



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No:
WCRO-2019-01918

March 26, 2020

Daniel M Mathis
Federal Highway Administration
Suite 501, Evergreen Plaza
711 South Capitol Way
Olympia, Washington 98501-1284

Re: Reinitiation of the Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the State Route 520 Bridge Replacement and HOV Project, King County, Washington (HUC 171100120302, Lake Washington).

Dear Mr. Mathis:

Thank you for your letter of July 18, 2019, requesting to re-initiate 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 the Federal Highway Administration's (FHWA's) State Route (SR) 520 Bridge Replacement and HOV Project. The NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)).

This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016). The enclosed document contains the supplemental biological opinion prepared by the NMFS pursuant to section 7 of the ESA on the effects of the revised proposed action. In this opinion, the NMFS concludes that the revised proposed action would adversely affect but is not likely to jeopardize the continued existence of Puget Sound (PS) Chinook salmon and PS Sound steelhead. The NMFS also concludes that the revised proposed action is likely to adversely affect designated critical habitat for PS Chinook salmon but is not likely to result in the destruction or adverse modification of that designated critical habitat. This Opinion includes an incidental take statement (ITS) that describes reasonable and prudent measures (RPMs) the NMFS considers necessary or appropriate to minimize the incidental take associated with this action, and sets forth nondiscretionary terms and conditions that the FHWA must comply with to meet those measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species.

Section 3 of this document includes our analysis of the action's likely effects on EFH pursuant to Section 305(b) of the MSA. Based on that analysis, the NMFS concluded that the action would adversely affect designated EFH for Pacific Coast Salmon. Therefore, we have provided 1 additional conservation recommendation that can be taken by the FHWA to avoid, minimize, or otherwise offset potential adverse effects on EFH.

WCRO-2019-01918



Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving this recommendation. If the response is inconsistent with the EFH conservation recommendations, the FHWA must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation you clearly identify the number of conservation recommendations accepted.

Please contact Elizabeth Babcock at (206) 526-4505, or by email at Elizabeth.Babcock@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,



Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: April Mangrave, WSDOT
Cindy Callahan, FHWA

Reinitiation of Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the

State Route 520 Bridge Replacement and HOV Project
King County, Washington
(HUC 171100120302, Lake Washington)

NMFS Consultation Number: WCRO-2019-01918

Action Agency: U.S. Federal Highway Administration

Affected Species and NMFS' Determinations:


ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Chinook salmon (Oncorhynchus tshawytscha) Puget Sound (PS)	Threatened	Yes	No	Yes	No
Steelhead (O. mykiss) PS	Threatened	Yes	No	N/A	N/A

Affected Essential Fish Habitat (EFH) and NMFS' Determinations:

Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

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

Issued By:



 Kim W. Kratz, Ph.D
 Assistant Regional Administrator
 Oregon Washington Coastal Office

Date: March 26, 2020

TABLE OF CONTENTS

1.	Introduction.....	1
1.1	Background.....	1
1.2	Consultation History.....	1
1.3	Proposed Federal Action.....	2
2.	Endangered Species Act: Biological Opinion And Incidental Take Statement.....	6
2.1	Analytical Approach.....	7
2.2	Rangewide Status of the Species and Critical Habitat.....	8
2.3	Action Area.....	8
2.4	Environmental Baseline.....	9
2.5	Changes to the Effects of the Proposed Action.....	9
2.5.1	Changes to the Effects on List Species.....	9
2.5.2	Changes to the Effects on Critical Habitat.....	11
2.6	Cumulative Effects.....	12
2.7	Revised Integration and Synthesis.....	12
2.7.1	Puget Sound Chinook Salmon ESU.....	12
2.7.2	Puget Sound Steelhead DPS.....	13
2.7.3	Puget Sound Chinook Salmon Critical Habitat.....	13
2.8	Conclusion.....	13
2.9	Changes to the Incidental Take Statement.....	13
2.9.1	Amount or Extent of Take.....	14
2.9.2	Effect of the Take.....	14
2.9.3	Reasonable and Prudent Measures.....	14
2.9.4	Terms and Conditions.....	14
2.10	Conservation Recommendations.....	14
2.11	Reinitiation of Consultation.....	15
3.	Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response.....	15
3.1	Essential Fish Habitat Affected by the Project.....	15
3.2	Adverse Effects on Essential Fish Habitat.....	15
3.3	Essential Fish Habitat Conservation Recommendations.....	16
3.4	Statutory Response Requirement.....	16
3.5	Supplemental Consultation.....	16
4.	Data Quality Act Documentation and Pre-Dissemination Review.....	16
5.	References.....	18

