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UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON AT SEATTLE

COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiffs,* vs. U.S. ARMY CORPS OF ENGINEERS, an agency of the United States; LIEUTENANT GENERAL SCOTT A. SPELLMON, in his Official capacity as Chief of Engineers of the U.S. Army Corps of Engineers; COLONEL GEOFF VAN EPPS, in his Official Capacity as the Commander of the Northwestern Division of the U.S. Army Corps of Engineers; and COLONEL ALEXANDER L. BULLOCK, in his Official Capacity as Commander of the Seattle District of the U.S. Army Corps of Engineers, *Defendants.*	Case No. 2:21-cv-1685 COMPLAINT (Environmental and Administrative Procedure Act Claims)

SUMMARY

1. Washington state is home to unique and invaluable coastal ecosystems, which are unfortunately being threatened by the excessive expansion of industrial commercial shellfish aquaculture. This action presents as-applied and facial challenges to decisions of the United States Army Corps of Engineers ("the Corps") authorizing commercial aquaculture operations in tidelands throughout Washington, including Puget Sound and Willapa Bay, under the 2021 issuance of Nationwide Permit 48 (NWP 48) and through "Letters of Permission" (LOPs) under the Rivers and Harbors Act. These challenges are based on the Corps' failure to comply with (1) the National Environmental Policy Act (NEPA); (2) the Clean Water Act (CWA); (3) the Endangered Species Act (ESA); (4) the Rivers and Harbors Act (RHA); and/or (5) the Administrative Procedure Act (APA), when authorizing such expansion.

2. Defendants violated NEPA because they (1) improperly determined that activities authorized under NWP 48 would not significantly adversely affect the environment, and (2) failed to rest a Finding of No Significant Impact (FONSI) on an adequate Environmental Assessment, including a hard look at all direct, indirect, and cumulative impacts of shellfish aquaculture permitting—or alternatively to complete an Environmental Impact Statement (EIS) with proper NEPA analysis in it. Defendants violated the CWA in the issuance and administration of NWP 48 by authorizing activities that result in more than minimal adverse environmental impacts and contribute to significant degradation of waters of the United States. Defendants violated RHA Section 10 and their own regulations by (1) failing to notify the public and provide opportunity to comment on LOPs, and (2) authorizing activities that result in more than minimal adverse environmental impacts. Defendants violated the ESA by failing to initiate consultation on 2021 NWP 48 as required by Section 7. Defendants violated the APA by making arbitrary and capricious decisions not in accordance with the law.

3. By initiating this action, Plaintiffs seek to:

a) Obtain a declaration that the Corps violated (again) NEPA and its implementing regulations when it improperly found when issuing NWP 48 that

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activities in Puget Sound authorized under NWP 48 would not significantly adversely affect the environment, and decided not to prepare an EIS;

b) Obtain a declaration that the Corps (again) violated the CWA and its implementing regulations when it issued NWP 48;

c) Obtain a declaration that the Corps (again) violated the CWA and its implementing regulations when it failed to take required actions to ensure that activities authorized under NWP 48 would not have more than minimal adverse impacts on the environment or significantly degrade waters of the United States;

d) Obtain a declaration that the Corps violated the CWA and RHA, including its own regulations, when it issued hundreds of LOPs to commercial shellfish activities previously authorized under NWP 48, despite those activities' potentially significant individual or cumulative impacts on environmental values, and when the Corps knew or should have known that those activities would have encountered appreciable opposition;

e) Obtain a declaration that the Corps violated the ESA and its implementing regulations when it issued NWP 48;

f) Obtain an order vacating, setting aside, and/or remanding the Corps' (1) authorizations of activities under NWP 48 since the 2021 issuance of that permit; and (2) the LOPs for projects previously authorized under NWP 48;

g) Obtain an order enjoining the Corps from issuing any further authorizations under NWP 48 in Washington, and any further LOPs for projects previously authorized under NWP 48, until the Corps complies with NEPA by producing a new supplemental document; and/or complies with the ESA by completing consultation; and/or complies with the CWA by completing adequate effects analyses, to ensure that authorized activities will have minimal effects on the environment and comply with 33 U.S.C. § 1344(b)(1) and the regulations adopted under that law; and/or the RHA and the regulations for issuance of LOPs.

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JURISDICTION

4. Jurisdiction is proper in this Court pursuant to 28 U.S.C. §§ 1331 (federal question); § 1346(a)(2) (civil action against the United States); § 1361 (action to compel officer of the United States to perform his or her duty); § 2201 (authorizing declaratory relief); and § 2202 (authorizing injunctive relief and any other "necessary and proper relief"), and 5 U.S.C. § 702 (judicial review of agency action under the APA). This action arises under the laws of the United States, including the APA, 5 U.S.C. §§ 701–706; NEPA, 42 U.S.C. §§ 4321–4370m; ESA, 16 U.S.C. §§ 1531–44; RHA, 33 U.S.C. § 403; and CWA, 33 U.S.C. § 1244. An actual, justiciable controversy exists between Plaintiff and Defendants. The requested relief is proper under 28 U.S.C. §§ 2201 (declaratory relief) and § 2202 (injunctive relief), and 5 U.S.C. §§ 705 and § 706.

VENUE

5. Venue is proper in this Court pursuant to 28 U.S.C. § 1391(e). A substantial part of the events or omissions giving rise to the claims occurred within this District. The Seattle District of the U.S. Army Corps is the responsible for substantial portions of the actions and omissions giving rise to this case, and it is also located in within this District, in Seattle, King County, Washington. In addition, Plaintiffs have several members who reside in this District.

PARTIES

6. Plaintiff **Coalition to Protect Puget Sound Habitat** ("Coalition") is a non-profit organization incorporated under the laws of the state of Washington. The Coalition is an alliance of interested citizens, environmentalists, scientists, and recreational users who reside on or near Puget Sound, and study, work to protect and recreate in the waters of Puget Sound. The Coalition's mission is to protect the habitat of Puget Sound tidelands from the expansion of new intensive shellfish aquaculture methods and practice. The Coalition and its members are directly affected by the expansion of industrial aquaculture operations in both the coastal and nearshore areas of Puget Sound, and its impact on plants, animals, and ecological function. The expansion of these operations directly impairs the Coalition and its members' personal, recreational, and aesthetic enjoyment of tidelands near their homes and other parts of Puget Sound. The Coalition

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and its members have repeatedly submitted comments raising these concerns to the Corps and/or other agencies before the Corps' issuance of the 2012 NWP 48, the 2017 NWP 48, the 2021 NWP 48, and the individual authorizations and/or LOPs at issue in this case. In addition, the Coalition previously brought a successful suit against the Corps for improper issuance of the 2017 NWP 48, challenging some of the same conduct at issue in this case, and obtained a favorable ruling on the merits and on remedy. The Coalition then successfully defended those rulings on appeal at the Ninth Circuit.

7. The Coalition seeks to give a voice to citizens' concerns about aquaculture and its impact on the health and quality of the shoreline and waters of Puget Sound, as well as the flora and fauna that depend upon these irreplaceable resources. Members of the Coalition live in and/or use Puget Sound and are and will be directly and adversely affected by the rapid and massive expansion of the aquaculture industry of the type at issue under NWP 48 and under the new LOPs for previous NWP 48 projects. This type of expansion can potentially undermine the protection and enhancement of the quality of the waters of Puget Sound, as well as the many plant and marine species that depend upon those waters for food and habitat. As such, the industrialization of aquaculture that is being allowed by the Seattle District of the Corps interferes with the ability of the plaintiff's members to enjoy and recreate in the waters of the Sound.

8. The Coalition has representational standing to bring this action. The Defendants' violations of the CWA, RHA, APA and NEPA have had an adverse impact on Plaintiff's members' ability to use and enjoy the waters of Puget Sound, and the Defendants' actions have injured the health, recreational, environmental, aesthetic, commercial and/or other interests of Plaintiff's members. These injuries are fairly traceable to the Defendants' violations and are capable of redress by this Court.

9. The Coalition also has organizational standing to bring this action. Plaintiff has long been engaged in a variety of educational and advocacy efforts to call attention to and challenge the dramatic expansion of the commercial shellfish industry in Puget Sound, so as to try to improve water quality and ecological function in its waters. This has included filing of a

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Petition with the Corps in May 2015 to suspend or revoke NWP 48, which the Corps ignored. The Coalition then successfully sued the Corps to overturn the previous NWP 48 and its authorizations. The Defendants' failures to comply with the requirements of the law, and the prior rulings of this court, have or will adversely affect Plaintiff's abilities to fulfill its mission and purpose, and these injuries are fairly traceable to Defendants' violations. These injuries are also capable of redress by this Court.

10. Plaintiff **Center for Food Safety** ("CFS") is a public interest nonprofit organization whose mission is to empower people, support farmers, and protect the earth from the adverse impacts of industrial food production, including the adverse environmental and wildlife impacts of industrial shellfish operations. CFS has more than one million members across the country, including tens of thousands of members in Washington State. CFS has offices in Portland, Oregon; San Francisco, California; and Washington, D.C. CFS is a nationally recognized leader on the issue of industrial agriculture and its impacts to public health and the environment. Through science-based regulatory advocacy, public engagement, and groundbreaking litigation, CFS protects its members and the public from the harmful effects of industrial agriculture and promotes transparency and accountability in the food system. CFS also acts as a watchdog of the federal agencies tasked with regulating different aspects of food production, such as the Corps, which is the only federal agency with permitting authority over industrial shellfish operations. If necessary, CFS utilizes public education, public notice and comment, regulatory action, and litigation to ensure that federal agencies comply with their statutory mandates and other federal laws designed to prevent and reduce the harmful impacts of industrial agriculture.

11. CFS has long had an aquaculture program, including numerous policy, scientific, and legal staff, dedicated to addressing the adverse environmental and public health impacts of industrial aquaculture. CFS strives to improve oversight and regulation of aquaculture operations by promoting policy and cultural dialogue between regulatory agencies, policymakers, and legislators and affected groups, including residents, consumers, chefs, and environmental

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advocates, to protect public health and the environment from industrial aquaculture, including specifically shellfish aquaculture, and to promote and protect more sustainable alternatives.

12. Specifically, regarding the challenged action, in 2017, CFS actively engaged with the Corps on the proposed reissuance of NWP 48, including the submission of several comments urging the Corps to forgo adopting NWP 48, at least in its current form, and to protect the unique and essential aquatic ecosystems and shorelines in Washington. When the Corps issued 2017 NWP 48, CFS brought a lawsuit in this Court challenging the Corps' compliance with the CWA, NEPA, ESA, and the APA. *Coal. to Protect Puget Sound Habitat v. U.S. Army Corps of Eng'rs*, 417 F. Supp. 3d 1354 (W.D. Wash. 2019). This Court vacated that permit and remanded to the Corps to comply with the CWA and NEPA, 466 F. Supp. 3d 1217 (W.D. Wash. 2020), and the Ninth Circuit affirmed. 843 F. App'x 77 (9th Cir. 2021). When the Corps first announced that it planned to reissue the NWP 48 in September 2020, CFS commented on the draft permit and again urged the Corps to follow CWA, NEPA, and the ESA, as well as this Court's order. *See* Comments Submitted on Proposal to Reissue and Modify Nationwide Permits, COE-2020-0002 (Nov. 16, 2020).

13. CFS has representation and organizational standing. CFS has thousands of members who live, work, and recreate in areas affected by commercial shellfish aquaculture in Washington, including Willapa Bay and Puget Sound. Specifically, these members' personal, economic, recreational, aesthetic, property, and other interests are harmed by the unchecked expansion of industrial shellfish activities in Washington's tidelands, including the use of pesticides and plastics, and the conversion of shorelines and native vegetation to commercial shellfish growing beds and other aquaculture operations. In addition, CFS has long worked to prevent and reduce the harmful impacts of aquaculture. Because the Corps continues to fail to comply with federal law and judicial orders, CFS must divert substantial organizational resources that would have otherwise been used to improve other aspects of aquaculture, such as offshore and state finfish farming, to bring costly, resource-intensive regulatory and legal challenges against the Corps.

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14. Defendant **United Sates Army Corps of Engineers** is an agency of the U.S. Department of Defense. The Corps has a District Office in Seattle, Washington. The Corps and its officers are responsible for the lawful execution of the CWA, NEPA, and the APA, as they pertain to dredge and fill activities of commercial shellfish aquaculture in coastal waters.

15. Defendant **Lieutenant General Scott A. Spellmon** is the Commanding General and Chief of Engineers of the Corps. Lieutenant General Spellmon is named as a defendant solely in his official capacity. The Commanding General and Chief of Engineers is charged with supervising and managing all Corps' decisions and actions, including the evaluation of Corps' decisions and actions under NEPA and section 404 of the CWA. The Chief of Engineers is authorized to issue NWPs and charged with reviewing NWPs and proposing modifications, revocations, and reissuance, as well as preparing NEPA documents and Section 404(b)(1) Guidelines compliance analyses for proposed NWPs.

16. Defendant **Colonel Geoff Van Epps** is the Commander and Division Engineer of the Northwestern Division of the Corps, which includes the Seattle District. Colonel Van Epps is named as a defendant solely in his official capacity. Division engineers are authorized to modify, suspend, or revoke NWP authorizations within their divisions, and are responsible for preparing supplemental documentation for modifications or revocations made as a result of their authority. Division engineers are also responsible for imposing regional conditions on NWPs at their discretion, and to prepare supplemental documentation for modifications or revocations made as a result of their authority. The Northwestern Division is responsible for a substantial portion of the actions or omissions at issue in this lawsuit, including regional effects analysis and determination that NWP 48, as well as the terms and conditions, all regional conditions, and limitations, and the finding that NWP 48 allegedly would (or would not) have only minimal and not significant effects on the aquatic environment here.

17. Defendant **Colonel Alexander L. Bullock** is the Commander of the Seattle District of the Corps. Colonel Bullock is named as a defendant solely in his official capacity. Under Corps regulations, district commanders are responsible for compliance with NEPA for

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actions within district boundaries, and CWA § 404 permitting. The Seattle District is responsible for a substantial portion of the actions or omissions at issue in this lawsuit, including, but not limited to, the issuance of regional conditions for NWP 48 and supplemental analysis and findings in support of those conditions. The Seattle District Engineer is authorized to add, modify, or delete special conditions in permits, and to modify, suspend and revoke permits, such as regional permits or authorizations under NWP 48.

LEGAL BACKGROUND

I. ADMINISTRATIVE PROCEDURE ACT

18. The APA authorizes any person who has been adversely affected by an agency action to seek judicial review of the action. 5 U.S.C. § 702. The APA provides a cause of action to challenge agency actions "made reviewable by statute," or final actions "for which there is no other adequate remedy in a court." *Id.* § 704. In addition, the APA provides standards for judicial review of agency action. The APA directs reviewing courts to "compel agency action [that is] unlawfully withheld or unreasonably delayed." *Id.* § 706(1). The APA also directs courts to "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." *Id.* § 706(1)(A).

19. The APA provides a cause of action for challenging the Corps' actions under NEPA; section 404 of the CWA, 33 U.S.C. § 1344; and section 10 of the RHA, 33 U.S.C. § 403 because "there is no other adequate remedy in a court" with respect to these actions. As a result, Plaintiffs' claims arising under NEPA, the CWA, and the RHA are reviewable under the APA.

II. CLEAN WATER ACT

20. The purpose of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251. To achieve this objective, section 404 of the CWA establishes a program for regulating the discharge of dredge or fill material into waters of the United States, including wetlands. *Id.* § 1344. Section 404 requires a permit for discharges of dredged or fill material into waters of the United States. Section 404 authorizes the Secretary of the Corps, acting through the Chief of Engineers, to issue permits for the discharge

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of dredged or fill material into waters of the United States when certain conditions are met. Concurrent regulatory authority exists under section 10 of the RHA, 33 U.S.C. § 403.

21. Under this program, the Corps must issue individual permits for proposed activities with potentially significant impacts. The Corps can issue a general permit for an entire category of activities on a regional or nationwide basis "if the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment." *Id.* § 1344(e)(1); *see also* 40 CFR § 230.7. A nationwide permit (NWP) is a general permit that authorizes specific activities across the country, unless a district or division commander revokes the NWP in a state or other geographic region. *See* 33 CFR § 330.1. If a proposed activity falls under an existing NWP, an applicant may request authorization under the existing NWP rather than applying for an individual permit. *Id.* §§ 320.1(a)(3), § 330.6(a).

22. Before issuing any NWPs, the Corps must conduct analyses of compliance with Section 404(b)(1) Guidelines and prepare a statement of findings. *See* 40 CFR § 230.7(b). The Corps must deny a permit that does not comply with those Guidelines.

23. Under Section 404(b)(1) Guidelines, developed in conjunction with the Secretary of the Army and published in 40 CFR § 230, cumulative impacts include "the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material." Section 404(b)(1) Guidelines require the Corps to predict cumulative effects by evaluating the number of individual discharges that already exist, and "the number of individual discharge activities likely to be regulated under a General permit until its expiration, including repetitions of individual discharge activities at a single location."

24. Section 404(b)(1) Guidelines prohibit the Corps from issuing a permit or NWP authorization if the discharge will cause or contribute to significant degradation of the waters of the United States. "Significant degradation" includes significantly adverse effects on fish, shellfish, wildlife, and special aquatic sites, as well as the life stages of aquatic life, and the diversity, productivity, and stability of aquatic ecosystems.

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25. Section 404(b)(1) Guidelines, specifically 40 C.F.R. § 230.12(a)(3), prohibit the Corps from issuing a permit or an NWP authorization if:

a) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or

b) The proposed discharge will result in significant degradation of the aquatic ecosystem; or

c) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or

d) There does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Guidelines.

26. In addition, the Corps' own "public interest review" rules prohibit the issuance of a Section 404 permit or an NWP authorization if it would be contrary to the public interest. 33 C.F.R. § 320.4. In evaluating this issue, the Corps must weigh the benefits of a proposed project against its reasonably foreseeable detriments, considering all relevant factors and their cumulative impacts. Relevant factors include conservation, general environmental concerns, fish and wildlife values, water quality, and the general needs and welfare of the people.

27. Under Corps regulations, a division engineer may modify, suspend, or revoke a NWP authorization by geographic area, class of activity, or class of waters within their division to address effects of authorized activities under Section 404(b)(1) Guidelines or any factor of the public interest or that otherwise may be more than minimal. Some NWPs, including NWP 48, require pre-construction notification (PCN) or application to the district engineer prior to undertaking covered activities.

28. Upon receipt of a PCN or application, the district engineer must determine whether the activity will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. A district engineer must perform a case-by-case review of each PCN or application submitted under an NWP to make these determinations. In

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doing so, the district engineer must consider the environmental setting, the resources affected, the functions of affected resources, the degree to which resources perform those functions, the extent of loss of aquatic resource functions, the duration of adverse effects, the importance of lost aquatic resource functions, and required mitigation.

29. When determining appropriate mitigation, a district engineer must consider its adequacy to ensure that adverse environmental effects are minimized. If a district engineer reviewing a PCN or application finds that a proposed activity would have more than minimal individual or cumulative adverse effects or is otherwise contrary to the public interest, the district engineer must either modify the NWP authorization to reduce or eliminate such effects or instruct the permittee to apply for a regional general permit (if one exists) or individual permit.

III. RIVERS AND HARBORS ACT

30. Under Section 10 of the RHA, 33 U.S.C. § 403, a Corps permit is required for work or structures affecting navigable waters of the United States.

31. Under Corps regulations, specifically 33 C.F.R. § 320.2(b) and § 322, "[t]he construction of any structure in or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army."

32. In cases where the district engineer determines that the proposed work or structure "would be minor, would not have significant individual or cumulative impacts on environmental values, and should encounter no appreciable opposition," the Corps may issue a letter of permission (or LOP) "through an abbreviated processing procedure which includes coordination with Federal and state fish and wildlife agencies, as required by the Fish and Wildlife Coordination Act, and a public interest evaluation, but without the publishing of an individual public notice." 33 C.F.R. § 325.2(e).

IV. NATIONAL ENVIRONMENTAL POLICY ACT

33. Pursuant to 42 U.S.C. §§ 4321–4370m, NEPA is our basic national charter for

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protection of the environment. Regulations promulgated by the Council on Environmental Quality ("CEQ") establish that NEPA's twin aims are to (1) ensure fully informed decision-making, and (2) provide for public participation in environmental analysis and decision-making.

34. As provided by law, the Corps has adopted regulations to implement NEPA. The Corps' NEPA regulations supplement—and do not supersede—other NEPA regulations.

35. Under both the 1978 CEQ Regulations and the 2020 Revisions, the Corps is required to conduct a thorough analysis of cumulative impacts under NEPA. The 2020 Revisions required the Corps to fully consider reasonably foreseeable effects, including those categorized as "cumulative impacts" under the 1978 CEQ Regulations. The consideration of cumulative impacts follows longstanding legal precedent interpreting NEPA to require agencies to consider cumulative effects. Even before CEQ issued its 1978 regulations, the U.S. Supreme Court interpreted NEPA to require consideration of cumulative effects "when several proposals . . . that will have *cumulative* or synergistic environmental impact upon a region are pending concurrently before an agency." *Kleppe* v. *Sierra Club,* 427 U.S. 390, 410 (1976) (emphasis added).

36. NEPA requires that agencies and the public have access to high-quality environmental information before making decisions or taking action. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.

37. NEPA imposes procedural requirements on federal agencies to make sure that they take a 'hard look' at the environmental effects of their actions. Pursuant to 42 U.S.C. § 4332(c), NEPA requires agencies to prepare an Environmental Impact Statement ("EIS") for "major Federal actions significantly affecting the quality of the human environment." For all actions not subject to a Categorical Exclusion, agencies must prepare either an EIS or an Environmental Assessment ("EA"), a public document that provides sufficient evidence and analysis to determine whether to prepare an EIS.

38. An agency may prepare an EA to determine whether an action requires an EIS. If the agency concludes that an action will not significantly affect the environment in its EA, the agency may issue a Finding of No Significant Impact ("FONSI") in lieu of preparing an EIS. A

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FONSI is a document in which the agency briefly explains the reasons why an action will not have a significant effect on the environment and the reasons an EIS will not be prepared. A FONSI must include the EA or a summary of it and note all related environmental documents.

39. Under NEPA, major federal actions may include new and continuing activities, including projects and programs entirely or partly financed or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures.

40. An agency must consider the impacts from a proposed action. An impact means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable, including effects that are later in time or farther removed in distance from the proposed action or alternatives. Effects include ecological, aesthetic, historic, cultural, economic, social, or health effects.

41. In considering whether the effects of a proposed action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action. When a proposed action is likely to have significant effects, the agency should prepare an EIS.

42. Section 102(2)(E) requires agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Section 102(2)(E) applies to both EAs and EISs, so an EA must include "appropriate alternatives" when a proposal involves unresolved conflicts concerning alternatives uses of available resources.

43. A FONSI must be supported, and if mitigation measures are relied upon to avoid significance, they must be developed to a reasonable degree: a perfunctory description, or mere listing of mitigation measures, without supporting analytical data, is insufficient to support a finding of no significant impact. Particularly in situations where the agency is relying upon mitigation to support a decision to rely upon an EA and a FONSI—and therefore not to prepare an EIS—the agency must carefully evaluate any proposed mitigation and engage in on-going monitoring to ensure that mitigation measures are being followed. Mitigation measures used to support a FONSI must be enforceable and the agency must have sufficient resources to perform or

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ensure performance of mitigation measures.

44. NEPA requires that an agency incorporate its environmental analysis into its decision-making process. NEPA's purpose is not to generate paperwork or litigation, but to provide for informed decision making and foster excellent action.

V. ENDANGERED SPECIES ACT

45. When a species is listed as threatened or endangered under the ESA, section 7(a)(2) requires that all federal agencies "insure" their actions "are not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [their critical habitat]."

46. ESA establishes an interagency consultation process to assist federal agencies in complying with their substantive) duty to guard against jeopardy to listed species or destruction or adverse modification of critical habitat. Under Section 7(a)(2), federal agencies must consult with the appropriate expert fish and wildlife agency to determine whether their actions will jeopardize any listed species' survival or adversely modify designated critical habitat and, if so, to identify ways to modify the action to avoid that result. The National Marine Fisheries Service (NMFS) is the expert for most anadromous and marine species, and the Fish and Wildlife Service (FWS) is the expert for many terrestrial and freshwater species.

47. The Services have adopted joint regulations governing the ESA Section 7(a)(2) consultation process. Under the joint regulations, a federal agency must initiate Section 7(a)(2) consultation with NMFS or FWS whenever it undertakes an "action" that "may affect" a listed species or critical habitat. 50 C.F.R. § 402.14(a). The threshold for a "may affect" determination and the required Section 7(a)(2) consultation is low.

48. To complete formal consultation, NMFS and/or FWS must provide the Corps with a "biological opinion" explaining how the proposed action will affect the listed species or habitat. In ensuring that any action is not likely to jeopardize a listed species or result in the adverse modification of critical habitat, the ESA requires every agency to use only the best scientific and commercial data available at every step of the process. Until consultation is complete, agencies

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may not commence the action or make any irreversible or irretrievable commitment of resources which may foreclose the formulation or implementation of any reasonable and prudent alternative measures.

49. If either of the Services concludes that the proposed action "will jeopardize the continued existence" of a listed species, the biological opinion must outline "reasonable and prudent alternatives." If the biological opinion concludes that the action is not likely to jeopardize the continued existence of a listed species, and will not result in the destruction or adverse modification of critical habitat, the Services must provide an incidental take statement specifying the amount or extent of such incidental taking on the listed species and any "reasonable and prudent measures" that they consider necessary or appropriate to minimize such impact, and also setting forth the "terms and conditions" that must be complied with by the Corps to implement those measures.

50. Formal consultation must be reinitiated by the Corps or the Services if discretionary federal involvement or control over the action has been retained or is authorized by law, and:

a) the amount or extent of taking specified in the incidental take statement is exceeded;

b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

c) the action is modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or

d) a new species is listed or critical habitat designated that may be affected by the identified action.

51. Section 7(a)(1) requires the Corps, in consultation with and with the assistance of the Services, to utilize its authority in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Federal agencies have an independent and substantive obligation to insure that their actions are not likely to jeopardize the

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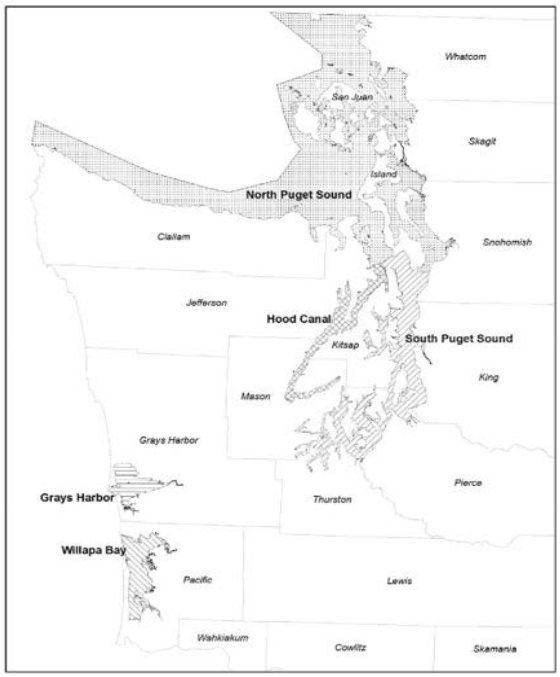
continued existence of endangered or threatened species or adversely modify critical habitat. Indeed, a "no jeopardy" biological opinion from NMFS or FWS does not absolve the action agency of its independent duty to ensure that its actions comply with the ESA.

FACTUAL BACKGROUND

I. INDUSTRIAL SHELLFISH AQUACULTURE IN WASHINGTON

52. Shellfish, including oysters, clams (including geoducks), and mussels, have been harvested and grown in Washington for over 150 years, but cultivation has expanded significantly since the Corps' initial issuance of NWP 48 in 2007, and continued maintenance of the NWP 48 program until it was vacated in 2020. Today, industrial shellfish aquaculture exist throughout Washington's coast and intertidal areas, including Willapa Bay, Grays Harbor, Hood Canal, and Puget Sound. In 2015, commercial shellfish aquaculture occupied one-quarter of the state's total shoreline, roughly 50,000 shoreline acres. Today, this number has increased due to the Corps' issuance of the 2017 and 2021 NWP 48. According to the Corps' estimates, commercial shellfish operations authorized under the 2017 NWP 48 cover 72,000 coastal acres, covering roughly one-third of Washington's total shoreline.



Washington Inland Waters in
U.S. Army Corps, Programmatic Biological Assessment (2015)

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53. The vast majority of this acreage (approximately 90%) is found in Willapa Bay, a large bay located in Pacific County, Washington. The 2017 NWP 48 authorized 50,000 acres of commercial shellfish aquaculture operations in Willapa Bay. In comparison, the 2012 NWP 48 authorized only 36,000 acres. Willapa Bay is a major estuary located along Washington's Pacific Coast, covering 88,000 acres of diverse ecosystems that provides essential nearshore habitat for several aquatic species, including endangered and threatened fish, whales, and shorebirds. The 2017 NWP 48 also authorized over 7,500 acres of commercial shellfish operations in Grays Harbor, another estuary located on the Washington's Pacific Coast, just north of Willapa Bay.

54. Additionally, nearly 15,000 acres of commercial shellfish operations are found in Puget Sound and Hood Canal. Puget Sound is a large inland estuary connected to the Pacific Ocean. It is the second-largest estuary in the United States, covering more than 2,000 miles of shoreline and 8.3 million acres of watershed. It is divided into South Puget Sound, a deep basin drained by many small streams with sheltered, nutrient rich waterways that are highly conducive to shellfish growing. North Puget Sound includes Whidbey Basin, Admiralty Inlet, Strait of Juan de Fuca, and the San Juan Archipelago. Another major waterbody associated with Puget Sound is Hood Canal, a long, narrow inlet of sea located in Mason County. Together, these areas have tens of thousands of acres of commercial shellfish aquaculture, overlapping with essential nearshore habitats for eelgrass, salmon, whales, and other aquatic species. The number of aquaculture operations is likely to increase dramatically in the future because this area is slated for much of the expansion of this industry in the future.

