16.0 Essential Fish Habitat

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Chapter Summary

- Three federal fishery management plans and their associated *essential fish habitat* (EFH) are applicable to projects within Washington State: the Pacific coast groundfish fishery, the coastal pelagic species fishery, and the Pacific coast salmon fishery.
- The Pacific groundfish fishery includes 82 species, approximately two-thirds of which occur in Washington State.
- The coastal pelagic fishery includes four fin fishes (Pacific sardine, Pacific [chub] mackerel, northern anchovy, and jack mackerel) and the invertebrate market squid.
- The Pacific salmon fishery includes Chinook, coho, and Puget Sound pink salmon.
- If the federal action agency determines that an action or proposed action may have an adverse effect on essential fish habitat, consultation is required.
- If the federal action agency determines that an action or proposed action will not have an adverse effect on essential fish habitat, consultation is not required.
- In an essential fish habitat assessment, the federal action agency provides to NMFS a description of the proposed action, an analysis of effects, minimization measures or proposed mitigation that will be incorporated into the project to minimize potential adverse effects on essential fish habitat, and an effect determination.
- If the essential fish habitat assessment is packaged with the BA, it should be a self-contained document included after the ESA biological assessment, but before the reference section.
- Rather than repeating information provided in the BA, the essential fish habitat assessment can cross-reference relevant sections in the BA that analyze potential project impacts on species or critical habitat.
- Discussion of project effects on essential fish habitat should be general and should be based on the habitat rather than each species.

- Effect determinations should be made for each group of species rather than for each species.

This chapter provides general information on essential fish habitat and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), including information pertaining to each of the three federally managed fisheries and their associated essential fish habitat located in Washington state, an overview of the consultation process, guidance for analyzing effects on essential fish habitat, guidance for effect determinations, recommendations for content and language (provided by WSDOT), and a template for essential fish habitat assessments.

16.1 Statutory Protection of Essential Fish Habitat

The Sustainable Fisheries Act of 1996 (Public Law 104-297) reauthorized and amended the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.) in October 1996, providing a new habitat conservation tool in the form of the essential fish habitat (EFH) mandate. When combined with the act's mandates to end overfishing and significantly reduce by-catch or by-catch mortality, the requirement to conserve and enhance EFH completes the foundation for an ecosystem approach to marine fisheries (Rosenberg et al. 2000).

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267) requires federal agencies to consult with NMFS on activities that may adversely affect essential fish habitat. In addition, the law requires fishery management councils to include descriptions of essential fish habitat and potential threats to essential fish habitat in all federal fishery management plans.

Essential fish habitat is defined in the Magnuson-Stevens Act as *those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity*. The law provides the following additional definitions for clarification:

- "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate.
- "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities.
- "Necessary" means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem.
- "Spawning, breeding, feeding, or growth to maturity" covers the full life cycle of a species.

Three federal fishery management plans and their associated essential fish habitat are applicable to projects and activities within Washington State: the Pacific coast groundfish fishery, the coastal pelagic species fishery, and the Pacific coast salmon fishery. The ground fish fishery includes 82 species; the coastal pelagic fishery includes four fin fishes (Pacific sardine, Pacific [chub] mackerel, northern anchovy, and jack mackerel) and the invertebrate market squid; and the salmon fishery includes Chinook, coho, and Puget Sound pink salmon.

The NMFS website provides an online source of information for essential fish habitat issues: https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast

16.1.1 Pacific Groundfishes

Research on the life histories and habitats of these species varies in completeness. While some species are well studied, there is relatively little information on certain other species. Information about the habitats and life histories of the species managed by the Pacific coast groundfish fishery management plan is evolving, with varying degrees of improvement in information for each species.

In November 2005, the Pacific Fishery Management Council released Appendix B1 to the Pacific Coast Groundfish Fishery Management Plan (https://www.pcouncil.org/documents/2005/11/groundfish-fmp-appendix-b-part-1-assessment-methodology-for-groundfish-essential-fish-habitat.pdf/). This appendix provides detailed descriptions of EFH for groundfish species based on habitat use, species and life stage distribution, and prey associations. The fundamental variables for determining if a particular area is EFH for a particular species are latitude, substrate and depth, which overlap with areas of observed prey species. The Pacific Habitat Use Relational Database (HUD) has been developed to provide a flexible, logical structure within which information on the uses of habitats by species and life stages in the west coast groundfish species complex can be stored, summarized and analyzed as necessary. Appendix B1 includes a series of tables providing output from the HUD model. The HUD tables provide a detailed text description of groundfish EFH pursuant to guidelines at 50 CFR 600.815(a).