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3, below.

1.1 Background

The National Marine Fisheries Service (NMFS) prepared the supplemental biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402, as amended.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. A complete record of this consultation is on file at the Oregon Washington Coastal Office.

1.2 Consultation History

On May 20, 2011, we completed formal consultation with the Federal Highway Administration (FHWA) on their proposal to replace the State Route (SR) 520 bridge, and issued the original opinion, which concluded that the proposed action would not jeopardize the continued existence of the Puget Sound (PS) Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionarily Significant Unit (ESU) or the PS Distinct Population Segment (DPS) of steelhead (*O. mykiss*), and is not likely to destroy or adversely modify PS Chinook critical habitat.

We completed six previous consultation re-initiations for this project:

- NWR-2011-05917 (addressing changes to the east approach and the floating bridge and landings (FB&L) portions of the project),
- NWR-2012-09537 (addressing changes to the west connection bridge (WCB) and the west staging area),
- NWR-2013-10358 (addressing changes to the west approach bridge north [WABN] phase),
- WCR-2014-1665 (addressing updated noise analysis and WABN design), issued May 7, 2015,
- WCR-2015-3817 (addressing changes to the WABN phase), and
- WCR-2016-4931 (addressing updated design of the West Approach Montlake Lid phase of the project).

Consultation number WCR-2014-1665, completed on May 7, 2015, superseded the original opinion (NWR-2010-05723) and the three previous reinitiation opinions (NWR-2011-05917, 2012-09537, and 2013-10358), which are no longer in effect. However, NMFS has determined that portions of text from the original opinion remain valid and are incorporated by reference here rather than reproduced.

A pre-BA meeting was held with the Washington State Department of Transportation (WSDOT) liaisons to the Services on April 18, 2019, to discuss the most recent project developments. On July 18, 2019, the FHWA requested a third reinitiation of the WCR-2014-1665 consultation to update the design of the I 5 interchange phase of the project to address changes in stormwater management. This opinion analyzes the effects of these changes. The proposed action is funded in part by the FHWA, and is being carried out by the WSDOT. A complete record of this consultation is on file at the Oregon and Washington Coastal Area Office in Lacey, Washington.

This opinion incorporates by reference, and is intended to be attached to and read in conjunction with, the May 20, 2011, biological opinion for the SR 520 Bridge Replacement Project, NMFS Consultation Number 2010 05723 (original opinion), as supplemented by six previous re-initiations of this consultation.

Since the original consultation, the design of the I 5 interchange has been revised to extend the project limits south to the Mercer Street interchange, resulting in an updated stormwater strategy. The project limits extended south introduce two new threshold discharge areas (TDAs), TDA 00 and TDA 0, that were not included in the original Project Biological Assessment (BA). The proposed changes do not represent new mechanisms of effect not previously considered during consultation. However, the changes do result in additional areas affected by increased pollutant loading from project stormwater runoff, which are the subject of this consultation.