55. Oyster and clam operations are concentrated in Willapa Bay and Grays Harbor. Over 25% of all U.S. oyster aquaculture takes place in this area. A wider variety of shellfish are cultivated in Puget Sound, including geoduck clams (produced almost exclusively for export to luxury food markets in Asia and other countries). Most geoducks are grown in Puget Sound/Hood Canal. Washington's shellfish aquaculture industry is growing and expected to continue to grow, meaning more tidelands will be authorized for shellfish production.

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56. Shellfish are raised either directly on the tidal bed ("bottom culture"), or with some kind of support ("off-bottom culture"), often using plastic gear like polyvinyl chloride (PVC) and high-density polyethylene (HDPE). Oysters may be grown using bottom culture; long lines (oysters suspended on nylon ropes strung on stakes in rows in tidal bed); rack and bag culture (plastic net bags hold oysters, rack suspends off ground, including emerging "flip bag" technique); or stake culture (oyster attached to stakes in tidal bed). Clams are also grown with bottom culture, often with anti-predator netting, and geoducks are grown inside PCV tubes inserted into the tidal bed (at a rate of 42,000 tubes per acre), which are then covered with the anti-predator netting.

Figure 1: Oyster Bags & Geoduck Tubes, Totten Inlet, South Puget Sound (2009)

Figure 2: Geoduck Tubes, Totten Inlet, South Puget Sound (2008)

Figure 3: Oyster Long Lines, Willapa Bay

Figure 4: New Geoduck Installation, Eld Inlet, South Puget Sound (2013)

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57. The same intertidal areas and inland bays that support shellfish aquaculture are also home to numerous wildlife species, including threatened and endangered species. This shoreline habitat is essential for many species, including invertebrates (such as benthic invertebrates that are the backbone of the food chain and larger, commercially important Dungeness crab); finfish (including forage fish like herring and many varieties of salmon); and birds (migratory and shorebirds). These areas serve as nurseries, feeding grounds, and have important roles in cycling nutrients.

58. Commercial shellfish aquaculture harms the aquatic ecosystem. *Coal. to Protect Puget Sound Habitat*, 417 F. Supp. 3d at 1359, 1362–63. The 2021 EA is less protective than the prior iterations of NWP 48 because it removes restrictions on acreage and time.

59. Shellfish aquaculture degrades water quality, reduces seagrass populations, and destroys aquatic habitats by depositing food and shellfish waste; disrupting sediments, water flow, and water turbidity; installing large-scale plastic structures and gear; and applying chemical pesticides to clear growing areas of native plants and species; and continuously using mechanical equipment to maintain growing areas and cultivate shellfish. Because the Corps estimated that shellfish aquaculture covered one-third of Washington's total shoreline in 2017, the potential for cumulative impacts from this industry is significant. Moreover, because the Corps also predicts that the number of acres authorized for commercial shellfish aquaculture will continue to increase due to the expansion of the industry, the industry's cumulative and individual impacts pose a growing threat to the local environment and wildlife

60. Shellfish aquaculture activities fall into the general categories of bed preparation, seeding, grow out, and harvest. Bed preparation and harvest activities can temporarily increase turbidity and total suspended solids. Bed preparation also involves the removal and destruction of species like snails, starfish, and sand dollars. Some activities, *e.g.*, tilling, harrowing, dredge harvest and geoduck harvest, can remove submerged aquatic grass, like eelgrass. The use of chemicals (*i.e.*, imazamox herbicide to kill non-native eelgrass) also affects water quality and removes eelgrass. During grow out, plastic gear remains on the beach continuously. Finally,

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shellfish aquaculture activities can cause benthic disturbance.

61. Despite the unfounded claims of the industry, there is no evidence that intensively concentrated shellfish aquaculture in Washington has a positive impact on water quality. In fact, these concentrated shellfish operations are consuming nutrients previously relied on by wild species, while depositing waste on the seabed, and changing the physical dynamics of an environment.

62. Geoduck aquaculture involves the use of a massive number of PVC tubes inserted into the substrate, then covered in anti-predator netting. At a rate of 42,000 tubes per acre, the shore is *covered* with plastic. This gear can and does become dislodged during storms and other weather events, spreading plastics pollution into other areas of the marine environment. Once the geoducks are ready for harvest, they are removed from the substrate via high-pressure water hoses, which liquefy the sediments, disrupting and harming benthic organisms and spreading suspended sediment in the water column.

63. Clam culture, including geoduck, involves acres and acres of anti-predator netting, typically plastic, to exclude predators (i.e., wildlife) like crabs and birds. Although evidence suggests that ironically these nets are not highly effective at deterring predators, they do, however, change the intertidal coastline resulting in lower species richness, accumulation of fine silt and organic matter, and trapping wildlife (crabs, fish, birds). Nets pose a particular threat to forage fish like herring that use the intertidal regions for spawning. The accumulation of silt and reduction of eelgrass provides perfect habitat for, and correlates with an increase in, native burrowing and ghost shrimp, which at high enough numbers cause the substrate to loosen and clams to sink and suffocate. Anti-predator nets can also become dislodged and wash up on the shore providing hazards to humans and wildlife alike. The expert wildlife agencies NMFS and FWS both recognized the harm these nets pose to wildlife from trapping, entanglement, and blocking movement/migration.

64. Commercial shellfish aquaculture operations also impact forage fish, like Pacific herring (a keystone forage fish species in the area), surf smelt, and sand lance. Forage fish are an

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important prey resource for many species including Chinook salmon, steelhead, bull trout, and marbled murrelet. Many types of shellfish aquaculture equipment result in loss of spawning habitat for these crucial fish, netting can entangle fish, and harvesting can destroy forage fish eggs. Active aquaculture, including fallow acreage, is co-located with herring, surf smelt, and sand lance in Puget Sound and Hood Canal, and with herring in Willapa Bay/Grays Harbor. The Corps estimates that in Willapa Bay, shellfish aquaculture currently overlaps with over 50% of the total herring spawning area mapped by the Washington Department of Fish and Wildlife.

65. Shellfish aquaculture also has negative aesthetic impacts, as well as impacts to public beach access and recreation. Shellfish operations, particularly those using a lot of plastic gear, mar views of the beaches, inlets, and bays along Washington shorelines, to the detriment of residents and visitors. These operations often involve heavy machinery, and some activities involve significant noise and light pollution. Shellfish aquaculture's presence and gear prevents residents and visitors from walking and other recreational activities on beaches. The harm to wildlife, including endangered species, impacts residents' and visitors' ability to view these species, and recreationally fish or harvest wild shellfish.

A. IMPACTS TO EELGRASS

66. One major impact from shellfish aquaculture is the reduction and removal of eelgrass and other submerged aquatic vegetation.

67. Much of the intertidal area in Washington still supports eelgrass (*zostera marina* and other varieties) and other submerged aquatic vegetation, although it is declining across the state and in the rest of the world. Eelgrass is a highly valued and protected native habitat for many species of fish, invertebrates, and birds. Eelgrass is known as an "ecosystem engineer" because it can partially create its own habitat by slowing down water flow, while its roots and rhizomes bind and stabilize sediments. Eelgrass is a direct food source for many organisms and serves as nurseries and juvenile habitat for various fauna, including herring, Dungeness crab, and several species of juvenile salmon. Further, eelgrass provides organic material, aids in sediment/substrate nutrient cycling and release, and improves water quality through oxygen production and nutrient

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absorption. Because eelgrass absorbs carbon dioxide and produces oxygen, it provides mitigation against ocean acidification (decrease in ocean pH caused by increasing atmospheric CO2 levels).

68. The vegetated shallows that support eelgrass are considered "special aquatic sites" under the CWA Section 404(b) Guidelines.

69. The Puget Sound Partnership, the state agency leading the region's collective effort to restore and protect Puget Sound, has identified eelgrass as a prime indicator of estuarine ecosystem health and aimed to increase eelgrass area in Puget Sound by 20% by the year 2020.

70. Japanese eelgrass (*zostera japonica*) was introduced to the Pacific Northwest nearly a century ago and now grows along the entire Pacific coast from Humboldt, California to British Columbia. Like the native *z. marina,* Japanese eelgrass provides many of the same food, shelter, and habitat functions in Washington and was long protected and highly valued. Its regulatory status only changed after shellfish growers lobbied the State Noxious Weed Control Board to list Japanese eelgrass as a Class C noxious weed to commercial shellfish beds.

71. Shellfish aquaculture significantly overlaps with eelgrass. The Corps estimates that 66% of the active aquaculture acreage overlaps with eelgrass, not including the authorized acreage currently fallow, which is even more likely to support eelgrass. Aquaculture exists in about 50% of the eelgrass in Willapa Bay, as shown below.

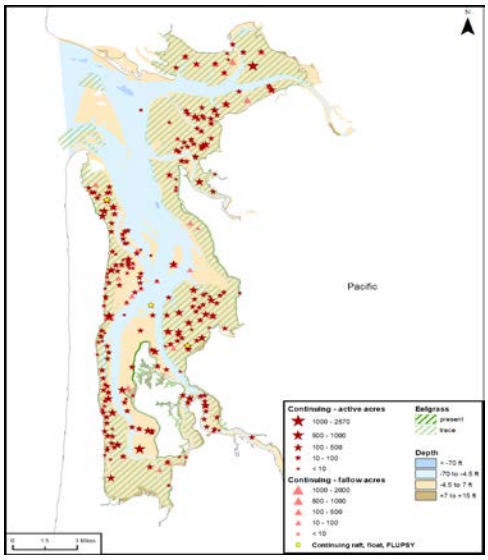

Figure 5: Willapa Bay Continuing Acres and Eelgrass from U.S. Army Corps, Programmatic Biological Assessment (2015)

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72. Studies find negative correlations between shellfish aquaculture and eelgrass density and extent. (Dumbauld and McCoy 2015; Wilson and Atkinson 1995). This is no surprise given that industrial shellfish aquaculture often involves the intentional removal of eelgrass, either through mechanical or chemical means. Many shellfish operations use heavy machinery like tractors on the tidal bed, outfitted with city street sweepers (to remove aquatic vegetation), plows, and pesticide injectors. In addition to intentional/actual removal of submerged aquatic vegetation, nets and other equipment used in commercial shellfish aquaculture can reduce or eliminate eelgrass and other vegetation due to shading.

73. The Corps has recognized that these impacts are continuous for the permit period authorizing aquaculture activities, because there is often no return to the prior substrate and habitat conditions; new equipment is placed shortly after harvest of the prior crop, and equipment use occurs in all regions of Washington. Corps, PBA (2015). Thus, while eelgrass may recover or re-colonize areas after shellfish aquaculture has ceased (recovery estimated to take about five years in Washington), the continuous nature of production makes this impossible.

Figure 6: Tractor with Street Sweeper, Willapa Bay

B. PESTICIDE USE IN SHELLFISH AQUACULTURE

74. Another harmful consequence of industrial shellfish operations in Washington is the introduction pesticides into the marine environment. Pesticides are biocides meant to kill living things, and as such have an enormous potential to harm non-target organisms, especially when used in aquatic areas where they are certain to move and disperse into the environment.

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75. Washington is the only state that allows pesticide use on shellfish beds. Currently, one herbicide is allowed in Willapa Bay/Grays Harbor, and another application for insecticide use is pending.

76. Once the shellfish industry succeeded in having Japanese eelgrass designated a noxious weed, they were able to secure a permit to remove it through chemical means. In 2014 the Washington Department of Ecology, the agency responsible for administering water pollution discharge permitting under CWA § 402, granted commercial clam growers a permit to spray the herbicide Imazamox on clam beds in Willapa Bay and Grays Harbor.

77. The Imazamox NPDES Permit was opposed by numerous groups and agencies, including the United States Fish and Wildlife Service (FWS), based on potential impacts to native eelgrass both in mixed beds and off-site and the ecological benefits of Japanese eelgrass. Imazamox is an ALS-inhibiting systemic herbicide that kills all types of eelgrass. While Japanese eelgrass grows at slightly higher elevations than *z. marina* eelgrass, Willapa Bay is very shallow and many mixed beds of both eelgrasses exist. The Permit did not prohibit the spraying native eelgrass on clam beds, nor did the permit include requirements to monitor impacts to native and off-site eelgrasses. No monitoring is required if spraying does not occur up to a 10 meter property line buffer. Imazamox NPDES Permit at 12. In the three years between 2014 and 2017, only one grower has ever been required to monitor impacts in the 10m buffer (on 2.5% of the total acreage sprayed). The Washington Department of Ecology modified the permit in 2017 to allow continued spraying for the remaining two years of the permit, despite a failure to adequately verify that 10m buffers are sufficient to prevent off-site impacts to eelgrass (either through the Buffer Validation study or monitoring by permittees).

78. In addition to the ongoing use of herbicide to kill eelgrass in Willapa Bay/Grays Harbor, oyster growers recently attempted to obtain a NPDES permit from the Washington Department of Ecology for imidacloprid, a systemic neurotoxin, to kill burrowing and ghost shrimp. As a neonicotinoid, imidacloprid is especially toxic to invertebrates, highly effective in small doses, persistent in the environment, and moves easily in water. Imidacloprid was selected

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as a replacement to the phased-out carbaryl, a likely carcinogen harmful to ESA-listed species like green sturgeon and salmon.

79. In 2015, the Department of Ecology initially granted a NPDES permit that would have allowed aerial spraying of thousands of acres of shellfish beds. Numerous conservation groups, residents, and other agencies objected to the permit. NMFS objected that burrowing shrimp are native to the area and play an important role in the ecosystem, including as prey for species like Dungeness crab, green sturgeon, and salmon. In addition to reducing prey, NMFS stated that imidacloprid would "kill nearly all benthic organisms on the acreage directly treated." Indeed, imidacloprid product labels expressly prohibit use in water because of its high toxicity to aquatic invertebrates. The permit was cancelled after major shellfish companies like Taylor Shellfish pulled out, due to customer pressure, including from major restaurant chefs in Seattle citing food safety concerns with serving shellfish directly sprayed with neurotoxin and refusing to serve it.

80. In 2017, growers' association again applied for a permit to spray imidacloprid on shellfish beds, but this time the Department of Ecology found that the proposal did meet Washington's environmental sediment and water quality protection laws and denied the permit in 2018. The Willapa-Grays Harbor oyster growers appealed Ecology's permit denial to the Pollution Control Hearings Board, and although the growers settled their appeal, they intend to find alternative chemicals and may request an imidacloprid permit in the future.

C. PLASTICS USE IN SHELLFISH AQUACULTURE

81. Another consequence of industrial shellfish aquaculture is the introduction of plastic pollution to the intertidal waters and beaches, with grave impacts to wildlife, aesthetics, recreation, and food safety.

82. According to the Corps, there are currently 34,441 acres of shellfish operations with artificial structure. The Corps also estimates that 23,409 acres of commercial shellfish operations currently use plastic gear, which is roughly half of all acres the Corps says it authorized under the previous iteration of NWP 48 in 2012.

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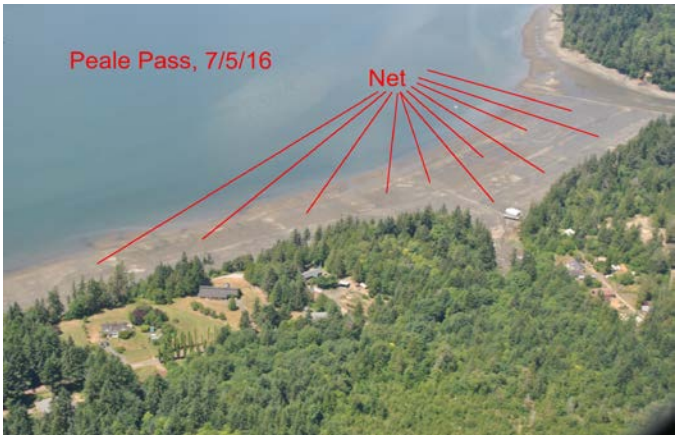
83. As noted above, plastic PVC tubes and anti-predator netting (HDPE) are heavily used in clam and geoduck culture, and other types of plastics like racks and bags and PVC stakes and polyolefin ropes are used for oyster culture. Shellfish plastic gear can exclude native species from their habitat, especially the anti-predator netting used to protect farmed shellfish from predators in the local environment. Anti-predator nets are harmful to wildlife that are exposed to debris or trapped in loose netting. Plastic cages and other artificial structures can also significantly change the habitat, inhibiting wildlife movement and increasing habitat fragmentation. Despite providing little benefit to shellfish producers, and posing a serious threat to wildlife, plastic structures and gear are frequently used in commercial shellfish aquaculture.



84. This plastic gear degrades over time and breaks down into smaller and smaller pieces called microplastics, which act as an additional source of plastic pollution in the ocean. Microplastics adsorb toxic pollutants already present in the water, creating a poison pill for

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wildlife that become exposed to microplastics in the food supply. Aquatic species at the top of the food chain, such as large fish, birds, and whales, have higher exposure to microplastics due to bioaccumulation.

85. Microplastics have been shown to reduce shellfish reproductivity, mobility, and survival, and they are often ingested by farmed shellfish grown in Washington's coastal waters for human consumption. In addition, strands of polyolefin ropes from oyster longlines have been found inside shellfish grown near operations that use this type of plastic gear. Hence, not only is the shellfish industry contributing to the global issue of marine plastic pollution, but they are also hurting themselves by polluting the waters in which they produce shellfish and threatening the health and survival of their very own product.

D. HARM TO MARINE LIFE

86. Large populations of industrially grown organisms require a proportional amount of food. These shellfish compete with forage fish for not only habitat, but also in many cases the zooplankton and phytoplankton on which they rely.

87. The impacts that result from that competition are obvious and reverberate throughout the food chain. Less food for forage fish means a reduced environmental carrying capacity for those forage fish. Fewer forage fish means a reduced carrying capacity for often-endangered salmonids. Fewer salmonids mean less food for Orca whales, and other large predators that rely upon the existence of healthy populations of those fish.

88. Industrial shellfish operations rely heavily on plastic nets and lines to anchor farmed shellfish to structures in the water and to protect shellfish from predators. For example, geoduck operations stick PVC tubes into sandy substrate at a rate of 42,000 tubes per acre, and then cover the tubes with anti-predator nets. These PVC tubes, lines, and nets erode over time, increasing plastic waste and microplastics in Washington's coastal waters.

89. Plastic pollution from aquaculture operations adversely affects marine ecosystems. When aquatic species (including farmed shellfish) ingest debris, they can suffer abrasions, obstructions, and other serious physical injuries. Further, microplastics are a "poison pill" to

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wildlife, impairing shellfish growth, development, mobility, reproductivity, and survival. Microplastics absorb pollutants in the environment, increasing toxicity and bioaccumulation for species that ingest microplastics, such as forage fish at the bottom of the food chain and shellfish produced for human consumption. In addition, entanglements with hanging lines or detached gear can cause death or serious injury to wildlife, including endangered whales. These injuries are particularly harmful for juvenile salmon and other species that travel long distances for feeding and rearing.

II. CORPS' INDUSTRIAL SHELLFISH AQUACULTURE PERMITTING

A. CORPS' PERMITTING PRIOR TO 2021 NWP 48

90. The Corps' shellfish aquaculture permitting history is one of varied effort and urgency. Apparently recognizing the existence of impacts from discharges into jurisdictional waters because of shellfish aquaculture activities, the Corps issued the first iteration of NWP 48 beginning around 2007. The Seattle District adopted NWP 48 beginning in 2007.

91. The 2007 NWP 48 only included existing operations as of 2007 (an operation "that has been granted a permit, license, or lease from a state or local agency specifically authorizing commercial aquaculture activities and which has undertaken such activities"). 72 Fed. Reg. 11,092, 11,145 (Mar. 17, 2007). Like later iterations, it authorized the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures necessary for commercial aquaculture activity, and discharges of dredged or fill material necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. The Seattle District adopted this NWP and consulted with NMFS regarding impacts to listed species, including as part of the action several conservation measures to be attached to authorizations under nationwide permit.

92. In 2012, the Corps reissued NWP 48, this time extending the permit to cover new shellfish aquaculture operations, although any new activity could not directly affect more than 1/2-acre of submerged aquatic vegetation beds (e.g., eelgrass). 77 Fed. Reg. 10.184, 10,228-10,232 (Feb. 21, 2012). An activity was considered "existing" if it was within "the area in which the operator is currently authorized to conduct commercial shellfish aquaculture activities, as

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identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any other easement, lease, deed, or contract which establishes an enforceable property interest for the operator."

93. The Seattle District adopted the renewed 2012 NWP 48 for Washington, with ten general conditions and one regional condition specifically for NWP 48: "The commercial harvest of clams by means of hydraulic escalator harvester equipment is not authorized by this NWP." Seattle District, *Supplement to National Decision Document for 2012 Nationwide Permit 48 and Regional General Conditions*, 42–45 (March 19, 2012). In its Supplemental Decision Document, the Seattle District stated that it already completed a programmatic ESA consultation for existing commercial shellfish aquaculture in 2009 and attached 16 special conditions to all activities authorized under the 2012 NWP 48.

94. Although the Seattle District predicted that 2012 NWP 48 would only be used 50 times a year, or 250 times over its five-year life, *id.* at 31, it was actually used *over 1,000 times* from 2012 to 2016. The Seattle District issued 92% of all NWP 48 authorizations in the nation, so the industrialized shellfish aquaculture production challenged here is particularly centralized and unique to Washington State.

95. Despite the significant overuse of the 2012 permit, far beyond what was considered and analyzed during its adoption, the Corps never completed any supplemental impacts analysis to determine whether the massive expansion of operations under the 2012 permit had adverse cumulative impacts that are more than minimal (CWA) or significant impacts the environment (NEPA). Instead, the overuse of this permit has allowed significant expansion of commercial shellfish aquaculture, onto thousands of never-before cultivated acres, or acres that had been fallow since (at least) before 2007, with no analysis of their environmental impacts.

96. The Corps reissued NWP 48 again in 2017. Like previous versions of the permit, NWP 48 authorizes "the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States . . . . NWP [48] also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish

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seeding, rearing, cultivating, transplanting, and harvesting activities." Issuance and Reissuance of Nationwide Permits, 82 Fed. Reg. 1,860, 1,995 (Jan. 1, 2017).

97. The 2017 permit included several significant changes, the biggest of which is a revised definition of "new" commercial aquaculture, to "an operation in a project area where commercial shellfish aquaculture activities have not been conducted during the last 100 years." *Id.* at 1,995 (emphasis added). This definition of "new" was not in the 2012 permit. Instead, a new project area was one not "currently authorized," and new operations were prohibited from directly affecting more than 1/2-acre of submerged aquatic vegetation beds. The 2017 revised definition of "new" means that any operation is considered "existing" rather than "new" so long as some manner of commercial shellfish activity was conducted there in the last 100 years. This was a significant departure from the previous definitions of existing operations: the 2007 permit included as "existing" only operations were actually authorized and operating at the time the permit was adopted, in 2007, and the 2012 permit defined "existing" as the "area in which the operator is currently authorized to conduct commercial shellfish aquaculture activities, as identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any other easement, lease, deed, or contract which establishes an enforceable property interest for the operator." Being considered an "existing" operation, rather than "new," allows a commercial shellfish operation to avoid specific protections, including the prohibition on affecting more than 1/2 acre of submerged aquatic vegetation (*i.e.,* eelgrass), and to avoid having to submit a Pre-Construction Notice (PCN) to the Corps (including various information about the proposed operation). *Id.* at 1,995-1,996. The Corps also removed the Pre-Construction Notice requirement for dredge harvesting, tilling, or harrowing in eelgrass, and for changing from bottom culture to floating/suspended culture. *Id.* at 1,995.

98. In its environmental assessment, the Corps predicted that approximately 1,625 activities could be authorized over a five-year period under the 2017 permit, resulting in impacts to approximately 56,250 acres of waters of the United States, including jurisdictional wetlands. Corps, Decision Document NWP 48, 65 (Dec. 21, 2016) (2017 Decision Document).

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99. Plaintiffs and others commented to the Corps that the permit approval would cause cumulatively adverse impacts, especially with the new 100-year loophole definition for "new" operations. Plaintiffs urged the Corps not to re-issue NWP 48 as written, to allow regional and District Engineers to utilize regional general or individual permits, or if the Corps did decide to move forward with NWP 48, to complete a full EIS rather than an EA and to undertake ESA consultation with the Services. CFS, Comments on Proposal to Reissue and Modify Nationwide Permits; Docket Number COE-2015-0017/RIN 0710-AA73 (August 1, 2016).

100. The Corps stated in the 2017 Decision Document that while individual authorizations or verifications under NWP 48 would not require any additional NEPA, regional Corps divisions and districts are required to prepare supplemental decision documents to provide regional analyses of environmental effects of a NWP, including a regional cumulative effects analysis. Corps Decision Doc. NWP 48 at 6.

101. The Corps' 2017 Decision Document for NWP 48 did not address pesticide or plastic gear use on shellfish beds: "The Corps does not have the authority to regulate discharges of pesticides. Discharges of pesticides may require authorization by states or the U.S. EPA under section 402 of the Clean Water Act. Division engineers can impose regional conditions to address the use of plastics, if plastic materials are used for the activities regulated under the Corps' authorities." *Id.* at 9.

102. The Corps did not complete any ESA Section 7 consultation with the Services regarding the renewal of NWP 48, instead relying on a general condition requiring all non-federal permittees to submit a Pre-Construction Notice "if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat." General Condition 18, 82 Fed. Reg. at 1,999.

103. Plaintiff Coalition challenged the 2012 issuance of NWP 48, and collectively, Plaintiffs Coalition and CFS challenged the 2017 issuance of NWP 48. *See* 2:16-cv-00950-RSL; 2:17-cv-01209-RSL. In October 2019, the U.S. District Court for the Western District of Washington held that the 2017 permit violated the CWA and NEPA because the Corps failed to

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adequately consider the individual and cumulative impacts on the environment. *Coal. to Protect Puget Sound Habitat*, 417 F. Supp. 3d at 1367. Specifically, the court held that the Corps' minimal impacts finding was improperly based on "(1) selectively chosen statements from the scientific literature, (2) the imposition of general conditions with which all activities under nationwide permits must comply, and (3) the hope that regional Corps districts will impose additional conditions and/or require applicants to obtain individual permits if necessary to ensure that the adverse impacts will be minimal." *Id.* at 1359. In June 2020, the district court vacated the permit, and in February 2021, the Ninth Circuit affirmed the district court's decision. *Coal. to Protect Puget Sound Habitat*, 466 F. Supp. 3d 1217 (W.D. Wash. 2020), *aff'd*, 843 F. App'x 77 (9th Cir. 2021).

B. 2021 NWP 48 ISSUANCE

i. National Headquarters

104. On September 15, 2020, the Corps published a proposed regulation to reissue with modifications the existing NWPs and associated general conditions and definitions, along with five new NWPs. 85 Fed. Reg. 57298.

105. On January 4, 2021, the Corps issued the Decision Document, which acts as the agency's Environmental Assessment (EA) for NWP 48 under NEPA. Exhibit B.

106. On January 13, 2021, the Corps reissued several NWPs authorizing certain activities that require Corps permits under CWA Section 404 and/or RHA Section 10, 33 U.S.C. § 403, including NWP 48 for commercial shellfish aquaculture (re-titled as commercial shellfish *mariculture* activities). Reissuance and Modification of Nationwide Permits, 86 Fed. Reg. 2744. NWP 48 went into effect on March 15, 2021.

107. The Corps' issuance of NWP 48 constitutes a final agency action.

108. The Corps estimated that the 2021 NWP 48 "will be used approximately 331 times per year on a national basis, resulting in impacts to approximately 13,684 acres of waters of the United States [per year]," or 68,420 acres of water over a five-year period. 2021 HQ Decision Doc. at 123. The Corps further estimated that "approximately 1,805 activities could be authorized

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over a five-year period until this NWP expires, resulting in impacts to approximately 69,420 acres of waters of the United States, including jurisdictional wetlands." *Id.* at 123–24.

109. The 2021 NWP 48 Decision Document contains almost no new analysis compared with the prior 2017 NWP 48 and eliminates one of the only ostensible protective measures contained in the prior permit, which limited authorizations based on a 100-year "lookback," allowing authorizations for only those areas which has been cultivated in some manner in the previous 100 years. Decision Document at 5. The Corps also removed the prior ½-acre limit for new activities. *Id.* at 5, 13.

110. The Corps did not analyze site-specific or regional impacts before issuing the 2021 NWP 48. In the 2021 NWP 48 Decision Document, the Corps expressly admits to limiting its impact analysis to national-scale impacts. 2021 HQ Decision Doc. at 41, 75–76. The Corps bluntly claims that information regarding site-specific impacts is not readily available. *See, e.g., id.* at 36 ("The environmental impacts of authorized activities during the period the NWP is in effect is dependent on the current environmental settings in which these activities will occur, and quantitative data on those current environmental settings is not available."); 41 ("Due to the large geographic scale of the affected environment (i.e., the entire United States), . . . it is only practical to describe the affected environment in general terms. In addition, it is not possible to describe the environmental conditions for specific sites where the NWPs may be used to authorize eligible activities."). The 2021 NWP 48 Decision Document also uses identical language to describe the "affected environment" as the 2017 Decision Document. *Compare id.* at 41 *with* 2017 HQ Decision Document at 25.

111. In addition, the Corps did not analyze quantitative data regarding potential impacts. In the 2021 NWP 48 Decision Document, the Corps expressly admits to limiting its impact analysis to a "qualitative analysis" of the general, national-scale impacts. 2021 HQ Decision Document at 75–76 ("Given the geographic scope in which this NWP can be used to authorize activities . . . and the wide variability in aquatic resource[s] . . . from site to site and from region to region, <u>the analysis of environmental consequences is a qualitative analysis</u>.") (emphasis

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added). The Corps bluntly claims that quantitative data regarding nationwide impacts is not available. *See, e.g., id.* at 60 ("There is little national-level information on the current ecological state of the Nation's wetlands, streams, and other aquatic resources, or the general degree to which they perform various ecological functions . . ."); 75 ("The analysis of environmental consequences in this environmental assessment is a qualitative analysis because of the lack of quantitative data at a national scale on the various human activities and natural factors that may concurrently alter the current environmental setting during the 5-year period this NWP is expected to be in effect . . . .").

112. The Corps also fails to provide quantitative data regarding the cumulative effects of NWP 48 other than the estimated number of times the permit will be used on a national basis over five years. 2021 HQ Decision Doc. at 123–24. Despite recognizing that "repetitive disturbances at a single site over time" and "multiple activities occurring in a geographic area over time" can have cumulative effects, the Corps admits to limiting its cumulative analysis to the agency's estimates on the number of activities authorized on a nationwide scale, ignoring data on the nature or location of the estimated uses. *Id.* at 36, 67–68 ("[T]he cumulative impacts of this NWP are the product of how many times this NWP is used . . . across the country during the 5-year period this NWP is anticipated to be in effect.").

