is an administrative approval process that annually reviews the proposed extraction plans, including proposed methods and locations of extraction. Additionally, the strategy includes a long-term monitoring component that provides data for use when making annual decisions on where and how much gravel can be removed from the lower Eel and Van Duzen Rivers without adversely affecting the rivers. The monitoring program involves periodic biological surveys, annual cross-sections and thalweg profiles, and annual aerial and ground photography at each gravel operation site. The information is then complied and compared to previous year's data to determine quantities of gravel recruitment, changes in channel morphology, and potential impacts on wildlife and fisheries.

[1] See http://documents.coastal.ca.gov/reports/2009/9/W25b-9-2009.pdf.
[2] See http://documents.coastal.ca.gov/reports/2004/9/TH8d-9-2004.pdf.
[3] See http://documents.coastal.ca.gov/reports/1997/6/F8b-6-1997.pdf.
[4] See http://documents.coastal.ca.gov/reports/2002/8/W15h-8-2002.pdf.

In addition to the monitoring component of the approval process, the County has established an extraction review team (CHERT) to provide the County and other agencies with scientific input on on-going gravel operations. CHERT is composed of independent fluvial morphologists, hydrologists, and biologists, and the group has the authority to review all annual gravel extraction plans and identify the need for changes to those plans as deemed necessary by the monitoring data. CHERT plays an active role in the annual approval process, and works with the gravel mining operators to establish annual extraction quantities and extraction methods that comply with local, state and federal regulations and permit requirements.

In addition to local government approval, the gravel extraction operations on the lower Eel and Van Duzen Rivers require authorization from the Corps. To coordinate and expedite this process for the numerous in-stream gravel extraction operations in Humboldt County, the Corps adopted a Letter of Permission (LOP) procedure for authorization of such projects. The LOP procedure includes incorporation of the County's CHERT review process. An applicant who wants to be covered by the LOP must submit annual gravel plans and monitoring information to the Corps for approval under the procedure. LOPs have been issued for gravel extraction operations since 2002, with the current LOP authorization signed as effective September 18, 2015 through December 31, 2024.

As with all federal actions that might adversely impact rare, threatened, and endangered fish and wildlife species, the LOP process is subject to consultations with the applicable natural resource trust agencies as required under Section 7 of the Endangered Species Act (ESA). Consultations are conducted by the NOAA-Fisheries National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) who are the trust agencies responsible for species listed under the ESA. Section 7 of the ESA directs all federal agencies to use their existing authorities to conserve threatened and endangered species, and, in consultation with other federal agencies possessing ecological expertise regarding ecology and habitat requirements for these plants and animals, ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that may affect listed species, such as federal approval of private activities through the issuance of federal permits, licenses, or other actions such as the LOP gravel mining and authorization procedure. The consultation process consists of the applicant developing a biological assessment (BA) that details the current status of the fish and wildlife species in the subject area, as well a preliminary assessment of the likely effects of the action on those species. The BA is then submitted to the resource agencies assigned the responsibility for protecting the ESA-listed species. Following review and analysis of the information provided in the BA, the agencies issue a Biological Opinion (BO) regarding impacts of the proposed action on listed fish and wildlife species, in this case, gravel extraction operations.

The NMFS BO, which was published for LOP 2015-1 on August 27, 2015, covers coho salmon, Chinook salmon, and steelhead trout. The FWS BO, which was published on September 3, 2015, covers the western snowy plover and the western yellow-billed cuckoo. Both consultations are valid through the "life" of LOP 2015-1, which is effective through 2024. The consultations provide critical evidence that proposed gravel mining operations on the Lower Eel and Van Duzen Rivers will not result in significant adverse impacts on threatened and endangered species. In past actions on CDPs for gravel mining on the Lower Eel and Van Duzen Rivers, the

Commission has relied upon BOs to find consistency of the gravel mining projects with the Coastal Act.

D. STANDARD OF REVIEW

The project site is located in the Commission's retained permit jurisdiction. The County of Humboldt has a certified LCP, but the site is within an area shown on State Lands Commission maps over which the State retains a public trust interest. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

E. OTHER AGENCY APPROVALS

Humboldt County

The County approved a Special Permit for a Vested Rights determination for the continued use of the subject site for gravel extraction and processing of up to 200,000 cubic yards of gravel annually on December 1, 1987 (SP-73-87). In addition, pursuant to the Corps LOP permit procedures and the County of Humboldt's surface mining regulations, in-stream gravel mining projects within Humboldt County are required to be assessed for potential direct and cumulative to riverine resources by an independent scientific panel known as CHERT. The CHERT in turn makes specific recommendations including recommendations that may involve changes to the amount of gravel proposed to be extracted, the specific location(s) of the extraction area(s), or the proposed mining techniques. To ensure that the annual gravel extraction plan recommended for approval by CHERT each year is the same as the annual gravel extraction plan that was reviewed under this permit by the Commission, and to ensure that extraction does not exceed the extraction limits established under Special Condition 1, the Commission attaches Special Condition 3-A-(4). This special condition requires the applicant to annually submit to the Executive Director for written review and approval a copy of the pre-extraction mining plan review comments obtained from the CHERT as part of the final gravel extraction plan as well as evidence that the final gravel extraction plan is consistent with all recommendations of CHERT and all terms and conditions of this permit.

U.S. Army Corps of Engineers (Corps)

As previously discussed, the Corps is permitting the proposed gravel operations under its Letter of Permission Procedure 2015 (LOP 2015-1). The Corps issued LOP 2015-1 for upstream gravel operations on September 18, 2015. The Corps is currently processing a Letter of Modification to authorize this year's proposed gravel extraction activities on Worswick Bar under LOP 2015-1. To ensure that the project ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches Special Condition 9, which requires the applicant to submit to the Executive Director evidence of the Corps' approval of the project prior to commencement of gravel operations each year that gravel operations are proposed. The condition requires that any project changes resulting from the Corps' approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit. The Commission also attaches Special Condition 8 to specify an authorization termination date of December 31, 2024, which corresponds to the project termination dates listed in LOP 2015-1 and in the associated BOs. The condition limits the length of development authorization under this CDP to a period of five years from the date of Commission approval. One request for an additional four-year period of development authorization may be accepted, reviewed, and

approved by the Executive Director for a maximum total of nine (9) years of development authorization (corresponding to the project termination dates listed in LOP 2015-1 and in the associated BOs), provided that the request would not substantively alter the project description and/or require modifications of conditions due to new information or technology or other changed circumstances. This condition ensures that the Commission will have the opportunity to reconsider the project activities at a later date, and the future reconsideration of the project would have the benefit of being informed by the results of the gravel extraction operations authorized under this CDP.

Regional Water Quality Control Board

The project requires a Water Quality Certification (WQC) from the North Coast Regional Water Quality Control Board pursuant to Section 401 of the Clean Water Act. The Board issued WQC Order No. 1B02129WNHU for gravel extraction activities on July 19, 2016, expiring on July 19, 2021. Special Condition 9 requires the applicant to submit to the Executive Director evidence of the regional board's approval of the project prior to commencement of gravel operations each year that gravel operations are proposed.

California Department of Fish and Wildlife (CDFW)

The project requires a Section 1600 Streambed Alteration Agreement from the CDFW. The applicant received the approved agreement (#1600-2011-0044-R1) in 2011. The agreement expires on July 21, 2021. Special Condition 9 requires the applicant to submit to the Executive Director evidence of the department's approval of the project prior to commencement of gravel operations each year that gravel operations are proposed.

State Lands Commission

The project is located in the bed of the Eel River, a navigable river, between the ordinary high water marks. As such, the State of California holds a public trust easement and other property interests at the site. Any such property interest would be administered by the State Lands Commission. The SLC has indicated in a letter to the applicant that SLC authorization only is required for activities taking place below the ordinary low water mark of the river at the project site. As no extraction activities or seasonal crossing construction is proposed below the ordinary low water mark, no SLC approval is required. Although no wetland trenching that might extend below the ordinary low water mark is presently planned, if the County were to pursue an extraction plan in any given year using wetland trenching, Special Condition 9 requires that any required SLC authorization for such development would have to be provided prior to commencement of extraction as part of the annual gravel extraction plan required by Special Condition 3.

F. Review of In-Stream Gravel Extraction Projects Under the Coastal Act

Several coastal resource protection policies of the Coastal Act apply to gravel extraction projects along the Eel River. The applicant's gravel extraction project is typical of most of the gravel extraction operations on the lower Eel River in that it includes (i) traditional skimming of gravel bars that are dry and exposed in the summer but inundated during high winter flows, (ii) trenching of gravel bars that may extend into the wetted channel even during the dry season, (iii) the placement of gravel along the edges of secondary channels to create abutments for seasonal

railroad flat car crossings for vehicles used in the gravel extraction operations, and (iv) stockpiling, staging, and/or processing operations in upland areas adjoining the river and adjacent to existing riparian areas. As discussed in the findings below, the skimming of gravel bars outside ESHA constitutes permissible fill and dredge of seasonal wetlands pursuant to Section 30233. The limitations of both Section 30233 and 30240(a) prohibit the skimming of the gravel bar in locations containing environmentally sensitive habitat area such as nesting habitat for the western snowy plover, or developed riparian habitat. The trenching of gravel bars containing ESHA that extends into the wetted channel may only be authorized if it is a permissible alteration of a river or stream as set forth in Section 30236. Finally, most of the elements of the gravel extraction operation are adjacent to various kinds of ESHA, including salmonid habitat within the waters of the river, nesting snowy plover habitat on the gravel bars, riparian habitat on the bars and along the river banks, and yellow billed cuckoo breeding habitat within some of the afore-mentioned riparian habitat. As such, these elements of the gravel extraction operations are subject to the requirements of Section 30240(b) that development adjacent to ESHA be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and restoration areas.

For the reasons discussed in the findings below, the Commission reviews (i) development undertaken outside ESHA involving the skimming of the dry gravel bars under Section 30233 in Finding G, "Gravel Extraction Operations Within Riverine Wetlands," below, (ii) the trenching of gravel bars containing ESHA that extend into the wetted channel under Section 30236 in Finding H, "Development Within Coastal River and Streams," below, and (iii) all of the elements of the gravel extraction operations that are adjacent to ESHA in the mitigation discussion of Finding G and in Finding I, "Protection of Environmentally Sensitive Habitat Areas."

G. GRAVEL EXTRACTION OPERATION WITHIN RIVERINE WETLANDS

Section 30233 of the Coastal Act allows the dredge and fill of wetlands for mineral extraction outside of ESHA, stating, 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:*
>
> …
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
>
> …
>
> *(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…*

Section 30107.5 of the Coastal Act defines "environmentally sensitive area" as encompassing:

> *…any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

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

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

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.*

When read together as a suite of policy directives, Sections 30230, 30231, and 30233 set forth a number of different limitations on what types of projects may be allowed in coastal wetlands. For analysis purposes, the limitations applicable to the subject project can be grouped into four general categories or tests. These tests require that projects that entail the dredging, diking, or filling of wetlands demonstrate that (i) the purpose of the filling, diking, or dredging is for one of the seven uses allowed under Section 30233; (ii) the project has no feasible less environmentally damaging alternative; (iii) feasible mitigation measures have been provided to minimize adverse environmental effects; and (iv) the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

Allowable Use

The first test set forth above is that any proposed fill, diking, or dredging must be for an allowable use as enumerated under Section 30233 of the Coastal Act. The proposed project involves dredging and temporary filling for the mining of gravel aggregate materials. Mineral extraction is specifically enumerated as a permissible use in the above-cited policy [Section 30233(a)(5)], provided the activity is not undertaken in environmentally sensitive areas. Therefore, to the extent that the proposed gravel extraction activities will avoid environmentally

sensitive areas, the proposed gravel extraction operation is consistent with the use limitations of Section 30233(a)(5).[5]

There are various types of environmentally sensitive habitats around the project site including: (i) the flowing waters of the river, which is habitat for threatened salmonid species; (ii) riparian habitat, including North Coast riparian habitat that is breeding habitat for the federally threatened western yellow-billed cuckoo and North Coast black cottonwood forest (a rare vegetation type); and (iii) exposed gravel bars adjacent to the flowing water that provide nesting habitat for the federally threatened western snowy plover. As discussed below, the proposed mining project will be located in areas that will avoid intrusion into these habitat areas and/or be performed at times when sensitive species will not be nesting and/or utilizing the site for habitat.

i. No Dredge or Fill Within Flowing River Channel

Under Section 30107.5 of the Coastal Act, any area supporting a plant, animal, or habitat is environmentally sensitive if the area meets two main criteria: (1) the plant, animal, or habitat is either rare or of special value because of its special nature or role in the ecosystem, and (2) the area could be easily disturbed or degraded by human activities and developments.

The water column and river bottom substrate within the year-round low-flow channel of rivers provide habitat for a wide variety of resident and migratory fish and wildlife species at all trophic levels, ranging from aquatic macroinvertebrates to mammals. These perennially-inundated areas within the river meet the first criterion of the definition of environmentally sensitive area cited above, because during the time that the proposed mining would be conducted within these riverine areas, the inundated areas of the reach may contain federal- and state-listed salmonids. The perennially-inundated areas within the river also meet the second criterion of the definition of environmentally sensitive area cited above, in that diversion, dewatering, fill, and dredging activities for gravel extraction can easily disturb and degrade the affected habitat areas. Trenching can also destabilize the river channel and cause erosional impacts that can degrade the perennially aquatic habitat long after the initial excavation work is completed. In past permit actions the Commission has previously determined that such riverine habitat that supports threatened salmonids and other sensitive fish species is ESHA, and the Commission has consistently conditioned permits for development in and near such ESHA to avoid disturbances of such environmentally sensitive aquatic resources.

[5] The multi-year gravel operation proposes to use a variety of extraction techniques that have been established by the previous Corps LOP and recommended by NMFS as techniques that would avoid significant impacts to salmonids. All but one of the proposed gravel extraction techniques would involve excavation on dry portions of the gravel bars without encroachment into the salmon habitat of the wetted river channel. The sole exception is the wet trenching technique, which would involve diverting the stream flow to a secondary channel location and then excavating sediment directly from portions of the channel. The wet trenching method of extraction would only be used when there is the objective of improving instream salmonid habitat by the limited use of sediment removal, and where the diversion of the low flow channel into a secondary channel that provides salmonid habitat is possible. Although the wet trenching technique would involve excavation within salmonid ESHA habitat, and thus would not be permissible under Section 30233(a)(5), the Commission evaluates this aspect of the proposed development under Section 30236 of the Coastal Act in Section IV-G of the findings below because the wet trenching method proposed is a permissible alteration of a river or stream proposed for the improvement of fish habitat.

In the most comprehensive sense, the entire area between the banks of the river could be considered environmentally sensitive, at least during portions of the year when covered by higher flows. However, during the summer dry season when river waters are confined to the definable low-flow channels, the dry exposed areas within the stream banks (bars) become inaccessible to salmonid species and other aquatic life forms. Therefore, the Commission has generally applied the ESHA designation only to the portions of the river containing live (active) flow.