The tables consist of the following:

- Shaded header row lists each groundfish species' common name, genus and species
- Lifestage; i.e. adult, juvenile, etc.
- Minimum/maximum depth (meters) are listed for each lifestage
- Minimum/maximum latitude (decimal degrees north) are listed for each lifestage
- Preferred habitat combinations listed with associated activities and observed prey

Most species/lifestages are observed within multiple habitat combinations and therefore many species/lifestages will have multiple habitat combinations listed below them. The habitat preferences are broken down by four life stages: eggs, larvae, juveniles and adults. The HUD contains absolute depth as well as latitude values for the four life stages of most species in the FMP. All depths listed are in meters. All latitudes are in decimal degrees north.

EFH is limited to US waters. In the instances where the text description includes a latitude range that extends beyond US waters, EFH stops at the boundary.

Preferred habitat types are classified according to their physical features. The habitat classifications are currently independent and are not structured as subsets within one another. For the west coast, the following types have been delineated:

Table 16-1. Habitat classifications for groundfish.

Megahabitat	Induration	Meso/macro habitat	Modifier	
Abyssal Plain	Basin	Artificial Structure	Algal Beds/Macro	Mud/Rock
Coastal Intertidal	Benthos	Biogenic	Artificial Reef	Oil/Gas Platform Piers
Estuarine	Intertidal Benthos	Epipelagic Zone	Basket stars	Rooted Vascular
Inland Sea	Seamount	Hard Bottom	Bedrock	Sand
Island Shelf	Submarine Canyon	Mesopelagic Zone	Boulder	Sand/Boulders
Nearshore	Unknown	Mixed Bottom	Brittlestars	Sand/Cobble
Shelf	Water Column	Tide Pool Unconsolidated Unknown	Clay	Sand/Gravel
Slope/Rise		Vegetated Bottom	Cobble	Sand/Rock
Slope/Rise/Plain			Current System	Sea anemones
			Demosponges	Sea Lilies
			Drift Algae	Sea Urchins
			Fronts	Sea Whips
			Gooseneck barnacles	Seawater surface
			Gravel	Silt
			Gravel/Cobble	Silt/Sand
			Gravel/Rock	Soft Bottom/Boulder
			Macrophyte Canopy	Soft Bottom/Rock
			Mixed mud/sand	Sponges
			Mud	Tube Worms
			Mud/Boulders	Unknown
			Mud/Cobble	Vase Sponges
			Mud/Gravel	

Each combination of these four levels defines a unique habitat type. The observed activity and prey are reported for each of these unique combinations of preferred habitat type.

EFH is defined by the Magnuson-Stevens Act as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802(10)). Therefore, the terms spawning, feeding and growth to maturity are used in the tables to describe observed activities.

In some habitats, all of these activities are observed. Other habitats have unknown activities associated with them.

Prey observed within the habitat type are listed as specifically as possible in the tables. Attempts are made to list as a taxonomic group, ranging from Family name, to genus and species. Occasionally only a descriptive name is available.

There are instances where no data is available from the literature. Blanks in the tables represent these data gaps.

The EFH description tables are available on NMFS website: <https://www.pcouncil.org/documents/2019/06/revised-groundfish-fmp-appendix-b-part-2.pdf >.

16.1.2 Coastal Pelagic Species

The coastal pelagic species fin fishes generally occur above the thermocline in the upper mixed layer and are therefore considered pelagic (occurring in the water column near the surface and not associated with substrate). For the purposes of essential fish habitat, the four fin fishes (Pacific sardine, Pacific [chub] mackerel, northern anchovy, and jack mackerel) are treated as a single species complex because of the similarities in their life history and habitat requirements. Market squid are also treated in this same complex because they are also fished above spawning aggregations.