113. The Corps relies on limited studies to make broad generalizations about the potential impacts. For example, despite failing to quantify any of the impacts to benthic organisms, the Corps broadly asserts that "[m]ost of the impacts to benthic organisms may be temporary, as these organisms can recover after various natural and anthropogenic disturbances that occur in these dynamic coastal ecosystems." Decision Document at 121. The only cited source for this broad assertion is an example focusing on "certain seagrass species in certain locations have in some cases exhibited capacity to recover and reproduce after dredge harvesting activities for commercial shellfish mariculture activities." *Id.*

114. The Corps also limits its evaluation of cumulative impacts to certain activities. For example, the Corps ignores shellfish seeding and other activities that will increase as a result of

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permitted activities because these activities "by themselves are not considered to be discharges of fill material regulated under section 404." Decision Document at 122. Likewise, Corps refuses to analyze the foreseeable impacts of pesticide use because it does not have direct permitting authority over pesticides. *Id.* at 10, 81, 96.

115. The Corps continues to analyze the potential impacts of permitted activities in comparison to past degradation and other human activities. *See, e.g.*, 57 ("The affected environment (i.e., the current environmental setting) has been shaped by a wide variety of human activities."); 67 ("The current environmental setting is the product of the cumulative or aggregated effects of human activities that have persisted over time. . . .The current environmental setting is dependent in part on the degree to which past and present human activities have altered aquatic and terrestrial resources in a particular geographic area over time. The Corps does not provide any site-specific information or quantitative data when comparing the estimated number of authorized activities on a national basis to past degradation. *See, e.g., id. at* 76–77 ("Because the activities authorized by this NWP constitute *only a small proportion* of the categories of human activities that directly and indirectly affect ocean waters . . . . and other aquatic resources, the activities authorized by this NWP over the next 5 years are *likely to result in only a minor incremental change* to the current environmental setting for ocean waters, estuarine waters.") (emphasis added).

116. In the 2021 NWP 48 issuance, the Corps declined to impose new protections for seagrass impacts, referring to the prospect as "impractical." Decision Document at 14.

117. The Corps proposed three alternatives in its EA. First, a "no action" alternative; second, reissuance of NWP 48 "with modifications;" and third, reissuance "without modifications." Dec Doc at 40. Despite a clear and unequivocal Order from this Court, and affirmed by the Ninth Circuit Court of Appeals, the Corps decided to reissue "with modifications," but without conducting the analysis required by 42 U.S.C. § 4321 *et seq* or 40 C.F.R. §230.7(a) to determine whether the activities will have only minimal cumulative adverse effects on the aquatic environment.

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118. Before the Corps re-issued the 2021 NWP 48, Plaintiffs and others submitted comments to the Corps to warn the agency that approving the proposed permit would cause significant direct, indirect, and cumulative adverse impacts. Plaintiffs urged the Corps to conduct a thorough analysis of all potential impacts of issuing the 2021 NWP 48.

119. Neither the final 2021 NWP 48 nor the Decision Document address the concerns Plaintiffs raised during the public comment period. For example, the Decision Document does not fully consider the adverse impacts of pesticide use or plastics on commercial shellfish operations. Nor does the agency analyze the potential impacts on salmonids, Orca whales, and other threatened and endangered species.

120. The Corps did not complete any ESA Section 7 consultation with the Services regarding the renewal of NWP 48, and instead relies on a general condition requiring all non-federal permittees to submit pre-construction notice "if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat" at page 2773.

ii. Seattle District

121. On September 30, 2021, the Seattle District of the Corps issued Special Public Notice for its proposed adoption of NWP 48, and the accompanying proposed regional conditions. This Special Public Notice was not published in the Federal Register, and the comment period for this Special Public Notice differed significantly from the opportunities to comment during the prior issuances of NWP 48.

122. The only proposed Regional Condition specific to NWP 48 stated that "commercial harvest of clams by means of hydraulic escalator harvester equipment is not authorized by NWP." SPN at 18.

123. Plaintiffs and other members of the public provided comments to the Seattle District urging it to forego NWP 48, and instead use individual permits, or regional general permits, but only following the requisite impact analyses pursuant to NEPA and CWA.

124. On information and belief, the Seattle District has authorized 85 operations under

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the 2021 NWP 48.

C. LETTERS OF PERMISSION

125. Despite an order from this Court requiring the Corps to comply with CWA and NEPA requirements and fully consider the individual and cumulative impacts of its shellfish permitting before issuing any further permits and vacating the 2017 NWP 48 (requiring entities previously authorized under NWP 48 to seek individual permits), the Seattle District proceeded to authorize most industrial shellfish aquaculture operations with LOPs, without any cumulative impacts analysis, contrary to the Corps' own regulations.

126. Most of the re-permitted operations following this Court's vacatur of 2017 NWP 48 were started as individual permits (or "standard permits") and then withdrawn to become LOPs. As of the date of this filing, the Seattle District has issued 325 LOPs to shellfish operations in Washington's tidelands in 2021. Exhibit A. On information and belief, based on permit information released to Plaintiffs under the Freedom of Information Act, the Seattle District has granted 274 LOPs following vacatur of 2017 NWP 48, 141 of which were formerly authorized under the 2012 and 2017 NWP 48.

127. From January to August 2021, the Corps issued 123 LOPs for aquaculture operations in Puget Sound and Hood Canal, covering over 522 acres of diverse ecosystems for the cultivation of geoduck clams, oysters, mussels, and other shellfish types. From March to July 2021, the Corps issued 4 LOPs for oyster operations in Grays Harbor, covering over 570 acres of Washington's tidelands. During this same period, the Corps issued 4 LOPs for oyster operations in Willapa Bay, covering over 457 acres.

128. From May to July 2021, the Corps issued several LOPs for new aquaculture operations across Washington, covering over 226 acres for the cultivation of geoduck clams, oysters, and other shellfish types.

i. Wildlife Impacts

129. The Corps issued LOPs for operations with adverse effects on aquatic species and federally threatened or protected species. In multiple decision documents, the Corps

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acknowledged that the potential effects on local wildlife and their habitats but failed to specify or quantify these effects. *See, e.g.*, Decision Document ("DD") (NWS-2007-01147-AQ) at 16 (approving 15 acres for oyster cultivation, despite acknowledging that the "proposed shellfish operation may alter the habitat characteristics of tidal waters which provide habitat to many species of fish and wildlife within Grays Harbor"); DD (NWS-2020-00356-AQ) at 14, 18 (acknowledging that the "proposed shellfish operation may alter the habitat . . . within Pickering Passage"); DD (NWS-2020-01154-AQ) at 15 (acknowledging that some "species would be adversely affected" by changes); DD (NWS-2020-00592-AQ) at 17 (concluding that wildlife impacts "will be temporary and minimal" despite acknowledging that the "[e]quipment used for the proposed shellfish aquaculture activities, such as project specific tubes and netting, may . . . entangle birds and other types of aquatic species such as forage fish and crabs").For example, on July 2, 2021, the Corps issued an LOP to Taylor Shellfish Farms "to commercially cultivate geoduck clams for human consumption" on one acre of tidelands in South Puget Sound, despite recognizing that "species may be temporarily adversely affected." Decision Document (NWS-2020-943-AQ) at 4–5, 17. The Corps also recognized that "South Puget Sound is occupied by Puget Sound Chinook salmon, Puget Sound steelhead, canary rockfish, and their designated critical habitat (programmatic consultation)." *Id.* at 5. However, the Corps failed to discuss the specific risks to wildlife, given the nature of the proposed operation, the number of years in operation, and the affected area. *Id.* Nor did the Corps attempt to quantify the potential effects on certain aquatic species and their habitats before summarily concluding the effects were temporary and negligible. *Id.*

ii. Environmental Impacts

130. The Corps issued LOPs for operations with adverse effects on the environment. In multiple decision documents, the Corps failed to describe the potential adverse effects. For example, in issuing an LOP to a new geoduck operation in Eld Inlet, the Corps claimed that the "effects" of the proposed activities would be "extremely short in duration and temporary in nature and would not result in detectable individual or cumulative adverse impacts," but failed to

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describe those potential effects with specificity. DD (NWS-2020-00060-AQ) at 3, 13-14.

131. In multiple LOP decision documents, the Corps generally acknowledged the potential adverse effects of aquaculture on the environment but failed to specify or quantity these effects. *See, e.g.*, DD (NWS-2020-01154-AQ) at 13, 18 (acknowledging that "[g]eneral environmental concerns such as water, air, noise and pollution may be positively or negatively affected by commercial shellfish aquaculture activity"); DD (NWS-2020-00592-AQ) at 15. For example, in issuing an LOP to an existing oyster operation on 100 acres of cultivation area in Willapa Bay, the Corps acknowledged that "[i]mpacts including water, air, noise pollution may be positively or negatively affected depending on the specific aquaculture activity proposed." DD (NWS-2020-559) at 13; *see also id.* at 15 (noting that "[s]ome species of aquatic organisms may temporarily benefit from those changes, while other species may temporarily be adversely affected." *Id.* at 15. However, the Corps failed to discuss the specific risks to wildlife and the environment, given the nature of the proposed operation, the number of years in operation, and the affected area. *Id.* Nor did the Corps attempt to quantify the potential effects on certain aquatic resources or characteristics before summarily concluding the effects were temporary and negligible. *Id.*

iii. Plastic Use

132. The Corps issued LOPs for operations without full consideration of the potential impacts of plastic use. In multiple LOP decision documents, the Corps also generally acknowledged the environmental effects of plastic use in shellfish aquaculture but failed to quantify or specify these effects. *See, e.g.*, Decision Document ("DD") (NWS-2007-01209-AQ) at 12 (approving 12 acres for geoduck clam cultivation in Puget Sound, despite plastic use); DD (NWS-2007-01219-AQ) at 12; DD (NWS-2020-00899-AQ) at 17. For example, in issuing an LOP to Taylor Shellfish for a geoduck operation, the Corps acknowledged that "[t]here are legitimate concerns about the impacts of plastics in our environment, particularly on the aquatic environment and within the food chain." Decision Document (NWS-2020-943-AQ) at 15. However, the Corps failed to discuss the specific risks of pesticide use to wildlife and the

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environment, given the nature of the proposed operation and the affected area. *Id.* The Corps also claimed that the potential impacts of plastic use were negligible due to proposed mitigation measures, without any quantitative analysis or public notice, or describing how the proposed mitigation measures would actually prevent the harms from plastic use. *See, e.g.*, DD (NWS-2020-00060-AQ) at 13 (concluding that "[t]he nets used in commercial shellfish aquaculture activities are minor and temporary, there are general and special conditions included to minimize discarded and escaped equipment").

iv. Pesticide Use

133. The Corps issued LOPs for operations without full consideration of the potential impacts of pesticide use. In all the LOPs and associated decision documents released thus far to Plaintiffs, the Corps ignored the potential impacts of pesticide use on proposed operations. For example, in issuing an LOP to a 35-acre oyster operation in North Grays Harbor, owned by Lone Tree Oyster Company, and a 97.5-acre oyster operation in North/Central Willapa Bay, owned by Petit and Sons Oyster, the Corps fails to describe or analyze any of the potential individual or cumulative effects of pesticide use. *See* DD (NWS-2007-1140-AQ); DD (NWS-2012-0609). Despite not prohibiting pesticide use by permittees, the Corps failed to account for its impacts where permitted operations use pesticides to eradicate species that they consider pests.

v. Cumulative Impacts

134. The Corps issued LOPs for operations without full consideration of the cumulative impacts. In multiple LOP decision documents, the Corps summarily concluded that operations would not have significant cumulative impacts on the environment because there were existing shellfish aquaculture operations in the area. *See, e.g.*, DD (NWS-2020-01183-AQ) at 28 (concluding that operation will have no significant cumulative effects because it will "perpetuate the status quo of 42 acres of shellfish cultivation occurring in [the] action area"); DD at 28DD (NWS-2020-00590-AQ) at 29 (operation "will perpetuate the status quo of 4.09-acres of shellfish cultivation occurring in this action area"). For example, in issuing a LOP to a geoduck operation owned by Taylor Shellfish, the Corps determined that "[i]mpacts from the continuation of [the

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proposed geoduck aquaculture operation] at this location would not have a significant cumulative impact on the area since the aquaculture activities are existing and ongoing." Decision Document (NWS-2020-943-AQ) at 15, 31. However, the Corps failed to specify or quantify the proposed operation's potential cumulative impacts. *Id.* Rather than analyze the potential cumulative impacts against the environmental baseline, the Corps compared the proposed operation with existing shellfish activities, even when those activities were never approved by the Corps. *See, e.g.*, DD (NWS-2007-01219-AQ) at 3 (approving 1.67 acres for geoduck clam cultivation in Puget Sound, even though "[t]he applicant had deviated from the approved plans by using plastic cups for geoduck cultivation"); DD (NWS-2020-01154-AQ) at 5 (concluding that there are no cumulative impacts because operation was previously verified in 2012 and 2017, even though proposed operation expands the area for geoduck cultivation, which has greater impacts than oyster culture). For new operations, the Corps focused on the proposed mitigation measures, rather than analyzing the potential cumulative impacts, as required. *See, e.g.*, DD (NWS-2021-00124-AQ) at 9 ("The proposed work would not have significant or cumulative impacts on environmental values because the proposed project has avoided and minimized effects to environmental values and would not have significant individual or cumulative impacts on such values.").

D. PLAINTIFFS' INTERESTS

135. Plaintiffs and their members are injured by the challenged actions because Defendants negated their procedural rights, as stakeholders, consumers of shellfish, and residents and visitors of the impacted areas, to meaningfully participate in important permit approval processes. The Corps failed to adequately evaluate the significant adverse impacts likely to result from the 2021 NWP 48 permit or any of the hundreds of LOPs issued to shellfish operations across the state of Washington. Nor did the Corps ensure that its re-issuance of the NWP 48 complied with the CWA and NEPA, as required by this Court's Order. As a result, the Corps caused procedural injury to Plaintiffs and their members.

136. Plaintiffs' members live, work, and recreate on or near Washington's shorelines, where shellfish aquaculture is or will be approved under the 2021 NWP 48 or an LOP. These

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members enjoy recreation along Washington's shorelines, including observing wildlife, walking along the beach, recreational shellfish harvest, and other activities. Some members have businesses that rely on the natural beauty and ecological health of Washington's marine aquatic ecosystems. Many of these members also consume shellfish, including commercially produced shellfish in Washington. These interests are harmed by the impacts of industrial shellfish aquaculture, including pesticide use and drift, physical barriers to beach access, impairment of aesthetics, light and sound pollution, and reduction in biodiversity. Some members are afraid to consume shellfish on their own property due to pesticide use in adjacent areas, while other members are concerned about health impacts from consuming commercial shellfish grown using industrial methods or near these operations.

137. Plaintiffs' members include people who have aesthetic, recreational, cultural, scientific, and economic interests in the health of Washington's aquatic ecosystems and the wildlife they support, including threatened and endangered species, like salmon. These members' interest in the species, including listed species, that require tidal waters for spawning, rearing, and/or feeding, is injured by the Corps' 2020-21 approvals. Plaintiffs and their members are injured by the Corps' approval of 2021 NWP 48 and LOPs that will have more than minimal adverse cumulative impacts to Washington's shorelines and bays, without adequate analysis of these impacts or mitigation to avoid cumulative impacts.

138. If the Court declares the 2021 NWP 48 unlawful, and vacates the permit, the Corps would no longer be able to rely on the permit to authorize shellfish operations that directly impair Plaintiffs' and their members' interests in Washington's shorelines, aquatic ecosystems, wildlife, and surrounding communities. Moreover, the Court could further prevent and reduce injuries to Plaintiffs and their members by ordering the Corps to fully consider the potential impacts before re-issuing NWP 48, as required by federal statutes and the agency's own regulations.

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FIRST CLAIM FOR RELIEF

VIOLATION OF CWA AND APA

ADOPTION OF NWP WITH ADVERSE CUMULATIVE IMPACTS

139. Plaintiffs re-allege paragraphs 1–138.

140. The Corps may issue general permits (including nationwide permits) only for activities that are similar in nature, and that will cause no more than minimal adverse effects to the environment, either separately or cumulatively. In issuing a nationwide permit, the Corps must consider the separate and cumulative impacts, and make a finding that the permit will not have more than minimally adverse cumulative impacts. As alleged herein, the Corps has violated the CWA and its implementing regulations by issuing a nationwide clean water act permit that will have more than minimal adverse cumulative impacts on the environment and cause or contribute to significant degradation of the aquatic ecosystem, due to the nature and extent of the commercial shellfish aquaculture activities authorized under NWP 48.

141. The Corps' adoption of NWP 48 in Washington, which will result in more than minimal adverse cumulative impacts and which may cause or contribute to significant degradation, and which is contrary to the public interest was arbitrary, capricious, an abuse of discretion, not in accordance with law, and without observance of procedures required by law, in violation of CWA, 33 U.S.C. § 1344, its implementing regulations, and the APA, 5 U.S.C. §§ 701–706.The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

142. Pursuant to the Equal Access to Justice Act, 28 U.S.C. § 2412, Plaintiff should be awarded its costs, expenses, expert witness fees, and reasonable attorney fees associated with this litigation.

SECOND CLAIM FOR RELIEF

VIOLATION OF CWA AND APA

FAILURE TO DOCUMENT IMPACTS AND MITIGATION MEASURES

143. Plaintiffs re-allege paragraphs 1–138 and 142.

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144. The Corps must set forth in writing an evaluation of the potential individual and cumulative impacts of the category of activities to be regulated under a NWP permit, and provide documentation to support each factual determination, including the cumulative impacts.

145. By failing to adequately document and support the Corps' factual determinations as to the impacts of NWP 48, including the cumulative impacts, the Corps' adoption of NWP 48 in Washington was arbitrary, capricious, an abuse of discretion, not in accordance with law, and without observance of procedures required by law, in violation of CWA, 33 U.S.C. § 1344, its implementing regulations, and the APA. 5 U.S.C. §§ 701-706.

146. The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

THIRD CLAIM FOR RELIEF

VIOLATION OF NEPA AND APA

FAILURE TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT

147. Plaintiffs re-allege paragraphs 1–138 and 142.

148. The Corps' issuance of the NWP 48 is a major federal action that will significantly affect the quality of the human environment.

149. Mitigation measures may be used when an agency seeks to forego issuing an EIS. However, proposed mitigation measures must be developed to a reasonable degree, and a perfunctory description, or mere listing of mitigation measures without supporting analysis, is insufficient to support a Finding of No Significant Impact.

150. The Corps' Finding of No Significant Impact for NWP 48 fails to establish or describe how the mitigation measures, framed as general conditions and unanalyzed discretion from District Engineers, would practically mitigate impacts.

151. The Corps' conclusion that issuance of NWP 48 would not significantly affect the quality of the human environment was arbitrary, capricious, or otherwise violates federal law as alleged herein.

152. The Corps' improper reliance on mitigation is arbitrary, capricious, and otherwise

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violates federal law.

153. The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

FORTH CLAIM FOR RELIEF

VIOLATION OF NEPA AND APA

FAILURE TO PROPERLY ANALYZE DIRECT, INDIRECT, AND CUMULATIVE IMPACTS OR DEVELOP REASONABLE RANGE OF ALTERNATIVES

154. Plaintiffs re-allege paragraphs 1–138 and 142.

155. When preparing an EA and issuing a Finding on No Significant Impact, NEPA requires that agencies take a hard look at the reasonably foreseeable direct, indirect, cumulative, or synergistic environmental impacts from proposed actions.

156. The Corps relied on the 1978 CEQ Regulations in preparing the environmental assessment for the 2021 NWP 48. In the 2021 NWP 48 Decision Document, the Corps' impact analysis "focuse[d] on the impacts or effects that are reasonably foreseeable and have a reasonably close causal relationship to the activities authorized by this NWP under the Corps' permitting authorities." 2021 HQ Decision Doc. at 70. In doing so, the Corps used the 1978 Regulations, which required the agency to review "reasonably foreseeable" "indirect effects." *See* 40 CFR 1508.8(a) (1978).

157. Under the Trump Administration, CEQ revised its NEPA regulations for the first time in over 40 years by removing the definition of "cumulative impact" and the terms "direct" and "indirect" to encourage agencies to focus on "whether the proposed action causes an effect rather than on categorizing the type of effect." Update to the Regulations Implementing the Procedural Provisions of the NEPA, 85 Fed. Reg. 43,343 (Jul. 16, 2020). The 2020 Revisions went into effect on September 14, 2020, one day after the Corps announced the proposed permit and four months before the Corps issued the final 2021 NWP 48. Although the Corps had the option to "choose whether to apply the revised regulations or proceed under the 1978 regulations and [its] existing agency NEPA procedures," *id.*, the Corps has long operated under the definition

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of "effects" as defined in the 1978 NEPA Regulations, and the agency has existing NEPA procedures aligned with the 1978 definitions. Moreover, the 2020 Revisions were not fully consistent with NEPA. *See* NEPA Implementing Regulations Revisions, 86 Fed. Reg. 55,757 (Oct. 7, 2021) (proposed rule) (proposing to "generally revert[] to the language from the 1978 NEPA Regulations that was in effect for more than 40 years prior to 2020"). To the extent the 2020 Revisions allowed the Corps to omit critical categories of effects from analysis and disclosure, contrary to NEPA's statutory purpose to promote informed decision making, the Corps' implementing regulations, and the Corps' longstanding practice, the 1978 CEQ Regulations applied.

158. Under both the 1978 CEQ Regulations and the 2020 Revisions, the Corps is required to conduct a thorough analysis of cumulative impacts under NEPA. The 2020 Revisions required the Corps to fully consider reasonably foreseeable effects, including those categorized as "cumulative impacts" under the 1978 CEQ Regulations. 40 CFR 1508.1(g) (2020); *see* 85 Fed. Reg. 43,355 ("In general, the changes . . . retain[] requirements to analyze all activities and environmental impacts covered within the scope of the statute."). The consideration of cumulative impacts follows longstanding legal precedent interpreting NEPA to require agencies to consider cumulative effects. Even before CEQ issued its 1978 regulations, the U.S. Supreme Court interpreted NEPA to require consideration of cumulative effects "when several proposals . . . that will have *cumulative* or synergistic environmental impact upon a region are pending concurrently before an agency." *Kleppe* v. *Sierra Club,* 427 U.S. 390, 410 (1976) (emphasis added).

159. The Corps failed to take the requisite hard look at the reasonably foreseeable direct, indirect, cumulative, or synergistic environmental impacts likely to result from the issuance of NWP 48.

160. The Corps' Finding of No Significant Impact was the result of a failure to consider the impacts described by Plaintiffs and others in public comments, as well as those described herein was arbitrary, capricious, or otherwise violates federal law.

161. An environmental assessment must include a purpose and need statement and

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define the scope of reasonable alternatives that would satisfy the purpose.

162. The Corps' Decision Document failed to include a purpose and need statement, and therefore failed to define the scope of reasonable alternatives in a manner arbitrary, capricious, or that otherwise violates federal law as alleged herein.

163. The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

FIFTH CLAIM FOR RELIEF

VIOLATION OF RIVERS AND HARBORS ACT AND APA

ISSUANCE OF LETTERS OF PERMISSION WITHOUT PROPER EVALUATION

164. Plaintiffs re-allege paragraphs 1–138 and 142.

165. Section 10 of the RHA, 33 U.S.C. § 403, and the Corps' implementing regulations limit use of LOPs to activities where the Corps properly concludes that the proposed activities "would be minor, would not have significant individual or cumulative impacts on environmental values, and should encounter no appreciable opposition." 33 C.F.R. § 325.2(e). The use of "and" makes it clear that all three conditions must be met for an LOP, as opposed to a standard individual permit, to be appropriate.

166. The Corps has issued at least 325 LOPs to shellfish operations with potentially significant adverse environmental impacts on Washington's tidelands. Exhibit A. Some of these operations cover hundreds of acres of Washington's shoreline, and many of them overlap with areas listed as essential habitats for threatened or endangered species.

167. In the decision documents associated with these LOPs released to Plaintiffs through requests submitted under the Freedom of Information Act, the Corps failed to adequately consider whether these LOPs would have significant adverse impacts on the environment and wildlife. Although the Corps' decision documents expressly acknowledged that plastics from shellfish operations pose a threat to the environment and wildlife, the Corps failed to describe or quantify these impacts, much less analyze them in their environmental assessment. The decision documents also confirmed that the Corps failed to consider adverse impacts to wildlife and their

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habitats, despite evidence that the operations were in areas with known threatened or endangered species, protected habitats, or other important features. Further, the Corps ignored some known impacts, such as pesticide use, entirely. Thus, because an LOP may only be issued in cases where proposed work would be minor and would not have significant individual impacts on the environment, the Corps improperly issued LOPs to shellfish operations without fully considering the potentially significant adverse impacts of the proposed shellfish operation on the local environment.

168. In the decision documents associated with these LOPs, only made public through Freedom of Information Act requests submitted by Plaintiffs, the Corps failed to adequately consider whether these LOPs would have cumulative impacts to the environment and wildlife. Although the Corps acknowledged that these operations are located in sensitive areas and areas with a high pollution burden, the Corps failed to describe or quantify how proposed operations would contribute or exacerbate existing threats. The Corps also failed to consider the full range of impacts from proposed and existing commercial shellfish operations in surrounding areas and connected waterbodies. Thus, because an LOP may only be issued in cases where proposed work would be minor and would not have significant cumulative impacts on the environment, the Corps improperly issued LOPs to shellfish operations without fully considering the potentially significant cumulative impacts of the proposed operation on the local environment and wildlife.

169. In addition, the Corps failed to fully consider the public interest before issuing LOPs, some of which cover hundreds of acres of tidelands in sensitive areas, without any public notice or comment. Given Plaintiffs' interest in improving federal permitting and regulation of commercial shellfish aquaculture in Washington, as well as Plaintiffs' previous litigation and public comments on this matter, the Corps should have known that the agency would "encounter appreciable opposition" from the Plaintiffs in this case, at the very least. Thus, because an LOP may only be issued in cases where proposed work would be minor and encounter no appreciable opposition, the Corps improperly issued LOPs to shellfish operations with significant adverse impacts that would have certainly received opposition from Plaintiffs, and potentially other

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residents, community groups, and environmental organizations. Rather than provide public notice and opportunity for comment, as required for standard individual permits, the Corps instead choose to hide from public view its shellfish aquaculture permitting activities following the vacatur of NWP 48.

170. The Corps failed to adequately consider the cumulative impacts of these operations. Instead of analyzing the cumulative effects of each proposed operation on the environment and local wildlife against the environmental baseline, the Corps compared proposed operations with existing degradation to conclude that there were no significant cumulative impacts on the environment. The Corps also failed to consider the cumulative impact of approving multiple projects in the same area. Consequently, the Corps issued LOPs based on improper cumulative impacts determinations. In issuing LOPs without conducting a proper cumulative impacts analysis, the Corps' decisions have violated the Rivers and Harbors Act, and arbitrary, capricious, an abuse of discretion, not in accordance with law, and without observance of procedures required by law, 33 U.S.C. § 403, its implementing regulations, and the APA. 5 U.S.C. §§ 701–706.

171. The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

SIXTH CLAIM FOR RELIEF

VIOLATION OF ESA:

FAILURE TO CONSULT REGARDING ADOPTION OF NWP 48

172. Plaintiffs re-allege paragraphs 1–138 and further allege:

173. Section 7(a)(2) of the ESA prohibits agency actions that jeopardize the survival of listed species, or that destroy, or adversely modify their critical habitat 16 U.S.C. § 1536(a)(2).

174. An agency must engage in consultation with the Services for every agency action—including "all activities or *programs* of any kind authorized, funded, or carried out," by an agency, 50 C.F.R. § 402.02 (emphasis added)—that "may affect" a federally listed species or critical habitat in any manner, *id.* § 402.14(a), (g).

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175. The Services' regulations recognize that certain programmatic actions, such as the Corps' issuance of the NWP program, "approve[] a framework for the development of future action(s)," and thus, "any take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out." *Id*. § 402.02 (defining "framework programmatic action").

176. The Corps has erroneously and unlawfully determined that the NWP program does not require programmatic ESA consultation. However, the agency's "no effect" determination for the NWP program is legally and factually flawed. Indeed, the Corps' reliance on project-specific reviews to avoid programmatic consultation is completely inconsistent with the Services' implementing regulations. *See* 50 C.F.R. § 402.14(c)

177. The Corps' failure to undertake programmatic consultation on NWP 48 also constitutes a violation of ESA Section 7(a)(1), which requires the Corps to "carry[] out [a] program[] for the conservation of endangered species and threatened species." 16 U.S.C. § 1636(a)(1).

178. Plaintiffs provided the Corps a 60-day notice letter outlining these violations on February 4, 2021. Exhibit C.

179. The actions and inactions of the Corps described in this Claim for Relief are causing injuries to the Plaintiffs, for which they have no adequate remedy at law.

180. Plaintiffs are entitled to fees, costs, expenses, and disbursements, including reasonable attorneys' fees, associated with this litigation under the ESA, 16 U.S.C.§ 1540.