Not all portions of the river containing live flow during the summer-early fall gravel mining season necessarily qualify as environmentally sensitive. Although salmonids are found in the lower Eel at most times of the year, the edges of the shallow flat-water areas do not support spawning or rearing habitat for salmonid fish species during the summer to early fall gravel extraction season. Unlike other portions of the Eel River and other North Coast rivers, the lower Eel does not provide spawning habitat for salmonid species. Typical salmonid spawning habitat consists of a sufficiently sized area with clean gravels at certain minimum depth and water velocity depending on the species. In the case of the lower Eel River, salmon pass through the project reach during migration periods to spawn further upstream in the river. During the summer and early fall, water temperatures in the lower Eel River typically are considered stressful for salmonids. As water temperatures increase, the amount of dissolved oxygen (DO) in the water decreases. Surveys conducted under the Corps LOP procedure have shown that juvenile salmonid rearing habitat areas are located in riffles and at the head of pools, where DO and food concentrations are highest. Shallow flat-waters and the shallow reaches of long pools are avoided by juvenile salmonids since they do not have the necessary oxygen and food concentrations, lack cover, and do not provide relief from higher water temperatures. More specifically, the use of the lower Eel River by threatened salmonid species has been established during surveys performed pursuant to the Corps LOP process and has been documented in the current NMFS BO and in previous BOs prepared for the proposed gravel operations. The site-specific surveys provide a basis for demonstrating that salmonids do not inhabit the shallow flat-waters of the lower Eel River during the summer months, though the results cannot be generalized to other river systems where no such surveys have occurred. Therefore, the Commission finds that during the summer and early fall, the edges of the shallow flat-water areas of the lower Eel River channel are <u>not</u> environmentally sensitive.

None of the proposed extraction techniques except “wet trenching” described below in Section IV-G specifically include extraction within wetted channel. The applicant does not propose to install seasonal crossings with abutments that could extend into shallow flat-water portions of the channel as some gravel operations upstream do. For operations where seasonal crossings are proposed, the CHERT gravel mining recommendations require such crossings to be located where the temporary bridge structures would minimize the potential impact to sensitive salmonid habitats. The locations are determined based on identification by a fisheries biologist of where sensitive juvenile rearing and adult holding habitats do not exist. NOAA-Fisheries and CHERT annually review the proposed bridges placement and determine where the bridges can be located to avoid salmonids. If the seasonal crossings cannot completely span the channel, the review process directs the crossings to be located in shallow flat-water areas where salmonids are not present. The wider flat-water portions of the channel are usually too wide to be feasibly crossed by a seasonal crossing without some portions of the crossing abutments extending into the side of the channel.

To ensure that mineral extraction and associated activities such as the installation of seasonal crossings within an ESHA as precluded by Coastal Act Sections 30233(a)(5) and 30240 do not occur, the Commission attaches the following two conditions. Special Condition No. 1-(C) prohibits excavation from occurring within the active wetted channel, where sensitive salmonid species could be present, except for wet trenching performed for restoration of instream salmonid habitat authorized pursuant to Section 30236. Special Condition 2 prohibits the use of seasonal crossings for the subject gravel operation unless a coastal development permit amendment is obtained. In its review of such a permit amendment, the Commission would be able to evaluate and address any potential significant adverse effects of such a crossing on sensitive salmonid species.

ii. No Dredge or Fill within Riparian Vegetation

The Coastal Commission has previously determined that most forms of riparian vegetation are environmentally sensitive, as riparian zones serve many critical ecosystem functions. Riparian areas contribute important organic debris that is transformed into nutrients, which support the riverine food web. Wood, leaf litter, and other organic matter from riparian areas provide nutrients for life at the base of the food web. Riparian vegetation supports insects and other prey resources, which are eaten by juvenile salmon and other fish and wildlife. If these areas are altered or eliminated, the food supply and, thus, the abundance of fish is likely to be reduced. Riparian vegetation provides cover – both for shade and protection purposes – for aquatic species such as salmonids, which need cool water temperatures for growth and survival. Furthermore, riparian areas capture contaminants, by absorbing or filtering contaminated stormwater runoff soils and vegetation in riparian areas can prevent pollutants from entering coastal waters. Moreover, healthy riparian areas support rich and diverse communities of animals, including birds, amphibians, and mammals that depend on the areas for feeding, breeding, refuge, movement, and migration. Riparian areas also serve as buffers for human health and safety. The riparian functions of water quality, soil stability, and the ability to absorb the impacts of large storm events and other natural, physical processes have direct benefits to humanity. Flooding and storm events can be exacerbated in the absence of riparian areas, which serve as protective buffers. The Commission has consistently conditioned permits for development near riparian woodlands along streams and rivers to avoid disturbances of riparian areas where mature vegetation exists.

Some of the riparian vegetation on the gravel bar is inundated during high flows and is often uprooted and scoured by river flows. The hydrodynamics of the river can cause the channel itself to migrate over time, which can eliminate more stands of riparian vegetation from one year to the next. As a result, much of the vegetation is young, having only grown a season or several seasons since the time of the last inundation severe enough to remove the plants previously growing there. Given that some of this riparian vegetation is very new and underdeveloped, it may not provide habitat values sufficient enough for the vegetation to be characterized as environmentally sensitive habitat.

Under Section 30107.5 of the Coastal Act, as discussed above, any area supporting a plant, animal, or its habitat is environmentally sensitive if the area meets two main criteria: (i) the plant, animal, or habitat is either rare or especially valuable because of its special nature or role

in the ecosystem, and (ii) the area could be easily disturbed or degraded by human activities and developments. The non-persistent, young riparian scrub-shrub areas clearly meet the second criterion, in that gravel extraction on the river bar can easily disturb or degrade riparian areas that extraction activities come into contact with. With regard to the first criterion, the young riparian scrub-shrub vegetation is not rare, as it generally does not provide habitat for rare or endangered species or for nesting birds, and it is widespread across the many thousands of acres gravel bars along North Coast waterways. However, such vegetation can be considered especially valuable and therefore also meet the first criterion.

In general, riparian vegetation must grow to a certain size and mass before it can begin to contribute significantly to the river ecosystem. A willow sprig growing in isolation that has just taken root and only rises a few feet out of the ground cannot serve the ecosystem functions discussed above such as contributing organic debris to the riverine food web (including supporting insects and other macro-invertebrates on which juvenile salmonids depend), capturing contaminants, providing forage area, nesting opportunities, or screening from predators for birds and wildlife, and other functions. As the plant grows bigger, however, and as more riparian plants colonize the surrounding area, the developing vegetation begins to contribute more debris to the riverine food web, capture more contaminants, and provide more forage, nesting, and cover opportunities that make it especially valuable habitat and therefore an environmentally sensitive area.

There is no clear-cut answer to the question of just when in the growth and development of riparian scrub, the vegetation reaches the point where it can be considered environmentally sensitive. In discussions with the CDFW staff, Commission staff has learned that no specific plant height and diameter, coverage, age, etc. thresholds exist for riparian vegetation that define when habitat value is sufficient to categorize the vegetation as environmentally sensitive. Part of the reason for this uncertainty is that there can be tremendous variability in the values of riparian vegetation of the same size from one location to the next depending on such factors as surrounding habitat and vegetation, surrounding land uses, river configuration, and others.

One existing standard that may provide useful guidance for determining when riparian scrub-shrub vegetation reaches the point of becoming environmentally sensitive is a standard imposed in the Corps LOP Procedure. The one restriction of the Corps LOP for gravel mining on the Eel River concerns riparian vegetation and states as follows:

> "All riparian and woody vegetation and wetlands must be avoided to the maximum extent possible. Any riparian vegetation or wetland that is to be disturbed must be clearly identified by mapping. Woody vegetation that is part of a contiguous 1/8-acre complex or is at least two inches in diameter breast height (DBH) must be mitigated if it is disturbed. Impacts to other woody vegetation must be described and a summary submitted to the Corps and CHERT with the gravel extraction plans. These impacts may require mitigation at the discretion of the Corps…"

The above-referenced restriction establishes a threshold for when impacts to riparian vegetation must be mitigated. The threshold is reached any time the riparian area that would be disturbed

contains woody vegetation that is part of a contiguous 1/8-acre complex or is at least two inches (2") DBH.

The Corps administers its permit program under Section 404 of the Clean Water Act (and the related Section 10 of the Rivers and Harbors Act of 1899). This administration limits mineral extraction in wetlands and open coastal waters differently than Section 30233 of the Coastal Act does. As previously stated, Section 30233(a)(5) only allows the dredge or fill of wetlands and open coastal waters for mineral extraction if the mineral extraction occurs outside of environmentally sensitive areas. Conversely, the Corps can allow mineral extraction in an environmentally sensitive area so long as mitigation is provided. Thus, the Corps' purpose in determining when mitigation should be required is not the same as determining when riparian vegetation reaches a level of growth and development such that it should be considered environmentally sensitive.

By requiring mitigation whenever a riparian vegetation area that is to be disturbed contains woody vegetation that is part of a contiguous 1/8-acre complex or is at least 2 inches DBH, the Corps LOP indicates that vegetation at this level already is providing habitat value. Otherwise, if the vegetation were not providing habitat value there would be no need for mitigation. Therefore, the Commission finds that the riparian vegetation must reach a form of growth and development where it provides important habitat values at some point before the Corps threshold is reached. Acknowledgement of this fact is contained in the rest of the Corps standards, which indicate that impacts to other woody vegetation not rising to the threshold level must also be described and submitted to the Corps and may require mitigation at the discretion of the Corps.

In discussions with CDFW staff, Commission staff has discerned that under average growing conditions, a willow tree that is one inch (1") in DBH or part of a contiguous 1/16-acre complex would likely have survived for one growing season. Given that riparian vegetation is only becoming established during the first growing season, the vegetation may not provide significant habitat value at this point. On the other hand, vegetation that has survived more than one growing season would be established and likely to be used by wildlife. Therefore, the Commission finds that the riparian scrub-shrub vegetation should be characterized as an environmentally sensitive area when the vegetation contains woody vegetation that is part of a contiguous complex of 1/16-acre or larger or is one-inch or larger in DBH. In addition, by restricting extraction in vegetated areas that are essentially half as developed as the riparian vegetation for which mitigation is indicated under the Corps LOP, the Commission will minimize the chances that any riparian vegetation providing significant habitat value will be disturbed by the proposed gravel extraction.

To ensure that mineral extraction proposed by the applicant each year is not performed within an area of riparian ESHA, thereby remaining an allowable use under Coastal Act Section 30233(a)(5), the Commission attaches Special Conditions 1-(E) & 1-(F), which further state that gravel extraction operations shall not disturb or remove any area of riparian vegetation growing on the river banks or on the gravel bar meeting either the aerial extent or plant girth criteria discussed above. Furthermore, the Commission attaches Special Condition 3 which requires the applicant to submit annually for the review and approval of the Executive Director a final gravel extraction plan for the gravel extraction season that is consistent with the extraction limitations

of Special Condition 1, which include the aforementioned limitations on extracting gravel in riparian areas. Moreover, Special Condition 5 prohibits the removal of riparian vegetation that may support cuckoo nesting habitat. Finally, Special Condition 7 prohibits the gravel extraction operations, including the construction of new haul routes, from disturbing or removing any of the established riparian vegetation along the banks of the river.

iii. No Dredge or Fill of Environmentally Sensitive Bird Breeding Habitat

As noted previously, the western snowy plover is a federally listed threatened species, which in the past has been observed nesting on gravel bars of the lower Eel and Van Duzen Rivers during April through early September. Western yellow-billed cuckoo, listed under both the federal and state Endangered Species Acts as threatened, nests in large stands of riparian vegetation from the Fortuna area (around the subject site) downstream to the estuary.

Regarding the project's potential effects on the western snowy plover, the BO completed by the FWS dated September 3, 2015 states that the gravel extraction project "has the potential to result in adverse effects to the [western snowy] plover through habitat modification, disturbance, direct mortality, and impairing recovery." Though originally thought to inhabit primarily open beach strand environments, plovers have also been observed roosting and nesting on gravel bars on the lower Eel River. The plover sightings on the Eel River have been in the months of April through early September, during the nesting season. Unlike many avian species which nest in trees, plovers establish their nests on the open gravel bars. Plover adults, nests, and chicks are very cryptic, largely because of their ability to blend in with their surroundings as a defense strategy. All life stages of the plover are susceptible to death or injury by humans driving, operating equipment, and otherwise using occupied plover habitat. Disturbance from noise and activity associated with gravel extraction, vehicle use, and pre-gravel extraction activities may adversely affect western snowy plovers by altering their feeding and breeding behavior, reducing the suitability of nesting habitat, masking essential warning signs of predators, and attracting potential scavengers/predators. According to the FWS, data from other portions of the plover's range suggest that activity and vehicle use in nesting and chick rearing habitat during low light and night conditions likely increases the risk of vehicle strikes to plovers, including adults. Activities associated with gravel extraction (including surveys for engineering, hydrology and biological resources) often need to be conducted prior to the initiation of gravel extraction activities. Because these pre-extraction activities require vehicular use and human presence in potential nest areas during the nest season, the potential exists to adversely affect the western snowy plover through direct harm or harassment.

Regarding the project's potential effects on western yellow-billed cuckoo, the species has been detected in the larger concentrations of riparian vegetation along the lower Eel River. Federally listed in 2014, the cuckoo has been observed in the lower Eel River area since 2000, and may be utilizing the riparian forest areas along the river as breeding habitat. Proposed designated critical habitat for this species consists of riparian stands of more than 37 acres and more than 325 feet in width. According to the 2015 BA prepared for the Lower Eel River gravel mining projects, riparian habitat adjacent to the project site appears suitable in size and width to meet minimum size requirements for a yellow-billed cuckoo breeding area. However, the FWS BO determined that the proposed project is not expected to modify cuckoo habitat, and therefore "No adverse effects to the cuckoo are expected."

The BO lists a series of measures and requirements "to avoid and minimize adverse effects to the plover and avoid adverse effects to the cuckoo." These include, but are not limited to, the following: (i) measures specifying survey requirements and protocols that are required prior to initiation of any gravel extraction operations that may occur prior to September 15th in any given extraction year (September 15th is considered the end of the breeding and nesting seasons for both the federally threatened plover and cuckoo species), (ii) minimum buffer distances to be established around identified sensitive habitats, (iii) protocols for vehicular use in areas adjacent to potential plover habitat areas, and (iv) measures to be implemented to deter recreational vehicle impacts to plovers on gravel bars.

The applicant proposes, and the Corps LOP 2015-1 requires, that the proposed gravel extraction operations be undertaken consistent with the seasonal provisions authorized within the BO's protective measures to avoid impacts to plovers and cuckoos. The development as proposed and conditioned herein is consistent with the use limitations of Section 30233(a)(5), because mineral extraction will not occur within environmentally sensitive riparian habitat (also cuckoo breeding habitat) as discussed above, or within sensitive plover nesting habitats. As proposed, development associated with gravel extraction operations will avoid plover ESHA and cuckoo ESHA. The proposed mining project will be located in areas that will avoid intrusion into plover ESHA and cuckoo ESHA and/or be performed at times when sensitive species are not nesting and/or utilizing the site for habitat consistent with the BO protective measures. As discussed above, the FWS has determined that its recommended protective measures, if appropriately implemented, are appropriate "to avoid and minimize adverse effects to the plover and avoid adverse effects to the cuckoo."