16.1.3 Pacific Salmon

U.S. Geological Survey (USGS) hydrologic units are used as the descriptor of essential fish habitat. The EFH for the Pacific coast salmon fishery is defined as those waters and substrate necessary for salmon production needed to support a long-term sustainable salmon fishery and salmon contributions to a healthy ecosystem. To achieve that level of production, EFH must include all those streams, lakes, ponds, wetlands, and other currently viable water bodies and most of the habitat historically accessible to salmon in Washington, Oregon, Idaho, and California. This does not include habitats above the impassible barriers identified by the Pacific Fishery Management Council Fishery Management Plan (PFMC 2016).

In the estuarine and marine areas, salmon EFH extends from the near-shore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception.

Foreign waters off Canada, while still salmon habitat, are not included in salmon EFH because they are outside United States jurisdiction. The Pacific coast salmon fishery also includes the marine areas off Alaska designated as salmon EFH by the North Pacific Fishery Management Council. This identification of EFH is based on the habitat used by coho, Chinook, and pink salmon.

16.2 Essential Fish Habitat Consultation

Essential fish habitat consultations address species in the federally managed Pacific groundfish fishery, the coastal pelagic species fishery, and the Pacific salmon fishery. If the federal action agency determines that an action or proposed action may have an adverse effect on EFH, consultation is required. If the federal action agency determines that an action or proposed action will not have an adverse effect on EFH, consultation is not required.

Usually, but not always, when impacts of a proposed action affect species under NMFS jurisdiction, EFH species or EFH itself also will sustain impacts from the proposed action. Consequently, the analysis of effects on EFH can often cross-reference the effects analysis provided within the BA for NMFS species and critical habitat protected under the Endangered Species Act.

In some situations a separate EFH impact analysis may be required (e.g., cases in which a project does not affect the evolutionarily significant unit of a listed species, but is located where Chinook, pink, or coho salmon or ground fishes occur). In another example, a separate analysis is appropriate when a BA only addresses impacts on bull trout and bull trout habitat, requiring additional analysis of potential impacts on coho, Chinook, and pink salmon habitats, as well as habitat for ground fish or coastal pelagic species, in order to adequately address essential fish habitat.

There are four components of an essential fish habitat consultation:

- **Notification**—the federal action agency notifies NMFS of an activity that may adversely affect EFH.
- **Essential fish habitat assessment**—the federal action agency provides NMFS with a description of the proposed action, analysis of effects, and effect determination.
- **Conservation recommendations**—NMFS involves the federal action agency in development of advisory EFH conservation recommendations and provides them to the federal agency.
- **Federal action agency response**—the federal action agency provides a written response to NMFS within 30 days after receiving NMFS conservation recommendations.

If the determination is that the proposed action may have an adverse effect on essential fish habitat, NMFS must provide EFH conservation recommendations to the federal action agency that submitted the environmental documentation. The federal action agency must then provide a detailed written response within 30 days of receiving the recommendations (or at least 10 days prior to final approval of the action, if a decision by the federal action agency is required in less than 30 days).

The written response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. If the response is inconsistent with the recommendations made by NMFS, adequate justification for not following the recommendations by NMFS must be provided.

16.3 Analysis of Effects: Magnuson-Stevens Act and Essential Fish Habitat

To streamline the essential fish habitat consultation process, consultation can occur under NEPA, ESA, or another federal process agreed upon by NMFS and the federal action agency. FHWA-funded projects may be streamlined by combining the EFH analysis with ESA Section 7 consultation. The analysis of project impacts on EFH should be prepared as a separate assessment document, to be included after the ESA BA.

Since the BA contains a detailed analysis of project impacts on critical habitat and the environmental baseline, it may already address most requirements of the EFH impact analysis. The adverse effects analysis discussed in the portion of the BA or BE addressing ESA requirements can be referenced in the EFH section of the document to avoid repetition.

In addition, it is not necessary to discuss the adverse effects on EFH on a species-by-species basis, as this would also be repetitive and would provide the reviewer with no additional information. Instead, the project's effects on EFH should be discussed more generally. If the minimization measures discussed in the ESA portion of the document will also minimize the potential adverse effects on EFH the project biologist may refer to that earlier description.