PRAYERS FOR RELIEF

WHEREFORE, the Plaintiffs respectfully request that the Court:

1. Adjudge and declare that the Corps' decision to adopt 2021 NWP 48 in Washington, as well as the Decision Document, EA, and FONSI issued by the Corps in connection with that approval, are in violation of the CWA, NEPA, ESA, RHA, and APA;

2. Adjudge and declare that the Corps violated NEPA and the APA by failing to

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prepare an EIS prior to adopting 2021 NWP 48 in Washington;

3. Adjudge and declare that the Corps violated the CWA and its implementing regulations when it adopted 2021 NWP 48 in Washington without adequately supporting its determination that it would not cause more than minimal cumulative adverse impacts or the effectiveness of its mitigation measures;

4. Adjudge and declare that the Corps violated the RHA in issuing LOPs for work in jurisdictional waters without adequately supporting its determination that the proposed work would be minor and not have significant individual or cumulative impacts on environmental values and would encounter no appreciable opposition;

5. Adjudge and declare that the Corps violated the ESA and its implementing regulations when it adopted 2021 NWP 48 in Washington without consulting with NMFS and FWS under Section 7 of the ESA;

6. Vacate, set aside, and/or enjoin the Corps' decision to adopt 2021 NWP 48 in Washington, and declare that the Corps must comply with all requirements of NEPA, the CWA, the ESA, and the APA, including preparing an EIS and reinitiating consultation, if the agency proposes to adopt a new general permit for commercial shellfish aquaculture in Washington;

7. Award the Plaintiffs their fees, costs, expenses, and disbursements, including reasonable attorneys' fees, associated with this litigation under the Equal Access to Justice Act, 28 U.S.C. § 2412 and the ESA, 16 U.S.C.§ 1540; and

8. Grant such other relief as this Court deems just and proper.

DATED: December 20, 2021

Respectfully Submitted,

/s/ Karl G. Anuta

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EXHIBIT A

Seattle District Final Issued Permits

12/17/2021

District	DA Number	Applicant	Project Name	Permit Type	Action Taken	Date Issued	Longitude	Latitude
Seattle	NWS-2008-00542-AQ	Karen Moran-Navy Yard Oyster Company	Navy Yard Oyster Company (Parcel #32025-50-00001)	Letter of Permission	Issued With Special Conditions	02/11/2021	-122.99435	47.1971
Seattle	NWS-2020-01134-AQ	Jared Kadoun-JDK Shellfish	JDK Shellfish	Letter of Permission	Issued With Special Conditions	03/04/2021	-123.02932	47.20508
Seattle	NWS-2019-00096-AQ	Roxanne Vanderberg-Pickering Pemium Seafood	Pickering Premium Seafood	Letter of Permission	Issued With Special Conditions	03/04/2021	-122.93627	47.2133
Seattle	NWS-2018-01184-AQ	Timothy Jackowski	Jackowski, Timothy (Takase Shellfish)	Letter of Permission	Issued With Special Conditions	03/04/2021	-122.93655	47.21359
Seattle	NWS-2007-01369-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc. (Linn Lease)	Letter of Permission	Issued With Special Conditions	03/05/2021	-122.99871	47.07629
Seattle	NWS-2018-00293-AQ	Troy Wiktorek-Olympic Shellfish LLC	Olympic Shellfish LLC (Olympic Shellfish Oyster and Clam Farm)	Letter of Permission	Issued With Special Conditions	03/05/2021	-122.93586	47.21266
Seattle	NWS-2007-01169-AQ	Karen Moran-Navy Yard Oyster Company, Rand Stevens-Stevens & Son Shellfish	Navy Yard Oyster Company	Letter of Permission	Issued With Special Conditions	03/05/2021	-123.04559	47.22956
Seattle	NWS-2007-01193-AQ	Norris Petit-Petit & Son Oyster	Petit & Son Oyster	Letter of Permission	Issued With Special Conditions	03/12/2021	-123.99908	46.67879
Seattle	NWS-2010-00087-AQ	Tim Sheldon-Potlatch Oyster Co.	Potlatch Oyster Co.	Letter of Permission	Issued With Special Conditions	03/16/2021	-123.14517	47.39024
Seattle	NWS-2007-01147-AQ	Ron Young-Nagles Chenois Creek Oyster Co	Nagles Chenois Creek Oyster Co.	Letter of Permission	Issued With Special Conditions	03/17/2021	-124.07682	47.00691
Seattle	NWS-2021-00175-AQ	Gary Mazzoncini-Joe Leonard Oyster Company	Joe Leonard Oyster Co.	Letter of Permission	Issued With Special Conditions	04/02/2021	-123.034	47.549
Seattle	NWS-2007-01140-AQ	Don Harders-Lone Tree Oyster Company	Lone Tree Oyster Co.	Letter of Permission	Issued With Special Conditions	04/06/2021	-124.07589	47.0082
Seattle	NWS-2009-00259-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood	Letter of Permission	Issued With Special Conditions	04/07/2021	-122.84014	47.15757
Seattle	NWS-2020-00590-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms Eld Inlet 3	Letter of Permission	Issued With Special Conditions	04/13/2021	-122.9544	47.13724
Seattle	NWS-2020-01183-AQ	Andrea Shotwell-Elkhorn Oyster Company	Elkhorn Oyster LLC (B100 Oyster Beds)	Letter of Permission	Issued With Special Conditions	04/15/2021	-123.9524	46.6537
Seattle	NWS-2020-01171-AQ	Andrea Shotwell-Elkhorn Oyster LLC	Elkhorn Oyster LLC (B307 Oyster Beds)	Letter of Permission	Issued With Special Conditions	04/16/2021	-123.95209	46.63999
Seattle	NWS-2010-01102-AQ	Gary Mazzoncini-Joe Leonard Oyster Company	Joe Leonard Oyster Co. (Gary Mazzoncini)	Letter of Permission	Issued With Special Conditions	04/16/2021	-123.03553	47.55003
Seattle	NWS-2011-00234-AQ	Daniel Hanson-HC Snail, LLC	Allen Shellfish LLC (HC Snail LLC Lease)	Letter of Permission	Issued With Special Conditions	04/22/2021	-123.10891	47.37356
Seattle	NWS-2020-00609	Christine Winn-Quinault Nation Enterprise	Quinault Nation Enterprise (Net pens in Westhaven Cove Marina)	Letter of Permission	Issued With Special Conditions	04/26/2021	-124.1025	46.90519
Seattle	NWS-2016-00729-AQ	Steven M and Vicki M Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Viney-Casady-79 Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	04/26/2021	-122.97335	47.16947
Seattle	NWS-2020-00588-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms Eld Inlet	Letter of Permission	Issued With Special Conditions	04/28/2021	-122.96267	47.12496
Seattle	NWS-2007-01190-AQ	Charles Stephens-Kamilche Sea Farms	Kamilche Sea Farms	Letter of Permission	Issued With Special Conditions	04/30/2021	-123.01866	47.12474
Seattle	NWS-2019-00450-AQ	Mark Schaffel-Northwest Shellfish Company, Inc.	Northwest Shellfish Company, Inc (Hjelm Geoduck Farm)	Letter of Permission	Issued With Special Conditions	05/03/2021	-122.93684	47.11258
Seattle	NWS-2009-01362-AQ	Karen Moran-Navy Yard Oyster Company	Navy Yard Oyster Company (parcel #22222-22-90180)	Letter of Permission	Issued With Special Conditions	05/04/2021	-122.92484	47.38836
Seattle	NWS-2009-00261-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood	Letter of Permission	Issued With Special Conditions	05/04/2021	-122.84211	47.16143
Seattle	NWS-2007-01332-AQ	Greg Reub-Geoducks Unlimited, LLC	Geoducks Unlimited LLC (Hanson Lease)	Letter of Permission	Issued Without Special Conditions	05/07/2021	-122.94102	47.17969
Seattle	NWS-2020-00598-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Green Cove)	Letter of Permission	Issued With Special Conditions	05/07/2021	-122.95093	47.09869
Seattle	NWS-2010-00144-AQ	Karen Moran-Navy Yard Oyster Co. Inc.	Navy Yard Oyster Co. Inc. (parcel #22219-50-00016)	Letter of Permission	Issued With Special Conditions	05/07/2021	-122.98035	47.37567
Seattle	NWS-2007-01345-AQ	John Lentz-Chelsea Farms LLC	Chelsea Farms LLC (Manke lease)	Letter of Permission	Issued With Special Conditions	05/07/2021	-122.95994	47.12888
Seattle	NWS-2012-00074-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish - (Storino Lease)	Letter of Permission	Issued With Special Conditions	05/13/2021	-122.93859	47.11383
Seattle	NWS-2009-01115-AQ	Joel Manke-Manke Lumber Company, Kellen Manke-Manke Lumber Company Inc.	Manke Lumber Company Inc.	Letter of Permission	Issued With Special Conditions	05/13/2021	-123.10047	47.3738
Seattle	NWS-2011-01100-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Mitchell Lease)	Letter of Permission	Issued With Special Conditions	05/13/2021	-122.93898	47.1145
Seattle	NWS-2009-00676-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.77816	47.1263
Seattle	NWS-2020-00954-AQ	Matt Smith-Trident Marine Services, Inc.	Trident Marine Services, Inc (Case Inlet Sites)	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.86853	47.27887
Seattle	NWS-2007-01393-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC - Schmidt	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.92776	47.15422
Seattle	NWS-2007-01400-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish--Thurston 5	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.93863	47.10939
Seattle	NWS-2020-00899-AQ	Matt Smith-Trident Marine Services, Inc.	Trident Marine Services, Inc. (Pickering Passage Sites)	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.93471	47.21086
Seattle	NWS-2007-01166-AQ	Laurra Lyden-McGregor-Lyden Shellfish	Lyden Shellfish	Letter of Permission	Issued With Special Conditions	05/14/2021	-122.98601	47.14899
Seattle	NWS-2010-00335-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	05/19/2021	-122.9421	47.17629
Seattle	NWS-2009-01572-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish	Letter of Permission	Issued With Special Conditions	05/19/2021	-122.78704	47.13336
Seattle	NWS-2013-00093-AQ	Steven and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood	Letter of Permission	Issued With Special Conditions	05/20/2021	-122.9643	47.1687
Seattle	NWS-2007-01580-AQ	Robert Snyder-Rob's Shellfish	Arcadia Point Seafood	Letter of Permission	Issued With Special Conditions	05/20/2021	-122.97375	47.16936
Seattle	NWS-2007-01396-AQ	Hui Xia-Net@Venture, Inc	Net@Ventures, Inc	Letter of Permission	Issued With Special Conditions	05/21/2021	-122.84004	47.15913
Seattle	NWS-2007-01386-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Co. Inc. (Wakefield Lease)	Letter of Permission	Issued With Special Conditions	05/21/2021	-122.95783	47.09632
Seattle	NWS-2020-00592-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Cooper Point)	Letter of Permission	Issued With Special Conditions	05/21/2021	-122.93664	47.13486
Seattle	NWS-2013-00045-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	05/24/2021	-122.93857	47.11161
Seattle	NWS-2021-00152	Mike Appleby-Chelan Cove LLC	Chelan Cove LLC (Lot 9 and 10)	Letter of Permission	Issued With Special Conditions	05/24/2021	-120.18398	47.89296
Seattle	NWS-2007-01370-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc. (Coulter Lease)	Letter of Permission	Issued With Special Conditions	05/25/2021	-122.93803	47.10974
Seattle	NWS-2020-00597-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms Hunter Point	Letter of Permission	Issued With Special Conditions	05/25/2021	-122.92004	47.16314
Seattle	NWS-2009-00648-AQ	Jim Gibbons-Seattle Shellfish LLC, Steve Hubregsen-Intertidal Farms	Seattle Shellfish LLC (Intertidal Farms-Dray)	Letter of Permission	Issued With Special Conditions	05/25/2021	-122.93845	47.11294
Seattle	NWS-2007-01209-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish - Foss Tidelands	Letter of Permission	Issued With Special Conditions	05/25/2021	-122.82059	47.23005
Seattle	NWS-2009-00667-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	05/26/2021	-122.78671	47.13201

Seattle District Final Issued Permits

12/17/2021

District	DA Number	Applicant	Project Name	Permit Type	Action Taken	Date Issued	Longitude	Latitude
Seattle	NWS-2009-00707-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	05/26/2021	-122.78821	47.13611
Seattle	NWS-2013-00186-AQ	Steven Wilson-Arcadia Point Seafood	Arcadia Point Seafoods (Acheson-Gentle Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	05/26/2021	-122.9648	47.16862
Seattle	NWS-2021-00449-AQ	Michael Rasmussen-Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises	Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	05/27/2021	-123.90599	46.71833
Seattle	NWS-2019-00569-AQ	Hui Xia-Net Venture Farms, INC	Net Venture Farms, INC (Lowell's Geoduck Aquaculture)	Letter of Permission	Issued With Special Conditions	05/27/2021	-122.77701	47.12298
Seattle	NWS-2020-00953-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish Farms (Owls Perch LLC Lease)	Letter of Permission	Issued With Special Conditions	05/27/2021	-122.83013	47.32284
Seattle	NWS-2010-00488-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC, Moore Lease	Letter of Permission	Issued With Special Conditions	05/27/2021	-122.87142	47.27576
Seattle	NWS-2013-00187-AQ	Steven and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Seward Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	05/28/2021	-122.96961	47.16877
Seattle	NWS-2009-01564-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Dekker)	Letter of Permission	Issued With Special Conditions	05/28/2021	-122.92282	47.15913
Seattle	NWS-2012-01315-AQ	Marty Beagle-Chelsea Farms	Chelsea Farms (Flapjack Point)	Letter of Permission	Issued With Special Conditions	05/28/2021	-122.95747	47.10501
Seattle	NWS-2007-01377-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc. (Cole Lease)	Letter of Permission	Issued With Special Conditions	06/01/2021	-122.93827	47.11123
Seattle	NWS-2009-00650-AQ	Taylor Shellfish Farms	Taylor Shellfish-Smith Lease	Letter of Permission	Issued With Special Conditions	06/02/2021	-122.93879	47.11331
Seattle	NWS-2007-01270-AQ	Diane Cooper-Taylor Shellfish, Taylor Shellfish Farms	Taylor Shellfish--Mason 27	Letter of Permission	Issued With Special Conditions	06/02/2021	-123.07958	47.21863
Seattle	NWS-2020-01154-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish (Bausher Lease)	Letter of Permission	Issued With Special Conditions	06/02/2021	-122.9917	47.1674
Seattle	NWS-2007-01372-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc. (Charneski Lease)	Letter of Permission	Issued With Special Conditions	06/02/2021	-122.93813	47.1104
Seattle	NWS-2007-01371-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc.(Caslin Lease)	Letter of Permission	Issued With Special Conditions	06/02/2021	-122.9381	47.10946
Seattle	NWS-2007-01374-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc. (Erickson Lease)	Letter of Permission	Issued With Special Conditions	06/03/2021	-122.93805	47.11007
Seattle	NWS-2008-00539-AQ	Gary Mazzoncini-Joe Leonard Oyster Company	Joe Leonard Oyster Co.	Letter of Permission	Issued With Special Conditions	06/03/2021	-123.00986	47.57175
Seattle	NWS-2011-00673-AQ	Net @ Venture, Inc	Net @ Venture, Inc	Letter of Permission	Issued With Special Conditions	06/03/2021	-122.91942	47.16733
Seattle	NWS-2007-01376-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company Inc (Rutherford Lease)	Letter of Permission	Issued With Special Conditions	06/03/2021	-122.93818	47.11075
Seattle	NWS-2009-00671-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/04/2021	-122.77681	47.12578
Seattle	NWS-2009-00680-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/04/2021	-122.77993	47.12668
Seattle	NWS-2021-00228	Jennifer Hagen-Quileute Indian Tribe	Quileute Indian Tribe (Scientific Buoys)	Letter of Permission	Issued With Special Conditions	06/04/2021	-124.645	47.733
Seattle	NWS-2007-01205-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish--Stratford Meyer Lease	Letter of Permission	Issued With Special Conditions	06/07/2021	-122.79535	47.31974
Seattle	NWS-2021-00448-AQ	Michael Rasmussen-Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises	Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	06/09/2021	-123.97827	46.712
Seattle	NWS-2007-01153-AQ	Jonathan Davis	Baywater Inc.	Letter of Permission	Issued With Special Conditions	06/10/2021	-122.73924	47.80648
Seattle	NWS-2018-00204-AQ	Buck Clark-Skoocum Swan Seafoods, James Oakes-Skoocum Swan Seafoods	Skookum Swan Seafoods (Cesnik-Clark and Oaks Geoduck Aquaculture)	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.91954	47.16752
Seattle	NWS-2012-00609-AQ	Nisbet Oyster Company, Inc	Nisbet Oyster Company, Inc. - Cedar River	Letter of Permission	Issued With Special Conditions	06/11/2021	-123.96673	46.71277
Seattle	NWS-2020-01127-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish Deepwater-Gallagher Farm	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.97501	47.14889
Seattle	NWS-2011-00724-AQ	Bruce Adams-Ernies Oyster Co., Jeannette Adams-Ernie's Oysters Co, LLC	Ernie's Oyster Co. (Bruce Adams)	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.94773	47.16771
Seattle	NWS-2008-00505-AQ	Drew Babare-Babare Brothers Shellfish Farms, LLC	Babare Bros. Inc. (Nisqually Aquaculture)	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.72609	47.10513
Seattle	NWS-2020-00065-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Lewis Geoduck Clam Farm)	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.9321	47.13964
Seattle	NWS-2020-00060-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Williams Geoduck Clam Farm)	Letter of Permission	Issued With Special Conditions	06/11/2021	-122.93518	47.13682
Seattle	NWS-2020-00607-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Henderson)	Letter of Permission	Issued With Special Conditions	06/16/2021	-122.83784	47.15098
Seattle	NWS-2007-01246-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Reginald Engman Tidelands)	Letter of Permission	Issued With Special Conditions	06/16/2021	-122.81607	47.37055
Seattle	NWS-2020-00915-AQ	Gary Ruggles-Markham Oyster Co.	Markham Oyster Co (Aquaculture)	Letter of Permission	Issued With Special Conditions	06/16/2021	-124.0806	46.8888
Seattle	NWS-2020-00559-AQ	Ken Wiegardt-Wiegardt & Sons, Inc.	Wiegardt, Ken (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	06/17/2021	-123.9637	46.51999
Seattle	NWS-2007-01224-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--Bogrand 25	Letter of Permission	Issued With Special Conditions	06/18/2021	-122.96538	47.16853
Seattle	NWS-2010-00338-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish, LLC (Nelson Lease)	Letter of Permission	Issued With Special Conditions	06/18/2021	-122.9419	47.17695
Seattle	NWS-2009-00673-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/19/2021	-122.77721	47.126
Seattle	NWS-2009-00674-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/21/2021	-122.77761	47.12618
Seattle	NWS-2009-00678-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/21/2021	-122.77951	47.12667
Seattle	NWS-2009-00677-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/21/2021	-122.77909	47.12654
Seattle	NWS-2007-01225-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--Mason 2	Letter of Permission	Issued With Special Conditions	06/22/2021	-122.96599	47.16852
Seattle	NWS-2020-00836-AQ	Michael C and Michael S Lytle-Lytle Seafoods	Lytle Seafoods	Letter of Permission	Issued With Special Conditions	06/22/2021	-124.06451	47.00091
Seattle	NWS-2007-01254-AQ	Taylor Shellfish Farms	Taylor Shellfish--Mason 11	Letter of Permission	Issued With Special Conditions	06/22/2021	-123.04231	47.20524
Seattle	NWS-2019-01041-AQ	Ian Jefferds-Penn Cove Shellfish, LLC	Penn Cove Shellfish LLC (Raft Relocation)	Letter of Permission	Issued With Special Conditions	06/22/2021	-122.70778	48.21859
Seattle	NWS-2007-01250-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish Farms (Danielle Young Tidelands)	Letter of Permission	Issued With Special Conditions	06/22/2021	-122.81	47.3662
Seattle	NWS-2010-00339-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC-Kehoe	Letter of Permission	Issued With Special Conditions	06/23/2021	-122.94217	47.17605
Seattle	NWS-2009-01116-AQ	Erin Ewald-Taylor Shellfish	Taylor Shellfish (Hamilton Lease)	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.82523	47.37117

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Seattle	NWS-2014-00635-AQ	Tammy Devlin-Lilliwaup Oysters LLC	Lilliwaup Oysters LLC (oyster farm)	Letter of Permission	Issued With Special Conditions	06/24/2021	-123.07173	47.49118
Seattle	NWS-2007-01162-AQ	Jim Gibbons-Seattle Shellfish, LLC	Seattle Shellfish, LLC (Johnston Lease)	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.94147	47.17746
Seattle	NWS-2009-00727-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish (Oakland Bay, Maple Beach) (clam and oyster on bottom)	Letter of Permission	Issued With Special Conditions	06/24/2021	-123.05869	47.2209
Seattle	NWS-2007-01243-AQ	Diane Cooper	Taylor Shellfish, Taylor Owned - North Bay	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.824	47.38825
Seattle	NWS-2021-00124-AQ	Troy Morris-Calm Cove Shellfish Company	Calm Cove Shellfish (Morris2)	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.98531	47.08028
Seattle	NWS-2019-00886-AQ	Catherine Gylys-National Fish & Oyster Company	National Fish & Oyster Company	Letter of Permission	Issued With Special Conditions	06/24/2021	-123.02731	47.20412
Seattle	NWS-2020-00356-AQ	Ian Child-Sound Shellfish Company	Sound Shellfish Company (Geoduck Farm)	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.88067	47.28805
Seattle	NWS-2017-00585-AQ	Taylor Shellfish Farms	Taylor Shellfish Farms (Johnson Tidelands)	Letter of Permission	Issued With Special Conditions	06/24/2021	-123.044	47.2051
Seattle	NWS-2007-01264-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	06/24/2021	-122.85321	47.3106
Seattle	NWS-2007-01333-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Tenglin Lease)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.84447	47.1978
Seattle	NWS-2010-00504-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.87145	47.27534
Seattle	NWS-2007-01581-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Viney-Casady-78 Lease)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.97361	47.16948
Seattle	NWS-2009-01149-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.89562	47.20681
Seattle	NWS-2010-01011-AQ	Dmitri Vasin	Vasin, Dmitri (Sunset Beach Oyster Company)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.97517	47.56216
Seattle	NWS-2014-00070-AQ	Diani Taylor-Taylor Shellfish Farms	Taylor Shellfish Farms (McDermid Geoduck Farm)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.95421	47.18399
Seattle	NWS-2020-00599-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Totten Inlet)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.95278	47.18541
Seattle	NWS-2007-01334-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC, Whiteman Cove Shellfish Farm	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.80811	47.22226
Seattle	NWS-2017-00282-AQ	Miranda L's Oysters	Miranda L's Oysters (Belfair)	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.99196	47.37124
Seattle	NWS-2007-01262-AQ	Audrey Lamb-Taylor Shellfish	Taylor Shellfish--Taylor Timber	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.84215	47.20135
Seattle	NWS-2010-00502-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.87127	47.27402
Seattle	NWS-2007-01229-AQ	Steven M. and Vicki M. Wilson-Arcadia Point Seafood	Arcadia Point Seafood - Pruitt Lease	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.96503	47.16858
Seattle	NWS-2008-00513-AQ	Audrey Lamb-Taylor Shellfish	Taylor Shellfish - Little Skookum Okada	Letter of Permission	Issued With Special Conditions	06/25/2021	-123.06555	47.14289
Seattle	NWS-2008-00518-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish - Mason 33	Letter of Permission	Issued With Special Conditions	06/25/2021	-122.99753	47.16489
Seattle	NWS-2013-00033-AQ	Taylor Shellfish Farms	Taylor Shellfish (Holbrook Lease)	Letter of Permission	Issued With Special Conditions	06/28/2021	-122.78936	47.14374
Seattle	NWS-2017-00469-AQ	Henderson Shellfish	Net Venture Farms, Inc. (Hunter Point Lease)	Letter of Permission	Issued With Special Conditions	06/28/2021	-122.91974	47.16487
Seattle	NWS-2007-01382-AQ	Taylor Shellfish Co.	Taylor Shellfish Co., Inc (Pritchett tidelands)	Letter of Permission	Issued With Special Conditions	06/28/2021	-122.84016	47.15788
Seattle	NWS-2007-01233-AQ	Steve and Vicki Wilson-Aarcadia Point Seafood	Arcadia Point Seafood--Mason 10	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.96576	47.16851
Seattle	NWS-2007-01252-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish Farms (Hammersley Cape Horn)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.95341	47.20546
Seattle	NWS-2007-01227-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.83174	47.32235
Seattle	NWS-2008-00478-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Young-Bean Song Tidelands)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.81352	47.36705
Seattle	NWS-2008-00477-AQ	Diane Cooper-Taylor Shellfish Farms	Taylor Shellfish (Fred McFeely Tidelands)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.81228	47.36662
Seattle	NWS-2009-00656-AQ	Bruce Brenner-J.J. Brenner Oyster Company	J.J. Brenner Oyster Company (Eld Inlet South)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.9931	47.07873
Seattle	NWS-2020-01233-AQ	Bruce Brenner-J.J. Brenner Oyster Company	J.J. Brenner Oyster Company (Eld Inlet North)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.96891	47.09004
Seattle	NWS-2010-00337-AQ	Jim Gibbons-Seattle Shellfish LLC	Rodrick Geoduck Farm	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.94138	47.17771
Seattle	NWS-2014-00315-AQ	Erin Ewald-Taylor Shellfish Farm	Taylor Shellfish Farms (Leenstra Lease)	Letter of Permission	Issued With Special Conditions	06/29/2021	-122.74714	47.18566
Seattle	NWS-2016-00738-AQ	Carl Iverson	Iverson, Carl Edwin (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	06/30/2021	-122.79189	47.14794
Seattle	NWS-2007-01165-AQ	Tim Salo-Puget Beach Shellfish LLC	Puget Beach Shellfish LLC	Letter of Permission	Issued With Special Conditions	06/30/2021	-122.78539	47.12948
Seattle	NWS-2009-01157-AQ	Steve Zimmerman-Zimmerman Shellfish	Zimmerman Shellfish	Letter of Permission	Issued With Special Conditions	07/01/2021	-122.96344	47.12262
Seattle	NWS-2009-00687-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	07/01/2021	-122.78401	47.12658
Seattle	NWS-2009-01575-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	07/01/2021	-122.78438	47.12787
Seattle	NWS-2007-01253-AQ	Taylor Shellfish Farms	Taylor Shellfish--Mason 10	Letter of Permission	Issued With Special Conditions	07/01/2021	-123.04316	47.20518
Seattle	NWS-2012-00164-AQ	Amy Holbrook	Zimmerman Shellfish (PNB Farms Lease)	Letter of Permission	Issued With Special Conditions	07/02/2021	-122.96343	47.12295
Seattle	NWS-2010-00923-AQ	Erik Anderson-Westcott Bay Shellfish Company, LLC	Westcott Bay Shellfish Company, LLC	Letter of Permission	Issued With Special Conditions	07/02/2021	-123.14535	48.59632
Seattle	NWS-2020-01035-AQ	Michael Rasmussen-Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises	Shoalwater Bay Indian Tribe dba Willapa Bay Enterprises (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	07/02/2021	-123.98273	46.71253
Seattle	NWS-2020-00943-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish, Boots Lease	Letter of Permission	Issued With Special Conditions	07/02/2021	-122.86129	47.2366
Seattle	NWS-2007-01406-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish, Block Lower Tidelands	Letter of Permission	Issued With Special Conditions	07/07/2021	-122.93863	47.11123
Seattle	NWS-2007-01222-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	07/07/2021	-122.86716	47.27256
Seattle	NWS-2017-00322-AQ	Arcadia Point Seafood	Arcadia Point Seafood (E. McGuire Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	07/07/2021	-122.9884	47.16826
Seattle	NWS-2007-01219-AQ	Derek Epps-Seattle Shellfish LLC	Seattle Shellfish LLC--Glaser Lease	Letter of Permission	Issued With Special Conditions	07/08/2021	-122.86571	47.24291