1.3 Proposed Federal Action

Under the ESA, “Action” means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02), whereas the EFH definition of a federal action is any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

Since the original consultation, the design of the I 5 interchange has been revised to extend the project limits south to the Mercer Street interchange, resulting in expanded areas for threshold discharge areas (TDAs) 1 and 2, as well as two additional TDAs that were not included in the previous project BA (TDA 00 and TDA 0). The proposed changes do not represent mechanisms of effect that were not previously considered during consultation. However, the changes do result in additional area affected by increased pollutant loading from project stormwater runoff. For the final configuration, WSDOT is proposing new transit and high-occupancy vehicle (HOV) features. The main elements of the project include:

- A new reversible transit and HOV ramp between SR 520 and I 5 Express Lanes (westbound to southbound in the morning traffic peak and northbound to eastbound in the afternoon traffic peak).

- An addition of a reversible north-south lane between the new reversible transit and HOV ramp above and the existing Mercer Street ramp along the west side of the I 5 express lanes. This auxiliary lane would be added within the existing I 5 express lane corridor. The existing four lanes of traffic in the I 5 express lanes corridor would be maintained and continue to operate as in current conditions.
- A new reversible transit and HOV ramp connection would be added to connect Mercer Street to the express lanes in the northbound direction.

The new Mercer Street transit and HOV ramp connection would eliminate the need for transit and HOV northbound traffic from Mercer Street to weave across four lanes of traffic to access SR 520, addressing a safety concern. The new reversible ramp from Mercer Street would allow HOV and transit traffic to access I 5 from the west side. Northbound transit traffic could then access the ramp to SR 520 without having to weave through four lanes of traffic. This revision will also allow for direct HOV access and transit service from SR 520 to South Lake Union, which has grown to be an important business district for the region.

The extension of the work along I 5 south to the Mercer Street interchange would disturb ground surfaces in multiple TDAs, all of which are tributary to Lake Union (Figure 1). Because there is no space to construct stormwater treatment facilities within two of the TDAs, WSDOT will provide an “equivalent stormwater treatment” approach, by treating a greater amount of pollutant-generating impervious surface (PGIS) within one of the TDAs using basic treatment best management practices (BMPs). Providing basic treatment for new and replaced PGIS for runoff draining to Lake Union is consistent with the stormwater strategy in the project BA, though the Highway Runoff Manual specifies that only new PGIS requires treatment for this project. Project stormwater management is described below.

Stormwater Management

This section updates Section 2.7.1 of the project BA. The original project consultation addressed stormwater effects of two TDAs and the associated discharges to Lake Union. The previously analyzed TDAs and outfalls are as follows:

- TDA 1 – East Garfield Street outfall
- TDA 2 – East Allison Street outfall

Since the May 7, 2015, opinion, the design of the I 5 interchange has been revised to extend the project limits south to the Mercer Street interchange, resulting in an updated stormwater strategy. The new project limits introduce two new TDAs (TDA 00 and TDA 0) that were not included in the project BA. The following is a summary of the stormwater revisions:

- A new TDA (0) has been added from which runoff is routed to the existing Minor Avenue North outfall

- The limits of TDA 1 and TDA 2 have been expanded and PGIS values adjusted accordingly
- No stormwater treatment is proposed for TDAs 0 or 1 due to lack of space in those basins. The project proposes an “equivalent area treatment” approach in which treatment for TDAs 0, 1, and 2 is provided in TDA 2 exclusively.



Figure 1. Satellite photograph of the SR 520 Bridge Replacement, I 5 Interchange Phase project site in Seattle, Washington. The insets show the revised threshold discharge areas (TDAs) and modeled dilution zones in Lake Union.

The project TDAs are shown in Figure 1 and described in further detail in the following sections.

TDA 00 is located in a portion of the WSDOT right-of-way that is composed of several ramps and landscaped medians in the western portion of the Mercer Street and I 5 interchange. Drainage systems in this TDA include a combination of ditches and enclosed drainage systems that convey flow to the west to the Fairview Avenue North and Mercer Street intersection and drain to the City of Seattle’s (City) combined sewer system (CSS). The CSS flows are ultimately conveyed to the West Point Treatment Plant before the flows are discharged to Puget Sound.