In general, the EFH assessment is not expected to exceed one page in length if other sections of the BA are referenced. However, if independent EFH analyses are required to address habitats not addressed in the BA, the report may be somewhat longer.

The objective of an EFH assessment is to determine whether the proposed action may adversely affect or will not adversely affect designated EFH for relevant federally managed commercial fishery species within the project action area. Therefore, the appropriate determination is either *may adversely affect* or *will not adversely effect*. There is no *may affect, not likely to adversely affect* category for EFH as there is under ESA.

If the designated EFH is for the Pacific coast salmon fishery, one effect determination must be made for Pacific salmon EFH. In instances where effects on an individual species are unique, an effect determination may be made for the EFH of a specific species (coho, Chinook, or Puget Sound pink). If the EFH in the project area is associated with a ground fish or coastal pelagic species, an effect determination for EFH may be made for each of these species groups.

The analysis must also describe minimization measures proposed to avoid, minimize, or otherwise offset potential adverse effects on designated EFH resulting from a proposed action. The actual EFH discussed depends upon the project location and the species potentially present.

Unless it is clear that the effects on a particular species are unique, it is not advisable to discuss the adverse effects on a species-by-species basis. Discussion of project effects on EFH should be general and based on the habitat rather than each species.

The following information should be provided in an essential fish habitat assessment:

- Action agency title
- Project name
- Background information on the Magnuson-Stevens Act and definition of essential fish habitat
- Description of the proposed activity
- A definition of the essential fish habitat designation for the fisheries potentially affected by the project
- An identification of the fisheries species likely to occur in the project area and a brief description of their use of the project action area (significant prey species [e.g., Pacific sand lance] should also be considered)
- Description of individual and cumulative adverse effects (and beneficial effects, if any) of the proposed project on relevant EFH, the managed species (including affected life history stages), and associated species such as major prey species
- Description of EFH minimization measures or proposed mitigation incorporated into the project to minimize potential adverse effects on EFH (additional conservation recommendations may be developed by NMFS upon review of the assessment)
- Conclusion and a summary of potential effects on EFH taking into account the minimization measures stipulated in the previous section
- References to information sources that are specific to the EFH analysis, including information regarding the EFH-specific species occurring in the project action area and the descriptions and definitions of EFH used by the project biologist in the assessment (some of the most frequently used references are provided in the EFH assessment template at the end of this chapter)

The general essential fish habitat consultation and assessment process is similar to the consultation and assessment performed for ESA-regulated species and habitats, as illustrated at the end of this chapter in the detailed EFH assessment template. Additional information on west

coast ground fishes is provided in the *EFH Excerpt from Amendment 11—Groundfish Fishery Management Plan*, which is provided on the compact disc accompanying this manual.

Additional information on EFH consultation can be found online at http://www.westcoast.fisheries.noaa.gov/habitat/fish_habitat/efh_consultations_go.html.

16.4 Guidance for Essential Fish Habitat Effect Determinations

Detailed guidance on essential fish habitat effects analysis is provided on the NMFS website: <http://www.westcoast.fisheries.noaa.gov/habitat/fish_habitat/efh_consultations_go.htmlA separate effect determination must be made for the essential fish habitat of each fishery (species group) that occurs in the project area. Hence a single report may contain an effect determination for several different kinds of EFH; one for Pacific coast salmonids, one for ground fishes, and one for coastal pelagic species.

16.5 Essential Fish Habitat Analysis Language

Essential fish habitat applies to several species that are not listed under the Endangered Species Act. Therefore, unlisted species may need to be addressed in the analysis of EFH impacts.

The example below contains recommended content and language for an analysis of EFH concerning species under NMFS jurisdiction.

Recommended content for essential fish habitat analysis (to be provided in as a stand-alone document after the ESA BA):
Describe the law protecting essential fish habitat, how EFH is defined, the species considered under EFH, the occurrence of EFH within the project action area, and any impacts likely to affect EFH from the project activities. Habitat of prey species for the species considered under EFH should also be addressed. The impact analysis should not be lengthy if ESA-listed fishes are addressed in the BA, because most potential impacts on EFH should be addressed in this prior analysis. A determination of may adversely affect should be made if the action results in the reduction of quantity or quality of EFH. Otherwise, a determination of will not adversely affect or no adverse effect is appropriate.