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Seattle	NWS-2017-00354-AQ	Kilisut Harbor Shellfish, LLC	Kilisut Harbor Shellfish, LLC (Oyster Farm)	Letter of Permission	Issued With Special Conditions	07/08/2021	-122.71254	48.07908
Seattle	NWS-2008-00522-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish - Mason 36	Letter of Permission	Issued With Special Conditions	07/09/2021	-122.98722	47.16868
Seattle	NWS-2008-00562-AQ	Reed Gunstone-J & G Gunstone Clams Inc., Taylor Shellfish Farms	Taylor Shellfish, Gunstone Lease	Letter of Permission	Issued With Special Conditions	07/09/2021	-122.86809	48.0679
Seattle	NWS-2008-00520-AQ	Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	07/09/2021	-122.99106	47.16798
Seattle	NWS-2007-01258-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish--Mason 15	Letter of Permission	Issued With Special Conditions	07/12/2021	-123.06025	47.23171
Seattle	NWS-2008-00525-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish - King Lease	Letter of Permission	Issued With Special Conditions	07/14/2021	-123.00118	47.16215
Seattle	NWS-2014-00668-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Mason County Geoduck Farm)	Letter of Permission	Issued With Special Conditions	07/14/2021	-122.86611	47.24493
Seattle	NWS-2010-00501-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	07/14/2021	-122.86383	47.28323
Seattle	NWS-2015-00930-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Harstine Real Estate Partners LLC)	Letter of Permission	Issued With Special Conditions	07/15/2021	-122.86702	47.28096
Seattle	NWS-2009-01337-AQ	Tim Morris-Coast Seafoods Company	Coast Seafoods Company	Letter of Permission	Issued With Special Conditions	07/15/2021	-124.06024	46.88434
Seattle	NWS-2007-01164-AQ	Jeffrey Fisher-Fisherport LLC, Stacy Fisher-Fisherport LLC	Fisherport LLC	Letter of Permission	Issued With Special Conditions	07/16/2021	-122.9418	47.17286
Seattle	NWS-2007-01136-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	07/19/2021	-122.74841	47.21759
Seattle	NWS-2010-00090-AQ	Jeffrey Fisher-Fisherport LLC, Stacy Fisher-Fisherport LLC	Fisherport LLC	Letter of Permission	Issued With Special Conditions	07/19/2021	-122.94186	47.17235
Seattle	NWS-2021-00289	William Bannecker	Bannecker, William (Mooring Buoy)	Letter of Permission	Issued With Special Conditions	07/19/2021	-122.46202	47.3961
Seattle	NWS-2017-00467-AQ	Perkins Family Farms	Perkins Family Farms (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	07/20/2021	-122.84191	47.15586
Seattle	NWS-2010-00334-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish, LLC (Wrye Lease)	Letter of Permission	Issued With Special Conditions	07/22/2021	-122.94178	47.17712
Seattle	NWS-2009-01125-AQ	Diane Cooper-Taylor Shellfish, Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	07/22/2021	-123.0639	47.2284
Seattle	NWS-2010-00336-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish, LLC (Westgard Lease)	Letter of Permission	Issued With Special Conditions	07/22/2021	-122.94197	47.17677
Seattle	NWS-2017-00959-AQ	David Nisbet-Nisbet Oyster Company Inc.	Goose Point (Willapa Bay, FLUPSY)	Letter of Permission	Issued With Special Conditions	07/23/2021	-123.96698	46.7075
Seattle	NWS-2021-00170-AQ		Totten Rock Shellfish - Totten Inlet Leases	Letter of Permission	Issued With Special Conditions	07/23/2021	-123.18303	47.35032
Seattle	NWS-2007-01273-AQ	Mary Bennett-Wallin's Oysters & Clams LLC	Wallin's Oysters & Clams	Letter of Permission	Issued With Special Conditions	07/23/2021	-122.99957	47.16356
Seattle	NWS-2007-01176-AQ	Mary Bennett-Wallin's Oysters & Clams	Wallin's Oysters & Clams LLC--Mason 1	Letter of Permission	Issued With Special Conditions	07/23/2021	-123.01931	47.15442
Seattle	NWS-2021-00603	David Phinney and Karen Oliver	Phinney, David and Karen Oliver	Letter of Permission	Issued Without Special Conditions	07/27/2021	-120.2107	47.912
Seattle	NWS-2017-00103-AQ	Joe Rae-R-Bay Seafoods	R-Bay Seafoods (Rae Parcel)	Letter of Permission	Issued With Special Conditions	07/27/2021	-123.04771	47.2343
Seattle	NWS-2013-00598-AQ	Diani Taylor-Taylor Shellfish Farms	Taylor Shellfish Farms (Haley Shellfish Farm)	Letter of Permission	Issued With Special Conditions	07/27/2021	-122.7929	47.29442
Seattle	NWS-2020-00600-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms	Letter of Permission	Issued With Special Conditions	07/29/2021	-122.97929	47.14433
Seattle	NWS-2007-01181-AQ	Ian Child-Sound Shellfish Company, Natalie Child-Sound Shellfish Company	Sound Shellfish	Letter of Permission	Issued With Special Conditions	07/29/2021	-123.05034	47.23047
Seattle	NWS-2009-01397-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Dosewallips State Lease)	Letter of Permission	Issued With Special Conditions	07/29/2021	-122.89191	47.70185
Seattle	NWS-2015-00264-AQ	Greg and Anne Reub	Geoducks Unlimited LLC (Dibble Property)	Letter of Permission	Issued With Special Conditions	07/29/2021	-122.94048	47.18021
Seattle	NWS-2012-00752-AQ	Mark Schaffel-Northwest Shellfish Co. Inc.	Northwest Shellfish Company (Thurston County Geoduck Farm)	Letter of Permission	Issued With Special Conditions	07/29/2021	-122.96265	47.12012
Seattle	NWS-2007-01152-AQ	James Smith-Deep Blue Seafood	Deep Blue Seafood (Aquaculture)	Letter of Permission	Issued With Special Conditions	08/02/2021	-122.71929	47.81262
Seattle	NWS-2017-00283-AQ	Miranda L's Oysters, Rosalino Lopez-Miranda L's Oysters	Miranda L's Oysters (Totten Inlet)	Letter of Permission	Issued With Special Conditions	08/02/2021	-122.9958	47.16531
Seattle	NWS-2009-01135-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/03/2021	-123.06647	47.22694
Seattle	NWS-2009-01123-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued Without Special Conditions	08/03/2021	-123.06542	47.22755
Seattle	NWS-2007-01255-AQ	Taylor Shellfish Farms	Taylor Shellfish (Sparby Lease)	Letter of Permission	Issued With Special Conditions	08/03/2021	-123.03955	47.20558
Seattle	NWS-2008-00524-AQ		Taylor Shellfish - Mason 37	Letter of Permission	Issued With Special Conditions	08/03/2021	-122.99836	47.16409
Seattle	NWS-2016-00591-AQ	Jamie Courtney-Washington State Seafood LLC	Washington State Seafood LLC (Oyster Farm)	Letter of Permission	Issued With Special Conditions	08/04/2021	-122.9523	47.58639
Seattle	NWS-2021-00164-AQ		Wallin's Oysters - Little Skookum Leases	Letter of Permission	Issued With Special Conditions	08/04/2021	-123.18303	47.35032
Seattle	NWS-2012-00693-AQ	Kenichi Wiegardt-Wiegardt & Sons, Inc	Wiegardt & Sons, Inc. (Aquaculture)	Letter of Permission	Issued With Special Conditions	08/04/2021	-124.01948	46.59735
Seattle	NWS-2007-01230-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--Mason 7	Letter of Permission	Issued With Special Conditions	08/04/2021	-122.9667	47.16858
Seattle	NWS-2009-01132-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/05/2021	-123.06608	47.22716
Seattle	NWS-2019-00867-AQ	Taylor Shellfish Farms	Taylor Shellfish Farms (Madden/Young Lease)	Letter of Permission	Issued With Special Conditions	08/05/2021	-122.95442	47.18693
Seattle	NWS-2007-01269-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/06/2021	-123.04488	47.242
Seattle	NWS-2016-01191-AQ	Tony Forsman-Suquamish Seafood Enterprises (SSE), Suquamish Tribe	Suquamish Seafood Enterprises (Agate Passage Oyster Cultivation)	Letter of Permission	Issued With Special Conditions	08/06/2021	-122.60276	47.69617

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Seattle	NWS-2007-01131-AQ	Mark Sawyer-Buck Bay Shellfish Farm	Buck Bay Shellfish	Letter of Permission	Issued With Special Conditions	08/06/2021	-122.83211	48.61982
Seattle	NWS-2011-00713-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish-Burley Lagoon Shellfish Farm - FLUPSY	Letter of Permission	Issued With Special Conditions	08/06/2021	-122.63353	47.39099
Seattle	NWS-2020-01215-AQ		Taylor Shellfish Farms (Willapa MA1)	Letter of Permission	Issued With Special Conditions	08/06/2021	-123.93817	46.6735
Seattle	NWS-2007-01395-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	08/06/2021	-122.78691	47.13284
Seattle	NWS-2007-01398-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish, Barbara Taylor Lease	Letter of Permission	Issued With Special Conditions	08/11/2021	-122.91949	47.1661
Seattle	NWS-2010-00486-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Whitmore)	Letter of Permission	Issued With Special Conditions	08/12/2021	-122.86996	47.27322
Seattle	NWS-2020-00604-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms (Hammersley)	Letter of Permission	Issued With Special Conditions	08/12/2021	-123.03594	47.20558
Seattle	NWS-2008-00515-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish, Dekker Lease	Letter of Permission	Issued With Special Conditions	08/13/2021	-123.00553	47.12836
Seattle	NWS-2007-01367-AQ	Ian Child-Sound Shellfish Company, James Child-Sound Shellfish Inc.	Sound Shellfish Inc.	Letter of Permission	Issued With Special Conditions	08/13/2021	-122.94369	47.14416
Seattle	NWS-2014-00330-AQ	Hui Xia-Henderson Shellfish, Hui Xia-Net Venture Farms, INC	Duncan Geoduck Aquaculture	Letter of Permission	Issued With Special Conditions	08/16/2021	-122.91969	47.16537
Seattle	NWS-2015-00568-AQ	Van Helker-Set & Drift, LLC (Shellfish Farm)	Set & Drift, LLC (Shellfish Farm)	Letter of Permission	Issued With Special Conditions	08/16/2021	-122.70508	47.82343
Seattle	NWS-2009-01327-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/17/2021	-123.02244	47.1511
Seattle	NWS-2007-01263-AQ	Diane Cooper-Taylor Shellfish, Taylor Shellfish Farms	Taylor Shellfish, Tecca/Albice Lease	Letter of Permission	Issued With Special Conditions	08/17/2021	-122.92192	47.2277
Seattle	NWS-2008-00502-AQ	Jonathan Davis-Hood Canal Mariculture, Michael Rosenthal-Hood Canal Mariculture	Hood Canal Mariculture	Letter of Permission	Issued With Special Conditions	08/18/2021	-122.61386	47.88379
Seattle	NWS-2020-00990-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish Farms (Heise Oakland Bay Lease)	Letter of Permission	Issued With Special Conditions	08/18/2021	-123.06096	47.21907
Seattle	NWS-2007-01249-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Gilbert Schoos Tidelands)	Letter of Permission	Issued With Special Conditions	08/18/2021	-122.81465	47.36795
Seattle	NWS-2007-01413-AQ	Diane Cooper	Taylor Shellfish (Dosewallips Farm)	Letter of Permission	Issued With Special Conditions	08/19/2021	-122.88817	47.696
Seattle	NWS-2010-00983-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish (North Totten Inlet Mussel Farm)	Letter of Permission	Issued With Special Conditions	08/20/2021	-122.96067	47.15891
Seattle	NWS-2020-00988-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish Farms (Heise Totten Lease)	Letter of Permission	Issued With Special Conditions	08/24/2021	-123.00146	47.16181
Seattle	NWS-2015-00672-AQ	Ralph Riccio-Jamestown S'Klallam Tribe	Jamestown S'Klallam Tribe (Floating Upweller System)	Letter of Permission	Issued With Special Conditions	08/24/2021	-123.04123	48.06248
Seattle	NWS-2007-01397-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/25/2021	-122.98592	47.09244
Seattle	NWS-2007-01211-AQ	Paul Williams-Aquaduck LLC	Aquaduck LLC Geoduck Farm	Letter of Permission	Issued With Special Conditions	08/25/2021	-122.74738	47.18489
Seattle	NWS-2014-00066-AQ	Diani Taylor-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish, Berliner Lease	Letter of Permission	Issued With Special Conditions	08/26/2021	-122.863	47.23725
Seattle	NWS-2009-01322-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/27/2021	-123.04166	47.10987
Seattle	NWS-2010-01281-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	08/27/2021	-122.83681	47.32406
Seattle	NWS-2018-00031-AQ	John Heckes-Heckes Clams Inc.	Heckes Clams Inc. (FLUPSY)	Letter of Permission	Issued With Special Conditions	08/31/2021	-124.0276	46.5004
Seattle	NWS-2007-01299-AQ	James Child-Sound Shellfish Inc	Sound Shellfish Inc.--Mason 1	Letter of Permission	Issued With Special Conditions	09/01/2021	-122.99946	47.20581
Seattle	NWS-2016-01018-AQ	Stephen Seymour-Drayton Harbor Oyster Company (DHOC) LLC	Drayton Harbor Oyster Company LLC (Aquaculture)	Letter of Permission	Issued With Special Conditions	09/01/2021	-122.75827	48.98406
Seattle	NWS-2007-01415-AQ	Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish, Dabob Farm (Jefferson 3)	Letter of Permission	Issued With Special Conditions	09/03/2021	-122.8237	47.82107
Seattle	NWS-2009-00643-AQ	Drew Babare-Babare Brothers Shellfish Farms, LLC	Babare Bros. Inc. (Oakland Bay Aquaculture)	Letter of Permission	Issued With Special Conditions	09/03/2021	-123.04708	47.23683
Seattle	NWS-2009-00681-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	09/03/2021	-122.78195	47.12695
Seattle	NWS-2018-00058-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish Farms (Potter Tidelands	Letter of Permission	Issued With Special Conditions	09/03/2021	-122.78961	47.14479
Seattle	NWS-2007-01260-AQ	Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	09/09/2021	-122.83229	47.32441
Seattle	NWS-2007-01248-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Butson LLC Tidelands)	Letter of Permission	Issued With Special Conditions	09/10/2021	-122.81486	47.36856
Seattle	NWS-2014-00067-AQ	Derek Epps-Gooey Duck LLC	Taylor Shellfish, Epps Lease	Letter of Permission	Issued With Special Conditions	09/10/2021	-122.86237	47.23677
Seattle	NWS-2020-00606-AQ	Kyle Lentz-Chelsea Farms	Chelsea Farms, Harstine	Letter of Permission	Issued With Special Conditions	09/16/2021	-122.86487	47.239
Seattle	NWS-2016-01017-AQ	David Steele-Rock Point Oyster Company, Inc.	Rock Point Oyster Company, Inc. (Quilcene Aquaculture)	Letter of Permission	Issued With Special Conditions	09/17/2021	-122.85369	47.81069
Seattle	NWS-2010-00489-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC-Benton	Letter of Permission	Issued With Special Conditions	09/17/2021	-122.85887	47.28623
Seattle	NWS-2007-01251-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Mike Tice Tidelands)	Letter of Permission	Issued With Special Conditions	09/17/2021	-122.81473	47.36819
Seattle	NWS-2012-01193-AQ	Tim Morris-Coast Seafoods Company	Coast Seafoods Co (Aquaculture)	Letter of Permission	Issued With Special Conditions	09/17/2021	-124.1303	47.004
Seattle	NWS-2007-01266-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish (Tyrone Rauschert Tidelands)	Letter of Permission	Issued With Special Conditions	09/17/2021	-122.85445	47.31023
Seattle	NWS-2007-01247-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Edwina Bent Trustee Tidelands)	Letter of Permission	Issued With Special Conditions	09/17/2021	-122.81433	47.36753
Seattle	NWS-2007-01210-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish (Meyer Lease)	Letter of Permission	Issued With Special Conditions	09/22/2021	-122.79398	47.32127
Seattle	NWS-2009-00882-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood -Wyeth	Letter of Permission	Issued With Special Conditions	09/22/2021	-122.83976	47.15451

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Seattle	NWS-2011-00938-AQ	Annie Fitzgerald, Annie Price-A&K Shellfish LLC DBA Dabob Bay Oyster Co.	A and K Shellfish, LLC	Letter of Permission	Issued With Special Conditions	09/24/2021	-122.81811	47.71295
Seattle	NWS-2009-01338-AQ	Tim Morris-Coast Seafoods Company	Coast Seafoods Company	Letter of Permission	Issued With Special Conditions	09/24/2021	-124.05789	46.90856
Seattle	NWS-2007-01497-AQ	Tim Morris-Coast Seafoods Company	Coast Seafoods Company - Willapa - Kemmer Sink DNR Lease	Letter of Permission	Issued With Special Conditions	09/28/2021	-123.99275	46.57064
Seattle	NWS-2007-01232-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Wilson-WG Intertidal)	Letter of Permission	Issued With Special Conditions	09/28/2021	-122.96918	47.16878
Seattle	NWS-2017-00891-AQ	David Steele-Rock Point Oyster Company, Inc.	Rock Point Oyster Company Inc (Quilcene-Halcyon Shellfish Farm)	Letter of Permission	Issued With Special Conditions	09/28/2021	-122.84779	47.80904
Seattle	NWS-2020-00276-AQ	Annie Price-A&K Shellfish LLC DBA Dabob Bay Oyster Co, Patrick Yamashita-Western Oyster Properties	Western Oyster Properties (DNR Lease 20-B09307)	Letter of Permission	Issued With Special Conditions	09/28/2021	-122.81628	47.71468
Seattle	NWS-2016-01064-AQ	David Steele-Rock Point Oyster Company	Rock Point Oyster Company, Inc. (Broad Spit Aquaculture)	Letter of Permission	Issued With Special Conditions	09/29/2021	-122.82042	47.81219
Seattle	NWS-2016-00751-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC, SGI South Shellfish Farm	Letter of Permission	Issued With Special Conditions	09/30/2021	-122.85717	47.17547
Seattle	NWS-2007-01293-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--McLean Intertidal	Letter of Permission	Issued With Special Conditions	09/30/2021	-122.96937	47.16882
Seattle	NWS-2020-01200-AQ	Troy Morris-Calm Cove Shellfish Co	Germeau-Calm Cove Shellfish	Letter of Permission	Issued With Special Conditions	09/30/2021	-122.89562	47.70562
Seattle	NWS-2017-01104-AQ	Caron DeNotta-D.D. DeNotta LLC	D.D. DeNotta Wild Shellfish Farm (Huson Lease)	Letter of Permission	Issued With Special Conditions	10/01/2021	-123.05333	47.36759
Seattle	NWS-2009-00642-AQ	Drew Babare-Babare Brothers Shellfish Farms, LLC	Babare Bros. Inc (Dabob Aquaculture)	Letter of Permission	Issued With Special Conditions	10/04/2021	-122.81408	47.8411
Seattle	NWS-2018-00485-AQ	Bill Taylor-Taylor Shellfish Farms	Taylor Shellfish (Kao Lease)	Letter of Permission	Issued With Special Conditions	10/07/2021	-122.79497	47.32085
Seattle	NWS-2007-01297-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Wilson White Intertidal)	Letter of Permission	Issued With Special Conditions	10/07/2021	-122.96635	47.16848
Seattle	NWS-2018-00483-AQ	Bill Taylor-Taylor Shellfish Farms	Taylor Shellfish (Torgeson Lease)	Letter of Permission	Issued With Special Conditions	10/07/2021	-122.79446	47.32153
Seattle	NWS-2018-00484-AQ	Bill Taylor-Taylor Shellfish Farms	Taylor Shellfish (Roosa Lease)	Letter of Permission	Issued With Special Conditions	10/07/2021	-122.79512	47.3205
Seattle	NWS-2017-00578-AQ	Arcadia Point Seafood	Arcadia Point Seafood (Bodin Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	10/08/2021	-122.98266	47.17013
Seattle	NWS-2013-00220-AQ	David Hawkins-Upper Skagit Indian Tribe	Upper Skagit Indian Tribe (aquaculture)	Letter of Permission	Issued With Special Conditions	10/13/2021	-122.47948	48.58027
Seattle	NWS-2019-00074-AQ	Logan Sander-Moonlight Oyster	Moonlight Oyster (Price Lease)	Letter of Permission	Issued With Special Conditions	10/13/2021	-122.70302	48.04573
Seattle	NWS-2017-00471-AQ	Henderson Shellfish	Net Venture Farms, Inc. (Hermeston & Hoerling Lease)	Letter of Permission	Issued With Special Conditions	10/13/2021	-122.92018	47.16413
Seattle	NWS-2016-00507-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish Farms (Bruce Zeller Lease)	Letter of Permission	Issued With Special Conditions	10/14/2021	-122.95448	47.18061
Seattle	NWS-2019-00677-AQ	James Padden-Padden Seafood, Inc	Padden, James (Padden Seafood)	Letter of Permission	Issued With Special Conditions	10/14/2021	-122.91091	47.38966
Seattle	NWS-2016-00508-AQ	Taylor Shellfish Farms	Taylor Shellfish Farms (Matthew Trowbridge Lease)	Letter of Permission	Issued With Special Conditions	10/15/2021	-122.95507	47.17755
Seattle	NWS-2021-00812-AQ	Caron DeNotta-D.D. DeNotta LLC	D.D. DeNotta LLC	Letter of Permission	Issued With Special Conditions	10/15/2021	-122.88285	47.40957
Seattle	NWS-2012-00387-AQ	Joe Rae-R-Bay Seafood	R-Bay Seafood (Oakland First)	Letter of Permission	Issued With Special Conditions	10/15/2021	-123.02133	47.25347
Seattle	NWS-2016-00509-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish Farms (Joseph Peters Lease)	Letter of Permission	Issued With Special Conditions	10/15/2021	-122.95447	47.18013
Seattle	NWS-2012-01192-AQ	Tim Morris-Coast Seafoods Company	Pacific Shellfish Grays Harbor LLC	Letter of Permission	Issued With Special Conditions	10/15/2021	-124.02514	46.98038
Seattle	NWS-2007-01404-AQ	Hui Xia-Net@Ventures, Inc	Net @Ventures, Inc.	Letter of Permission	Issued With Special Conditions	10/15/2021	-122.96194	47.12673
Seattle	NWS-2021-00815-AQ	Caron DeNotta-D.D. DeNotta LLC	D.D. DeNotta LLC Middleton Shellfish Farm	Letter of Permission	Issued With Special Conditions	10/18/2021	-122.88186	47.40967
Seattle	NWS-2016-00510-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish Farms (Zeller Family Lease)	Letter of Permission	Issued With Special Conditions	10/18/2021	-122.9553	47.17718
Seattle	NWS-2019-00198-AQ	Steven Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Chambers-Rowson Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	10/18/2021	-122.9849	47.16921
Seattle	NWS-2020-01187-AQ	Robert Knapp-Jamestown S'Klallam Tribe	Jamestown S'Klallam Tribe	Letter of Permission	Issued With Special Conditions	10/19/2021	-122.9995	48.02561
Seattle	NWS-2010-00487-AQ	James Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	10/20/2021	-122.86039	47.28484
Seattle	NWS-2008-00536-AQ	Erin Ewald-Taylor Shellfish	Taylor Shellfish, Smith Lease	Letter of Permission	Issued With Special Conditions	10/21/2021	-122.92099	47.24815
Seattle	NWS-2009-00881-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood-Talaber	Letter of Permission	Issued With Special Conditions	10/22/2021	-122.84012	47.15419
Seattle	NWS-2009-00940-AQ	Bill Perkins-Perkins Family Farms, Hui Xia-Net@Venture, Inc., Steve Hubregsen-Rising Tide LLC	Perkins Family Farms (De Bakker Lease)	Letter of Permission	Issued With Special Conditions	10/22/2021	-122.84011	47.15705
Seattle	NWS-2009-00684-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	10/28/2021	-122.78331	47.12678
Seattle	NWS-2009-00685-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Kiekhaefer Lease)	Letter of Permission	Issued With Special Conditions	10/28/2021	-122.78368	47.12671
Seattle	NWS-2016-01104-AQ	Jeromy Sullivan-Jamestown S'Kllalam Tribe and Port Gamble S'Klallam Tribe, Ron Allen-Jamestown S'Kllalam Tribe and Port Gamble S'Klallam Tribe	Jamestown S'Klallam Tribe and Port Gamble S'Klallam Tribe (Point No Point Aquaculture)	Letter of Permission	Issued With Special Conditions	10/29/2021	-122.80218	47.82918
Seattle	NWS-2007-01421-AQ	Antony Barran-Willapa Wild LLC	Willapa Wild LLC - Oyster Farm	Letter of Permission	Issued With Special Conditions	11/02/2021	-123.93303	46.67251
Seattle	NWS-2017-00284-AQ	Miranda L's Oysters	Miranda L's Oysters (Lilliwap Hood Canal)	Letter of Permission	Issued With Special Conditions	11/03/2021	-123.09878	47.46509
Seattle	NWS-2007-01228-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--Mason 5	Letter of Permission	Issued With Special Conditions	11/09/2021	-122.94319	47.19317

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Seattle	NWS-2007-01231-AQ	Steve and Vicki Wilson-Arcadia Point Seafood	Arcadia Point Seafood--Mason 8	Letter of Permission	Issued With Special Conditions	11/09/2021	-122.87683	47.17325
Seattle	NWS-2017-00449-AQ	Carol Farms LLC	Carol Shellfish Farms LLC (#139856)	Letter of Permission	Issued With Special Conditions	11/10/2021	-122.93912	47.2164
Seattle	NWS-2021-00814-AQ	Caron DeNotta-D.D. DeNotta LLC	D.D. DeNotta LLC Broere Tideland	Letter of Permission	Issued With Special Conditions	11/16/2021	-122.76974	47.66265
Seattle	NWS-2007-01271-AQ	Becky Schayten-Becky's Bivalves	Becky's Bivalves	Letter of Permission	Issued With Special Conditions	11/18/2021	-123.01385	47.15339
Seattle	NWS-2017-00785-AQ	Julie Barber-Swimomish Indian Tribal Community	Swinomish Indian Tribal Community (Similk aquaculture)	Letter of Permission	Issued With Special Conditions	11/22/2021	-122.57653	48.44422
Seattle	NWS-2009-01431-AQ	Erika Buck-FMO Aquaculture	Lytle Seafoods, LLC	Letter of Permission	Issued With Special Conditions	11/22/2021	-124.05586	46.86121
Seattle	NWS-2009-01432-AQ	Tim Morris-Pacific Shellfish/Pacific Seafood Company	Lytle Seafoods Aquaculture	Letter of Permission	Issued With Special Conditions	11/23/2021	-124.06569	46.88939
Seattle	NWS-2009-01434-AQ	Tim Morris-Pacific Shellfish/Pacific Seafood Company	Lytle Seafoods	Letter of Permission	Issued With Special Conditions	11/23/2021	-124.06058	46.88766
Seattle	NWS-2007-01401-AQ		Taylor Shellfish, Pults Tidelands	Letter of Permission	Issued With Special Conditions	11/23/2021	-122.96341	47.12284
Seattle	NWS-2008-01567-AQ	Taylor Shellfish Farms	Taylor Shellfish, Lockhart Geoduck Farm	Letter of Permission	Issued With Special Conditions	11/23/2021	-122.84211	47.16164
Seattle	NWS-2009-01433-AQ	Erika Wiksten-FMO Aquaculture, Erika Buck-FMO Aquaculture LLC	Lytle Seafoods, LLC	Letter of Permission	Issued With Special Conditions	11/23/2021	-124.05628	46.86163
Seattle	NWS-2009-00686-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	11/23/2021	-122.78376	47.12675
Seattle	NWS-2017-00470-AQ	Henderson Shellfish	Parke Geoduck Aquaculture	Letter of Permission	Issued With Special Conditions	11/23/2021	-122.9202	47.16403
Seattle	NWS-2008-00534-AQ	Diane Cooper-Taylor Shellfish Farms, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish - Steel Lease	Letter of Permission	Issued With Special Conditions	11/24/2021	-122.99204	47.16752
Seattle	NWS-2015-00034-AQ	Steven M. and Vicki M. Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Partlow Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/24/2021	-122.98802	47.16831
Seattle	NWS-2020-01149-AQ	Ken Wiegardt-Wiegardt & Sons Inc.	Wiegardt & Sons, Inc (Red Can Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/26/2021	-123.9908	46.5516
Seattle	NWS-2008-00530-AQ	Diane Cooper-Taylor Shellfish, Taylor Shellfish Farms	Taylor Shellfish - Winkleworld Rental Lease	Letter of Permission	Issued With Special Conditions	11/26/2021	-122.95619	47.17683
Seattle	NWS-2016-00990-AQ	Mark Schaffel-Northwest Shellfish Company, Inc.	Northwest Shellfish Company, Inc. (Old Arcadia Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/29/2021	-123.04043	47.20555
Seattle	NWS-2021-00138-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC (Kissick Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.92162	47.16096
Seattle	NWS-2020-01174-AQ	Catherine Gylys-National Fish & Oyster Co. Inc, John N	National Fish & Oyster Co., Inc. (Merlino Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.816	47.383
Seattle	NWS-2007-01399-AQ	Diane Cooper-Taylor Shellfish	Taylor Shellfish, Emery Lease	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.93833	47.11196
Seattle	NWS-2017-00821-AQ	Cornelis Bakker, Marty Beagle	Bakker, Cornelis (Bakkers Beach geoduck farm)	Letter of Permission	Issued Without Special Conditions	11/29/2021	-122.78798	47.1349
Seattle	NWS-2010-00240-AQ	Kenichi Wiegardt-Wiegardt & Sons Inc.	Wiegardt & Sons Inc.	Letter of Permission	Issued With Special Conditions	11/29/2021	-124.01066	46.58161
Seattle	NWS-2020-00931-AQ	Catherine Gylys-National Fish & Oyster Co. Inc	National Fish & Oyster Co.-Skewis Shellfish Farm	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.816	47.384
Seattle	NWS-2020-01177-AQ	Catherine Gylys-National Fish & Oyster Co. Inc	National Fish & Oyster Co., Inc.(Bender Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.817	47.382
Seattle	NWS-2020-01131-AQ	Catherine Gylys-National Fish & Oyster Company	National Fish & Oyster Co., Inc.(Toebbe Shellfish Farm)	Letter of Permission	Issued With Special Conditions	11/29/2021	-122.96972	47.14601
Seattle	NWS-2015-00019-AQ	Changmook Sohn-Pacific Northwest Aquaculture LLC	Taylor Shellfish - PNW Aquaculture, ChangMook	Letter of Permission	Issued With Special Conditions	12/01/2021	-122.89101	47.14454
Seattle	NWS-2009-00704-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC	Letter of Permission	Issued With Special Conditions	12/01/2021	-122.78625	47.13079
Seattle	NWS-2009-01297-AQ	Tim Morris-Coast Seafoods Company	Coast Seafoods Company Willapa B64	Letter of Permission	Issued With Special Conditions	12/01/2021	-123.94444	46.65954
Seattle	NWS-2007-01368-AQ	Ian Child-Sound Shellfish Company	Sound Shellfish Inc.- Hairston Lease	Letter of Permission	Issued With Special Conditions	12/02/2021	-122.88206	47.15048
Seattle	NWS-2018-00549-AQ	Steven Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Potvin Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	12/02/2021	-122.97479	47.17033
Seattle	NWS-2008-00535-AQ	Diane Cooper-Taylor Shellfish, Erin Ewald-Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	12/02/2021	-122.99316	47.16697
Seattle	NWS-2009-01574-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish	Letter of Permission	Issued With Special Conditions	12/03/2021	-122.78481	47.1284
Seattle	NWS-2009-01576-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish	Letter of Permission	Issued With Special Conditions	12/03/2021	-122.78519	47.12667
Seattle	NWS-2014-00783-AQ	Hui Xia-Henderson Shellfish, Hui Xia-Net Venture Farms, Inc.	Connolly Geoduck Aquaculture	Letter of Permission	Issued With Special Conditions	12/03/2021	-122.91998	47.16474
Seattle	NWS-2007-01335-AQ	Jim Gibbons-Seattle Shellfish LLC	Seattle Shellfish LLC--Mason 8	Letter of Permission	Issued With Special Conditions	12/06/2021	-122.96344	47.16899
Seattle	NWS-2008-00479-AQ	Erin Ewald-Taylor Shellfish Farms, Taylor Shellfish Farms	Taylor Shellfish	Letter of Permission	Issued With Special Conditions	12/06/2021	-122.8357	47.32453
Seattle	NWS-2014-00784-AQ	Hui Xia-Henderson Shellfish	Hanh Geoduck Aquaculture	Letter of Permission	Issued With Special Conditions	12/06/2021	-122.92006	47.16463
Seattle	NWS-2009-00889-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood-Wagner-Richardson	Letter of Permission	Issued With Special Conditions	12/07/2021	-122.83963	47.15496
Seattle	NWS-2009-00943-AQ	Steve Wilson-Arcadia Point Seafood	Arcadia Point Seafood-Theis	Letter of Permission	Issued With Special Conditions	12/08/2021	-122.83966	47.15556
Seattle	NWS-2014-00262-AQ	Steven M. and Vicki M. Wilson-Arcadia Point Seafood	Arcadia Point Seafood (McGuire Lease)	Letter of Permission	Issued With Special Conditions	12/08/2021	-122.96999	47.16877
Seattle	NWS-2013-00188-AQ	Steven Wilson-Arcadia Point Seafood	Arcadia Point Seafood (Wilson-Looney Intertidal Shellfish Farm)	Letter of Permission	Issued With Special Conditions	12/09/2021	-122.96883	47.16864
Seattle	NWS-2009-01459-AQ	James Kemmer-Long Island Oyster Co. Inc.	Long Island Oyster Co.	Letter of Permission	Issued With Special Conditions	12/09/2021	-123.96374	46.4943
Seattle	NWS-2020-01159-AQ	Catherine Gylys-National Fish & Oyster Company	National Fish & Oyster Co.(North Bay, Case Inlet) (Reef Shellfish Farm)	Letter of Permission	Issued With Special Conditions	12/09/2021	-122.815	47.37
Seattle	NWS-2010-01237-AQ	Diane Cooper-Taylor Shellfish, Taylor Shellfish Farms	Taylor Shellfish Farms (Sullivan Farm)	Letter of Permission	Issued With Special Conditions	12/10/2021	-122.97173	47.16914

EXHIBIT B

DECISION DOCUMENT
NATIONWIDE PERMIT 48

This document discusses the factors considered by the Corps of Engineers (Corps) during the issuance process for this Nationwide Permit (NWP). This document contains: (1) the public interest review required by Corps regulations at 33 CFR 320.4(a)(1) and (2); (2) a discussion of the environmental considerations necessary to comply with the National Environmental Policy Act; and (3) the impact analysis specified in Subparts C through F of the 404(b)(1) Guidelines (40 CFR Part 230). This evaluation of the NWP includes a discussion of compliance with applicable laws, consideration of public comments, an alternatives analysis, and a general assessment of individual and cumulative environmental effects, including the general potential effects on each of the public interest factors specified at 33 CFR 320.4(a).