TDA 00 (Mercer Street Ramps Generally Located West of Minor Avenue North)

Proposed construction will not significantly alter the drainage patterns in TDA 00. The proposed improvements include relocating a ramp that is situated near the mid-portion of the TDA.

Stormwater discharges will continue to enter into the City’s combined sewer system the same as under existing conditions. A total of 0.21 acre of new PGIS (establishing 2.79 acres total) will discharge to this system (Table 1).

Table 1. Comparison of Previous and Current Conditions of Threshold Discharge Areas (TDAs) Discharging to Surface Water Outfalls^a.

TDA (Outfall)	Year ^b	Existing PGIS	Proposed Existing PGIS to Remain	New PGIS	Proposed New and Replaced PGIS	Total Proposed PGIS	Proposed Water Quality Treatment
TDA 00 (Combined sewer)	2019	2.45	2.37	0.21	0.42	2.79	2.79 ^c
TDA 00 (Combined sewer)	2010	NA	NA	NA	NA	NA	NA
TDA 0 (Minor Avenue North)	2019	5.65	4.44	0.37	1.53	5.97	0.00
TDA 0 (Minor Avenue North)	2010	NA	NA	NA	NA	NA	NA
TDA 1 (East Garfield Street)	2019	21.69	21.07	0.05	0.67	21.74	0.00
TDA 1 (East Garfield Street)	2010	2.45	2.45	0	0	2.45	0.00
TDA 2 (East Allison Street)	2019	14.25	12.71	0.91	4.48	17.19	6.68 ^d
TDA 2 (East Allison Street)	2010	14.25	10.3	0.05	4	14.3	4.00

a Values are in acres.

b 2010 values from original project BA.

c The combined sewer flow is conveyed to the West Point Treatment Plant and discharged to Puget Sound. This treatment is assumed to be comparable to basic stormwater treatment.

d Equivalent to all proposed new and replaced PGIS in TDAs 0, 1, and 2.

TDA 0 (Mercer Street Ramps Generally Located East of Minor Avenue North)

TDA 0 is also composed of several ramps and landscaped medians. Proposed construction will not significantly alter drainage patterns in this TDA. The proposed improvements include the alteration of several existing ramps and the addition of a new HOV reversible slip ramp. The outfall location and the receiving water body will remain the same as the existing condition. The project revisions include 0.37 acre of new PGIS (establishing 5.97 acres total), the runoff from which will be routed to this outfall with no treatment.

TDA 1 (I 5/Lakeview Boulevard East Vicinity)

TDA 1 consists of enclosed systems that collect stormwater from northbound I 5 lanes, southbound I 5 lanes, the reversible lanes, and several ramps located near the southern portion of the TDA. Stormwater runoff is conveyed westerly to a WSDOT drainage trunk main along the

west side of the freeway, which flows westerly along East Garfield Street prior to its outfall into Lake Union.

Proposed construction will not alter drainage patterns in this TDA. The outfall location and the receiving water body will remain the same as the existing condition. The project revisions include 0.05 acre of new PGIS (establishing 21.74 acres total), the runoff from which will be routed to this outfall with no treatment.

TDA 2 (I 5/SR 520 Interchange Vicinity)

TDA 2 is an area that is predominantly WSDOT-owned and maintained, but also encompasses portions of Harvard Avenue East, East Roanoke Street, and 10th Avenue East, which are within City right-of-way. Drainage systems in this TDA are composed of enclosed systems and four roadside ditches. These systems collect and convey drainage from northbound I 5 lanes, southbound I 5 lanes, the reversible lanes, as well as the I 5 and SR 520 interchange. Flows are discharged into Lake Union.

Proposed construction will not significantly alter drainage patterns in this TDA. This construction consists of a new HOV direct access flyover bridge connecting SR 520 to I 5, reconstructing large portions of the interchange east of I 5, and adding a lane to the I 5 express lanes by reducing the shoulder width. The outfall location and the receiving water body will remain the same as the existing condition. The project revisions include 0.91 acre of new PGIS (establishing 17.19 acres total); runoff from this added PGIS, as well as replaced PGIS, will be treated before routing to the existing outfall.