To ensure that mineral extraction will not occur within plover ESHA or within cuckoo ESHA consistent with the use limitations of Section 30233(a)(5), the Commission imposes Special Conditions 4, 5, and 6. Special Condition 4 requires the applicant to undertake the proposed development consistent with the BO plover protective measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any plover ESHA is detected, restrictions on vehicle use in areas of potential plover habitat, and other protective measures. Special Condition 5 requires the applicant to undertake the proposed development consistent with the BO cuckoo protective measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any cuckoo ESHA is detected, and riparian protective measures. Finally, Special Condition 6 allows for gravel extraction operations to commence prior to September 15 only if undertaken pursuant pre-activity survey clearances detailed in Special Conditions 4 and 5 of this CDP and the related conservation measures listed in the BO.

Therefore, as conditioned herein, the proposed development is consistent with the use limitations of Section 30233 of the Coastal Act on dredging in coastal water bodies, as the proposed dredging project is for mineral extraction within areas that are not environmentally sensitive, consistent with Section 30233(a)(5).

Alternatives

The second test set forth by the Commission's dredging and fill policies is that the proposed dredge or fill project must have no feasible less environmentally damaging alternative. In this case, the Commission has considered the various identified alternatives, and determined that there are no feasible less environmentally damaging alternatives to the project as conditioned. A total of four possible alternatives have been identified, including: (i) the "no project" alternative; (ii) obtaining sand and gravel from quarry operations; (iii) obtaining sand and gravel from terrace deposits in the Eel River floodplain; and (iv) modifying the proposed project. As explained below, each of these alternatives is infeasible and/or more environmentally damaging than the proposed project as conditioned.

i. No Project Alternative

The no project alternative means that no gravel extraction would occur at the site. Without extraction from the site, an equivalent amount of sand and gravel materials would be obtained from other sources to meet regional demand aggregate products for the construction of roads, buildings, and other development. Increasing production from other river bar extraction operations would have environmental impacts similar to or greater than the proposed project. The proposed project is located in an area where gravel has historically been accumulated and mined. The proposed project is located in an area where gravel has historically been accumulated and mined. Mining in many other parts of the river where gravel does not accumulate could lead to changes in river geomorphology which, in turn, could cause a variety of adverse impacts such as increased sedimentation, the undermining of bridge supports, and bank erosion resulting in the loss of environmentally sensitive riparian habitat areas and/or adjacent agricultural lands. As discussed below, obtaining additional sand and gravel terrace deposits from terrace deposits in the valley floors of local river valleys would create adverse environmental impacts similar to or greater than the proposed project. The Commission therefore finds that the "no project" alternative is not a feasible less environmentally damaging alternative to the project as conditioned.

ii. Obtaining Sand and Gravel from Quarry Operations

Excavation from the river could be avoided if an equivalent amount of sand and gravel could be obtained from upland quarries. As discussed in the PEIR, there are few quarries in the vicinity where it would be economically feasible to obtain material of sufficient quality and quantity as compared to that available at the project site. The substrate of nearby areas of Humboldt County is composed mostly of the Franciscan formation, which is comprised of large masses of greywacke and sandstone interspersed with less competent (for construction applications) clay and silt materials. This composition of material generally does not lend itself to quarrying. The quarries that are found in the region are generally located in remote areas with limited water supplies and where no nearby processing facilities are available. The unprocessed materials would need to be transported greater distances resulting in increased traffic, air quality, and greenhouse gas emissions impacts. The Commission therefore finds that substituting gravel extracted from quarry operations is not a feasible less environmentally damaging alternative to the project as conditioned.

iii. Obtaining Sand and Gravel from Terrace Deposits

Excavation from the river could be avoided if an equivalent amount of sand and gravel products could similarly be obtained from terrace deposits in the floodplain of the lower Eel, Van Duzen, or Mad Rivers. The floors of these river valleys are underlain by substantial amounts of gravel deposited over thousands of years and provide materials to upland rock quarries. However, extracting gravel from these terrace deposits would create its own adverse environmental impacts. Much of the valley floor of each of these rivers is developed with agricultural and timber production uses. Converting productive coastal agricultural lands or forest lands to gravel extraction or other uses would not be consistent with Coastal Act policies, which call for the maintenance of lands suitable for agriculture and timber production. Most of the remaining undeveloped areas of these river valleys are currently covered with riparian habitat and other environmentally sensitive habitats. Extracting gravel from such areas would result in far more impacts to environmentally sensitive habitat than extraction at the project site as conditioned by the permit to avoid all riparian habitats. Therefore, the Commission finds that substituting gravel extracted from terrace deposits in local river valleys is not a feasible less environmentally damaging alternative to the proposed project as conditioned.

iv. Modifying the Proposed Project as Conditioned

Various modifications to the project as proposed and conditioned could be made in an attempt to reduce the environmental effects. One such modification would be to mine in different locations at the project site. However, this modification would not result in less significant adverse impacts than the project as conditioned under this permit. As discussed previously, the proposed project has been conditioned to avoid the dredge or fill of wetlands within ESHA. Additionally, modifying the proposed gravel extraction project to require mining in different locations at the project site could result in greater impacts to coastal resources and would not be a feasible less environmentally damaging alternative. No other feasible modification to the proposed extraction scheme has been identified. Therefore, the Commission finds that modifying the proposed gravel extraction project as conditioned is not a feasible less environmentally damaging alternative.

Conclusion

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

Feasible Mitigation Measures

The third test set forth by the dredging and fill policy of the Coastal Act is whether feasible mitigation measures have been provided to minimize the adverse environmental impacts of the proposed project. Depending on the manner in which the gravel extraction operation is conducted, the portions of the proposed project to be conducted below the ordinary high water mark could have potentially significant adverse effects on the natural environment of the Lower Eel River, including: (i) direct and indirect impacts on fisheries; (ii) alteration of the riverbed and increased bank erosion; (iii) impacts on environmentally sensitive riparian vegetation; (iv) impacts on western snowy plover; and (v) impacts on water quality.

i. Measures To Avoid Significant Degradation of Fisheries Habitat

Gravel extraction activities undertaken within the flowing river channel in the form of trenching have the potential to have both direct and indirect adverse impacts on threatened salmonid species through: (i) water quality degradation associated with increased turbidity and sedimentation; (ii) fish injuries and or mortality from contact with excavation equipment; (iii) fish injuries, deaths, and changes in behavior due to flow diversions; (iv) decreased invertebrate production associated with removal and/or degradation of habitat substrate; and (v) increased susceptibility to predation due to tendency of fish to concentrate in trench excavations that afford little or no cover from predators and poachers.

As noted previously, the Eel River and its tributaries are ranked among the most significant anadromous fisheries in Northern California and include coho salmon, Chinook salmon, and steelhead trout, all federally listed threatened species under the ESA (coho also is listed as threatened under the state ESA). The project area and the lower Eel River are important for these anadromous fish as a migration route to and from upstream spawning grounds. In addition, the lower Eel River supports summer rearing habitat for juvenile salmonids, especially steelhead yearlings and fall Chinook sub-yearlings, and holding areas for adult summer steelhead as well as spawning and nursery habitat for other marine fishes and many invertebrates.

Gravel extraction from river bars can adversely affect fisheries in a number of ways. Poorly designed extractions can alter the river channel or even cause capture of the channel into extraction areas in a manner that can lead to significant downstream erosion of stream banks and greater sedimentation of the river. In addition, NMFS has indicated that juvenile and adult salmonid stranding could occur as a result of certain extraction methodologies depending on how the methodology is implemented and the manner in which the extraction area is reclaimed following extraction. For example, the various on-bar and secondary channel trenching techniques could result in salmonid stranding once river waters rise following the end of the mining season and then subsequently drop during the following spring. The potential for salmonid stranding is minimized if the trenches are breached on their downstream ends to provide the fish with a connection back into the river's main channel.

NMFS staff has also indicated that gravel mining has the potential to result in elevated turbidity levels and increased sedimentation. Fine sediments can become entrained in runoff from skimmed bar surfaces, as skimming typically exposes finer sediment that would be inundated during higher discharges. Increased sedimentation can adversely impact salmonid spawning habitat by filling pores spaces, which decreases hydraulic conductivity of the gravel, thus reducing the supply of oxygenated water to incubating eggs.

Construction and removal of channel crossings and the use of heavy equipment can adversely affect salmonids. Heavy equipment is required to operate in the wetted, low-flow channel to construct and remove the crossings, which are typically placed at riffle locations. According to NMFS, death or injury of salmon through direct contact with such heavy equipment is likely during installation and removal of the crossing structures. In addition, the operation of heavy equipment has the potential to result in disturbance to salmonids caused by noise and vibration in the extraction work area. Furthermore, stream crossings can also impact juvenile rearing habitat by impeding or altering channel stream flow dynamics.

The impacts of gravel mining operations on fish species include more than just the direct gravel mining activities within or in proximity to the low flow channel or the individual impacts of a particular gravel mining operation at one site. Often of greater significance are the indirect effects of gravel mining on geomorphology together with the cumulative adverse impacts on sensitive fish species from all of the various gravel mining operations occurring along the river. An assessment of the significant adverse indirect and cumulative impacts of gravel mining operations along the lower Eel River on sensitive fish species is discussed within the BO issued by NMFS (see Appendix C).

The Corps formally requested that NMFS prepare a BO to analyze the LOP Procedure 2015 for proposed gravel extraction on Humboldt County rivers over the next 10 years (through 2024). The NMFS BO was finalized on August 27, 2015 and includes salmonid protection measures similar to both the Commission's prior approval at the subject site and the prior BO relating to the protection of salmonids along the lower Eel River. Based on the biological information collected as part of the consultation, NMFS has concluded that the proposed seasonal extraction of gravel over the for the term of authorization of LOP 2015-1 (i.e., through 2024) will not result in more than incidental take of threatened salmonid species and will not jeopardize their continued existence.

To ensure that significant adverse impacts to salmonids from exceedance of incidental take of listed species does not occur during authorized mining operations, the Commission attaches Special Condition 1 and Special Condition 3, which incorporate specific elements of the proposed LOP 2015 and the NMFS recommendations. These elements have been identified by NMFS as important for minimizing impacts to channel form and function, as well as protecting fish habitat.

During its consultation, NMFS reviewed the extraction methods and techniques described in LOP 2015 including, but not limited to, traditional skims, horseshoe skims, inboard skims, narrow skims, alcove extractions, wetland pits, wet trenches for salmonid habitat improvement purposes only, and dry-trenches. NMFS has concluded that although there is a preference for the non-skimming methods, none of the above methods would adversely affect channel form and function in a manner that would be likely to jeopardize the continued existence of the sensitive fish species. Therefore, to ensure that the mineral extraction proposed by the applicants use these proposed techniques to avoid degradation of threatened salmonid species habitat, the Commission includes within the requirements of Special Condition 1-(B) a limitation that requires use of only these extraction methods. This requirement will ensure that significant adverse disturbance of fish habitat from use of inappropriate extraction measures will be avoided.

Maintaining a head of the bar buffer, where gravel extraction would be precluded, is intended to provide protection of the natural stream flow steering effect provided by an undisturbed bar. According to the BO, head-of-bar buffers reduce the potential for geomorphic changes to the river from sediment extraction. The buffer helps to maintain bar slope and form, which in turn helps to guide stream flows that are effective at creating and maintaining habitats. Therefore, Special Condition 1-(K) precludes mining in the upper one-third of a gravel bar, consistent with NOAA Fisheries Staff recommendations and Corps permit requirements.

The use of vertical offsets of the gravel extraction area from the low flow channel of the river will also help minimize sedimentation impacts on the river. The natural entrainment of sediment into river flows in the dry summer and early fall seasons is minimal in comparison with natural entrainment in winter months, when heavy rains entrain large quantities of sediment into river flows. Anadromous fish depend on the natural variation in sedimentation and river flows for spawning, migration, and other life-cycle habitat needs. Artificially introducing large amounts of sediment at times of the year when natural entrainment is otherwise low would adversely affect the anadromous fish as discussed above. Therefore, certain vertical offsets need to be maintained to prevent the sediment in lower skimmed surfaces of the bars from becoming entrained prior to the beginning of significant movement of fine bed load material in the river that occurs during winter months. The general benefit of increased skim floor elevations is that effects associated with sediment inputs are reduced as the elevation of the skim floor increases. The applicant proposes to set minimum skim floor elevations to correspond to the water surface elevation of the flow that is exceeded 35 percent of the time in the historic record of daily average flows for rivers in Humboldt County. According to the draft BO, the 35 percent exceedance flow is the flow where significant movement of fine bed load material begins in the rivers of Humboldt County. A skim floor at the 35 percent exceedance flow will provide confinement of the low flow channel until the stream is gaining in volume and naturally beginning to transport fine sediment. Therefore, Special Condition 1-(J) requires that any bar-skimming extractions that are proposed adjacent to the low flow channel shall have a minimum skim floor elevation at the elevation of the 35% exceedance flow. Special Condition 1-(G) similarly includes this exceedance requirement for horseshoe extractions.

In addition, gravel mining operations on the river bed need to cease before the rainy season to prevent significant adverse impacts to fisheries, as the runs of the various species of anadromous fish up and down the river increase in the fall with the rise in river water levels and remain at high levels through the early spring. In recent CDFW Section 1600 Streambed Alteration Agreements issued for gravel extraction at the project site, CDFW has limited gravel extraction operations to the dry season of June 1 through October 15 each year, which corresponds to the period when potential impacts to fisheries are lowest. CDFW can choose to extend the operations until November 1 if dry weather conditions prevail. The 2015 NMFS BO allows for completion of gravel mining operations by October 15, with similar extensions to November 1 if possible.

Therefore, the Commission attaches Special Condition 6 that requires mining and all post-extraction bar grooming work and equipment removal be performed during the summer months and completed by October 15 to ensure no significant disturbance to anadromous fish. The Executive Director may approve a one or two week extension of gravel extraction and regrading activities to as late as November 1 if dry weather conditions are forecasted and the permittee has received all necessary approvals to extend gravel operations from CDFW, the Corps, and NOAA-Fisheries.

In conclusion, the Commission finds that as conditioned, the proposed gravel mining project would avoid significant disturbance of sensitive fish habitat consistent with the requirements of Sections 30233.

ii. Measures to Avoid Significant Degradation of River Morphology

As discussed above, a potential impact of gravel mining operations is degradation of the riverbed and erosion of the riverbanks. Such impacts can occur if the amount of gravel extracted from a particular part of the river over time exceeds the amount of gravel deposited on the site through natural recruitment – the downstream movement of sand and gravel materials. Bed degradation and bank erosion can also result from the manner in which gravel is extracted. For example, if gravel bars are skimmed too close to the low-water surface or are left with a very shallow slope, the river may spread across the bar during higher flows, thereby reducing the depth of the channel and may result in channel migration or channel "braiding." Channel braiding can also result in watercourse reaches where aggradation of materials is a problem. Such sites tend to trap gravel that would otherwise move downstream, potentially trapping or impeding fish migration up and down the river.

Although the applicant proposes to extract an amount of gravel that is small relative to the overall permitted gravel mining activity along the Eel River, approval of extraction operations without consideration of potential effects on river morphology could cause bed degradation and riverbank erosion.