1.0 Text of the Nationwide Permit

Commercial Shellfish Mariculture Activities. Structures or work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States necessary for new and continuing commercial shellfish mariculture operations (i.e., the cultivation of bivalve molluscs such as oysters, mussels, clams, and scallops) in authorized project areas. For the purposes of this NWP, the project area is the area in which the operator is authorized to conduct commercial shellfish mariculture activities, as identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any easement, lease, deed, contract, or other legally binding agreement that establishes an enforceable property interest for the operator.

This NWP authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States. This NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. Rafts and other floating structures must be securely anchored and clearly marked.

This NWP does not authorize:

(a) The cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody;

(b) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990; or

(c) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas, or the deposition of shell material back into waters of the United States as waste.

Notification: The permittee must submit a pre-construction notification to the district engineer if the activity directly affects more than 1/2-acre of submerged aquatic vegetation. If the operator will be conducting commercial shellfish mariculture activities in multiple contiguous project areas, he or she can either submit one PCN for those contiguous project areas or submit a separate PCN for each project area. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: The permittee should notify the applicable U.S. Coast Guard office regarding the project.

Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan.

Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines “aquatic nuisance species” as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.”

1.1 Requirements

General conditions of the NWPs are in the Federal Register notice announcing the issuance of this NWP. Pre-construction notification requirements, additional conditions, limitations, and restrictions are in 33 CFR part 330.

1.2 Statutory Authorities

- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)
- Section 404 of the Clean Water Act (33 U.S.C. 1344)

1.3 Compliance with Related Laws (33 CFR 320.3)

1.3.1 General

Nationwide permits are a type of general permit designed to authorize certain activities that have no more than minimal individual and cumulative adverse

environmental effects and generally comply with the related laws cited in 33 CFR 320.3. Activities that result in more than minimal individual and cumulative adverse environmental effects cannot be authorized by NWPs. Individual review of each activity authorized by an NWP will not normally be performed, except when pre-construction notification to the Corps is required or when an applicant requests verification that an activity complies with an NWP. Potential adverse impacts and compliance with the laws cited in 33 CFR 320.3 are controlled by the terms and conditions of each NWP, regional and case-specific conditions, and the review process that is undertaken prior to the issuance of NWPs.

The evaluation of this NWP, and related documentation, considers compliance with each of the following laws, where applicable: Section 10 of the Rivers and Harbors Act of 1899; Sections 401, 402, and 404 of the Clean Water Act; Section 307(c) of the Coastal Zone Management Act of 1972, as amended; Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended; the National Environmental Policy Act of 1969; the Fish and Wildlife Act of 1956; the Migratory Marine Game-Fish Act; the Fish and Wildlife Coordination Act, the Federal Power Act of 1920, as amended; the National Historic Preservation Act of 1966; the Interstate Land Sales Full Disclosure Act; the Endangered Species Act; the Deepwater Port Act of 1974; the Marine Mammal Protection Act of 1972; Section 7(a) of the Wild and Scenic Rivers Act; the Ocean Thermal Energy Act of 1980; the National Fishing Enhancement Act of 1984; the Magnuson-Stevens Fishery and Conservation and Management Act, the Bald and Golden Eagle Protection Act; and the Migratory Bird Treaty Act. In addition, compliance of the NWP with other Federal requirements, such as Executive Orders and Federal regulations addressing issues such as floodplains, essential fish habitat, and critical resource waters is considered.

The evaluation of this NWP is largely a qualitative evaluation that utilizes available information on the categories of activities authorized by this NWPs, the potential environmental impacts of those authorized activities, potential mitigation measures, and the potential benefits of the authorized activities. The Council on Environmental Quality's regulations at 50 CFR parts 1500 to 1508 for implementing the National Environmental Policy Act do not require quantitative analyses for environmental assessments. Since this NWP authorizes activities across the United States, this environmental assessment uses, available national information supplemented with other available information. The U.S. Environmental Protection Agency's regulations for the Clean Water Act Section 404(b)(1) Guidelines (40 CFR part 230) generally do not require quantitative analyses for determining compliance with those guidelines. For the issuance of a general permit under Section 404 of the Clean Water, the one exception is that the cumulative impact analysis for the proposed issuance of a general permit must include an estimate of the number of discharges of dredged or fill material that general permit is anticipated to be authorized by that general permit during the time period it is in effect (see 40 CFR 230.7(b)(3)). Section 230.7(b)(3) does not require the permitting authority to estimate the amounts of permitted impacts and compensatory mitigation required that are

anticipated to occur during the period the general permit is in effect.

1.3.2 Terms and Conditions

Many NWPs have pre-construction notification requirements that trigger case-by-case review of certain activities. Two NWP general conditions require case-by-case review of all activities that may adversely affect Federally-listed endangered or threatened species or historic properties (i.e., general conditions 18 and 20, respectively). General condition 16 restricts the use of NWPs for activities that are located in Federally-designated wild and scenic rivers. None of the NWPs authorize the construction of artificial reefs. General condition 28 addresses the use of an NWP with other NWPs to authorize a single and complete project, to ensure that the acreage limits of each of the NWPs used to authorize that project are not exceeded.

In some cases, activities authorized by an NWP may require other federal, state, or local authorizations. Examples of such cases include, but are not limited to: activities that are in marine sanctuaries or affect marine sanctuaries or marine mammals; the ownership, construction, location, and operation of ocean thermal conversion facilities or deep water ports beyond the territorial seas; activities that result in discharges of dredged or fill material into waters of the United States and require Clean Water Act Section 401 water quality certification; or activities in a state operating under a coastal zone management program approved by the Secretary of Commerce under the Coastal Zone Management Act. In such cases, a provision of the NWPs states that an NWP does not obviate the need to obtain other authorizations required by law. [33 CFR 330.4(b)(2)]

Additional safeguards include provisions that allow the Chief of Engineers, division engineers, and/or district engineers to: assert discretionary authority and require an individual permit for a specific activity; modify NWPs for specific activities by adding special conditions on a case-by-case basis; add conditions on a regional or nationwide basis to certain NWPs; or take action to suspend or revoke an NWP or NWP authorization for activities within a region or state. Regional conditions are imposed to protect important regional concerns and resources. [33 CFR 330.4(e) and 330.5]

1.3.3 Review Process

The analyses in this document and the coordination that was undertaken prior to the issuance of the NWP fulfill the requirements of the National Environmental Policy Act (NEPA), the Fish and Wildlife Coordination Act, and other acts promulgated to protect the quality of the environment.

All NWPs that authorize activities that may result in discharges into waters of the United States require compliance with the water quality certification requirements of Section 401 of the Clean Water Act. Nationwide permits that authorize activities within, or affecting land or water uses within a state that has a Federally-approved

coastal zone management program, must also be certified as consistent with the state's program, unless a presumption of concurrence occurs. The procedures to ensure that the NWPs comply with these laws are described in 33 CFR 330.4(c) and (d), respectively.

1.4 Public Comments and Responses

For a summary of the public comments received in response to the September 15, 2020, Federal Register notice, refer to the preamble in the Federal Register notice announcing the reissuance of this NWP. The substantive comments received in response to the September 15, 2020, Federal Register notice were used to improve the NWP by changing NWP terms and limits, notification requirements, and/or NWP general conditions, as necessary.

The Corps proposed a number of modifications to this NWP. The Corps proposed to change the title of this NWP from "Commercial Shellfish Aquaculture Activities" to "Commercial Shellfish Mariculture Activities" to more accurately reflect where these activities are conducted (i.e., coastal waters). The Corps also proposed to remove the 1/2-acre limit for new activities that have direct effects on submerged aquatic vegetation in project areas that that have not been used for commercial shellfish aquaculture activities during the past 100 years. In addition to the proposed removal of that 1/2-acre limit, the Corps proposed to remove the definition of "new commercial shellfish aquaculture operation" that was adopted in 2017. Also, the Corps proposed to remove both PCN thresholds for this NWP, as well as the paragraph that identifies the additional information that permittees must submit with their NWP 48 PCNs.

The Corps changed the title of this NWP to "Commercial Shellfish Mariculture Activities" because the NWP only authorizes activities in coastal waters. Mariculture is the cultivation of organisms in marine and estuarine open water environments (NRC 2010). The term "aquaculture" refers to a broad spectrum of production of aquatic organisms. In the United States aquaculture activities encompass the production of marine and freshwater finfish, as well as shellfish (bivalve molluscs and crustaceans). Oysters, clams, mussels, and scallops are examples of bivalve molluscs (bivalves). Since aquaculture activities in the United States include both water-based and land-based activities, we use the term "mariculture" in NWPs 48, 55 (seaweed mariculture activities), and 56 (finfish mariculture activities) to make it clear that these NWPs only authorize activities in marine and estuarine waters.

In response to the October 10, 2019 decision of the United States District Court, Western District of Washington at Seattle in the *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps of Engineers et al.* (Case No. C16-0950RSL) and *Center for Food Safety v. U.S. Army Corps of Engineers et al.* (Case No. C17-1209RSL), the Corps has made substantial revisions to the national decision document for NWP 48. The revisions addressed, to the extent appropriate, issues

identified in the district court's decision. A copy of the final national decision document is available in the docket at www.regulations.gov (COE-2020-0002).

The national decision document for the 2021 NWP 48 provides a more thorough discussion of the direct and indirect impacts caused by commercial shellfish mariculture activities. The national decision document also uses a broader set of scientific literature to support that discussion of potential effects to various resources and the human environment. The national decision document does not focus solely on oyster mariculture; rather, it also discusses mariculture activities for other bivalve species, such as clams, mussels, and scallops. The national decision document presents a more detailed discussion of the potential impacts of commercial shellfish mariculture activities on aquatic vegetation other than seagrasses, benthic communities, fish, birds, water quality, and substrate characteristics.

The national decision document provides a more thorough discussion of how the Corps applies its two permitting authorities to commercial shellfish mariculture activities (i.e., Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act). It discusses the types of activities regulated under those authorities and their potential environmental consequences. In addition, the national decision document provides a more rigorous analysis to support a finding, at a national level, that the NWP would authorize only those commercial shellfish mariculture activities that have no more than minimal individual and cumulative adverse environmental effects. The national decision document explains that division engineers retain the authority to modify, suspend, or revoke NWP 48 on a regional basis (see 33 CFR 330.5(c)). It further discusses the authority of district engineers to modify, suspend, or revoke NWP 48 on a case-by-case basis (see 33 CFR 330.5(d)) if impacts of an activity proposed for authorization using NWP 48 has more than a minimal adverse effect on the environment. A copy of the national decision document for the 2021 NWP 48 is available in the www.regulations.gov docket for this rulemaking action (docket number COE-2020-0002).

Commercial shellfish mariculture activities involve the production of bivalves such as oysters, mussels, clams, and scallops. These activities occur in marine and estuarine coastal waters of the United States. As discussed above, the Corps regulates commercial shellfish mariculture activities under two of its permitting authorities: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Under Section 10 of the Rivers and Harbors Act of 1899, the Corps regulates structures and work in navigable waters of the United States. Under Section 404 of the Clean Water Act, the Corps regulates discharges of dredged or fill material into waters of the United States.

Nationwide permit 48 authorizes structures or work in navigable waters of the United States for commercial shellfish mariculture activities when DA permits are required by Section 10 the Rivers and Harbors Act of 1899. The Corps' regulations for Section 10 of the Rivers and Harbors Act of 1899 in 33 CFR part 322 define the

term “structure” as including, “without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other obstacle or obstruction.” [33 CFR 322.2(b)] Commercial shellfish mariculture activities usually involve structures such as cages, racks, nets, pilings, lines, trays, tubes, ropes, and bouchots (i.e., piles wrapped in rope for cultivating mussels) placed in navigable waters to cultivate bivalves.

Oysters may be cultivated using structures such as cages, trays, racks, bags, and lines. Oyster mariculture may be conducted through on-bottom or off-bottom techniques (NRC 2010). Clams are generally cultivated through on-bottom techniques because the commercially produced species are infaunal organisms that grow in the substrate of waterbodies (NRC 2010). Clam mariculture may involve the use of structures such as tubes and anti-predator netting. Mussels may be cultivated by attaching mussel brood stock or seed to ropes, which are suspended in the water column from a floating raft. Mussels may also be grown on ropes attached to pilings (bouchots) (McKindsey et al. 2011), or in cages, trays, or racks. Mussels may also be cultivated through on-bottom or off-bottom culture methods (NRC 2010). For example, mussels may be grown on ropes suspended in the water column from a raft, or via bottom culture. Scallops may be attached to ropes via monofilament lines tied through a small hole drilled into the shell (Robinson et al. 2016), a technique called “ear hanging.”

The installation and use of structures such as racks, cages, bags, lines, nets, and tubes, in navigable waters for commercial bivalve shellfish mariculture activities in navigable waters requires DA authorization under Section 10 of the Rivers and Harbors Act of 1899. Department of the Army authorization is required under Section 10 of the Rivers and Harbors Act of 1899 for all structures and/or work in or affecting navigable waters of the United States, except for activities identified in section 322.4 of the Corps’ section 10 regulations (see 33 CFR 322.3). The exceptions in section 322.4 are limited to: (a) activities that were commenced or completed shoreward of established federal harbor lines before May 27, 1970; and (b) wharves and piers construct in any waterbody, located entirely within one state where the waterbody is a navigable water of the United States solely on the basis of its historical use to transport interstate commerce. None of these exceptions apply to structures or work for commercial shellfish mariculture activities. In the Corps’ section 10 regulations, there is no de minimis exception from the requirement to obtain DA authorization for structures and work in navigable waters of the United States. Any structure or work that alters or obstructs navigable waters of the United States requires section 10 authorization from the Corps. With respect to structures used for shellfish mariculture activities, those structures require section 10 authorization because they alter navigable waters of the United States even though there might be circumstances where they might not obstruct navigation.

Commercial shellfish mariculture structures may be floating or suspended in

navigable waters, placed on the bottom of the waterbody, or installed in the substrate of the waterbody. The placement of mariculture structures in the water column or on the bottom of a waterbody does not result in a discharge of dredged or fill material that is regulated under section 404 of the Clean Water Act. While the presence of these structures in a waterbody may alter water movement and cause sediment to fall out of suspension onto the bottom of the waterbody, that sediment deposition is not considered a discharge of dredged or fill material because those sediments were not discharged from a point source. In general, the placement of bivalve shellfish mariculture structures on the bottom of a navigable waterbody, or into the substrate of a navigable waterbody does not result in discharges of dredged or fill material into waters of the United States that are regulated under Section 404 of the Clean Water Act.

The Corps' section 10 regulations define the term "work" as including, "without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States." [33 CFR 322.2(c)] Under this NWP, the section 10 authorization applies to discharges of dredged or fill material into waters of the United States that are also navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Commercial shellfish mariculture activities often involve work that requires authorization under Section 10 of the Rivers and Harbors Act, such as harvesting and bed preparation activities. Bed preparation activities may include tilling or harrowing activities, or the placement of shell or gravel to provide substrate suitable for the establishment and growth of bivalves via bottom culture.

Commercial shellfish mariculture activities that only require authorization under Section 10 of the Rivers and Harbors Act of 1899 are evaluated under the Corps' public interest review process at 33 CFR 320.4. The Clean Water Act Section 404(b)(1) Guidelines issued by the U.S. EPA do not apply to activities authorized by the Corps under its section 10 authority because those guidelines only apply to activities that require authorization under Section 404 of the Clean Water Act. The 404(b)(1) Guidelines do not apply to section 10 activities that may directly or indirectly impact special aquatic sites such as vegetated shallows (i.e., submerged aquatic vegetation).

Section 101(a)(2) of the Clean Water Act states that "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983." [33 USC 1251(a)(2)] In other words, one of the goals of the Clean Water Act is to promote water quality that supports the propagation of fish and shellfish, in addition to other uses of waters of the United States.

The Clean Water Act regulates discharges of pollutants into waters of the United States. See 33 USC 1311(a). Section 502(6) of the Clean Water Act defines the term "pollutant" as meaning "dredged spoil, solid waste, incinerator residue,

sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." Section 502(12) of the Clean Water Act defines the terms "discharge of a pollutant" and "discharge of pollutants" as meaning: any addition of any pollutant to navigable waters from any point source, or any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.

Point source discharges of pollutants are regulated under Sections 402 and 404 of the Clean Water Act. Under Section 402 of the Clean Water Act, the U.S. EPA authorized state agencies to regulate a variety of pollutants that may be discharged into waters of the United States via a point source. Under Section 404 of the Clean Water Act, the Corps regulates discharges of dredged or fill material into waters of the United States. Discharges of dredged or fill material into waters of the United States that require section 404 permits must comply with the Clean Water Act section 404(b)(1) Guidelines issued by the U.S. EPA at 40 CFR part 230.

The term "pollutant" does not include the placement of shellfish seed or bivalves at various stages of growth into jurisdictional waters, or the waste products (e.g., feces or pseudofeces, ammonium) excreted by bivalves. In *Association to Protect Hammersley, Eld, and Totten Inlets v. Taylor Res., Inc.*, 299 F.3d 1007 (9th Cir. 2002), the court concluded that Congress did not intend that living bivalves and the natural chemicals and particulate biological matter they release through normal physiological processes, or the shells that might be separated from living bivalves from time to time, be considered pollutants under the Clean Water Act. In other words, bivalve shells and natural waste products excreted by living bivalves are not "biological materials" under the Clean Water Act's definition of "pollutant" because shells and natural waste products come from the natural growth and development of bivalves and not from a transformative human process.

The EPA's National Summary of State Information, water quality assessment and total maximum daily load (TMDL) information1, provides information on the causes of impairment and probable sources of impairment for the Nation's waters, including bays, estuaries, coastal shorelines, ocean waters, and near coastal waters where commercial shellfish mariculture activities may occur. Twenty-eight causes of impairment were identified for bays and estuaries. The top 10 causes of impairment for bays and estuaries are: polychlorinated biphenyls, nutrients, mercury, turbidity, dioxins, toxic organics, metals (other than mercury), pesticides, pathogens, and organic enrichment/oxygen depletion. For bays and estuaries, the top 10 sources of impairment for bay and estuaries are: legacy/historic pollutants, urban-related runoff/stormwater, unknown sources, atmospheric deposition, municipal discharges/sewage, unspecific non-point sources, other sources, natural/wildlife, agriculture, and industrial.

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1 https://iaspub.epa.gov/waters10/attains_nation_cy.control (accessed November 27, 2020)

Coastal shorelines were impaired by 16 identified causes, the top 10 of which are: mercury, pathogens, turbidity, organic enrichment/oxygen depletion, pH/acidity/caustic conditions, nutrients, oil and grease, temperature, cause unknown – impaired biota, and algal growth. The top 10 sources of impairment of coastal shorelines are municipal discharges/sewage, urban-related runoff/stormwater, "unknown," recreational boating and marinas, hydromodification, industrial, unspecified non-point source, agriculture, legacy/historic pollutants, and land application/waste sites/tanks.

Ocean and near coastal waters were impaired by 17 identified causes, the top 10 of which are: mercury, organic enrichment/oxygen depletion, pathogens, metals (other than mercury), pesticides, turbidity, nuisance exotic species, total toxics, pH/acidity/caustic conditions, and polychlorinated biphenyls. The top 10 sources of impairment of ocean and near coastal waters are: atmospheric deposition, unknown sources, unspecified non-point sources, other sources, recreation and tourism (non-boating), recreational boating and marinas, urban-related runoff/stormwater, hydromodification, municipal discharges/sewage, and construction.

None of the top 10 sources of impairment of these categories of waters are directly related to commercial shellfish mariculture activities. Commercial shellfish mariculture activities require clean water to produce bivalve shellfish for human consumption. Further, the ability of bivalves to improve water quality is well understood and their presence in an aquatic ecosystem is considered to be beneficial (e.g., NRC 2010).

Mariculture activities can be classified as extensive or intensive. For extensive mariculture, young organisms are allowed to grow naturally using resources (food, inorganic nutrients) available in marine and estuarine waters until they are harvested (Diana et al. 2009). In intensive mariculture, the young organisms are provided feed to promote their growth before they are harvested. Bivalve shellfish mariculture and seaweed mariculture are examples of extensive mariculture, and for such activities there is no addition of materials (e.g., nutrients) through a point source that might trigger a permit requirement. However, in some cases a pesticide might be applied in waters where bivalve shellfish mariculture occurs (NRC 2010, Simenstad and Fresh 1995). The application of pesticides is not regulated by the Corps under Section 404 of the Clean Water Act, but it may be regulated by EPA or approved states under Section 402 of the Clean Water Act. As discussed in the previous paragraph, the bivalves themselves that are seeded in the waterbody, or are added to the waterbody after a limited grow out period in a nursery facility located on-shore or elsewhere, does not trigger a permit requirement the Clean Water Act because those living organisms are not considered to be pollutants under the Act.

Nationwide permit 48 also authorizes discharges of dredged or fill material into waters of the United States. The Corps' regulations define "dredged material" as "material that is excavated or dredged from waters of the United States." [33 CFR

323.2(c)] The term “discharge of dredged material” is defined at 33 CFR 323.2(d)(1) as meaning “any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States.” The term “discharge of dredged material” includes, but is not limited to: (1) the addition of dredged material to a specified discharge site located in waters of the United States; (2) the runoff or overflow from a contained land or water disposal area; and (3) any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation. [33 CFR 323.2(d)(1)] Some activities associated with commercial shellfish mariculture may result in a discharge of dredged material under the third instance identified above (i.e., redeposit of dredged material other than incidental fallback).

Some commercial shellfish mariculture activities involve mechanical or hydraulic harvesting techniques that may or may not result in discharges of dredged material that require authorization under Section 404 of the Clean Water Act. If the bivalve harvesting activity would result in only incidental fallback of dredged material into the waterbody, a section 404 permit would not be required. (However, a section 10 permit would be required as “work” in navigable waters). A section 404 permit would be required for a mechanical or hydraulic harvesting activity if that activity results in a regulated discharge of dredged material by having more than incidental fallback. Some harvesting activities associated with commercial shellfish mariculture operations may result in the redeposit of dredged material other than incidental fallback within the waters of the United States. For example, dredge harvesting activities may remove sediment along with the bivalves. If the removed sediment is deposited back into the waterbody in a different location, and is more than incidental fallback, then the harvesting activity may be determined by the district engineer to result in a discharge of dredged material that requires section 404 authorization. On the other hand, if the sediment removed while harvesting the bivalves is redeposited in the same location, then it may be considered to be incidental fallback, and not require section 404 authorization.

The Corps’ regulations at 33 CFR 323.2(e)(1) define “fill material” as meaning “material placed in waters of the United States where the material has the effect of: (1) replacing any portion of a water of the United States with dry land; or (2) changing the bottom elevation of any portion of a water of the United States. Examples of fill material include: “rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States.” [33 CFR 323.2(e)(2)] “Fill material” does not include trash or garbage (see 33 CFR 323.2(e)(3)). Discharges of trash or garbage may be regulated under other federal, state, or local laws and regulations. Fill material does not include the placement or release of living organisms, such as bivalve larvae and juvenile bivalves, into waters of the United States.

The term “shellfish seeding” is defined in Section E of the NWPs as the “placement of shellfish seed and/or suitable substrate to increase shellfish production. Bivalve shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.” This definition was adopted in the NWPs in 2007 (see 72 FR 11197). Other materials may be used for bivalve shellfish seeding such as nets, bags, and ropes. Shellfish seed can be produced in a hatchery. Shellfish seed can also be produced in waterbodies where bivalve larvae can attach to appropriate materials, such as shell pieces, bags, or ropes.

Placing shellfish seed on the bottom of a waterbody is not a “discharge of fill material” and thus does not require a section 404 permit. Placing gravel or shell on the bottom of a waterbody to provide suitable substrate for bivalve larvae to attach to is considered to be a “discharge of fill material” and would require section 404 authorization. The shellfish themselves, either growing on the bottom of a waterbody or in nets, bags, or on ropes, are not considered to be “fill material” and do not require a section 404 permit to be emplaced, remain in place, or to be removed from a waterbody.

On-bottom bivalve shellfish mariculture activities may involve placing fill material such as shell or gravel to provide suitable substrate for bivalve larvae to attach to and grow on the bottom of the waterbody. These fill activities may require section 404 authorization. The placement of structures that are used for commercial shellfish mariculture activities, such as cages, bags, racks, tubes, and netting, does not result in discharges of dredged or fill material into waters of the United States and therefore do not require authorization under Section 404 of the Clean Water Act. As discussed above, the placement of cages, bags, racks, tubes, lines, and netting and other structures in navigable waters of the United States for the purposes of commercial shellfish mariculture activities is regulated under Section 10 of the Rivers and Harbors Act of 1899 because they can be potential obstructions to navigation.

In the 2020 Proposal, the Corps proposed to remove the 1/2-acre limit for new commercial shellfish mariculture activities that directly affect submerged aquatic vegetation. The Corps also proposed to remove the definition of “new commercial shellfish mariculture activities.”

Many commenters said that the 1/2-acre limit for direct impacts to submerged aquatic vegetation for new commercial shellfish mariculture activities should be retained because removal of the 1/2-acre could cause significant and permanent losses of submerged aquatic vegetation. One commenter said that allowing new commercial shellfish mariculture activities to directly affect more than 1/2-acre of submerged aquatic vegetation would result in more than minimal adverse environmental effects. A couple of commenters stated that the removal of the 1/2-acre limit for impacts to submerged aquatic vegetation conflicts with submerged

aquatic vegetation goals and restoration efforts in different states. These commenters said that many federal, state, and local agencies are working throughout the country to recover lost submerged aquatic vegetation habitat in support of water quality and ecosystem goals. Removal of the 1/2-acre limit would undermine the investments and progress made to date to recover these important habitats.

The Corps is removing the 1/2-acre limit for new commercial shellfish mariculture activities that directly affect submerged aquatic vegetation in the project area. In place of the 1/2-acre limit, the Corps is substituting a PCN requirement for new and existing commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. This new PCN requirement accompanies the removal of the definition of “new commercial shellfish aquaculture operation” and will provide activity-specific review of all commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. In response to a PCN, the district engineer can add conditions to the NWP authorization to require mitigation, such as best management practices or other mitigation measures, to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

Under the 2017 NWP 48, the 1/2-acre limit only applied to new commercial shellfish mariculture activities. After a new commercial shellfish mariculture activities was authorized by the Corps, the 1/2-acre limit no longer applied to the existing commercial shellfish mariculture activity. In this regard, it was less protective than the NWP 48 in this final rule, which would apply a PCN requirement to existing operations seeking reauthorization. The removal of the 1/2-acre limit in this final rule does not affect the authority of other federal agencies or tribal, state, or local governments to adopt and implement protection programs for submerged aquatic vegetation under their authorities.

Submerged aquatic vegetation does not have any special status under the Corps’ regulations for implementing Section 10 of the Rivers and Harbors Act of 1899, which is the statute that applies to most commercial shellfish mariculture activities. Submerged aquatic vegetation is covered by a number of the Corps’ public interest review factors such as conservation, general environmental conditions, fish and wildlife values, and wetlands. While vegetated shallows are special aquatic sites under the Clean Water Act Section 404(b)(1) Guidelines, the Guidelines do not prohibit discharges of dredged or fill material into vegetated shallows. A smaller proportion of commercial shellfish mariculture activities trigger the permit requirements of Section 404 of the Clean Water Act because many commercial shellfish mariculture activities do not involve discharges of dredged or fill material into waters of the United States. Impacts to submerged aquatic vegetation caused by commercial shellfish mariculture activities may also be addressed through Endangered Species Act Section 7 consultations for proposed NWP 48 activities that district engineers determine “may affect” listed species or designated critical habitat, including critical habitat for which submerged aquatic vegetation is a

physical or biological feature. Impacts to submerged aquatic vegetation may also be addressed through the essential fish habitat consultation process when the district engineer determines a proposed NWP 48 activity may adversely affect essential fish habitat, which may include submerged aquatic vegetation beds.

Several commenters recommended that the Corps propose a revised threshold for seagrass impacts based on biological reference points. These commenters said that this is particularly important in regions where additional provisions to protect seagrasses are not in place and state laws do not impose additional restrictions on eelgrass. One commenter stated that the Corps seeks to remove an impact limitation that would otherwise incentivize responsible siting of mariculture operations and minimization of impacts to submerged aquatic vegetation.

The Corps declines to impose an additional threshold for seagrass impacts based on biological reference points because it would be impractical to establish such biological reference points at a national level for activities requiring authorization under section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act. The threshold to require a PCN for new and existing commercial mariculture operations that impact more than 1/2-acre of submerged aquatic vegetation is sufficient for the purposes of ensuring that a project will have no more than a minimal individual or cumulative adverse environmental impact. If a state decides not to take measures to regulate activities in submerged aquatic vegetation within its own waters, it does not create a legal or regulatory requirement for the Corps to address such situations. The requirements of NWP 48 will continue to provide incentives for commercial shellfish mariculture operators to plan and design their activities to qualify for NWP authorization. As discussed above there are other applicable laws that can address impacts to submerged aquatic vegetation in conjunction with the Corps' NWP authorization. In addition, where necessary based on the characteristics of the regional ecosystem, division engineers can add regional conditions to NWP 48 to help ensure that activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects.