A biofiltration swale is proposed as a Basic Runoff Treatment BMP for the proposed new and replaced PGIS (4.48 acres) in TDA 2. This facility, located between the express lanes and southbound I 5 lanes south of the East Roanoke Street undercrossing, will also treat an equivalent amount of new and replaced PGIS (2.20 acres) to offset the untreated PGIS added in TDAs 0 and 1. The design team evaluated enhanced treatment BMPs for this phase; however, constraints within the confined spaces of the I 5 median preclude enhanced treatment as a viable option.

Previous and current conditions of TDAs in the project area are summarized in Table 1. No flow control is proposed for any TDA. The downstream receiving water body (Lake Union) is flow control exempt per the Washington State Department of Ecology (<https://fortress.wa.gov/ecy/madcap/wq/2014SWMMWWinteractive/Content/Topics/VolumeI2014/VolII%20AppE%202014.htm>).

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the

continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency’s actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

The FHWA determined that the proposed action is likely to adversely affect PS Chinook salmon, PS steelhead, and designated critical habitat for PS Chinook salmon (Table 1). Because the proposed action is likely to adversely affect listed species, the NMFS has proceeded with supplemental formal consultation.

Table 2. ESA-listed species and critical habitats that may be affected by the proposed action.

ESA-listed species and critical habitat likely to be adversely affected (LAA)				
Species	Status	Species	Critical Habitat	Listed / CH Designated
Chinook salmon (<i>Oncorhynchus tshawytscha</i>) Puget Sound	Threatened	LAA	LAA	06/28/05 (70 FR 37160) / 09/02/05 (70 FR 52630)
steelhead (<i>O. mykiss</i>) Puget Sound	Threatened	LAA	N/A	05/11/07 (72 FR 26722) / 02/24/16 (81 FR 9252)

LAA = likely to adversely affect; NLAA = not likely to adversely affect; N/A = not in the action area or not designated

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of “jeopardize the continued existence of” a listed species, which is “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which “means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species” (50 CFR 402.02).

Critical habitat designations prior to 2016 used the terms “primary constituent element” (PCE) or “essential feature” (EF) to identify important habitat qualities. However, the 2016 critical habitat regulations (50 CFR 424.12) replaced those terms with “physical or biological features” (PBFs). The shift in terminology does not change the approach used in conducting a “destruction or adverse modification” analysis, which is the same regardless of whether the original designation identified PCEs, EFs, or PBFs. In this biological opinion, we use the term PBF to mean PCE or EF, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term “consequences” (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not

change the scope of our analysis and in this opinion we use the terms “effects” and “consequences” interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the range-wide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species’ likelihood of both survival and recovery. The species status section also helps to inform the description of the species’ “reproduction, numbers, or distribution” as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the essential PBFs that help to form that conservation value.

The range-wide status of the species and critical habitat section of the May 7, 2015, opinion is incorporated by reference here.

2.3 Action Area

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The Action Area sections of the original opinion and reinitiation opinions are incorporated by reference here. The proposed changes described in this opinion do not affect the extent of the action area defined in the original opinion and subsequent reinitiation opinions. Although there

are two additional stormwater outfalls to Lake Union associated with the revised project, nearshore areas of Lake Union were included in the action area of the original opinion.

2.4 Environmental Baseline

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline (50 CFR 402.02).

The Environmental Baseline section of the May 7, 2015, opinion and subsequent reinitiation opinions is incorporated by reference here.

2.5 Changes to the Effects of the Proposed Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

The Effects of the Action sections of the May 7, 2015, opinion and subsequent reinitiation opinions are incorporated by reference here, except to the extent that they are inconsistent with the changes described below, in which case the description of the changes prevail. The proposed action will contribute additional untreated stormwater to Lake Union in two locations, and provide additional treatment of stormwater in one location. All discharge points are on the Lake Union shoreline (see Figure 1).