In January of 2009 CHERT released a 10-year analysis of river channel cross sections taken at various sites along the Eel and Van Duzen Rivers near mining sites (including the lower, middle, and South Fork reaches of the Eel River and the lower Van Duzen River). The report represents the longest-term geomorphic analysis completed to date examining the potential effects of gravel mining operations on river channel morphology. The report found that "while certain methods of mining and locally excessive volumes can affect instream habitat in the short term, the river does not appear to suffer from long term or broad scale channel bed degradation from gravel mining. Furthermore, the CHERT adaptive management program authorized by the interim management plan specifically addresses preventing local over-extraction and avoiding/minimizing mining methods that cause aquatic and riparian habitat damage" (page 2). The report concludes that "…we did not discern any large scale, persistent adverse effects of Eel River gravel mining on channel thalweg elevations, mean bed elevations, or scour…Gravel mining effects in the Eel River are probably limited to short term, localized effects which the adaptive management program and federal and state oversight attempt to avoid or minimize. Refinement of project-scale minimization measures will continue to be a fundamental component of the adaptive management process, as will instream habitat improvement projects associated with gravel extraction operations" (page 24).

More recently, channel profiles taken following the 2013 gravel mining season show modest amounts of fill and scour within the active channel area of the lower reach of the Eel River as compared to channel profiles taken in 2009. The reworking of the low flow channel, as seen in the more recent channel profiles, is not an unexpected occurrence in a semi-unconstrained alluvial channel. The higher elevation channel margins and channel banks of the monitoring cross sections appear stable in profile as these areas are not subject to regular inundation and flow energy that generates scour and fill. The higher elevation alluvial surfaces of the site are also protected by herbaceous and woody vegetation which tends to reduce high flow energy and provide armoring of the surface sediments. Therefore, the comparative data depicts a stable channel form that is not being adversely affected by gravel mining operations at the site.

As discussed in the previous section, the proposed gravel extraction methods have been proposed to avoid significant adverse impacts to channel form and function. The determination of NMFS that gravel operations conducted in accordance with the LOP-2015 would not result in more than incidental take of listed species is based in part on a finding that the extraction methods specified in LOP-2015 will be used to help preserve channel form and minimize bank and bar erosion that would degrade fishery habitat. Special Condition No. 1 limits the use of gravel extraction techniques to those recommended by NMFS. In addition, annual gravel extraction plans will be reviewed by CHERT in consultation with NMFS and the Corps to ensure that the particular methods proposed in any given year will minimize the chances of degradation of channel form based on conditions that exist at the time. Special Condition No. 3 requires that annual gravel extraction plans be submitted for the review and approval of the Executive Director and section (A)(4) of that condition requires that the submitted plans be consistent with the recommendations of CHERT. These requirements will ensure that disturbance of the active channel will be avoided.

iii. Measures to Avoid Significant Degradation of Riparian Vegetation

To ensure that disturbances to riparian habitat are prevented, Special Condition 1 includes the requirement that the mining be performed, on the portions of the gravel bar that do not contain or are in close proximity to riparian vegetation with environmentally sensitive habitat characteristics. Furthermore, the Commission attaches Special Condition 7, which reiterates that gravel extraction and processing operations shall not disturb or remove any area of environmentally sensitive vegetation growing on the gravel bar or river bank, and enumerates the threshold growth characteristics for when riparian vegetation becomes environmentally sensitive habitat. In this manner, significant degradation of all of the adjacent environmentally sensitive riparian vegetation in the vicinity of the project will be avoided.

iv. Measures To Avoid Significant Degradation of Western Snowy Plover

As previously discussed, the BO completed by the FWS dated September 3, 2015 states that the gravel extraction project "has the potential to result in adverse effects to the [western snowy] plover through habitat modification, disturbance, direct mortality, and impairing recovery." The BO lists a series of measures and requirements to avoid and minimize adverse effects to the plover including: (i) measures specifying survey requirements and protocols that are required prior to initiation of any gravel extraction operations that may occur prior to September 15th in any given extraction year; (ii) minimum buffer distances to be established around identified sensitive habitats; (iii) protocols for vehicular use in areas adjacent to potential plover habitat areas; and (iv) measures to be implemented to deter recreational vehicle impacts to plovers on gravel bars. To avoid significant degradation of plover habitat, the Commission attaches Special Conditions 4 and 6. Special Condition 4 requires the applicant to undertake the proposed development consistent with the BO plover protective measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any plover ESHA is detected, restrictions on vehicle use in areas of potential plover habitat, and other protective measures. Special Condition 6 allows for gravel extraction operations to commence prior to September 15 only if undertaken pursuant pre-activity survey clearances detailed in Special Conditions 4 and

the related conservation measures listed in the BO. Therefore, as conditioned, the Commission finds that the project will avoid significant degradation of the western snowy plover habitat.

v. Measures to Avoid Significant Degradation of Yellow-Billed Cuckoo Habitat

As previously discussed, the western yellow-billed cuckoo has been observed in the lower Eel River area since 2000 and may be utilizing the riparian forest areas along the river as breeding habitat. Proposed gravel mining activities will require the use of heavy equipment, and vehicles, all of which introduce high levels of noise and human activity into the environment that could disrupt potential yellow-billed cuckoo habitat within the riparian areas. Disturbance from human presence or activities during the breeding season may potentially disrupt yellow-billed cuckoos essential breeding behaviors in adjacent riparian areas that may be used for breeding by causing (i) abandonment of the breeding effort by failure to initiate nesting or to complete incubation; (ii) noise disruption of the established breeding territory; and (iii) frightening adults from utilizing potential nesting areas. Potential effects depend on frequency, timing, location and intensity of activities.

The FWS BO determined that the proposed project is not expected to modify cuckoo habitat, and therefore "No adverse effects to the cuckoo are expected." Similar to the plover, the BO also lists a series of measures and requirements avoid adverse effects to the cuckoo including, but not limited to, measures specifying survey requirements and protocols that are required prior to initiation of any gravel extraction operations that may occur prior to September 15th in any given extraction year, and minimum buffer distances to be established around identified sensitive habitats. To avoid significant degradation of cuckoo habitat, the Commission attaches Special Conditions 5 and 6. Special Condition 5 requires the applicant to undertake the proposed development consistent with the BO cuckoo protective measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any cuckoo ESHA is detected, and riparian protective measures. Special Condition 6 allows for gravel extraction operations to commence prior to September 15 only if undertaken pursuant pre-activity survey clearances detailed in Special Conditions 5 and the related conservation measures listed in the BO. Therefore, as conditioned, the Commission finds that the project will avoid significant degradation of the western yellow-billed cuckoo habitat.

vi. Measures to Avoid Significant Adverse Impacts on Water Quality

If properly managed, the proposed gravel operations should not significantly adversely affect the river's water quality. However, gravel extraction operations in close proximity to an open stream course could adversely impact water quality and ultimately the biological productivity and fisheries resources of the river. For example, pushing gravel materials or allowing sediment-laden water to drain from an excavation bucket into the river could degrade water quality and biological productivity by increasing the turbidity of the water. In addition, if not retained to allow settlement of suspended sediment, wash water from gravel processing activities could entrain soil materials which could result in sedimentation of coastal waters.

To prevent such occurrences, the Commission attaches Special Conditions 1, 3, 6, and 7. Special Condition 1 requires the applicant to perform the mining project on the exposed gravel bar in order to avoid in-water activities that might result in sedimentation of the river. Special

Condition 3 requires that a runoff control plan be reviewed and approved by the Executive Director as part of the annual gravel extraction plan ensuring that mining equipment be maintained and operated in such a manner as to not allow for release of petroleum products into the river, that spill clean-up materials be available on the worksite, and that operators and sub-contractors undergo spill contingency training. Special Condition 6-(C) requires that all materials be promptly removed from the river bar after the cessation of mining and prior to the start of the rainy season. Special Condition 7 prohibits placing any material into the river during gravel extraction activities. Therefore, as conditioned, the project will not result in significant adverse impacts to coastal water quality.

Conclusion

The Commission finds, as conditioned herein, the proposed gravel extraction operation is consistent with the requirements of Section 30233 of the Coastal Act in that feasible mitigation measures have been provided to minimize adverse environmental effects.

Maintenance and Enhancement of Habitat Values

The fourth general limitation set by Sections 30231 and 30233 is that any proposed dredging or filling project in coastal waters must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible. As discussed in the above section, the conditions of the permit will ensure that the project will not have significant adverse impacts on salmonids, river morphology, riparian vegetation, western snowy plover, western yellow-billed cuckoo, or water quality. By avoiding impacts to coastal resources, the Commission finds that the project will maintain the biological productivity and functional capacity of the habitat consistent with the requirements of Sections 30230, 30231, and 30233 of the Coastal Act.

The Commission thus finds that the project is an allowable use, that there is no feasible less environmentally damaging alternative, that no additional mitigation is required for the impacts associated with the dredging of coastal waters, and that riverine habitat values will be maintained or enhanced. Therefore, the Commission finds that the proposed development, as conditioned, is consistent with Sections 30230, 30231, and 30233 of the Coastal Act.

H. SUBSTANTIAL ALTERATIONS OF THE RIVER

Section 30236 of the Coastal Act states the following:

> *Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (l) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat*. [Emphases added.]

Section 30236 sets forth a number of different limitations on what development may be allowed that causes substantial alteration of rivers and streams. For analysis purposes, a particular development proposal must be shown to be for one of three purposes: (i) for a necessary water

supply project; (ii) flood control projects where there is no other feasible methods for protection of existing structures within the floodplain and the project is necessary for public safety and the protection of existing development; or (iii) primarily for fish and wildlife habitat improvement. In addition, the development proposed must provide the best mitigation measures feasible to minimize the significant adverse environmental effects of the subject channelization, damming, or other substantial alteration of a river or stream.

As discussed above, the wet trenching technique, which is not the preferred extraction method for Worswick Bar but which nonetheless under the NMFS BO and LOP 2015-1 may be undertaken in an annual gravel extraction plan if authorized by NMFS and CDFW, would involve excavation within environmentally sensitive salmonid habitat and thus would not be permissible under Section 30233(a)(5). However, Section 30236 allows substantial alteration of rivers and streams where the primary function is for the improvement of fish habitat. To the extent that use of the wet trenching technique is primarily for the improvement of fish habitat, the proposed wet trenching excavation is consistent with the use limitations of Section 30236, as explained below.

Trenching can be an effective tool for the enhancement of salmonid migration corridors and in providing cold water refuge adjacent to the wetted channel. NMFS encourages the use of trenching on the lower Eel and lower Van Duzen Rivers to assist salmonid migration through dry river reaches. A migration trench is essentially a designed channel mimicking a natural channel, which permits salmonid migration and water flow through a dry reach of a stream. Meander and slope may be designed into the channel to control velocity and provide resting areas for fish. Large woody debris also may be placed within the channel to provide cover and refuge for salmonids during upstream migration or downstream emigration. Connection of the designed channel at the upstream end must be carefully planned so that the existing channel area is not significantly diminished and so that low, pulse flows do not encourage fish migration into channel areas that are incapable of providing cover and protection from predation or upstream passage. The upstream connection to the existing channel should most likely form a narrow riffle to prevent pool dewatering.

To ensure consistency with the limited purpose for which Section 30236 allows substantial alteration of rivers and streams, the Commission attaches Special Condition 1-(B), which states that if wet trenching methods for salmonid habitat improvements are used, the trenching within the wet channel shall be limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat. Additionally, the Commission attaches Special Condition 3-(A)-9. This condition requires that, prior to the start of each year's gravel extraction operations, the applicant shall provide, for the Executive Director's review and approval, a final gravel extraction plan for that gravel extraction season that includes, among other things, evidence demonstrating that any proposed wet trenching for instream salmonid habitat restoration purposes is limited to the restrictions described above, including but not limited to, written approval of the proposed wet trenching from NMFS and/or the CDFW.

Limiting the trenching configuration and extraction volumes to the minimum amount necessary for improving salmonid habitat ensures that the primary function of the technique will be for the improvement of fish habitat, even though there may be incidental use of the gravel extracted for

commercial purposes. Such extraction is consistent with Section 30236, provided that the best mitigation measures feasible also are incorporated into the project. Special Condition Nos. 1, 3, 6 and 7 discussed above require use of the best feasible extraction standards and limitations, methods of extraction, and the timing of extraction to avoid and minimize significant adverse environmental effects on salmonid habitat.

Therefore, the Commission finds that as conditioned herein, the proposed wet trenching excavation is consistent with the requirements of Section 30236 of the Coastal Act, in that the primary function of the wet trenching is the improvement of fish habitat, and the best feasible mitigation measures have been provided to minimize or avoid significant adverse environmental effects.

I. PROTECTION OF ADJACENT ENVIRONMENTALLY SENSITIVE AREAS

Coastal Act Section 30240(b) states as follows:

> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

As explained above, the annual extraction operations as conditioned will not be performed within environmentally sensitive habitat either within or outside of the bank-full channel of the river. Although the gravel extraction operations will not be performed directly within ESHA, the development will occur adjacent to several kinds of ESHA as discussed above, including sensitive salmonid habitat in the river, possible western snowy plover habitat in areas of the gravel bars that will be restricted from gravel mining activities, riparian habitat that has become established on the gravel bars and along the banks of the river, and those portions of the riparian habitat that may be used for nesting by the western yellow-billed cuckoo. As conditioned under this permit, discussed above, the gravel extraction operations will be sited and designed to prevent significant disruption of these adjacent ESHAs for all of the following reasons:

- Salmonids: As discussed in the above findings, the proposed development, as conditioned, includes the various conservation measures identified by NOAA-Fisheries in its BO completed for the project as necessary to protect water quality and salmonid habitat. These measures, included in Special Conditions 1, 2, 3, 6, and 7, will prevent impacts that would significantly degrade adjacent salmonid ESHA and will be compatible with the continuance of any such identified habitat areas, consistent with Section 302040(b) of the Coastal Act.

- Riparian habitat: Gravel extraction operations have been conducted adjacent to the riparian habitat along the lower Eel River for several decades. In April of 2009, McBain and Trush conducted a study of woody riparian vegetation trends of the Eel and Van Duzen Rivers for the period of 1995-2008 that demonstrates that the riparian habitat along the river continues to thrive in the presence of the adjacent gravel

extraction operations. The Worswick Bar project area was included in the 2,800-acre study area that extended from Fox Creek on the Van Duzen River to Fernbridge on the Eel River. The study results concluded that over the period of study (1995-2008), the combined percent acreages of the open riparian categories (floodplain, woodland, and terrace) remained relatively stable, suggesting that gravel extraction did not have a detectable effect on overall woody riparian vegetation acreage. The study also noted that the total area of annual extraction within the lower Eel River study area was quite small, and therefore changes in vegetation acreage relative to the size of the lower Eel River extraction reach and study area are likely undetectable. The combined area of proposed extraction operations within the lower Eel River study area would remain at low levels during the 9-year period of authorization of this CDP.

To ensure that the gravel extraction operation continues to avoid significant degradation of adjacent riparian habitat, the Commission imposes Special Condition 1, which prohibits mining in those portions of the gravel bars where the riparian vegetation has reached a size and extent where there is an expectation of appreciable habitat values for nesting, forage and cover of wildlife being afforded. Furthermore, the Commission imposes Special Condition 7 requiring that the proposed project not disturb or remove any of the established riparian vegetation at the site and prohibits the cutting of new haul roads through the habitat. Existing haul roads through the riparian areas must be used to truck gravel from the bar to the stockpiling and processing facility. Finally, Special Condition 5 prohibits the removal of riparian vegetation that may support cuckoo nesting habitat.