Several commenters supported removing the 2017 definition of "new operation" as it is not relevant to a specific date or timeline. One commenter stated that the Corps has not been able to justify why one set of rules should apply to existing commercial shellfish mariculture operators and another set of rules should apply to everyone else, including new commercial shellfish mariculture operators. This commenter said that if there is a conservation justification for protecting eelgrass and other submerged aquatic vegetation, then limitations on impacts to submerged aquatic vegetation should apply to everyone. One commenter said that removal of this definition failed to identify what it would be replaced with and stated that there needs a definition for new commercial shellfish mariculture activities but it must not conflict with tribal treaty reserved rights to take shellfish.

The Corps has removed the definition of "new commercial shellfish aquaculture

operation" from this NWP. The new 1/2-acre PCN threshold will apply to both new and existing commercial shellfish mariculture activities. All activities authorized by NWP 48 must comply with general condition 17, tribal rights.

One commenter said that the removing the distinction for new operations, with the 1/2-acre limit, will result in more impacts. This commenter asserted that the Corps does little to justify the proposed removal of the 1/2-acre limit, given that it added this limit three years ago to ensure impacts from NWP 48 would be no more than minimal. One commenter recommended adding the following definition for an ongoing or existing activity: existing commercial shellfish aquaculture should be defined as the area under cultivation when NWP 48 was first issued in 2007 or where an operator can document that an area is part of a regular rotation of cultivation.

The 1/2-acre limit for new commercial shellfish mariculture activities was added to NWP 48 in 2012 (see 77 FR 10280). The 1/2-acre limit only applied to new commercial shellfish activities, and does not apply when those on-going activities are authorized when NWP 48 is reissued after the current NWP expires. There is no need to add a definition of on-going commercial shellfish mariculture activities, because both new and existing activities are treated the same under this reissued NWP.

One commenter stated that the Corps should identify a clear spatial delineation of what constitutes a waterbody to aid in decision-making and allow the public to determine the scope of this action. One commenter noted that the provision for "project area" could be subject to two differing interpretations. First, it could refer to that area where some entity or agreement specifically authorizes the operator to conduct commercial shellfish aquaculture. Second, it could be read as being that area where a legally binding agreement establishes an enforceable property interest for the operator. This commenter recommended revising the term "project area" to read as follows: "The project area is an area in which the operator conducts commercial shellfish aquaculture activities, as authorized by a lease or permit or other legally binding agreement."

The geographic scope for an NWP 48 activity is the project area, and the term project area is defined in the text of the NWP. The Corps did not change the definition of project area, and it covers both situations identified by the commenter. It is not necessary to and the Corps declines to define, at a national level, what constitutes a waterbody for the purposes of NWP 48. District engineers can identify the geographic extent of waterbodies for the purposes of NWP 48 activities.

In the 2020 Proposal, the Corps proposed to remove the pre-construction notification thresholds for this NWP because most of the direct and indirect impacts caused by the activities authorized by this NWP under its permitting authorities (i.e., Section 10 of the Rivers and Harbors Act of 1899 and, when applicable, Section of the Clean Water Act) are temporary impacts. As discussed in the proposed rule,

NWP 48 activities may require PCNs because of the requirements of paragraph (c) of NWP general condition 18, endangered species. Under paragraph (c) of general condition 18, pre-construction notification is required for non-federal permittees when any listed species or designated critical habitat might be affected by the proposed NWP activity or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat. In some areas of the country, commercial shellfish mariculture activities are located in waters inhabited by listed species and designated critical habitat. Division engineers may also add regional conditions to this NWP to require PCNs for some or all proposed NWP 48 activities.

Several commenters expressed concern of the removal of the PCN thresholds for new or existing shellfish mariculture activities. These commenters said the removal of the PCN thresholds will result in fewer chances to account for regional differences in submerged aquatic vegetation communities and it will make tracking of individual and cumulative environmental impacts more difficult. One commenter said that the Corps should require PCNs for all shellfish cultivation operations across the country and evaluate sediment enrichment at individual cultivation sites.

After evaluating the comments received in response to the proposed changes to the notification requirements of this NWP, the Corps determined that pre-construction notification should be required for proposed activities that directly affect more than 1/2-acre of submerged aquatic vegetation. The Corps has added a new PCN requirement to NWP 48 to require pre-construction notification for all NWP 48 activities that directly affect more than 1/2-acre of submerged aquatic vegetation. The new PCN threshold will provide district engineers the opportunity to review all new and existing commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. The Corps does not agree that PCNs should be required for all shellfish mariculture activities because of potential impacts caused by temporary suspension of sediment during harvesting activities or discharges of dredged material that may occur during dredge harvesting activities utilizing hydraulic dredging equipment. The impacts caused by the suspended sediment or discharged sediment are temporary because the sediment will settle to the bottom of the waterbody after a period of time. That period of time may depend on local currents and other factors but is generally understood to be relatively short (Newell et al. 1998) and not ecologically relevant, especially in shallow waters where wave actions frequently cause sediment to be suspended in the water column.

Direct effects of commercial shellfish mariculture activities on submerged aquatic vegetation include the placement of structures such as racks, bags, and cages on the bottom of a waterbody inhabited by submerged aquatic vegetation. Direct effects of commercial shellfish mariculture activities also include harvesting activities, including mechanical and hydraulic dredging and harvesting by hand. Shading of submerged aquatic vegetation by off-bottom bivalve mariculture structures, such as floating racks, bags, and cages, is an indirect effect that would

not trigger this PCN requirement. Changes in water flows caused by the use of long lines for bivalve mariculture cultivation, where slowed water flows cause sediment to fall out of suspension and accumulate on the bottom of the waterbody is another example of a potential indirect effect that would not trigger this PCN requirement. These direct and indirect effects would be caused by structures or work regulated under Section 10 of the Rivers and Harbors Act of 1899.

Direct effects also include discharges of dredged or fill material on the bottom of a waterbody inhabited by submerged aquatic vegetation for on-bottom culture methods, such as the placement of shell or gravel to provide substrate for the bivalves to attach to and grow. Discharges of dredged or fill material into waters of the United States may smother submerged aquatic vegetation, which is a direct effect of those activities. During harvesting activities that include regulated discharges of dredged or fill material, there are likely to be direct effects to submerged aquatic vegetation if those activities occur in seagrass beds. These direct effects would trigger the PCN requirement if they directly affect more than 1/2-acre of submerged aquatic vegetation An example of an indirect effect that might be caused by a discharge of dredged or fill material into waters of the United States for commercial shellfish mariculture activities might be a turbidity plume that reaches areas beyond the discharge site, as suspended sediment is transported by water currents away from that discharge site. This indirect effect would not trigger the PCN requirement.

This pre-construction notification requirement will provide district engineers the opportunity to evaluate each proposed activity that will directly affect more than 1/2-acre of submerged aquatic vegetation and determine whether that activity qualifies for NWP 48 authorization. In response to a pre-construction notification, the district engineer may require mitigation (e.g., on-site avoidance and minimization) to ensure that the authorized activity complies with the no more than minimal adverse environmental effects requirement for the NWPs (see paragraph (a) of NWP general condition 23, mitigation).

The Corps has removed the additional information requirements for PCNs from the text of NWP 48 because the information requirements of NWP general condition 32 cover the information needed for this new PCN requirement. The information requirements for NWP PCNs are listed in paragraph (b) of NWP general condition 32, pre-construction notification. Paragraph (b)(5) of NWP general condition 32 requires the PCN to include a delineation of wetlands, other special aquatic sites (including vegetated shallows, or submerged aquatic vegetation), and other waters.

One commenter supported the removal of the PCN requirements because in many instances bivalve populations have been overharvested or in some cases attacked by diseases or poor water quality. This commenter said that regulation of these activities should not impede the ability to reinvigorate these species and growing them for food production. One commenter supported of removal of the PCN threshold for commercial shellfish mariculture for activities that include a species

that has never been cultivated in the waterbody as long as the NWP continues to prohibit the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody, and prohibit the cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. One commenter said that state natural resource agencies should be notified for NWP 48 activities that seek to stock a species that has never been cultivated in a waterbody, and applicable state permits be obtained before the NWP 48 authorization becomes effective for a particular commercial shellfish mariculture activity.

The addition of the PCN requirement for commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation should not pose impediments on food production or efforts to reinvigorate these species in waters whether they have been overharvested. The Corps has also removed the PCN threshold for indigenous species that have never been cultivated in the waterbody. While the Corps has removed the PCN threshold, it has modified the NWP to prohibit the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody. State natural resources agencies can reach out to Corps districts to request coordination on proposals to cultivate indigenous species that have never been cultivated in the waterbody.

Several commenters stated the PCN requirements should not be removed because tribes require notice and collaboration with the Corps in order to protect their treaty fishing rights. These commenters said that even temporary impacts to eelgrass could result in consequences to tribe's treaty-reserved fish populations and the habitat they rely on. In addition, these commenters stated that removal of the PCN thresholds poses significant problems to assuring protection of salmon, nearshore habitat, and treaty shellfish gathering rights. One commenter recommended adding a PCN requirement for all activities within the U.S. v. Washington (Boldt) case area.

During the process for issuing and reissuing these NWPs, Corps districts have been consulting and coordinating with tribes. Corps districts and tribes can establish coordination procedures to help ensure that NWP 48 activities comply with general condition 17, tribal rights. Division engineers can also add regional conditions to this NWP, where appropriate based on the characteristics of the regional ecosystem, to ensure that the activities authorized by this NWP cause no more than minimal adverse environmental effects to specific resources, including tribal trust resources.

One commenter expressed support for the proposed reissuance of NWP 48. One commenter expressed support for the reissuance of NWP 48 because this NWP could significantly reduce the barriers to entry for emerging mariculture industries, and reduce the timeframes and costs associated with obtaining DA authorization for such activities. One commenter said that the conditions in the text of NWP 48 and NWP A should be consistent and preferably combined into one NWP for cultivating shellfish and seaweeds. One commenter stated that small businesses are supportive of the proposed changes to NWP 48, but acknowledged that there may

be unfavorable litigation outcomes if the changes are finalized. However, these businesses are concerned that small businesses nationwide could be subject to unfavorable litigation outcomes where the environmental analysis and justification for this rulemaking is not sound.

Nationwide permit 48 provides a streamlined authorization process for commercial shellfish mariculture activities that result in no more than minimal adverse environmental effects, and should help reduce regulatory burdens for the mariculture industry. The text of NWPs 48 and A (now designated as NWP 55) has some similarities, as well as some differences. Some of those differences are due to NWP 55 activities potentially occurring in a broader range of waters, including deeper coastal waters more distance from the shoreline and federal waters over the outer continental shelf. Commercial shellfish mariculture activities typically occur in coastal waters new the shoreline. The national decision document for this NWP has been revised to address the 2019 decision of the United States District Court, Western District of Washington at Seattle in the *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps of Engineers et al.* (Case No. C16-0950RSL) and *Center for Food Safety v. U.S. Army Corps of Engineers et al.* (Case No. C17-1209RSL),

Several commenters stated that the Corps should not reissue NWP 48, and if the Corps decides to reissue NWP 48 it should improve its review of PCNs and require documentation of compliance with specific design and operational standards. A few commenters said that the Corps should not reissue NWP 48 as proposed for the same reasons that NWP was found by the United States District Court, Western District of Washington at Seattle to be in non-compliance with National Environmental Policy Act and the Clean Water Act. One commenter said that regional general permits should be issued in Washington State, for specific water bodies and for particular types of shellfish aquaculture.

Nationwide permit 48 authorizes a variety of commercial shellfish mariculture activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, and a number of different structures can be used to cultivate bivalve molluscs. Project proponents are responsible for designing their projects and for those activities that require pre-construction notification, district engineers evaluate the direct, indirect, and cumulative adverse environmental effects caused by the proposed NWP activity. In the national decision document, the Corps has revised its NEPA analysis and its Clean Water Act Section 404(b)(1) Guidelines analysis. Regional general permits can be issued by district engineers to authorize these activities. Regional general permits can be effective in addressing regional approaches to commercial shellfish mariculture activities and the potential adverse environmental effects those activities may cause.

One commenter noted that a lack of clarity in the proposed rule may lead to permitting delays and uncertainty, both of which have negative effects on small businesses. A couple commenters said that with regards to shellfish mariculture

there needs to be more support from all levels of government to consider first and foremost a food production activity now and in the future to address our seafood deficit and food security for our nation. One commenter recommended that the Corps utilize information in Endangered Species Act and essential fish habitat consultation documents issued in Washington State to support the reissuance of NWP and address environmental issues of concern under the Clean Water Act, the Rivers and Harbors Act of 1899, and the National Environmental Policy Act.

The reissued NWP 48 will provide a streamlined authorization process for commercial shellfish mariculture activities that cause no more than minimal individual and cumulative adverse environmental effects. Commercial shellfish mariculture activities may also be regulated by tribal, state, and local governments. The consultation documents issued by the U.S. FWS and NMFS in Washington State are applicable only to Washington State, and this NWP authorizes commercial shellfish mariculture activities across the country.

One commenter observed that at the national level, Congress passed the National Aquaculture Act of 1980 in response to findings that the nation has potential for significant aquaculture growth, but that this growth is inhibited by many scientific, economic, legal, and production factors. In support of the proposed reissuance of NWP 48, one commenter cited the National Shellfish Initiative's goal of increasing populations of bivalve shellfish in our nation's coastal waters—including oysters, clams, and mussels—through commercial production and conservation activities. One commenter stated that the NWP 48 should require notification to the U.S. Coast Guard.

The reissuance of NWP 48 helps support the growth of the aquaculture industry in the United States by reducing regulatory burdens on growers and providing a streamlined authorization process under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. The activities authorized by this NWP will also help increase the numbers of bivalves in the Nation's coastal waters, and the ecological functions and services those bivalve molluscs provide, especially in coast waters where bivalve shellfish populations have significantly declined as a result of overharvesting. The project proponent is responsible for securing any licenses or permits from the U.S. Coast Guard, and complying with U.S. Coast Guard requirements that may apply to structures used for commercial shellfish mariculture activities.

Several commenters supported changing the name of NWP 48 from "commercial shellfish aquaculture activities" to "commercial shellfish mariculture activities." One commenter suggested adding modifying terms to "aquaculture" such as "marine," "coastal marine," or "offshore" to improve specificity and clarity. One commenter suggested clarifying that the terms "mariculture" and "aquaculture" can be used interchangeably. A couple of commenters objected to changing "aquaculture" to "mariculture" in the title and text of NWP 48. They suggested using the term "marine aquaculture" to more closely align with the terms used by industry. One said that

using the term “mariculture” may result in an unintended consequence of confusing or invalidating local and regional policy and regulations. One commenter stated the term “commercial shellfish aquaculture” is not defined and recommended defining that term in a manner that does not conflict with tribes’ treaty-secured rights to take shellfish. One commenter stated that term “shellfish” is not explicitly defined, and recommended adding a definition to clarify whether that term includes lobsters and conches or only bivalves.

The Corps is retaining the use of the term “mariculture” in this NWP. Use of the term “mariculture” in NWP 48, as well as NWPs 55 and 56, will not invalidate any local or regional policies or regulations. The use of the term mariculture is intended to provide clarity, to ensure that project proponents do not attempt to use NWP 48 to authorize the production of other species considered to be “shellfish” (e.g., shrimp, crawfish) in land-based facilities and ponds. The term “mariculture” refers to the cultivation of species for food production, and should not interfere with a tribe’s taking of shellfish from coastal waters. The Corps has modified the first paragraph of this NWP to clarify that the term “shellfish” refers to bivalve molluscs such as oysters, clams, mussels, and scallops.

Several commenters said that the Corps’ proposal fails to properly consider that the impacts authorized by NWP 48 violate the Clean Water Act and the Endangered Species Act. These commenters stated that the impacts of commercial shellfish mariculture activities should be evaluated through environmental impact statements and through formal programmatic ESA consultations. One commenter stated that the Corps has failed to provide adequate documentary support or substantive evidence for its conclusions that permit terms and conditions would be sufficient to ensure that environmental effects would be minimal and not significant. One commenter asserted that the proposed NWP 48 violates the Section 404(e) of the Clean Water Act because it allows unlimited impacts.

Activities authorized by NWP 48 must comply with general condition 18, endangered species. Some Corps districts have developed programmatic ESA section 7 consultations that cover commercial shellfish mariculture activities. Activities authorized by NWP 48 do not require additional NEPA compliance, since the Corps fulfills the requirements of NEPA when it issues its national decision document for the reissuance of that NWP, because that decision document includes and environmental assessment with a finding of no significant impact. Section 404(e) of the Clean Water Act does not require NWPs to have quantified acreage or other limits to ensure that authorized activities result in no more than minimal individual and cumulative adverse effects. Commenters have not provided any substantive evidence to support their opinions that all activities authorized by NWP 48 result in more than minimal adverse environmental effects and should not be authorized by an NWP. The Corps has issued a number of NWPs that do not have quantitative limits, such as NWP 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities), NWP 31 (Maintenance of Existing Flood Control Facilities), and NWP 38 (Cleanup of Hazardous and Toxic Waste).

Several commenters said that NWP 48 activities contribute to degradation of waters of the United States by adversely affecting water quality, eelgrass, salmon, birds, herring, and flatfish and causing adverse effects from the introduction of plastics. One commenter recommended prohibiting commercial shellfish mariculture activities in or near marine protected areas or sensitive areas, such as essential fish habitat. This commenter said that the NWP should prohibit the use of plastic equipment or inputs such as pesticides, herbicides, or pharmaceuticals. This commenter also said that NWP 48 activities should require extensive documentation of compliance with design and operation standards, with routine reporting. In addition, this commenter stated that permitted activities should incorporate more rigorous operation, emergency response, and pollution standards, with swift and severe consequences for non-compliance, including revocation of permits.

The potential environmental effects caused by commercial shellfish mariculture activities are discussed in the national decision document for NWP 48. The Corps acknowledges that commercial shellfish mariculture activities may have negative, positive, and neutral effects on various environmental components, including various species. It is generally understood that the presence of bivalves in an aquatic ecosystem is beneficial. Some commenters point out various adverse environmental effects caused by commercial shellfish mariculture activities, but other acknowledge the studies and observations that identify beneficial environmental effects caused by commercial shellfish mariculture activities. If a proposed commercial shellfish mariculture activity may adversely affect essential fish habitat as a result of activity subject to the Corps' legal authority, the district engineer will conduct essential fish habitat consultation with the NMFS, and incorporate as appropriate, essential fish habitat conservation recommendations into the NWP authorization as permit conditions.

The Corps does not have the legal authority to regulate the use of pesticides, herbicides, or pharmaceuticals that may be associated with commercial shellfish mariculture activities. General condition 6 requires the use of suitable material for activities authorized by NWPs. Plastics materials may be used for commercial shellfish mariculture activities and it is the responsibility of the permittee to ensure that structures that may be made with plastics (e.g., tubes for geoducks, anti-predator netting) are properly maintained (see general condition 14). The Corps has no authority to regulate plastics that may wash away from a commercial shellfish mariculture activity. The Corps does not regulate the placement of trash or garbage into waters of the United States (see 33 CFR 323.2(e)(3)). Section 13 of the Rivers and Harbors Act of 1899 (i.e., the Refuse Act) has been superseded by Section 402 of the Clean Water Act (see 33 CFR 320.2(d)).

One commenter requested that the Corps change NWP 48 to remove any unintended competitive edge for wild harvest fisheries, both in terms of allowable gear and harvesting requirements. One commenter stated that they investigated

direct and indirect effects of individual bottom cages on eelgrass, and found that at the current level of mariculture activity, short-term cultivation of oysters has a minimal effect on eelgrass growth, water quality, and sediment characteristics. However, if the cultivation activity expands in terms of gear and/or individual operations, it may result in measurable effects.

The Corps lacks the authority to prevent competition between commercial shellfish mariculture operators and fishers that harvest wild populations of bivalves. The Corps appreciates the information regarding the direct and indirect effects of bottom cages for oyster mariculture on eelgrass. The Corps is finalizing a new PCN threshold for commercial shellfish mariculture activities directly affecting more than 1/2-acre of submerged aquatic vegetation to ensure the effects noted by the commenter are evaluated by district engineers.

One commenter said that commercial shellfish mariculture activities have minimal adverse impacts, and they can have beneficial effects on habitat and water quality, and there is an extensive scientific literature that supports the identification of these benefits. This commenter discussed the structured habitat provided by commercial shellfish mariculture activities that is used by numerous species for refuge, foraging, and predator avoidance, thereby increasing species richness, abundance, and biodiversity. This commenter also said that bivalves ingest and filter suspended materials in the water column, sequestering excess nutrients as protein in their tissue. This commenter also remarked that upon harvesting these bivalve molluscs, nutrients are removed from the marine ecosystem, which improves water quality. This commenter also noted that commercial shellfish mariculture activities can also help to transfer the load of suspended materials from the water column to the benthos through a phenomenon known as benthic-pelagic coupling. In addition, this commenter said that by providing structured habitat, improving water quality, and helping to transfer the load of suspended materials from the water column to the benthos, shellfish can help mitigate adverse impacts caused by several different types of human activities and developments. This commenter stated that for these reasons, shellfish are increasingly being utilized in environmental restoration projects across the United States. The Corps acknowledges these comments on the beneficial effects of commercial shellfish mariculture activities on coastal waters. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects.

One commenter said that impacts from geoduck farms are insignificant (no more than minimal) for: forage fish spawning areas; consumption of forage fish larvae; juvenile salmon; waves, currents, and sediment transport; microplastics; marine debris; impact to the benthic community; cumulative impacts; recreation and navigation; marine mammals; birds; farm preparation; predator protection netting; harvest activities; density, genetics, diseases, and parasites; and property values. This commenter remarked that the disturbances caused by commercial shellfish mariculture activities are within the range of natural variation experienced by benthic

communities in Puget Sound. This commenter also stated that differences in the structure of mobile macrofauna communities between planted areas with geoduck tubes and nets and nearby reference beaches do not persist after the geoduck tubes and nets removed during the grow-out culture phase. In addition, this commenter said that nutrients released from a typical commercial geoduck operation are low and localized effects are likely to be negligible. Finally, this commenter stated that geoduck aquaculture practices do not make culture sites unsuitable for later colonization by eelgrass. The Corps acknowledges these comments on the beneficial effects of geoduck mariculture activities on coastal waters. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects.

One commenter said that commercial shellfish mariculture activities have minimal impacts on birds, including foraging, noise, and the potential for net entanglement. This commenter noted that birds forage within mariculture operations, and feed on organisms growing on mariculture equipment, and the shellfish being produced. This commenter stated that noise associated with commercial shellfish mariculture activities could result in temporary displacement of birds from the immediate area, but this is a temporary impact to overall bird populations. Lastly, this commenter asserted that while predator exclusion net entanglement is a possibility for birds, it is likely to be rare and unlikely to result in significant effects to marine bird and bald eagle populations utilizing these areas. The Corps acknowledges these comments on the effects of commercial shellfish mariculture activities on birds, which have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects.

One commenter objected to a statement in the proposed rule regarding the placement of shell or gravel on the bottom of the waterbody for on-bottom cultivation of bivalves. The proposed rule stated that this is a permanent impact. This commenter said that the placement of gravel or shell on the bottom of the waterbody causes temporary changes, which is why shellfish farmers frequently need to place gravel or shell in the same area from time to time. According to this commenter, this temporary change has beneficial impacts to species presence and diversity, according to a programmatic biological opinion issued by the NMFS for commercial shellfish mariculture activities in Washington State. This commenter said that placement of shell or gravel on the bottom of the waterbody shifts the benthic community from polychaetes to amphipods and copepods, which are important prey items for juvenile salmon. This commenter requested that the Corps correct or clarify this statement to recognize that the placement of shell or gravel causes temporary, localized changes to the marine environment, and these changes are beneficial.

If the commercial shellfish mariculture operator places shell or gravel on the bottom of the waterbody, and does not remove the shell or gravel, then it is a permanent impact. When an NWP authorizes a temporary impact, the structure or fill has to be

removed after that structure or fill is no longer needed. For a temporarily filled area, after the fill is removed several NWPs require the project proponent to restore the affected area to pre-construction elevations. The Corps acknowledges that a permanent fill may have positive, negative, or neutral environmental effects. For example, the permanent fill may be dispersed by flowing water and transported in the waterbody so that it becomes part of the benthic habitat in that waterbody. That permanent fill may provide habitat for certain aquatic organisms.

Several commenters said they agreed that placing shellfish seed on the bottom of a waterbody is not a “discharge of fill material” and thus does not require a section 404 permit. Regardless of that whether the placement of shellfish seed is done for commercial aquaculture, habitat restoration, or fisheries enhancement, it should not require a section 404 permit unless there is significant placement of materials for reefs/ hummocks in quantities adequate to alter the depth profile and alter the bottom topography. Several commenters noted that while depositing shell with spat already attached is considered seed and regulated “work” under Section 10 of the Rivers and Harbors Act of 1899, the proposed NWP 48 is also defining this as fill regulated under Section 404 of the Clean Water Act. They stated that requiring section 404 authorization is an additional unnecessary burden and these activities do not result in adverse environmental impacts and in actuality have positive impacts to water quality. This method is unlike a restoration project where oyster shell is deposited in large enough quantities to create reefs and foster a permanent non-transient population. This commenter requested that the Corps make a distinction between two different activities: sparsely placing shell on the bottom of the waterbody to catch larvae and hummock building and restoration efforts.

In the 2020 Proposal, the Corps did not state that shellfish seeding activities require authorization under Section 404 of the Clean Water Act. In addition, the Corps did not state that shellfish seeding requires authorization under Section 10 of the Rivers and Harbors Act of 1899. The placement of shell in a waterbody to construct reefs or hummocks for bivalves to settle on and grow requires Clean Water Act section 404 authorization because it raises the bottom elevation of the waterbody and is a discharge of fill material, as that term is defined at 33 CFR 323.2(e). That activity also requires authorization under Section 10 of the Rivers and Harbors Act of 1899 as a structure (e.g., a reef) under 33 CFR 322.2(b) or work under 33 CFR 322.2(c).

One commenter said that placing single shellfish seeds on beds without containment structures is not regulated under Section 10 of the Rivers and Harbors Act of 1899. This commenter asserted that this activity is not subject to regulation under section 10 because it does not involve the use of structures, nor does it constitute work that alters or modifies the navigable capacity of the waters. Juvenile clams bury a few inches into the sediment and are essentially imperceptible, and single-set oysters lie on the bottom of the substrate without meaningfully altering the elevation of the seabed. This commenter said that the placement and grow-out of single set clams and oysters therefore does not require approval under Section 10 of the Rivers and Harbors Act of 1899. This commenter noted that section 10

authorization is required for activities that alter the bottom elevation of waters in a manner to impact their navigable capacity, and that shellfish seeding does not alter the bottom elevation.

In the proposed rule at 85 FR 57334, the Corps stated that on-bottom bivalve shellfish mariculture activities may involve placing fill material such as shell or gravel to provide suitable substrate for bivalve shellfish larvae to attach to and grow on the bottom of the waterbody and that these activities may require section 404 authorization. The proposed rule did not state that depositing shell with spat attached to the shell is considered fill material for the purposes of NWP 48. Discharging shell without bivalve larvae (i.e., spat) into a waterbody for the purposes of enhancing benthic habitat to attract bivalve shellfish larvae may require section 404 authorization if it meets the Corps' definition of "fill material" and "discharge of fill material" at 33 CFR 323.2(e) and (f). Under 33 CFR 323.2(f), the term "discharge of fill material" means the addition of fill material into waters of the United States. The term "discharge of fill material" does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products (33 CFR 323.2(f)), so shellfish seeding is not considered a "discharge of fill material." If the placement of gravel or shell on the bottom of the waterbody to enhance the substrate of the waterbody to attract shellfish larvae is not removed upon completion of the shellfish cultivation activity, it is considered a permanent fill even though it may increase the habitat value for bivalves, crustaceans, and other aquatic organisms.

A few commenters said that predator nets, and low-profile cages to protect bottom planted seeds should not be considered navigation hazards subject to permitting requirements unless they create a vertical profile of greater than 25% of the water depth. One commenter agreed with the Corps' statements in the proposed rule that most commercial shellfish mariculture activities do not involve discharges of dredged or fill material that require Clean Water Act section 404 authorization. This commenter noted that placing living bivalve shellfish (e.g., clam seed and oyster cultch) in the intertidal zone during bottom-culture activities and their natural by-products are not pollutants, citing the Association to Protect Hammersley, Eld, and Totten Inlets v. Taylor Res., Inc., 299 F.3d 1007 (9th Cir. 2002). One commenter stated that the proposal accurately states that some commercial bivalve shellfish mariculture activities are regulated under section 10 because they include structures such as racks, cages, bags, lines, nets, and tubes, when those structures are placed in navigable waters. This commenter also said that dredging, excavation, and filling activities would also require section 10 authorization, although these activities are relatively rare.

The placement of predator nets and low-profile cages in navigable waters of the United States requires authorization under Section 10 of the Rivers and Harbors Act because those nets and cages are considered structures under 33 CFR 322.2(b) and may be obstructions to navigation. The Corps maintains its views that most commercial shellfish mariculture activities are regulated solely under Section 10 of

the Rivers and Harbors Act of 1899, and a relatively small percentage are also regulated under Section 404 of the Clean Water Act because they involve discharges of dredged or fill material into waters of the United States. The Corps agrees that the placement of living bivalves into waters of the United States does not result in a discharge of a pollutant that requires authorization under Section 404 of the Clean Water Act.

One commenter said that bivalve shellfish harvesting activities do not bring commercial shellfish farming within the regulatory reach of Clean Water Act Section 404. In order for there to be a discharge regulated under Section 404 of the Clean Water Act, there must be an addition of a pollutant to a water of the United States, and that the harvesting commercial shellfish does not involve an “addition” for purposes of the Clean Water Act section 404. This commenter also stated that harvesting shellfish constitutes a “net withdrawal” of material from the water, not an “addition.” This commenter requested that the Corps clarify in the final rule that these commercial shellfish farming activities do not involve discharges of dredged or fill material and hence do not require Clean Water Act Section 404 authorization.