2.5.1 Changes to the Effects on List Species

Because the I 5 interchange construction will occur entirely within developed areas and no in-water work is proposed, the construction phase does not result in effects to listed species or habitat except through the discharge of stormwater runoff to Lake Union. The use of the new lanes/project revisions will result in direct runoff from PGIS to four outfalls, one of which (TDA 00) discharges to the City of Seattle combined sewer system (CSS). The CSS conveys stormwater runoff and sewage from homes and businesses in a single conveyance system to the West Point Treatment Plant. Under typical operating conditions, the combined stormwater and sewage flows are treated and discharged to the marine waters of Puget Sound. During extreme

wet weather, the CSS can exceed capacity resulting in untreated discharges (combined sewer overflows) at CSS outfalls to other receiving water bodies, including Lake Union. The CSS outfalls are relief points for the excess flow to prevent sewer backups, surface flooding, and operational issues at the West Point Treatment Plant. The proposed action will reduce CSS contributions from the action area and will not increase the frequency or size of CSS overflow discharges.

Stormwater pollutant loads and concentrations for pollutants of concern (total suspended solids [TSS], total copper, dissolved copper, total zinc, and dissolved zinc) were assessed for TDAs 0, 1, and 2 using the HI RUN model (WSDOT 2009). Results indicate that pollutant loads will generally increase in TDA 0 and TDA 1 (apart from slight decreases in dissolved copper and total zinc in TDA 1), and decrease in TDA 2. When the three project area outfalls to Lake Union are considered together, loads of TSS, total copper, and total zinc discharged to Lake Union will decrease as a result of the proposed project changes, and slight increases in loads of dissolved copper and dissolved zinc are expected (Table 3). Copper and zinc are both contaminants that are known to negatively affect salmonids.

Table 3. Modeling Results of Hi-Run Receiving Water End of Pipe Loading for Project Outfalls^a.

Threshold Discharge Area (outfall)	Baseline/ Proposed	TSS Median	Total Copper	Dissolved Copper	Total Zinc	Dissolved Zinc
TDA 0 (Minor Avenue North)	Baseline	2,554	0.65	0.15	3.91	1.12
TDA 0 (Minor Avenue North)	Proposed	2,750	0.69	0.16	4.10	1.20
Net Difference	NA	+196	+0.04	+0.01	+0.19	+0.08
TDA 1 (East Garfield Street)	Baseline	9,895	2.47	0.59	15.3	4.27
TDA 1 (East Garfield Street)	Proposed	9,909	2.50	0.58	15.0	4.30
Net Difference	NA	+14	+0.03	-0.01	-0.30	+0.03
TDA 2 (East Allison Street)	Baseline	7,436	1.90	0.44	11.50	3.30
TDA 2 (East Allison)	Proposed	5274	1.50	0.47	8.90	3.20
Net Difference	NA	-2162	-0.40	+0.03	-2.60	-0.10
Total difference	NA	-1952	-0.33	+0.03	-2.71	+0.01

a Values are in pounds per year.

Because the loads of dissolved copper and dissolved zinc are estimated to increase relative to existing conditions, dilution zones (that area in which pollutant concentrations exceed biological thresholds compared to the receiving water body) were calculated for each pollutant for each of the three outfalls that drain project area runoff to Lake Union. Dilution zones range from 14 to

19 feet beyond the outfall for dissolved copper, and from 22 to 49 feet beyond the outfall for dissolved zinc in the waters of Lake Union (Table 4; Figure 1).

Table 4. Summary of Stormwater Dilution Modeling Results for Project Outfalls.