- Western yellow-billed cuckoo: As previously discussed, the cuckoo may use the riparian areas adjacent to gravel mining operations along the lower Eel River. Breeding habitat may exist in areas adjacent to gravel operations and haul roads that have been previously established. Proposed gravel mining activities will require the use of heavy equipment, and vehicles, all of which introduce high levels of noise and human activity into the environment that could disrupt potential yellow-billed cuckoo habitat within the riparian areas. Disturbance from human presence or activities during the breeding season may potentially disrupt yellow-billed cuckoos essential breeding behaviors in adjacent riparian areas that may be used for breeding by causing (1) abandonment of the breeding effort by failure to initiate nesting or to complete incubation; (2) noise disruption of the established breeding territory; and (3) frightening adults from utilizing potential nesting areas. Potential effects depend on frequency, timing, location and intensity of activities.

  As previously discussed, the applicant has proposed, and the Corps is requiring through its LOP 2015-1 authorization, to undertake permitted extraction operations during the cuckoo nesting season consistent with the seasonal provisions authorized within the BO's requirements to avoid impacts to cuckoos. As previously discussed, the FWS determined that with the use of surveys for cuckoos and determinations that no cuckoos are present within 1,000 feet of gravel operations, gravel extraction may commence as early as July 22nd and will avoid development within cuckoo ESHA. Special Condition 5, discussed above, requires the applicant to undertake the

proposed amended development consistent with the BO cuckoo conservation measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any cuckoo ESHA is detected, and riparian protective measures. Furthermore, Special Condition 6 prohibits gravel extraction operations from occurring prior to July 22nd. Thus, the proposed development, as conditioned, will avoid degradation of the cuckoo habitat.

- Western snowy plover: As previously discussed, the endangered western snowy plover will sometimes nest on the gravel bars within the Eel River. Gravel operations could lead to plover mortality if nesting plovers are present during the gravel extraction operation. The plover nesting season begins in March and ends by mid-September. The end of the plover nesting season coincides closely with the end of the breeding season for the yellow billed cuckoo, which as described above runs from April 30 to mid-September.

  As discussed above, the applicant proposes to implement the permitted extraction operations during the plover nesting season consistent with the seasonal provisions authorized within the BO's requirements to avoid impacts to plovers. The FWS BO concludes that with the use of surveys for plovers and determinations that no plovers are present within 1,000 feet of gravel operations, gravel extraction may commence as early as July 22nd and will avoid development within plover ESHA. Special Condition 4, as discussed above, requires the applicant to undertake the proposed amended development consistent with the BO plover protective measures, including requirements for pre-activity surveys, establishment of a minimum 1,000-foot buffer if any plover ESHA is detected, restrictions on vehicle use in areas of potential plover habitat, and other protective measures. Furthermore, Special Condition 6 prohibits gravel extraction operations from occurring prior to July 22nd. Thus, the proposed development, as conditioned, will avoid degradation of the plover habitat.

Therefore, the Commission finds that the proposed development, as conditioned, will be sited and designed to prevent impacts that would significantly degrade adjacent ESHA and will be compatible with the continuance of any such identified habitat areas, consistent with Section 302040(b) of the Coastal Act.

J. PROTECTION OF VISUAL RESOURCES

Section 30251 of the Coastal Act provides in applicable part that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be (a) sited and designed to protect views to and along the ocean and scenic coastal areas, and (b) visually compatible with the character of surrounding areas.

This portion of the river is readily visible from Highway 255 as it crosses Fernbridge. However, the extraction operation has existed at the site for many years, and the proposed project will not be any more prominent than the gravel extraction that has occurred at the site in the past. The Commission finds that the proposed project is visually compatible with the character of the area, as gravel extraction operations here and in the vicinity have long been a part of the view shed.

Therefore, the Commission finds that, as conditioned, the proposed project is consistent with the visual resource policies of Section 30251 of the Coastal Act, as the project is compatible with the visual character of the surrounding area and will not block views to and along the coast.

K. PUBLIC ACCESS

Coastal Act Section 30210 requires in applicable part that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Section 30211 requires in applicable part that development not interfere with the public's right of access to the sea where acquired through use (i.e., potential prescriptive rights or rights of implied dedication). Section 30212 requires in applicable part that public access from the nearest public roadway to the shoreline and along the coast be provided in new development projects, except in certain instances, such as when adequate access exists nearby or when the provision of public access would be inconsistent with public safety. In applying Sections 30210, 30211, and 30212, the Commission is 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 public access.

The project site is located between the first public road (Highway 101) and the sea (the Eel River is considered to be an arm of the sea in this area). Recreational use of the river in this particular stretch is relatively limited. The principal public access use of the project site is by recreational fishermen and boaters (canoeing and kayaking). The prime fishing season occurs in the spring or wet season when gravel extraction is not occurring.

Due to the significant adverse impacts that vehicle use on the gravel bars has on the plover, the FWS BO includes conservation measures aimed at minimizing vehicle impacts to plover habitat. Plover conservation measure number 7 imposes limits on vehicular use in potential plover nesting areas during the nesting season. Plover conservation measure number 8 states that access roads owned, controlled, or used by commercial gravel operators shall be gated and locked during the plover nesting season when no active extraction and hauling is occurring (including at night) in order to deter recreational vehicle impacts to plovers on gravel bars. As previously discussed, Special Condition 4 requires the applicant to undertake the development consistent with the BO plover conservation measures, including restrictions on vehicle use in areas of potential plover habitat. However, the condition requires that gates shall be designed only to block vehicles and shall allow for pedestrian access to the river, unless the applicant obtains additional authorization from the Commission to block pedestrian access.

Thus, the Commission finds that the development, as conditioned, will have no significant adverse effect on public access, and the development as proposed without new public access is consistent with the public access policies of the Coastal Act.

L. CALIFORNIA ENVIRONMENTAL QUALITY ACT

The County of Humboldt, as the lead agency, adopted a Programmatic Environmental Impact Report (PEIR) to describe and analyze the potential environmental effects resulting from the gravel extraction operations in the lower Eel and lower Van Duzen Rivers in 1992.

Section 13906 of the Commission's administrative regulations requires Coastal Commission approval of a coastal development permit application to be supported by findings showing that 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 feasible alternatives or feasible mitigation measures available, which would significantly lessen any significant effect that the activity 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. 1-16-0423.

Application Files for Coastal Development Permit Nos. 1-15-0204, 1-15-0204-A1, 1-15-0205, 1-15-0205-A1, and 1-09-014.

Final Program Environmental Impact Report (EIR) on Gravel Removal from the Lower Eel River, adopted 1992, and Supplemental EIR, certified July 24, 1992.

Letter of Permission Procedure (LOP 2015-1) for Gravel Mining and Excavation Activities Within Humboldt County signed by District Engineer John C. Morrow September 15, 2015.

Biological Opinion of the U.S. Fish and Wildlife Service dated September 3, 2015 for LOP 2015-1 for the western yellow-billed cuckoo and western snowy plover

Biological Opinion of the NOAA-Fisheries dated August 27, 2015 for LOP 2015-1 for SONCC coho salmon ESU, California coastal Chinook salmon ESU, and Northern California steelhead DPS.

Biological Assessment for Aggregate Extraction Operations in the Eel, South Fork Eel, Van Duzen, and Trinity Rivers, Humboldt County, California. Stillwater Sciences, February 2015.

Lower Eel River Gravel Mining and Extraction Activities Biological Assessment (Western Snowy Plover and Yellow Billed Cuckoo), prepared by Gary S. Lester, LACO Associates February 28, 2015.

Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007, prepared by County of Humboldt Extraction Review Team (CHERT), January 2009.

Humboldt County certified Local Coastal Program.

APPENDIX B

Table 1. Summary of gravel operations authorized in the coastal zone on the Lower Eel and Van Duzen Rivers.

Location (Bar and River Mile)	List of Current & Past Applicants	Coastal Development Permit Nos.	Approved Maximum Annual Volumes (cubic yards)
Singley Bar (RM 5-6)	Eureka Ready Mix (aka Eureka Sand & Gravel); Arcata Readimix	1-92-157 1-97-068 1-04-022 1-09-005	150,000
Worswick Bar (RM 7)	Humboldt County Public Works Dept.; Humboldt Bay Gravel, Inc.; Eureka Southern Railroad Co.	1-90-195 1-96-062 1-00-055 1-04-024 1-09-014	25,000
Drake Bar (RM 9)	Mallard Pond Sand & Gravel; Drake Materials; Drake Sand & Gravel	1-94-079 1-01-046 1-02-162 1-04-046	250,000
Sandy Prairie Plant B (RM 10-11)	Mercer-Fraser; Canevari Timber Co.	1-94-006 1-94-006-A1 1-94-035 1-00-009 1-03-014 1-04-020	200,000
Sandy Prairie Plant A (RM 11-12)	Mercer-Fraser	1-09-022 1-09-022-A1	70,000
Hansen Bar (RM 13.5)	Charles Hansen	1-97-017 1-02-023 1-03-030 1-09-011	50,000
Hauck Bar (RM 14)	Eureka Ready Mix (aka Eureka Sand & Gravel)	1-96-053 1-02-022 1-02-164 1-04-011 1-09-006 1-09-006-A1 1-15-0204	150,000
Confluence of Van Duzen & Eel (up to Van Duzen RM 0.7)	Rock & Dwelley	1-96-068 1-02-006 1-03-048 1-04-045 1-09-021 1-09-021-A1 1-15-0205	100,000

Table 2. Approved and extracted gravel mining volumes in the Lower Eel River (excluding Rock and Dwelley operation on the Lower Van Duzen River) 1997-2014 (CHERT 2014).

Year	Approved Volume (cubic yards)	Extracted Volume (cubic yards)	Percent
1997	561,700	326,500	58
1998	399,100	273,000	68
1999	471,400	290,500	62
2000	291,300	208,600	72
2001	389,900	119,300	31
2002	387,300	220,000	57
2003	318,300	163,900	51
2004	188,840	120,305	64
2005	199,370	166,280	83
2006	235,495	208,240	88
2007	243,097	177,334	73
2008	237,955	215,760	91
2009	229,386	106,467	46
2010	208,286	188,730	91
2011	301,537	214,730	71
2012	226,520	188,994	83
2013	176,477	80,918	46
2014	127,671	97,232	76
Totals	**5,193,634**	**3,366,790**	**65**
Years	**18**	**18**	**--**
Averages	**288,535**	**187,044**	**65**

Table 3. 2004 through 2015 gravel volumes for the Worswick Bar (in part from Stillwater Sciences 2015 and from County staff R. Vogt, personal communication 7/18/16).

Year	CHERT Approved Annual Volumes (cubic yards)	Actual Extracted Annual Volumes (cubic yards)	Percent
2004	0	0	--
2005	0	0	--
2006	24,980	17,520	70
2007	0	0	--
2008	0	0	--
2009	0	0	--
2010	0	0	--
2011	0	0	--
2012	0	0	--
2013	0	0	--
2014	0	0	--
2015	0	0	--
Totals	**24,980**	**17,520**	

APPENDIX C

GRAVEL EXTRACTION METHODS, CONCLUSIONS, TERMS AND LIMITATIONS DESCRIBED IN THE NMFS BIOLOGICAL OPINION

(EXCERPTS)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

AUG 27 2015

Refer to NMFS No: WCR-2015-2716

Jane M. Hicks
Chief, Regulatory Division
Department of the Army
San Francisco District, U.S Army Corps of Engineers
1455 Market Street
San Francisco, California 94103

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Letters of Permission for Gravel Extraction in Humboldt County (LOP 2015-1) and the Hoopa Valley Tribe's Individual Permit for gravel extraction (2015-2025)

Dear Ms. Hicks:

Thank you for your letter of April 3, 2015, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 *et seq.*) for an 11-year Letter of Permission for Gravel Extraction in Humboldt County (LOP 2015-1) and for the Hoopa Valley Tribe's (HVT) 11-year individual permit (2015-2025).

NMFS has decided to batch the LOP 2015 and the HVT's individual permit biological opinions because of significant similarities in the proposed actions and overlap in some of the action area (Trinity River). The batched biological opinion is based on NMFS' review of the information provided within the consultation initiation package submitted on April 3, 2015, by the U.S. Army Corps of Engineers (Corps). The batched biological opinion addresses potential adverse effects on Evolutionarily Significant Units (ESU) or Distinct Population Segments (DPS) and the designated critical habitat of the following federally listed species:

Southern Oregon/Northern California Coast (SONCC) coho salmon ESU
(Oncorhynchus kisutch)
Threatened (70 FR 37160, June 28, 2005)
Designated Critical Habitat (64 FR 24049, May 5, 2009)

California Coastal Chinook (CC) salmon ESU
(O. tsawytcha)
Threatened (70 FR 37160, June 28 2005)
Designated Critical Habitat (70 FR 52488, September 2, 2005)

Northern California (NC) steelhead DPS
(O. mykiss)
Threatened (71 FR 834, January 5, 2006)
Designated Critical Habitat (70 FR 42488, September 2, 2005).

Based on NMFS' review of the consultation initiation packages and the best scientific information available, NMFS concurs with the Corps determinations that the actions, as proposed, are not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, and NC steelhead and is not likely to result in the destruction or adverse modification of the designated critical habitats for the aforementioned species.

NMFS' expects the proposed actions will result in the incidental take of SONCC coho salmon, CC Chinook, and NC steelhead. An incidental take statement is included with the enclosed batched biological opinion for each individual proposed action (LOP 2015 and the HVT's individual permit). The incidental take statements include non-discretionary reasonable and prudent measures and terms and conditions that are expected to further reduce incidental take of SONCC coho salmon, CC Chinook, and NC steelhead as a result of the proposed action.

The enclosed Essential Fish Habitat (EFH) Response consultations were prepared pursuant to section 305(b) of the Magnuson Stevens Fishery Conservation and Management Act. The proposed action includes areas identified as EFH for coho salmon and Chinook salmon, which are Pacific Salmon species managed under the Pacific Coast Salmon Fishery Management Plan. NMFS concludes that the projects would adversely affect EFH for coho salmon and Chinook salmon. However, the proposed actions contain adequate measures to avoid, minimize, and mitigate the adverse effects to EFH. Thus, no additional EFH Conservation Recommendations are requested by NMFS.

Please contact Mitch Markey, Northern California Office, Arcata, California at (707) 825-1620 or mitch.markey@noaa.gov, if you have any questions concerning the LOP 2015 section 7 consultation, or Dan Free at (7-7) 825-5164 or Dan.Free@noaa.gov, if you have questions regarding the HVT's section 7 consultation, or if you require additional information.

Sincerely,

for

William W. Stelle, Jr.
Regional Administrator

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Letters of Permission for Gravel Extraction in Humboldt County (LOP 2015-1)

NMFS Consultation Number: *WCR-2015-2716*
Action Agency: *United States Army Corps of Engineers*

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?*	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Northern California steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	No
California coastal Chinook (*O. tshawytscha*)	Threatened	Yes	No	No
SONCC Coho (*O. kisutch*)	Threatened	Yes	No	No

Fishery Management Plan That Describes EFH in the Project Area	Do Actions Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By: for

William W. Stelle, Jr.
Regional Administrator

Date: AUG 27 2015

General Timeline

FEB 1	CHERT annual report that evaluates the past extractions.
SPRING	Gravel Week: the involved agencies are invited to meet to review permit applications and compliance. No specific date is established for the annual meeting.
	Aerial orthographic photos to be taken.
	Gravel extraction plans along with CHERT recommendations submitted to the Corps and NMFS at the earliest possible date and reviewed by the Corps in the order received.
JUN 1	Earliest extraction.
JUN 30	Earliest construction of temporary channel crossings.
OCT 1	Gravel stockpiled on river bars must be removed on a daily basis after October 1. Each day thereafter, extraction sites will be groomed and graded to drain freely at the end of each working day. Channel crossings must be removed.
OCT 15	Grading must be completed. All gravel extraction ceases on river bars, unless an approved river flow monitoring plan is enacted and a time extension granted by the Corps.
NOV 1-	Revegetate mitigation areas. Post-extraction aerial photos are delivered to the Corps, CHERT, and NMFS.
DEC 15	Post-extraction cross section data and biological monitoring data submitted to Corps, NMFS and CHERT, except biological monitoring data gathered in November and December.
JAN 15	Mitigation monitoring reports due to Corps, NMFS, CDFW, and CHERT.
FEB 28	Biological monitoring data gathered in November or December submitted to the Corps, NMFS, CDFW, and CHERT.