Sample language for essential fish habitat analysis (to be provided in as a stand-alone document after the ESA BA):
The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) includes a mandate that NMFS must identify essential fish habitat (EFH) for federally managed marine fishes, and federal agencies must consult with NMFS on all activities or proposed activities authorized, funded, or undertaken by the agency that may adversely affect EFH. The Pacific Fisheries Management Council (PFMC) has designated EFH for the Pacific salmon fishery

(PFMC 2016), federally managed ground fishes (PFMC 2008), and coastal pelagic fisheries (PFMC 2018).

The EFH designation for the Pacific salmon fishery includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassible barriers identified by PFMC (2016). In estuarine and marine areas, proposed designated EFH for salmon extends from near-shore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone offshore of Washington, Oregon, and California north of Point Conception (PFMC 2016).

The Pacific salmon management unit includes Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), and pink salmon (*Oncorhynchus gorbuscha*). All three of these species use Hood Canal for adult migration, juvenile out-migration, and rearing where suitable habitat is present. Coho and Chinook are known to stage in Hood Canal as subadults.

The EFH designation for ground fishes and coastal pelagics is defined as those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery. The marine extent of ground fish and coastal pelagic EFH includes those waters from the near-shore and tidal submerged environment within Washington, Oregon, and California state territorial waters out to the exclusive economic zone (370.4 km [231.5 miles]) offshore between Canada and the Mexican border.

The west coast ground fish management unit includes 83 species that typically live on or near the bottom of the ocean. Species groups include skates and sharks, rockfishes (55 species), flatfishes (12 species) and ground fishes. Ground fishes such as lingcod (*Ophiodon elongates*), Cabezon (*Scorpaenichthys marmoratus*), and brown rockfish (*Sebastes auriculatus*) potentially occur in Hood Canal (Orr et al. 2000). Coastal pelagics are schooling fishes, not associated with the ocean bottom, that migrate in coastal waters. West coast pelagics include the pacific sardine (*Sardinops sagax*), Pacific chub *(Scomber japonicus*), northern anchovy (*Engraulis mordax*), jack mackerel (*Trachurus symmetricus*), and market squid (*Loligo opalescens*). These fishes are primarily associated with the open ocean and coastal areas (PFMC 2018) and are not likely to occur in the project area.

The Pacific sand lance (*Ammodytes hexapterus*) is an important forage fish for juvenile Chinook salmon. Loss of prey is considered an adverse effect on EFH. The Pacific sand lance is known to breed in Hood Canal.

Essential fish habitat for ground fishes and Pacific salmon is present in the project action area. The project will result in a minor, temporary effect on water quality. No permanent adverse effects on EFH for ground fishes, coastal pelagics, Pacific salmonids, or their prey species will result from the geotechnical test drilling. Therefore, the project will not adversely affect EFH for ground fishes, coastal pelagics, or Pacific salmonids.

16.6 Essential Fish Habitat Assessment Template

This template is intended to aid in the preparation of essential fish habitat assessments, which must contain the following information (see 50 CFR 600.920(g)):

- A description of the proposed project
- An analysis of the effects (including cumulative effects) of the proposed action on essential fish habitat and the managed species and associated species, such as major prey species, including affected life history stages
- The federal agency's views regarding the effects of the action on essential fish habitat
- Proposed mitigation, if applicable.

The essential fish habitat assessment template is available online at <https://media.fisheries.noaa.gov/dam-migration/efh_assessment_guidance_2004.pdf>. This template is intended as a guide in preparing an essential fish habitat assessment and can be modified as the writer sees fit. The text in italics is explanatory and should be removed from the final product.

If the essential fish habitat assessment accompanies a biological assessment or biological evaluation that will be provided to NMFS, the information already supplied in the BA or BE can be referenced and need not be repeated in the EFH assessment. Headings that do not provide the information required by the EFH regulations, such as Action Agency and Project Name (which are already identified in the BA) need not be repeated in the EFH assessment appendix.

Essential Fish Habitat Assessment for
[project name and location]

Action Agency: *[name of project proponent]*

Project Name: *[project name and location]*

Essential Fish Habitat Background

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect essential fish habitat (EFH).