Outfall	PGIS (acres)	Receiving Water Body	Dilution Distance Dissolved Copper (feet)	Dilution Distance Dissolved Zinc (feet)
TDA 0	5.97	Lake Union	14	22
TDA 1	21.72	Lake Union	19	49
TDA 2	17.19	Lake Union	15	26

Chinook salmon and steelhead could be exposed to elevated levels of dissolved copper and dissolved zinc within these dilution zones, and will be exposed to these contaminants in all areas downstream where the load is transported. Juvenile Chinook salmon can spend days to weeks in Lake Union, utilizing the entire lake (Celedonia et al. 2009). Juvenile PS Chinook salmon are shoreline oriented and, based on their rearing behavior, spend a greater amount of time in the action area than do steelhead. Juvenile Chinook salmon will therefore have the greatest exposure to stormwater discharges and will likely experience increased physiological stress, and behavior alterations such as reduced feeding and impaired ability to detect predators. However, the increased pollutant loading that would be caused by the proposed project modification is unlikely to measurably increase the effects in exposed individuals above what was considered in the original opinion.

2.5.2 Changes to the Effects on Critical Habitat

The action area contains the following physical or biological features (PBFs) of designated critical habitat for Puget Sound Chinook salmon; Freshwater Rearing Sites (PBF 2) and Freshwater Migration (PBF 3).

PBF 2: Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

PBF 3: Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

The additional PGIS created by the project modification would be a permanent additional source of pollutant loading during storm events that would cause slightly increased water quality degradation and slightly increased dilution zones in small portions of Lake Union over what was considered in the original opinion. However, the total estimated increased dissolved copper and

dissolved zinc would be only 0.03 and 0.01 pound per year, respectively. This additional loading would not reduce water quality enough to alter the original opinion's determination that the action is unlikely to diminish the water quality attribute of PBFs 2 and 3 enough to impair the conservation value of Lake Union for rearing or migration.

2.6 Cumulative Effects

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The additional impacts that would be caused by the proposed project modification would be too small to alter the cumulative effects determination of the May 7, 2015 opinion. Therefore, the Cumulative Effects section of that opinion is incorporated by reference here.

2.7 Revised Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline, including the increasing effects of climate change (Section 2.4), and cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action, including the newly proposed modifications, is likely to: (1) appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

2.7.1 Puget Sound Chinook Salmon ESU

The proposed action modification would cause long-term minor increases in pollutant loading within the action area. The life stage most likely affected would be shoreline obligated juveniles. Adults are unlikely to enter or linger within Lake Union during their in-migration to reach upstream spawning habitats. As stated in Section 2.5, the increased pollutant loading is unlikely to measurably increase the effects in exposed individuals above what was considered in the original opinion. Further, the impacts would occur in an area with little fish use, so fish exposure would be infrequent and would affect few individuals.

Based on the best available information, the scale of the direct and indirect effects of the proposed action, including the project modifications, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would remain too small to cause detectable effects on any of the characteristics of a viable salmon population (abundance, productivity, distribution, or genetic diversity) for the affected PS Chinook salmon populations. Therefore, the proposed action would not appreciably reduce the likelihood of survival and recovery of this listed species.

2.7.2 Puget Sound Steelhead DPS

As stated above, the proposed action modification would cause long-term minor increases in pollutant loading within the action area, but the increase is unlikely to measurably increase the effects in exposed individuals above what was considered in the original opinion. Further, very few PS steelhead are likely to be exposed to the effects of the action. Lake Washington Basin steelhead are virtually extirpated (see Section 2.6.2 from the original opinion), and both juvenile and adult steelhead are likely to remain close to the center of the canal during their respective migrations. Therefore, they are unlikely to enter or linger within Lake Union where they could be exposed to project-related effects.

Based on the best available information, the scale of the direct and indirect effects of the proposed action, including the project modifications, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would remain too small to cause detectable effects on any of the characteristics of a viable salmon population (abundance, productivity, distribution, or genetic diversity) for the affected PS steelhead populations. Therefore, the proposed action would not appreciably reduce the likelihood of survival and recovery of this listed species.