1.3.1.2 Gravel Extraction Methods

Traditional Skim

Skimming of gravel from exposed gravel bars involves the use of excavating machinery to remove the uppermost layer of gravel. Skimming will be performed above the 35 percent exceedence flow water surface elevation of the low flow channel, and downstream from the head-of-bar buffer (described below), and on exposed (dry) bars, within the active channel that is typically inundated annually. After skimming, the bar must be graded in order to be left smooth, free of depressions and with a slope downstream and/or to the low-flow channel. Traditional skims are typically laid out as

curvilinear benches along the outside of gravel bars, and are typically no wider than about half the exposed bar surface width.

Horseshoe Skim
This method removes gravel from the downstream two-thirds of gravel bars. A lateral edge-of-water buffer is maintained along the low flow channel. The upper third of the bar will be left in an undisturbed state as the head-of-bar buffer (described below). The finished grade of the extraction area will have a downstream gradient equal to the river gradient and a flat cross slope and will be no lower than the 35 percent exceedence flow elevation. Cut-slopes will be left at a 2:1 (horizontal:vertical) slope, except along the upstream side at the head-of-bar buffer where a 6:1 slope will be established. There will be at least a 15-foot offset buffer from the bank. The extraction surface will daylight along the downstream one-third to one-fifth of the bar to facilitate drainage following high runoff events.

Inboard Skim
This method is similar to the horseshoe skim except that it maintains a wider horizontal offset from the low flow channel where warranted. These areas will be excavated to a depth no lower than the water surface elevation of the 35 percent exceedence flow, with a 0–0.5 percent cross slope, steeper (1:1) slopes on the sides, and gentle (10:1) slopes at the head of the excavation. There will be a 15-foot offset buffer from the bank. The excavation may extend into the upper one-third of the head-of-bar buffer if sufficient rationale is provided to show that protection of the upstream riffle will be maintained.

Narrow Skim
Narrow skims will be no more than one-third of the bar width, follow the shape of the bar feature, maintain the point of maximum height of the bar, and trend in the general direction of streamflow. These skims will maintain a vertical offset corresponding to the discharge at 35 percent exceedence level. Finished narrow skims will be free draining and slope either toward the low-flow channel or in a downstream direction. Furthermore, these skims will avoid the head-of-bar buffer. This buffer may be decreased on a case-by-case basis provided the extraction area narrows, tapering smoothly to a point and remains below the upstream cross-over riffle.

Narrow Skim - Van Duzen River
Narrow skims along the Van Duzen River will be limited to a maximum width of 90 feet across the top of the extraction. This width is designed to contain average peak flows of 1,000 cfs commonly seen during the early period of adult salmonid migration in November and December. The minimum skim floor will be equal to the water surface elevation of the 35 percent exceedence flow.

Narrow Skim - Lower Eel River
Narrow skims that are adjacent to the low flow channel, but are not adjacent to entire riffle areas, will be considered for the lower Eel River. These narrow skims will have a minimum vertical offset equal to the water surface elevation of the 35 percent exceedence flow. Narrow skim widths will be determined on a site specific basis, and will: (1) not increase channel braiding; (2) not lower the elevation at which flows enter secondary channels; (3) avoid the higher elevation portions of the annually inundated bar surface; and (4) maintain channel confinement.

Secondary Channel Skim
These extractions are elongate, shallow skims in the area of dry, secondary channels, designed to be free-draining and open at either end so as to not impede fish passage and to prevent any potential fish stranding. The upstream riffle crest, or elevation control of secondary channels will not be affected by extraction proposals. The skim floor of these excavations will be set at the 35 percent exceedence flow elevation.

Alcoves
Alcove extractions are located on the downstream end of gravel bars, where naturally occurring alcoves form and may provide velocity refuge for juvenile salmonids during high flows, and potential thermal refuge for juvenile salmonids during the summer season. Alcove extractions are irregularly shaped to avoid disturbance of riparian vegetation, and are open to the low flow channel on the downstream end to avoid stranding salmonids. Alcoves are extracted to a depth either above or below the water table.

Wetland pits
Wetland pits are irregularly shaped excavations (to avoid excavating riparian vegetation) located on the 2-to-5 year floodplain surface. An excavator digs out the sediment below the water table and leaves the sides of the pit sloped. Wetland pits must have vegetation, either existing or planted, around their perimeter and must contain some type of cover elements, such as woody debris.

Wet trenching
Wet trenching excavates sediment directly from dry portions of the channel near the wetted perimeter. The wet trench extends below the water table and may be excavated adjacent to the flowing channel. The upstream and downstream ends of the trench would be opened to the river's flow once the suspended sediment has settled out. Wet trenches are typically constructed adjacent to the wetted channel. The wet trenching method would only be used when there is the additional objective of improving instream salmonid habitat or reducing effects on the channel's width and depth.

Dry trenching
The dry trenching method of extraction may be both shallow and stay above the water table or deep and extend below the water table, and removes gravel from the exposed (dry) bar surface. A gravel berm may be constructed with materials on site to isolate the trench from the channel. After excavation, and when the sediment in the trench has settled, the berm is breached on the downstream end, and the trench is connected to the river to prevent fish stranding. Alternatively, the berm may be constructed to be naturally breached during normal fall flows.

Modifications
Modifications to extraction limitations, when they provide equal or greater protection to listed fish species, may be approved by the Corps.

1.3.1.3 Minimization Measures/Gravel Extraction Terms

Projects authorized under LOP 2015-1 are subject to the following terms that minimize the effects of gravel mining on river morphology and listed salmonids. The Corps has the right to add or modify

terms or measures as appropriate. Modifications to excavation procedures may be made to increase fisheries and wildlife habitat with Corps approval.

1.3.1.3.1 *CHERT Process for Annual Review and Recommendation*

The annual CHERT review and recommendation for each proposed gravel extraction site is a requirement of the LOP 2015-1. Gravel miners contact CHERT at the beginning of each extraction season to discuss opportunities for extraction at their site. CHERT or the miner schedules a pre-extraction site review, and involved agencies are invited to attend and provide input. Extraction alternatives are discussed on site, and CHERT prepares a written recommendation for extraction prior to the Corps' issuance of the annual Letter of Modification. As part of their extraction recommendation, CHERT provides a summary of its rationale and describes how the proposed extraction does not significantly increase the risk of channel braiding, how the extraction attempts to promote channel confinement, and does not increase the risk of adult salmonid stranding or increase the risk of riffle instability. More detail about CHERT is provided by Humboldt County on their website: http://www.humboldtgov.org/252/Surface-Mining-Reclamation-Act-SMARA-Doc.

1.3.1.3.2 *Minimum One-Third Head-of-Bar Buffer*

The upstream end of the bar (head-of-bar) will not be mined or otherwise altered by activities authorized by the LOP 2015-1. The minimum head-of-bar is defined as that portion of the bar that extends from at least the upper third of the bar to the upstream end of the bar that is exposed at summer low flow. Therefore, the upstream one-third portion of the bar as exposed at summer low flow is provided as the minimum head of bar buffer. The intent is to protect the natural stream flow steering effect provided by an un-mined bar.

Some alternative extraction techniques, such as longer and much narrower skims adjacent to the low flow channel, have specific geomorphic objectives that may require extraction on a portion of the head-of-bar buffer. Variances to the minimum head of bar buffer may be considered on a case-by-case basis, if the proposed alternative provides equal or greater protection. The specific nature of the proposed variance must be described, along with sufficient biological, hydrological, and sediment transport rationale to support the recommended alternative. For example, any modification in the default head-of-bar buffer dimensions should, at a minimum, provide for protection of the adjacent cross-over riffle, by limiting extraction to the area downstream of the riffle.

1.3.1.3.3 *Minimum Skim Floor Elevation*

The minimum skim floor elevation will be defined as the elevation of the water surface at the 35 percent exceedence flow for each site, on an annual basis. Instructions for determining, marking and reporting the water surface elevation of the 35 percent exceedence flow are available from Corps. Additionally, the water surface elevation of the 35 percent exceedence flow will be marked on the gravel bar and indicated on the cross section survey data.

1.3.1.3.4 *Pollution Prevention and Minimization*

Equipment will be parked above the OHWM during maintenance, fueling, and after-hours. The site will be inspected daily for grease, oil, or other fluid spills. If a spill is observed, photograph and document the spill and implement the spill-cleanup plan and notify the Corps' and NMFS' points of

contact. All tires and auto body debris, or other large metal debris will be removed from the gravel bar and disposed/recycled properly.

1.3.1.3.5 *Temporary Channel Crossings*

Design and Construction

The location, construction and removal of all temporary channel crossings will be reviewed by the Corps, NMFS, CDFW, and CHERT for conformance with these guidelines and will be described in the CHERT recommendation. Crossings will be designed and installed to minimize turbidity and geomorphic impacts from bridge construction, bridge use and bridge removal. Factors that will be considered include habitat quality, channel width, length of available bridges, required bridge width, water depth and velocity, amount of fine sediment in the native gravel and the availability of washed rock.

- Main channels must be spanned to the maximum length practicable using either a flatcar or bridge span. Culverts may be approved for use in secondary channels on a case-by-case basis.

- Heavy equipment passes across the wetted channel during temporary channel crossing construction and removal will be kept to an absolute minimum and described in the CHERT recommendation. Heavy equipment passes will be limited to two passes per bridge construction and two passes per removal.

- Native gravel can be used for bridge approaches and abutments if the bridge will completely span the wetted channel, and the abutment materials are removed and graded onto approved sites upon bridge removal.

- Use of brow logs, concrete blocks, concrete K-rails or other suitable materials will be used in temporary abutments to minimize the amount of sediment required for abutments or approach ramps.

- If encroachment into the low flow channel is necessary to span the wetted channel, then approach ramps will be constructed using techniques to reduce delivery of fine sediment to the channel. These techniques could include a base of washed rock or cobbles on the access side of the stream. The base will extend from the bed of the stream to six inches above the water surface at construction time. This base can be topped with native gravel. Alternatively, if washed rock is not readily available, native gravel used in wetted approaches and abutments may be lined with filter fabric and surrounded with K-rails. Other methods that will provide equal or superior protection from turbidity impacts may be suggested by the operator and presented for review and recommendation by CDFW, CHERT, and NMFS. Other methods may be approved if they meet the objective of minimizing sediment delivery to the wetted channel.

- Upon bridge removal, the original channel configuration will be restored to the fullest extent feasible.

Timing
Temporary crossings will be constructed after June 30 only. All crossings and associated fill must be removed by October 1. The Corps will coordinate with NMFS on requests for time extensions for bridge construction or removal, due to the sensitivity of working directly within the wetted channel.

Location
Bridge locations will avoid known spawning areas. The middle of riffles may provide the best location for temporary crossings since the bridge may be able to span the entire wetted channel. Where bridges are not able to span the entire wetted channel, the crossing location will be determined on a site-specific basis. The proposed location, and rationale used to determine how the crossing location minimizes effects to salmonids, will be included in the CHERT recommendation. Haul roads will follow the shortest route possible while avoiding sensitive areas such as riparian vegetation. If excessive compaction is identified, the roads will be scarified after extraction is complete.

1.3.1.3.6 ***Reach Specific Minimization Measures***

Lower Eel River
Alternative extraction techniques will be preferred over traditional skimming. These alternative techniques may include, but are not limited to alcoves, wetland pits, trenches, and dry-trenches, as described previously in this *Description of the Proposed Action* section. In addition to the alternative extraction techniques, narrow skims that are designed according to the lower Eel River specifications may be used.

South Fork Eel River
Alternative extraction techniques will be given deference over traditional skimming. These alternative techniques may include, but are not limited to alcoves, wetland pits, trenches, and dry-trenches, as described previously in this *Description of the Proposed Action* section.

Van Duzen River
Extraction proposals in the Van Duzen River will be limited to alternative extraction designs, such as trenching, alcoves, horseshoe pits, very narrow skims, *etc.* In particular, trenching is recommended in some locations in the lower Van Duzen River, especially when very close to the wetted channel. Very narrow skims on the Van Duzen River will be limited to 90 feet total width, as measured across the top of the extraction. Extraction proposals will include rationale describing how the proposal will prevent increases in the width-to-depth (W/D) ratio and not increase the likelihood of salmon stranding.

Trinity River
The minimum skim floor elevation on the Trinity River will be a minimum of two feet above the adjacent summer low-flow water surface elevation.

1.3.1.4 Storage and Stockpiles

Temporary storage of excavated material may occur on the gravel bar, but must be removed by October 1. In order to minimize the turbidity associated with excavating wet sediment, all wet

excavated sediment must be stockpiled on the gravel bar away from the low flow channel and allowed to drain prior to hauling across any temporary channel crossing.

1.3.1.5 Vegetation and Wetlands

All riparian woody vegetation and wetlands will be avoided to the maximum extent practicable. Any riparian vegetation or wetland that is to be disturbed will be clearly identified on a map. Woody vegetation that is part of a contiguous 1/8-acre complex or is at least 2 inches diameter that is disturbed will be mitigated. Impacts to other woody vegetation will be described and submitted to the Corps and CHERT with the gravel extraction plans. These impacts may require mitigation at the discretion of the Corps. Areas that will be mapped consist of riparian vegetation that have driplines within 25 feet of excavation activities (excavation, stockpiling, parking, *etc.*) or wetlands, which are filled, excavated or drained. Mitigation for impacts to woody vegetation will not be required for pre-existing haul roads, stockpile areas and facilities.

1.3.1.6 Structure Setbacks

Gravel removal will remain a minimum distance of 500 feet from any structure (bridge, water intake, dam, *etc.*) in the river. For bridges, the minimum setback distance is the length of the bridge or 500 feet, whichever is greater. Gravel removal may encroach within this setback if written approval is given by owners of these structures and approved by the Corps.

1.3.1.7 Regrading

The mined, or disturbed, area must be graded, if necessary, before the water levels rise in the rainy season. Grading must be completed by October 15 each year. Grading includes filling in depressions, grading the construction/excavation site according to the approved configuration, leaving the area in a free-draining configuration (no depressions and sloping toward the low flow channel).

1.3.1.8 Timing of Extraction

Unless the operator's LOP is specifically modified, gravel extraction will cease by October 15 each year. Grading, if necessary, will be completed prior to October 15 each year. Requests for a time extension will be reviewed on a case-by-case basis. The operator, however, must have graded the site before an extension can be authorized. The Corps will coordinate with CHERT, CDFW, and NMFS before a decision is made on the time extension.