The objective of this EFH assessment is to determine whether or not the proposed action(s) "may adversely affect" designated EFH for relevant commercially, federally-managed fisheries species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or

otherwise offset potential adverse effects to designated EFH resulting from the proposed action.

Description of the Proposed Action

Describe the project, or reference the description presented in previous sections of the BA. If a previous section is referenced, briefly describe the project in one or two lines. The species and life-history stages affected should be noted here. They can be listed in table form (see Table 16-2). This table was constructed using the references at the end of the template.

Table 16-2. Fish species and life-stages with designated essential fish habitat in the action area.

Ground Fish Species	Eggs	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Spiny dogfish			X	X	X	
Ratfish				X	X	
Lingcod		X		X	X	X
Cabezon		X				
Kelp greenling		X				
Pacific cod		X	X	X	X	X
Pacific whiting (hake)			X	X	X	
Sablefish		X	X	X	X	X
Dark-blotched rockfish				X	X	
Greenstriped rockfish				X	X	
Thornyhead		X				
Pacific Ocean perch				X	X	
Widow rockfish			X	X		
Miscellaneous rockfish				X	X	
Arrowtooth flounder				X	X	
Butter sole	X	X				
Curlfin sole	X					
Dover sole	X			X	X	
English sole	X	X	X	X	X	X
Flathead sole		X		X	X	X
Pacific sanddab				X	X	
Petrale sole			X	X	X	
Rex sole	X	X		X	X	
Sand sole	X	X				
Starry flounder	X	X	X			X
Northern anchovy	X	X		X	X	
Pacific sardine	X	X		X	X	
Pacific mackerel	X	X		X	X	
Jack mackerel					X	

Ground Fish Species	Eggs	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Market squid	?	?	?		X	?
Salmon						
Coho salmon				X	X	
Chinook salmon			X	X	X	

Potential Adverse Effects of Proposed Project

The specific essential fish habitat discussed depends on the project location and the species present. The adverse effects discussed in the BA or BE can be referenced, and additional effects can be discussed here. Unless it is clear that the effects on an individual species are unique, it is not necessary to discuss the adverse effects on a species-by-species basis, as this would certainly be repetitive and would provide no additional information. Instead, discuss the project's effects on EFH generally. However you should discuss the effects to salmonid, groundfish, and coastal pelagic EFH separately.

Adverse Effects on Essential Fish Habitat for Salmonids

Describe project effects on salmonid EFH.

Adverse Effects on Essential Fish Habitat for Ground Fishes

Describe project effects on ground fish EFH.

Adverse Effects on Essential Fish Habitat for Coastal Pelagic Species

Describe project effects on coastal pelagic EFH.

Essential Fish Habitat Conservation Measures

Describe the conservation measures incorporated into the project to minimize potential adverse effects on EFH. If these measures have already been described, refer to that description. An example follows:

The following measures will be implemented to minimize the potential adverse effects on designated EFH described above:

- Conservation measure 1
- Conservation measure 2
- etc.

Conclusion and Effect Determination

Summarize the potential effect that the project will have on EFH. This takes into account the conservation measures proposed as part of the project that were

described above. [A determination of *may adversely affect* should be made if the action results in the reduction of quantity or quality of EFH. Otherwise, a determination of *will not adversely affect* or *no adverse effect* is appropriate.]

Essential Fish Habitat References

Listed below for convenience are the references containing the descriptions and definitions of essential fish habitat, provided by NMFS and the Pacific Fisheries Management Council. The specific references to be cited in each project EFH assessment depend on the fishery groups (ground fishes, coastal pelagics, and salmonids) present in the project action area.

Pacific Fishery Management Council (PFMC). 2008. Pacific Coast Groundfish Management Plan for the California, Oregon, and Washington Groundfish Fishery as Amended through Amendment 19. PFMC, Portland, OR. 155 p.

_____. 2016. Pacific Coast Salmon Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California as Amended through Amendment 19. PFMC, Portland, OR. 91 p.

_____. 2018. CoastalSpecies Fishery Management Plan as Amended through Amendment 16. PFMC, Portland, OR. 49 p.