2.7.3 Puget Sound Chinook Salmon Critical Habitat

The proposed design changes will cause minor increases in the effects of the proposed action on critical habitat for Chinook salmon. However, those small changes would not alter NMFS' determination from the original opinion that critical habitat will remain functional and retain the current ability for PBFs to serve the intended conservation role for the species. Therefore, the critical habitats will maintain their current level of functionality, and retain their current ability for PBFs to become functionally established, to serve the intended conservation role for PS Chinook salmon.

2.8 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, the effects of other activities caused by the proposed action, and cumulative effects, it is the NMFS' biological opinion that the proposed action, including the project modifications, is not likely to jeopardize the continued existence of PS Chinook salmon and PS steelhead, or to destroy or adversely modify PS Chinook salmon designated critical habitat.

2.9 Changes to the 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 (ITS).

2.9.1 Amount or Extent of Take

Section 2.8.1 of the May 7, 2015, opinion describes the amount and extent of take exempted for the proposed action. The following are changes based on the project design updates described above:

- Take from stormwater discharges (dissolved zinc 5.6 mg/l over background concentrations and dissolved copper at 2.0 mg/l over background concentrations) will occur in Lake Union in an area a minimum of 14 feet but no more than 49 feet from the discharge point for each of the three project area stormwater outfalls.

2.9.2 Effect of the Take

The effect of the take on PS Chinook salmon and PS steelhead remain consistent with that as described in the May 20, 2011, opinion, which is incorporated by reference here.

2.9.3 Reasonable and Prudent Measures

The proposed project revisions would cause no mechanisms of effect that were not considered during the previous consultations. Further, the scale of impacts to listed species resulting from project revisions are consistent the analyses in the previous consultations. Therefore, NMFS is not revising the existing reasonable and prudent measures.

2.9.4 Terms and Conditions

The proposed project revisions would cause no mechanisms of effect that were not considered during the previous consultations. Further, the scale of impacts to listed species resulting from project revisions are consistent the analyses in the previous consultations. Therefore, NMFS is not revising the existing terms and conditions.

2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

The Conservation Recommendations Effects section of the original opinion is incorporated by reference here. In addition, NMFS further recommends that:

1. The WSDOT provide enhanced stormwater treatment for all project PGIS.

2.11 Reinitiation of Consultation

This concludes formal consultation for the FHWA's SR 520 Bridge Replacement and HOV Project in Seattle, Washington.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service 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 ITS 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 identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with the NMFS on all actions or proposed actions that may adversely affect essential fish habitat (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 the NMFS to recommend measures that can be taken by the action agency to conserve EFH.

3.1 Essential Fish Habitat Affected by the Project

The action area includes waters and substrates that have been designated as EFH for various life-history stages of Pacific Coast Salmon.

3.2 Adverse Effects on Essential Fish Habitat

The Essential Fish Habitat analysis of the original opinion is incorporated by reference here, with the following change:

- The amount of EFH that will be adversely affected by increased pollutant loading is shown in Table 3.

3.3 Essential Fish Habitat Conservation Recommendations

The EFH conservation measures of the original opinion are incorporated by reference here, with the following addition:

1. The NMFS recommends that WSDOT provide enhanced stormwater treatment for all project PGIS.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the FHWA must provide a detailed written response in to the NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of the NMFS' EFH Conservation Recommendations unless the NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with the NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, the NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The FHWA 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 users of this Opinion is the FHWA and WSDOT. Other users could include WDFW, the government and citizens of King County and the City of Seattle, and Native American tribes. Individual copies of this Opinion were provided to the FHWA. The document will be available within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by the 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 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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

5. REFERENCES

Celedonia, M.T., R.A. Tabor, S. Sanders, S. Damm, D.W. Lantz, T.M. Lee, Z. Li, and B.E. Price. 2009. Movement and Habitat Use of Chinook Salmon Smolts, Northern Pikeminnow, and Smallmouth Bass Near the SR 520 Bridge, 2008 Acoustic Tracking Study. Draft report, US Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, Washington.