1.3.1.9 Habitat Enhancement and Protection

1.3.1.9.1 ***Habitat Improvement Activities***

The actions authorized by the LOP 2015 can include certain activities at gravel extraction sites, during extraction seasons, that will enhance habitat for salmonids and other riverine species. The specific details of such habitat enhancement activities will be determined during the pre-extraction review and recommendation process. Habitat enhancement activities may include, but are not

limited to, trenching designed to improve salmon migration, alcove construction, placement of edge water large woody debris, riparian planting and strategic placement of large wood and boulders in the stream. Some specific habitat improvement activities have been identified in the BAs for the LOP 2015 (Stillwater Sciences 2015; HCPW 2015; HRC 2015), and include, trenching to improve salmonid migratory habitat in the Van Duzen River and riparian planting to improve rearing habitat in the Van Duzen River.

Certain habitat enhancement activities, such as riparian planting projects, may be conducted outside of the normal extraction operating season. For example, riparian planting efforts tend to have a higher rate of success when cuttings are collected and planted during the fall and winter.

1.3.1.9.2 *Protection of Large Woody Debris*

Large woody debris (LWD) in the wetted channel and on floodplains is an important component of aquatic and riparian habitat. However, it is common practice for LWD to be gathered by local residents for firewood and other uses. To reduce the adverse effects of this longstanding practice, educational signing regarding the importance of LWD for salmonids will be placed at access roads owned, controlled, or utilized by the gravel operators. In addition, in order to protect LWD deposited on mined gravel bars, all access roads owned or controlled by commercial gravel operators will be gated and locked to reduce access.

1.3.1.10 Proposed Mitigation

The Corps requires each gravel operator to mitigate impacts to wetlands and riparian zones in the following manner: avoiding, minimizing, rectifying, reducing or eliminating the impact over time, and finally, compensating for impacts. For all unavoidable impacts, a mitigation plan will be submitted with applications for all projects that will adversely affect wetlands and riparian vegetation. Mitigation will consider the size and age of the vegetation removed or adversely impacted. All vegetative mitigation will be planted between November 1 and February 28 of the year following excavation and will have a survival rate determined by the Corps on a site-specific basis, over three growing seasons. Failure to obtain a Corps specified three-year survival rate will require replanting. Annual reports depicting the survival of vegetation will be due by December 31 each year for three growing seasons after planting year.

1.3.1.11 Site Visits

Site visits will be conducted by the Corps, CDFW, NMFS, and CHERT before and after gravel extraction operations at all locations. Additional site visits can be made upon request by the operator or when otherwise deemed necessary by the Corps, NMFS, CHERT, CDWF, or other participating agencies. Pre-extraction visits will be done as part of the review and Corps approval process. Post-extraction visits will be as soon as possible following completion of operations and prior to site inundation by rising river stages in the fall. To help ensure this occurs in a timely manner, gravel operators will notify the Corps, NMFS, CDFW, and CHERT by email, phone, or fax within two business days of project completion. The Corps will provide an operational checklist (please see the draft form at Appendix N of the LOP 2015) to the operator outlining the habitat improvement goals for the specific river reach, and the procedures that occur during the extraction season.

1.3.1.12 Monitoring

Monitoring required by the LOP 2015 includes: 1) monitoring cross sections for all rivers; 2) water surface elevation at the 35 percent exceedence flow for all rivers, except the Trinity River where minimum 2 foot vertical offset is used for skims, rather than the 35 percent exceedence flow elevation, and 3) habitat mapping and biological observations for all rivers. These data are described in Appendix C and D (Enclosure 1) and will be collected on an annual basis and reported to the Corps, NMFS, CDFW, and CHERT, unless otherwise noted.

1.3.1.13 LOP 2015 Operators

The Corps proposes to permit the following operators in the following watersheds under the LOP 2015 procedure (**Table 1-1**). Specific bar locations are described by Stillwater Sciences (2015), HCPW (2015) and HRC (2015).

Table 1-1. Annual maximum gravel extraction by bar, operator and watershed.

Watershed	Operator	Bar	Annual Maximum Extraction as defined by Humboldt County permit
Lower Eel River	Eureka Sand & Gravel	Hauck Bar (River Mile [RM] 14.0)	150,000 cubic yards (cy)/yr
		Singley Bar (RM 6.0)	150,000 cy/yr
	Mercer-Fraser Company	Sandy Prairie Bar complex (RM 10.5)	270,000 cy/yr (70,000 cy/yr for Pedrazzini site and 200,000 cy/yr for Canevari site)
	Mallard Pond	Drake Bar (RM 8.0)	250,000 cy/yr
	Humboldt County	Worswick Bar (RM 7.0)	25,000 cy/yr
Van Duzen River	Humboldt County	Pacific Lumber Bar (RM 16.7)	3,000 cy/yr
	Thomas R. Bess Asphalt Sand & Gravel	Bess Bar (RM 5.4)	20,000 cy/yr
	Rock and Gadberry Sand and Gravel	Leland Rock Bar (RM 0.3)	100,000 cy/yr
	Jack and Mary Noble	Van Duzen River Ranch Bar (RM 3.3)	100,000 cy/yr
South Fork Eel River	Randall Sand and Gravel	Randall Bar complex (RM 34)	50,000 cy/yr, but ≤40,000 cy annual average over 3 yr period

habitat quantity and quality, and the conservation value of that habitat will not be appreciably diminished. Therefore, we have determined that implementation of the proposed action is not likely to appreciably diminish the value of designated critical habitat for the conservation of NC steelhead.

2.6.4.2 CC Chinook Salmon

Implementation of the proposed action will result in localized, minor reductions in the quality and quantity of rearing and spawning habitat for CC Chinook salmon. The localized reductions in rearing habitat will be temporary as higher flows replenish gravel to the mining sites, are dispersed throughout the watershed, and are relatively minor because the mining intensity is not high. Spawning habitat in the vicinity of the extraction sites in the South Fork Eel River and the Van Duzen River may be less suitable, but these sites are not key spawning areas for Chinook salmon. Chinook salmon utilize the extraction area in the South Fork Eel River and the Van Duzen River primarily when upstream access has been hindered. The localized impacts to rearing and spawning habitat are extremely minor, and are insignificant when compared to the available rearing and spawning habitats throughout the Eel River, Van Duzen River, South Fork Eel River, Mattole River, and Bear Creek. Therefore, there will not be a reach-wide decline in overall habitat quantity and quality, and the conservation value of those habitats will not be appreciably diminished. Adult holding and migration habitat are expected to be enhanced for Chinook salmon from deeper channels created by trenching, especially with the addition of woody debris. Therefore, we have determined that implementation of the proposed action is not likely to appreciably diminish the value of designated critical habitat for the conservation of CC Chinook salmon.

2.6.4.3 SONCC Coho Salmon

Implementation of the proposed action will result in localized, minor reductions in the quality and quantity of juvenile rearing habitat for SONCC coho salmon. The localized reductions in rearing habitat will be temporary as higher flows replenish gravel to the mining sites, are dispersed throughout the watershed, and are relatively minor because the mining intensity is not high. The localized impacts to rearing habitat are extremely minor, and are insignificant when compared to the available rearing habitat throughout the Eel River, Van Duzen River, South Fork Eel River, Trinity River, Mattole River, and Bear Creek. Therefore, there will not be a reach-wide decline in overall habitat quantity and quality, and the conservation value of that habitat will not be appreciably diminished. Adult holding and migration habitat are expected to be enhanced for coho salmon from deeper channels created by trenching. Therefore, we have determined that implementation of the proposed action is not likely to appreciably diminish the value of designated critical habitat for the conservation of SONCC coho salmon. SONCC coho salmon critical habitat does not occur on the HVIR, therefore, the HVT proposed action will not affect critical habitat.

2.7 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of

interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the the Humboldt LOP 2015 and HVT individual permit for gravel mining, as proposed, is not likely to jeopardize the continued existence of NC steelhead, CC Chinook salmon, or SONCC coho salmon; and is not likely to result in the destruction or adverse modification of NC steelhead, CC Chinook salmon, or SONCC coho salmon critical habitat.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply. If the Corps fails to assume and implement the measures or fails to require the applicant to adhere to the measures through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to NMFS as specified in the ITS [50 CFR § 402.14(i)(3)].

2.8.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take would occur as follows:

NMFS anticipates that annual gravel mining operations under the LOP 2015-1 will result in take of SONCC coho salmon, CC Chinook salmon and NC steelhead within the action area. NMFS expects temporary physical habitat impacts will occur primarily within the extraction areas. The temporary physical habitat impacts will primarily influence the availability of shelter during high flows which inundate extraction areas as well as reduce the quality and quantity of juvenile rearing habitat (i.e., reductions in coarse substrate, deep water habitats, riparian vegetation and velocity refugia) for SONCC coho salmon, CC Chinook, and summer and winter run NC steelhead. The impairment of essential behavior patterns of juveniles resulting from the temporary loss of habitat, short-term increases in turbidity, and displacement during instream bridge construction is likely. We also expect that localized changes in habitat will result in a small reduction in the emergence of fry from redds within the Van Duzen and South Fork Eel rivers, adjacent to and immediately downstream of the extraction sites. Reductions in habitat and

alterations in essential behavioral patterns will result in both decreased growth rates and ocean survival. Overall, we anticipate that the number of individuals harmed resulting from these annual temporary habitat changes will be low.

NMFS is unable to estimate the number of individuals that will experience lower survival as a result of the proposed action. The number of coho salmon, CC Chinook, and NC steelhead occupying the action area is dependent on their population size and hydrology which varies spatially and temporally throughout the extraction reaches. We anticipate that a small number of steelhead juveniles may be crushed during construction and removal of temporary channel crossings (bridges). In addition, we expect that adults and juveniles of all three species may become stranded in trenches and wetland pits. Although the trenches and wetland pits will be designed to avoid stranding, unexpected river changes may cause stranding of fish with mortality before fish rescue operations commence. While we cannot reliably estimate the number of individuals that may become stranded in a given year, NFMS expects that the probability of stranding is very low due to minimization measures included in the LOP 2015-1, but if stranding occurs, then a small number of juveniles or adults (in any combination of the three species) may become stranded and die in trenches or wetland pits. Overall, the effects of the action vary based on the extraction intensity, location, and hydrological factors. NMFS is using two surrogates for the amount of take which could occur. The surrogates are based on the maximum extraction acreage and the maximum extraction volumes of each extraction reach during the 2005 through 2014 permit periods. NMFS does not expect the maximum acreage for LOP 2015-1 to increase due to site specific volume limitations. The maximum extraction acreage and maximum volume for each reach from 2005 through 2014 is as follows:

- Lower Eel River: 42.3 acres/215,760 cu. yds.
- Middle Eel River: 9.3 acres/64,424 cu. yds.
- South Fork Eel: 9.5 acres/73,956 cu. yds.
- Van Duzen River: 29.3 acres/137,850 cu. yds.
- Mattole River/Bear River/PL Bar/Fort Seward: 2.6 acres/14,064 cu. yds.

NMFS expects that physical habitat impacts will be: (1) limited to the habitat adjacent to and immediately upstream of and downstream of the extraction areas described in Table 2-21 below; (2) compliant with the minimization measures of the LOP 2015-1; and (3) within the expected effects of the proposed action as described in this Opinion. Critical minimization measures in the LOP 2015-1 include, implementing a head-of-bar buffer, giving preference to alternative extraction techniques on the South Fork Eel River, Lower Eel River and Van Duzen River, and limiting the type of skimming on the Van Duzen River to narrow skims with widths of no more than 90 feet as measured across the top of the extraction. We expect more frequent use of alcoves, trenches and narrow skims in these reaches in lieu of traditional skimming, and that a fish migration channel will be designed and implemented in the Van Duzen River delta at the

Leland Rock site and the Hauck Bar site. We also expect that trenching will be used at the Bess and Noble sites.

The duration of effects is anticipated to extend from 2015-2025, and possibly beyond. Although many of the effects will be short-lived and occur on a seasonal basis (*e.g.*, effects of bridge construction), effects to habitat and consequent incidental take of coho salmon, Chinook salmon and steelhead juveniles may persist beyond a given extraction season.

2.8.2 Hoopa Valley Tribe

NMFS anticipates that HVT gravel mining operations as permitted under the CWA section 404 permit will result in incidental take of naturally produced, unmarked coho salmon in the Trinity River. NMFS expects that temporary physical habitat impacts will occur primarily on the extraction areas. These changes will primarily influence the sheltering of coho salmon juveniles during higher flows that inundate the extraction areas. These localized changes in habitat will reduce juvenile rearing habitat. We expect impairment of essential behavior patterns of juveniles as a result of a temporary loss of habitat (*i.e.*, coarse substrate), short-term increases in turbidity and fine sediment, and from being displaced during instream heavy equipment activity from bridge construction. These reductions in habitat and behavioral displacement of juveniles will increase competitive pressures on the affected individuals resulting in decreased growth rates and lower ocean survival. Coho salmon that are displaced from rearing areas will be subject to increased predation. We expect that very few juvenile coho salmon will be harmed as a result of these changes in habitat per year and no adults will be affected.

NMFS is unable to determine the number of individuals that will experience lower survival as a result of the HVT's proposed action because the number of coho salmon that occupy the action area varies temporally and spatially in response to population size, hydrology, and other factors that will influence their use of the action area. In addition, the effects of the action will vary based on extraction intensity, location, and the persistence of changes in the bar caused by extraction that will vary due to hydrologic and other factors. Therefore, NMFS is using a surrogate for the amount of take in terms of the extent of the gravel bars that may be mined in the action area. The distance of river where the bars occur is approximately 5.3 river miles. In addition, the acreage of the bars is:

- Tish Tang Campround Bar = approx. 9.7 acres

- Tish Tang Creek Bar = approx. 1.2 acres

- Campbell Bar = approx. 3.2 acres

- Tish Tang #8 Bar = approx. 15.2 acres

- Cal Pac Bar = approx. 5.4 acres

- Security East Bar = approx. 11.4 acres

The Corps shall:

1. Ensure that the monitoring necessary to track changes to coho salmon habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

2.8.5 Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps or any applicant must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

2.8.5.1 LOP 2015

The following terms and conditions implement reasonable and prudent measure 1:

Ensure that the monitoring necessary to track changes to salmonid habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

a. The Corps will ensure that all required monitoring is completed annually. This requirement includes both the biological monitoring that is described in the biological monitoring plan dated February 2015 and added to the LOP 2015-1 on April 4, 2015, as Appendix D, and the physical monitoring that is described in Appendix C of the LOP 2015-1. Completion of required monitoring will be documented by development of a tracking system by the Corps that clearly shows that all applicants meet all monitoring requirements annually. The tracking system will be developed and implemented by the Corps by December 31, 2015.

b. The Corps will provide a cross section data protocol and reporting format that NMFS and CHERT have reviewed to ensure that all data is provided in a consistent format. If modifications to the protocol are necessary, proposals for the modifications will be circulated to CHERT, NMFS and the applicants for review and comment prior to approval and implementation.

c. Ensure that the site-specific checklists required by the LOP 2015-1 (Appendix N of the LOP 2015-1 provides an example checklist) are completed annually for all mining sites.

d. Ensure that monitoring reports are provided to NMFS each year by December 31. Reports shall be submitted to:

Matt Goldsworthy
Acting North Coast Branch Chief
National Marine Fisheries Service
1655 Heindon Road
Arcata, California 95521

The following terms and conditions implement reasonable and prudent measure 2:

Ensure that wetland pits are located above the 2-year flood elevation in order to reduce the potential for salmonid stranding.

a. Pre-extraction plans will provide either an air photo showing observed edge of water of the previous winter flood flow with a frequency above the 2-year flood and below the proposed wetland pit location or a HEC-RAS model will be provided that demonstrates that the location of wetland pits are above the 2-year flood level.

2.8.5.2 Hoopa Valley Tribe

The Corps, and its applicant, the HVT, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions implement reasonable and prudent measure 1:

Ensure that the proposed monitoring to track changes to Coho salmon habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

a. The Corps will ensure that all required monitoring is completed annually. Completion of required monitoring will be documented by development of a tracking system by the Corps that clearly shows that the HVT meets all monitoring requirements annually. The tracking system will be developed and implemented by the Corps by December 31, 2015.

b. Ensure that all monitoring reports are provided to NMFS each year prior to December 31. Reports shall be submitted to:

Matt Goldsworthy
Acting North Coast Branch Chief
National Marine Fisheries Service
1655 Heindon Road
Arcata, California 95521

2.9 Reinitiation of Consultation

2.9.1 LOP 2015

This concludes formal consultation for LOP 2015. As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

For example, reinitiation of consultation may be required if (1) the extraction intensity that was analyzed in the Opinion by river reach is exceeded, and if greater mining intensity results in habitat changes not anticipated in this Opinion; or (2) critical minimization measures such as, implementing a head-of-bar buffer, giving preference to alternative extraction techniques on the South Fork Eel, Lower Eel and Van Duzen rivers, and limiting skim widths in the Van Duzen River to no more than 90 feet as measured across the top of the extraction, are not implemented. Reinitiation of consultation is also required if additional sites other than those listed in the ITS Table 1 are authorized by the LOP 2015-1.

2.9.2 Hoopa Valley Tribe

This concludes formal consultation for the Hoopa Valley Tribe. As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount of incidental take is exceeded, consultation shall be reinitiated immediately. For example, reinitiation of consultation may be required if minimization measures such as the head-of-bar buffer and the pre-extraction planning process are not implemented.

3 Magnusun-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct

or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for Pacific coast salmon (PFMC 1999) contained in the fishery management plans developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

Pacific Coast Salmon EFH will be affected by the Proposed Action. The aspects of the EFH that may be affected by the Proposed Action include adult spawning and migration habitat and juvenile rearing habitat within the Lower Eel River, Middle Eel River, South Fork Eel River, Van Duzen River, Mattole River, Bear River, and Trinity River.

3.2 Adverse Effects on Essential Fish Habitat

Effects of the proposed action on coho salmon and Chinook salmon EFH are those associated with habitat degradation from increased sedimentation and channel instability. These effects are described in the NMFS biological opinion.

3.3 Essential Fish Habitat Conservation Recommendations

NOAA Fisheries has no conservation measures to recommend over what is currently proposed. Conservation recommendations provided in past gravel mining consultations were incorporated into the proposed action.

3.4 Supplemental Consultation

The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

4 Data Quality Act Documentation and Pre-Dissemination Review

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the Corps. Other interested users could include permit applicants, citizens of affected areas, and others interested in the conservation of the affected ESUs/DPS. Individual copies of this opinion were provided to the Corps. This opinion will be posted on the Public Consultation Tracking System web site (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion [*and EFH consultation, if applicable*] contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA [*and MSA implementation, if applicable*], and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

5 REFERENCES

Abbe, T.A. and D.R. Montgomery. 1996. Large woody debris jams, channel hydraulics and habitat formation in large rivers. Regulated Rivers: Research and Management 12:201-221.

EXHIBIT N0. 1
CDP Application No. 1-16-0423
(Humboldt Co. Public Works Dept.)
REGIONAL LOCATION MAP

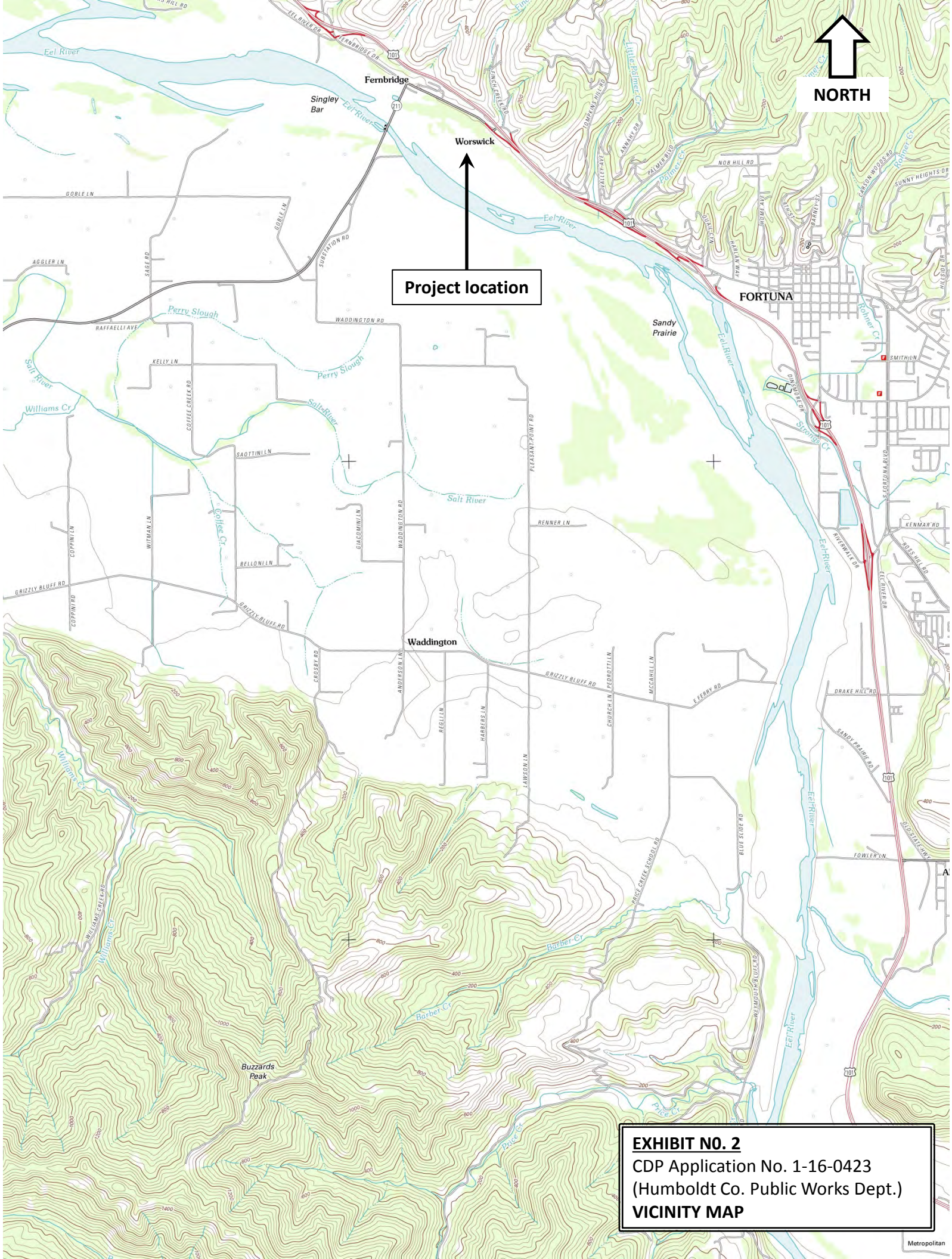

EXHIBIT N0. 2
CDP Application No. 1-16-0423
(Humboldt Co. Public Works Dept.)
VICINITY MAP

NORTH

EXHIBIT N0. 3
CDP Application No. 1-16-0423
(Humboldt Co. Public Works Dept.)
SITE PLAN

EXHIBIT N0. 4
CDP Application No. 1-16-0423
(Humboldt Co. Public Works Dept.)
SITE PHOTO

APPENDIX E
USFWS CONDITIONS FOR WESTERN SNOWY PLOVERS
AND WESTERN YELLOW-BILLED CUCKO

The following conservation measures are necessary for Worswick, Leland Rock, Hauck, Sandy Prairie, Drakes, Singley, and Hansen gravel bars to minimize the potential impacts to the western snowy plover:

1. Operators shall make an attempt to initiate all extraction related activities after September 15 each year to avoid direct effects to plovers. However, if this is not feasible, gravel extraction will not occur prior to July 22.

2. All pre-extraction activities within plover habitat that occur between March 1 and August 22 require a Service-approved surveyor (authorized under section 10(a)(1)(A) of the ESA) to minimize potential harm to plovers. To be effective, plover surveyors must have the authority to direct the activities of workers to avoid nests and other plover life stages, and require that activity be halted until technical assistance from the Service is received regarding avoidance or minimization measures. All reference to plover surveys will be conducted by a Service-approved surveyor. Vehicle use within plover habitat should be restricted to those occasions where the activity cannot be completed otherwise.

3. Plover surveys will be conducted prior to initiation of extraction activities to determine if a plover, nest, or brood is present within 1,000 feet of the extraction site (refer to item 3 below). If an active plover nest is present within 1,000 feet of a planned extraction site, extraction activities will not commence until the nest has hatched or the fate of the nest has been determined.

4. Between July 22 and September 15, extraction may commence within plover habitat after three (3) consecutive days of surveys have determined that no adult plovers, broods, chicks, or nests are within 1,000 feet of the proposed extraction site. The three consecutive days of surveys will not begin before July 20th, and will only occur on days of acceptable weather conditions (generally in the mornings and not during periods of low light, high winds or when heat waves distort observations).

5. Between July 22 and September 15, all areas containing suitable habitat within 1,000 feet of extraction sites will be surveyed for plovers and nests to determine the likelihood of chicks, juveniles and adults moving into areas where they could be affected by operations.

6. Between July 21 and September 15, operators of extraction sites that have plovers or nests within 1,000 feet of extraction sites will ensure the following: (1) daily plover surveys are conducted to determine the status of plovers and nests, (2) that plovers move to a distance greater than 1,000 feet away before commencing operations, and

(3) training is provided to all extraction site personnel by a Service-approved biologist, for all extraction site personnel regarding identification of adult and immature plovers, plover behavior, and implementation of the conservation measures in the BO and the measures contained in LOP 2015.

7. Between July 21 and September 15, prohibit night driving (0.5 hour after sunset to 0.5 hour before sunrise) for extraction-related activities within suitable plover habitat. Authorized daytime driving shall be minimized to those trips essential to complete authorized work. Parking, staging, and maintenance of vehicles and equipment shall occur in areas of suitable plover habitat. The first three vehicle trips on haul roads in suitable habitat each day shall not exceed 10 mph to allow plovers and chicks to vacate roads.

8. Access roads owned, controlled, or used by commercial gravel operators will be gated and locked when no active extraction and hauling is occurring (including at night) in order to deter recreational vehicle impacts to plovers on gravel bars.

9. Before September 15, the Corps will not participate in on-site pre-extraction reviews until the Service-approved surveyor provides the Corps written or verbal confirmation that pre-extraction surveys have been completed in accordance with this BO and LOP 2015. In addition, if a Service representative is not on-site at the pre-extraction review, the surveyor must contact the Service via a call (voicemail message is okay) or e-mail notifying them that the survey was conducted.

10. All operators conducting surveys within suitable plover habitat will submit annual plover survey reports to the Arcata Fish and Wildlife Office by November 15 of each year gravel extraction activities occur.

The following conservation measures are necessary to minimize the potential impacts to the Western yellow-billed cuckoo:

1. Service-approved survey protocol will be used to conduct cuckoo surveys (i.e., Halterman, M., M. J. Johnson, and J. A. Holmes 2011; A Natural History Summary and Survey Protocol for the Western Yellow-billed Cuckoo Population, see Appendix J). In addition, surveys will be conducted by a Service-approved surveyor (authorized under section 10(a)(1)(A) of the Act).

2. Survey call-stations would only be established if an extraction area or haul route was proposed within 1,000 feet of suitable habitat during the cuckoo's breeding season (May 1-September 15).

3. Identification of suitable cuckoo habitat and cuckoo survey locations will be determined in consultation with the Service.

4. Cuckoo detections, either during protocol surveys or incidentally, will be reported to the Service within 48 hours of discovery.

5. Suitable habitat for the cuckoo will not be cleared, cut, or removed, except for hand pruning of overhanging vegetation (stems smaller than 6 inches in diameter) along existing haul routes. Any other vegetation removal requiring equipment or power tools will be limited to outside the cuckoo's breeding season (i.e., limited to the period September 15-April 30).

6. All operators conducting surveys within cuckoo habitat will submit annual cuckoo survey reports to the Arcata Fish and Wildlife Office by November 15 of each year gravel extraction activities occur

The following **Terms and Conditions** are non-discretionary components of the Incidental Take Statement of the USFWS BO, issued September 4, 2015 (*AFWO-15B0075-15F0204*), and this LOP procedure. They shall be binding conditions of any grant or permit issued to the applicants, regardless of whether listed in the individual Letter of Permissions issued to the applicant.

1. To protect flightless chicks, an exclusionary fence will be installed around all trenches to minimize the potential for chick entrapment. The fencing will be installed within 24 hours of digging the trench. The fencing will be a silt fence fabric not less than 24 inches tall. The fabric will be keyed-in to the gravel bar so that no gaps greater than 0.5 inch exist below the fabric. The fabric will extend across both sides of the entire trench. The exclusionary fencing will remain in place until September 15 or until no plovers are detected on the gravel bars within the action area.

2. Large woody debris or other salmonid habitat restoration structures will not be incorporated on the Worswick Bar. Elevated structures can be used by plover predators as perch sites. If large wood debris washes up on the Worswick Bar without human intervention (i.e. large woody debris is deposited as a result of natural river flows rather than being dragged or otherwise placed by humans), it should be left in place. If the large woody debris needs to be moved, it will be done outside of the plover breeding season, and in coordination with the Arcata FWO.

3. All trash and food scraps brought into the action area will be removed daily and secured in predator-proof receptacles. Feeding wildlife, including corvids and gulls, will be prohibited.

4. The Corps will ensure that gravel operators are aware of the plover conservation measures described in the project description, and terms and conditions in this biological opinion. In addition, the Corps shall make periodic checks to ensure that all of the conservation measures, and therefore the terms and conditions of this biological opinion are being adhered to. The Corps shall note the date and time of compliance checks, the situation under which the check was completed (eg. whether or not

extraction activities were ongoing at the time of the compliance check, the Corps was on a site visit, etc.), the findings of the compliance check, and any corrective action taken by the Corps and/or operator. A minimum of 3 compliance checks shall be conducted annually throughout the LOP period, beginning the first extraction year following issuance of this BO.

5. Prior to January 31st of each year for the duration of project, the Corps shall provide the Service with an annual compiled report of gravel extraction activities on the lower Eel River gravel bars (not individual reports from gravel operators). The report shall discuss and summarize plover survey results from the previous extraction-year, including, but not limited to, adult plover use of the project area, nest numbers and locations, nest fates, brood activity, and reproductive success. The report shall include a complete list of survey dates and related pre-extraction activity, weather conditions, names of plover surveyors, and survey results (even survey results when no plovers were detected). The result of the Corps' compliance checks (term and condition 3 above) shall be included in the annual report. The first report shall be submitted by January 31st of 2016 if gravel extraction activities occurred during 2015.