The Corps does not agree that all bivalve shellfish harvesting activities do not require authorization under Section 404 of the Clean Water Act. There may be circumstances where a bivalve shellfish harvesting activity results in a regulable discharge that requires section 404 authorization. Those circumstances depend on how the harvesting activity is conducted, and whether a particular harvesting activity results in an addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States. District engineers apply the definitions of “dredged material” and “discharge of dredged material” at 33 CFR 323.2(c) and (d), respectively to determine whether a discharge requiring section 404 authorization has occurred. The Corps agrees that bivalve shellfish harvesting activities do not normally involve discharges of fill material, as that term is defined at 33 CFR 323.2(f).

One commenter said that aquaculture is not exempt from CWA permitting under Section 404(f) of the Clean Water Act. This commenter said that adding gravel or shell to bags also triggers a section 404 permit requirement even if the bags themselves do not qualify as fill material. Even for activities that do not directly result in discharge of dredge or fill material, the Corps must document secondary effects, and has the authority to impose conditions reasonably related to the purpose of section 404 permits. Another commenter stated that established shellfish farms are exempt from regulation under the Clean Water Act’s farming exemption, and that the reissued NWP 48 should state that established commercial shellfish farming activities do not require CWA Section 404 permits. This commenter said that even if some shellfish farming activities include discharges of dredged or fill material, established shellfish farms are exempt from regulation under section 404(f), which exempts normal farming activities from the requirement to obtain permits under Section 402 and 404 of the Act.

Whether shellfish mariculture qualifies for a section 404(f) exemption is beyond the scope of this rulemaking. The authority for determining whether a particular activity, such as commercial shellfish mariculture activities, is eligible for the Clean Water Act Section 404(f) exemptions lies with the U.S. EPA. See the 1989 Memorandum of Agreement Between the Department of the Army and the U.S. EPA Concerning the Determination of the Section 404 Program and the Application of the Exemptions under Section 404(f) of the Clean Water Act.

One commenter stated that advanced authorization of the broad suite of commercial shellfish mariculture activities afforded by the NWP 48 is impracticable because the blanket authorization cannot take into account important details regarding local ecological conditions at the growing site and specific information about the shellfish cultivation techniques. This commenter recommended that initial authorization should be made on a case-by-case basis and should be subject to ongoing monitoring and periodic review.

Section 404(e) of the Clean Water Act does not specify how broadly or narrowly the Corps has to identify any category of activities for the issuance of a general permit, including the NWPs. Section 404(e) only requires that the activities in that category are similar in nature. Likewise, under the Corps' definition of general permit in its section 10 regulations at 33 CFR 322.2(f), there are no standards regarding how broad or narrow the category has to be. Therefore, the Corps has substantial discretion to determine the categories of activities to be authorized by the NWPs. Nationwide permits are issued by Corps Headquarters to authorize categories of activities across the country, and there is substantial variation in aquatic resources and the functions they provide, as well as the degree to which they perform those functions. Nationwide permits require pre-construction notification for certain activities so that district engineers can assess proposed activities in the context of local ecological conditions and make a case-by-case determination as to whether proposed activities qualify for NWP authorization.

Some commenters mentioned that the scientific literature cited in the proposed rule concerned studies of eelgrass located in Washington State. These commenters stated that despite its broad distribution along the Pacific and Atlantic coasts, eelgrass is a poor choice for a model species to develop a national standard from a regional dataset. One genus should not dictate policy on an entire suite of functionally, taxonomically, and geographically distinct species. These commenters went on to say that while the individual and cumulative impacts to eelgrass meadows in Washington may be temporary, it could be irreversible in areas where environmental conditions are more impaired and submerged aquatic vegetation meadows are declining in areas such as New England, the mid-Atlantic coast, the East coast of Florida, the Gulf of Mexico, and California.

For the 2020 Proposal, the Corps considered scientific literature in coastal ecosystems located nationwide. The Corps also discussed submerged aquatic vegetation in general terms, and only made specific references to eelgrass when a

particular study examined eelgrass. After the reissuance of NWP 48 in 2017, the Corps reviewed a broader range of scientific literature on the interactions between commercial bivalve shellfish mariculture activities and submerged aquatic vegetation, and found that while some permanent impacts to submerged aquatic vegetation may occur, the impacts are often temporary and submerged aquatic vegetation co-exists with bivalve mariculture activities. The Corps examined scientific literature from studies that occurred in other areas of the United States (e.g., Chesapeake Bay), not just Washington State.

One commenter recommended that the Corps require mitigation for impacts to submerged aquatic vegetation at a ratio of at least 1.2:1 (mitigation area to impact area). One commenter said that when the functional value of eelgrass and shellfish are combined, and the seascape matrix of habitats are considered, it is possible that a broader ecosystem perspective would find benefits from the presence of aquaculture. This commenter also stated that commercial shellfish farming activities have minimal negative to beneficial impacts on eelgrass and supports the Corps' proposal to reissue NWP 48. One commenter remarked that interactions between seagrasses and shellfish mariculture must separately be addressed during Endangered Species Act and Essential Fish Habitat consultations for authorizations for shellfish farming activities in Washington State.

Compensatory mitigation requirements for activities authorized by the NWPs are more appropriately determined by district engineers on a case-by-case basis after reviewing PCNs. If the district engineer reviews a PCN and determines the proposed activity will result in more than minimal adverse environmental effects, he or she will notify the applicant and provide an opportunity to the applicant to submit a mitigation proposal (see 33 CFR 330.1(e)(3)). If, after reviewing the mitigation proposal, the district engineer determines the adverse environmental effects of the proposed activity will be no more than minimal, she or he will issue an NWP verification with permit conditions that require implementation of the mitigation. The Corps acknowledges that, when viewed from a seascape perspective, a district engineer may determine that the proposed shellfish mariculture will provide ecological benefits that should be factored in the district engineer's decision regarding whether the proposed activity will result in no more than minimal adverse environmental effects. If the district engineer reviews a PCN for a proposed NWP 48 activity and determines the proposed activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S. FWS and/or NMFS and that section 7 consultation may address potential impacts to seagrasses. If the district engineer reviews a PCN for a proposed NWP 48 activity and determines the proposed activity may adversely affect essential fish habitat, he or she will conduct essential fish habitat consultation with the NMFS and the NMFS may provide the district engineer with essential fish habitat conservation recommendations that may address potential impacts to seagrasses.

Several commenters stated while shellfish mariculture can provide ecosystem services, some of which are similar to seagrasses and other benthic communities,

there is no meaningful effort to discuss the numerous studies regarding impacts of a variety of aquaculture practices on submerged aquatic vegetation. Allowing commercial shellfish activities in new areas that have extensive beds of submerged aquatic vegetation could impact critical habitat for ESA-listed species. A couple commenters stated that tribes in the Puget Sound region have a unique interest in assuring that both salmon and shellfish are allowed to flourish. Consultation between Corps districts, tribes, federal, and state agencies are the appropriate entities to determine how best to protect submerged aquatic vegetation. A couple of commenters said that submerged aquatic vegetation is a critical resource requiring protection and removal of that protection from NWP 48 could create conflicts with other federal or state agencies such as NOAA Fisheries. These commenters asserted that some states, recognizing the need to protect these high-quality habitats have prohibited the siting of new mariculture leases in areas where surveys indicate the presence submerged aquatic vegetation in any one of the past five years.

In the 2020 proposal and the draft decision document for NWP 48, the Corps provided a substantial discussion of the positive and negative impacts that commercial shellfish mariculture activities may have on seagrasses and other benthic organisms. Some of these impacts may be a result of activities under the Corps' legal authorities; however, bivalve shellfish mariculture activities may have impacts that are beyond the scope of the Corps' legal authorities. Under general condition 18, non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat (or species proposed for listing) might be affected or is in the vicinity of the activity, or if the activity is located in designated or proposed critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized (see paragraph (c) of general condition 18, endangered species). During the rulemaking process, district engineers have conducted consultation or coordination with tribes to identify regional conditions or coordination procedures that could be used to protect tribal trust resources and comply with general condition 17. Other federal agencies, as well as states, can develop regulations and policies to protect submerged aquatic vegetation under their authorities.

A couple of commenters stated that the Corps thinks it is important to protect submerged aquatic vegetation in other contexts, but not under NWP 48. These commenters said that the Clean Water Act regulations provide for protection of special aquatic sites, which include "vegetated shallows" and that submerged aquatic vegetation beds are considered vegetated shallows. One commenter said that while the Corps states that all activities and structures must avoid submerged aquatic vegetation, but it doesn't apply that principle to commercial shellfish mariculture activities.

While the Clean Water Act Section 404(b)(1) Guidelines provide a greater degree of protection to vegetated shallows (submersed aquatic vegetation) as special aquatic

sites compared to aquatic resources that are not special aquatic sites, the Guidelines do not prohibit discharges of dredged or fill material into vegetated shallows (i.e., submerged aquatic vegetation beds). The 404(b)(1) Guidelines only apply to discharges of dredged or fill material. They do not apply to activities authorized under Section 10 of the Rivers and Harbors Act of 1899.

One commenter stated that submerged aquatic vegetation beds provide numerous ecosystem services including improving water quality, providing nursery habitat for commercial and recreationally significant fish and invertebrates, buffering shorelines from erosion, and sequestering carbon. Because of these additional functions performed by submerged aquatic vegetation, this commenter said that bivalve shellfish mariculture cages do not do any of these things and cannot be considered functionally equivalent habitat to submerged aquatic vegetation.

As discussed in the 2020 Proposal and the national decision document for NWP 48, it is the bivalves that perform a number of the same ecological functions as submerged aquatic vegetation, not the structures in which these bivalves are grown. However, commercial shellfish mariculture structures do provide structural habitat for a wide variety of aquatic organisms, including substrate for organisms to attach to, and some aquatic organisms feed on the attached organisms. Structures used for commercial shellfish mariculture activities can slow the movement of water, and help reduce erosion of nearby shorelines. These impacts would be considered during the review of a PCN for a new or existing shellfish mariculture activity.

One commenter noted that the argument that shellfish aquaculture activities only temporarily impact submerged aquatic vegetation is not accurate because leases issued for shellfish aquaculture vary in duration but are generally 5-20 years to ensure any investment in the enterprise is worthwhile. This commenter said that the word “temporary” is a highly relative and generally misleading descriptor.

It is not the duration of the lease for shellfish mariculture activities that determines whether commercial shellfish mariculture activities have temporary impacts on submerged aquatic vegetation. Commercial shellfish mariculture operators might not cultivate bivalve shellfish continuously during the period the lease is in effect. The operator may let some areas within a leased area to go fallow for a period of time, to reduce adverse effects to the benthic community. The Corps agrees that the term “temporary” is a relative term, but disagrees that it is misleading. What constitutes a temporary impact depends in part on how much time it takes an organism or an ecosystem to recover from a disturbance, and how resilient and resistant the species or ecosystems are to disturbances. Coastal waters are highly dynamic environments subjected to periodic disturbances, both natural and man-made.

Several commenters concurred with the Corps’ view that commercial shellfish mariculture activities typically only has temporary impacts on submerged aquatic vegetation and these plants can sustain a healthy coexistence. A few commenters

noted that mechanical harvesting has been found to not negatively impact native eelgrass and may even enhance it. One commenter stated that the positive ecosystem services (e.g., better water quality, habitat creation, and ecosystem studies) provided by bivalve shellfish mariculture activities outweigh the temporary nature of any perceived negative impacts. The habitat created by shellfish aquaculture increases species richness and diversity of both benthic and epibenthic organisms. This three-dimensional habitat is utilized by many commercially valuable species, such as Dungeness crab and flatfishes. The Corps acknowledges these comments. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects.

One commenter noted that farming methods such as bottom culture propagation tends to focus on the cultivation of larger older shellfish with large time intervals between harvests, which results in short term impacts at harvest with long periods for recovery and result in no permanent losses of submerged aquatic vegetation. This commenter said that the persistence of eelgrass along the coast demonstrates that shellfish mariculture and eelgrass can coexist and have for over a century. Furthermore, commercial shellfish mariculture operators have long understood the best way to propagate eelgrass is to plant oysters, which creates optimal habitat allowing eelgrass to expand due to decreased current over the tide flats. This commenter also said that the bivalve shellfish, as filter feeders, remove large amounts of waterborne nutrients resulting in cleaner water which facilitates photosynthesis, expanding habitable ranges of eelgrass. The Corps acknowledges these comments. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects.

Several commenters recommended revising the definition of mechanical harvest so that they are not classified as "dredge or fill" activities because it is too broad and lumps many methods together and lacks clarity. These commenters said that mechanical harvesting by dragging a metal basket along the tide flats to gently tumble harvestable oysters does not result in a discharge of dredge or fill material and should be exempt from section 404 jurisdiction. Furthermore, these commenters said that these activities do not create ditches, channels, or substantially redeposit excavated soil material and none of the harvest tools are designed to remove large quantities of material to improve the navigability of waters. These commenters said that the sediment that may be disturbed during harvest should be considered as incidental fallback under 33 CFR §323.2(d)(1).

Mechanical harvesting activities generally do not result in discharges of fill material, as that term is defined at 33 CFR 323.2(f). However, mechanical harvesting activities may result in discharges of dredged material, depending on how they are conducted. The term "discharge of dredged material" is defined at 33 CFR 323.2(d) to include the "addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States." Some

mechanical harvesting activities may result in incidental fallback and not require section 404 authorization while other mechanical harvesting activities may result in additions of dredged material into waters of the United States that are not incidental fallback, and therefore require section 404 authorization. Mechanical and hydraulic harvesting activities that redeposit sediment in a different area of the bottom of the waterbody that the area from which the sediment was removed is considered a "discharge of dredged material" and therefore requires section 404 authorization. These discharges of dredged material into waters of the United States are authorized by NWP 48.

A commenter noted that in the statement "mechanical harvesting can include grading, tilling, and dredging the substrate of the waterbody" that the term "grading" does not describe shellfish culture methods. A couple of commenters suggested that shellfish mariculture harvest activities should be regulated like wild-harvest shellfisheries (e.g., as they are regulated in NWP 4). This commenter said that both wild and cultured shellfish are state-managed resources, with the exception of many tidelands in Washington, and should not require additional oversight and regulation by federal authorities. This commenter also stated that harvesting activities do not involve structures and do not impact navigation in a way that should trigger regulation under the Section 10 of the Rivers and Harbors Act of 1899.

Mechanical harvesting activities may move sediment in a waterbody in a manner that is not considered incidental fallback. These activities would require section 404 authorization under the Corps' definition of "discharge of dredged material." Nationwide permit 4 authorizes discharges of dredged or fill material associated with fish and wildlife harvesting, enhancement, and attraction devices and activities, including clam and oyster digging. The Corps has jurisdictional authority in Washington State for activities regulated under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Mechanical harvesting activities generally meet the definition of "work" at 33 CFR 322.2(c) for the purposes of Section 10 of the Rivers and Harbors Act of 1899, and are authorized by NWP 48.

One commenter requested that the Corps add a statement in the final rule that acknowledges that the accumulation of sediment around shellfish farming gear may be considered beneficial in certain environments, as well as provision of year-round durable, structured three-dimensional habitat. The Corps declines to add the requested statement because the potential benefits would need to be determined on a case-by-case basis, and the durability of those sediment accumulations is influenced because water movements that could cause that sediment to be re-suspended in the water column.

One commenter said that the Corps must comply with ESA Section 7 and the Magnuson-Stevens Act prior to issuing NWP 48. A few commenters stated that in all areas where submerged aquatic vegetation exists, it is designated essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act.

These commenters said that removal of the 1/2-acre limit for direct impacts to submerged aquatic vegetation fails to acknowledge submerged aquatic vegetation as essential fish habitat and the need for consultation with NMFS for activities that may adversely affect essential fish habitat. These commenters asserted that the Corps must consult on a nationwide programmatic basis because essential fish habitat is adversely affected by shellfish mariculture activities.

The NWP program's compliance with the essential fish habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act is achieved through EFH consultations between Corps districts and NMFS regional offices. This approach continues the EFH Conservation Recommendations provided by NMFS Headquarters to Corps Headquarters in 1999 for the NWP program. Corps districts that have EFH designated within their geographic areas of responsibility coordinate with NMFS regional offices, to the extent necessary, to develop NWP regional conditions that conserve EFH and are consistent the NMFS regional EFH Conservation Recommendations. If a district engineer determines a proposed NWP 48 activity may adversely affect essential fish habitat, he or she will conduct EFH consultation with NMFS. Where there is a requirement to consult on EFH, consideration of direct impacts to submerged aquatic vegetation caused by new and existing commercial shellfish mariculture activities would occur regardless of the PCN threshold of 1/2-acre. In response to an EFH assessment prepared by the Corps, the NMFS may provide EFH conservation recommendations to address potential impacts to submerged aquatic vegetation. As discussed in Section III.D of this final rule, the Corps has prepared a biological assessment for this rulemaking activity and determined that the issuance of the NWPs has no effect on listed threatened and endangered species and designated critical habitat, as well as species proposed for listing and proposed designated critical habitat.

One commenter stated that significant changes to NWP 48 are not appropriate until the national decision document is finalized and deemed sufficient. This commenter said the draft decision document fails to satisfy the requirements of the National Environmental Policy Act and the Clean Water Act, and that it fails to properly acknowledge the impacts of mariculture on benthic habitat, fish communities, birds, water quality and substrate characteristics. Several commenters stated that the proposed revisions to the national decision document for NWP 48 do not fairly represent the conclusions of authors of the cited literature, in some cases omitting relevant information and in others misrepresenting study results and conclusions.

The purpose of the national decision document is to provide information for the decision on whether to reissue NWP 48. The national decision document discusses the positive and negative impacts of commercial shellfish mariculture activities on benthic habitat, fish communities, birds, water quality and substrate characteristics. The Corps has considered this information and determined that NWP 48 will not have more than a minimal individual or cumulative adverse environmental effects.

One commenter said that the Corps describes no studies in its decision document

to verify its claim that commercially-raised shellfish help improve water quality. One commenter noted that the Corps acknowledges throughout the environmental consequences, public interest, and 404(b)(1) Guidelines Analysis, some negative impacts, but then fails to assess them and instead focuses only on positive impacts. This commenter said that the impacts from mechanical and hydraulic dredging are barely mentioned, with no assessment of their harmful impacts to the same degree as the supposed benefits from shellfish aquaculture.

The Corps discusses, in numerous places, the water quality benefits of filter-feeding bivalves that are cultivated by commercial shellfish mariculture activities. The Corps acknowledges that commercial shellfish mariculture activities cause adverse and beneficial environmental effects. Throughout the draft and final national decision documents, the Corps discusses the negative and positive effects of harvesting activities.

One commenter identified errors in projected use and acreage impacted over the 5-year period NWP 48 is anticipated to be in effect. This commenter notes that the draft NWP 48 decision document states that the Corps estimates this permit will be used approximately 336 times per year on a national basis, resulting in impacts to approximately 13,360 acres of waters of the United States. It then states the Corps estimates that approximately 1,680 activities could be authorized over a five-year period until the NWP expires, resulting in impacts to approximately 40,080 acres. While 1,680 is five times the annual use figure (336), five times the annual acreage figure (13,360) is 66,800. One commenter requested that the Corps provide documentation on the number of permit request over the last 10 years that exceeded the 1/2-acre limit, and of those activities, how many ultimately received a permit through regional or individual permit process, and what conditions were applied to those applications. One commenter stated that the Corps claims to have no duty to use any quantitative data, but has issued NWP 48 since 2007 and should be able after all these years to provide some quantitative data about loss of seagrasses, natural habitats, etc. One commenter recommended that the Corps pursue a quantitative analysis of the environmental effects of shellfish mariculture for habitat alterations, climate change, invasive species, overharvesting and exploitation, and pollution.

Nationwide permit 48 authorizes structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for both existing (on-going) and new commercial shellfish mariculture activities. Many of the activities authorized by NWP 48 are on-going activities that require reauthorization each time the current NWP 48 expires and is replaced by a reissued NWP 48. Nationwide permits can be issued for period of no more than 5 years (see Section 404(e) of the Clean Water Act). The acreage of projected impacts in the national decision document for NWP 48 includes many on-going commercial shellfish mariculture activities, many of which have been in operation for decades. These on-going commercial shellfish mariculture activities have been part of the current environmental setting for years, and it is the current environmental

baseline against which the degree of severity of adverse environmental effects is assessed to determine eligibility for NWP authorization (i.e., whether the individual and cumulative adverse environmental effects caused by commercial shellfish mariculture activities during the 5-year period the NWP is in effect are no more than minimal).

The Corps has revised the national decision document to correct the errors in its estimates of potential use of this NWP and authorized impacts. However, it should be noted that these are estimates of projected use over the 5-year period the NWP is anticipated to be in effect. With respect to the removal of the 1/2-acre limit for direct impacts to submerged aquatic vegetation caused by new commercial shellfish mariculture activities, the Corps is only required to provide an estimate of the number of activities that might occur during the period this NWP is in effect. It is not necessary to provide data on how many commercial shellfish mariculture activities were authorized by regional general permits or individual permits.

The Council on Environmental Quality's NEPA regulations at 40 CFR parts 1500-1508 do not require quantitative analyses of potential environmental impacts. With respect to the 404(b)(1) Guidelines, 40 CFR 230.7(b)(3) requires cumulative effects to be analyzed by estimating the number of discharges expected to occur under the NWP while it is in effect. The environmental impacts of authorized activities during the period the NWP is in effect is dependent on the current environmental settings in which these activities will occur, and quantitative data on those current environmental settings is not available. It should also be noted that context is important, because these activities are occurring in coastal waters that have been altered by human activities and natural processes for thousands of years, and continue to be impacted by coastal watershed land use, point source pollution, non-point source pollution, fishing activities, recreation, and other disturbances, not just commercial shellfish mariculture activities.

Several commenters stated it is unclear how mitigation can both be unnecessary and something the Corps is relying on to avoid cumulative impacts. Further, several commenters stated that the Corps relies heavily on mitigation at a district level, but fails to actually describe the possible effects (direct, indirect and cumulative) from shellfish aquaculture activities or how these unknown mitigation measures will actually avoid more than minimal adverse impacts. Any individual mitigation measures will only be attached if a permittee is required to submit a pre-construction notification, which will likely be few and far between.

For commercial shellfish mariculture activities, the Corps generally does not require compensatory mitigation because these activities do not cause losses of waters of the United States. Paragraph (a) of general condition 23 requires permittees to design their projects to avoid and minimize adverse effects, both temporary and permanent, to waters of the United State to the maximum extent practicable on the project site. Many of the NWP general conditions consist of mitigation measures to avoid and minimize impacts. When determining whether to require mitigation to

ensure that a particular NWP activity results in no more than minimal individual and cumulative adverse environmental effects, the district engineer will consider the direct, indirect, and cumulative effects, as required by paragraph 2 of Section D, District Engineer's Decision. If the district engineer requires mitigation for an NWP activity, he or she will add conditions to the NWP authorization (see 33 CFR 330.1(e)(3)) that are directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable (see 33 CFR 325.4(a)).

One commenter stated that the Corps said that "standard and best management practices" can reduce impacts but fails to explain what these are and how they will mitigate impacts. One commenter said that the Corps claims commercially-reared bivalves improve water quality but fails to assess water quality impacts by deferring to district engineers and water quality certifications under Clean Water Act section 401, but impacts to water quality must be assessed before granting NWPs. One commenter said that the Corps fails to discuss the context and intensity factors that might indicate that this proposed NWP will have a "significant impact to the human environment" and thus requires an environmental impact statement.

As stated in the 2020 Proposal, species-specific or regional standards and best management practices for commercial shellfish mariculture activities may be appropriate as regional conditions approved by division engineers (see 85 FR 57331). In the national decision document, the Corps has discussed potential impacts to water quality as well as potential benefits to water quality that may result from commercial shellfish mariculture activities. In addition, the Corps has explained that cultivated bivalves are not considered a pollutant under the Clean Water Act. After considering the information in the national decision document for this NWP, including the potential benefits and detriments caused by commercial shellfish mariculture activities, there is no evidence that these activities cause a significant impact to the human environmental and thus no environmental impact statement is required.

One commenter stated the alternatives analysis is inadequate. The commenter asserts that the Corps lists the "no action" alternative but barely analyzes it, strangely concluding that it would somehow have more substantial adverse environmental consequences. The "national modification" alternative is not an alternative, but the proposed NWP 48 and the "regional modification" is also not an alternative because it includes no conditions or changes from the proposed NWP 48.

The national decision document discusses alternatives. In the Council on Environmental Quality's NEPA regulations that were published in the Federal Register on July 16, 2020, the preamble to the final rule at 85 FR 43323 states that an agency does not need to include a detailed discussion of each alternative in an environmental assessment. In the national decision document, the Corps briefly discussed the environmental consequences of each alternative.

One commenter said that the Corps should impose monitoring requirements that would ensure that NWP terms and conditions, including those resulting from subsequent exercises in discretionary authority, would be adequately policed. In response, Corps districts can conduct compliance inspections for authorized activities, to ensure that those activities are conducted in accordance with any conditions added to the NWP authorization. The Corps district will take appropriate actions to address non-compliance with permit conditions.

Several commenters approved of the reiteration and clarification that the discharge of pesticides is regulated under Section 402 of the CWA and not Section 404. They suggested that the final rule clearly state that operators may be permitted to use pesticides to control agricultural pests and predators instead of just predators. One commenter said that the statement regarding commercial shellfish mariculture operations using chemicals to control fouling organisms is incorrect because chemical use or the potential introduction of toxic materials is regulated by the Interstate Shellfish Sanitation Conference. One commenter said that commercial shellfish mariculture operators may use herbicides to control invasive, noxious weeds on commercial clam beds.

The Corps does not have the authority to control the use of pesticides, herbicides, and antifouling agents in commercial shellfish mariculture activities. Use of some of these chemicals may be regulated under other federal or state laws and regulations administered by other agencies.

One commenter said that while gear sometimes escapes from commercial shellfish farms despite growers' best efforts to ensure it remains secured, shellfish farmers do not discard equipment into the marine environment. This commenter requested that the Corps revise the national decision document to make it clear that growers are not discarding equipment, but equipment may wash away from the project site or move by other mechanisms. This commenter also said that NWP general condition 6 addresses the use of trash in the NWP program. One commenter said that the use of plastics gear for commercial shellfish mariculture activities adds plastic pollution to the ocean and beaches through plastic debris and this plastic can break down further into microplastics, which can impact wildlife, aesthetics, and food safety.

The Corps has revised the national decision document to clarify that some materials used for commercial shellfish mariculture activities may wash away from the project area. General condition 6 does not address trash or garbage that may be associated with commercial shellfish mariculture activities. General condition 6 prohibits the use of trash as fill material. Trash and garbage are not considered fill material for the purposes of section 404 of the Clean Water Act (see 33 CFR 323.2(e)(3)).

2.0 Purpose and Need for the Proposed Action

The proposed action is the issuance of this NWP to authorize structures and work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899 and discharges of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act for commercial shellfish mariculture activities that result in no more than minimal individual and cumulative adverse environmental effects. This proposed action is needed for efficient implementation of the Corps Regulatory Program, by authorizing with little, if any, delay or paperwork a category of activities that has no more than minimal individual and cumulative adverse environmental effects. The NWP also provides an incentive to project proponents to reduce impacts to jurisdictional waters and wetlands to receive the required authorization under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act in less time than it takes to obtain individual permits. Issuing an NWP to authorize eligible activities, instead of processing individual permit applications for these activities, will allow the Corps to devote more of its resources towards evaluating proposed activities requiring authorization under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act that have the potential to cause more substantial adverse environmental effects.

3.0 Alternatives

This evaluation includes an analysis of alternatives based on the requirements of NEPA, which requires a more expansive review than the Clean Water Act Section 404(b)(1) Guidelines. The alternatives discussed below are based on an analysis of the potential environmental impacts and impacts to the Corps, Federal, Tribal, and state resource agencies, general public, and prospective permittees. Since the consideration of off-site alternatives under the 404(b)(1) Guidelines does not apply to specific projects authorized by general permits, the alternatives analysis discussed below consists of a general NEPA alternatives analysis for the NWP.

3.1 No Action Alternative (Do Not Reissue or Modify the Nationwide Permit)

The no action alternative would be to allow this NWP to continue to authorize activities until it expires on March 18, 2022, and not reissue or modify the NWP. After the NWP expires, under the no action alternative activities that were authorized by this NWP would require individual permits, unless Corps districts issued regional general permits to authorize a similar category of activities that the NWP authorized.

3.2 Reissue the Nationwide Permit With Modifications

This alternative consists of modifying and reissuing the NWP while considering the comments received in response to the proposal to reissue this NWP with modifications, including the proposed changes identified by the Corps and changes suggested by commenters. This alternative includes changes to the terms and conditions of this NWP, including quantitative limits for this NWP, pre-construction notification thresholds and requirements, and other provisions of this NWP. This alternative also includes consideration of modifying, adding, or removing general conditions that apply to this NWP. In addition, this alternative includes the mechanisms in the Corps' NWP program regulations at 33 CFR 330.5(c) and (d) where division and district engineers can modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects.

In the September 15, 2020, Federal Register notice, the Corps requested comments on the proposed reissuance of this NWP. The Corps proposed to change the title of this NWP from "Commercial Shellfish Aquaculture Activities" to "Commercial Shellfish Mariculture Activities" to more accurately reflect where these activities are conducted (i.e., coastal waters). The Corps also proposed to remove the 1/2-acre limit for impacts to submerged aquatic vegetation in project areas that that have not been used for commercial shellfish aquaculture activities during the past 100 years. In addition, the Corps proposed to remove the definition of "new commercial shellfish aquaculture operation" that was adopted in 2017. The Corps also proposed to remove both PCN thresholds for this NWP, as well as the paragraph that identifies the additional information that permittees must submit with NWP 48 PCNs.

Since the Corps' NWP program began in 1977, the Corps has continuously strived to develop NWPs that only authorize activities that result in no more than minimal individual and cumulative adverse environmental effects. Every five years the Corps reevaluates the NWPs during the reissuance process, and may modify an NWP to address concerns for the aquatic environment. Utilizing collected data and institutional knowledge concerning activities authorized by the Corps regulatory program, the Corps reevaluates the potential impacts of activities authorized by NWPs. The Corps also uses substantive public comments on proposed NWPs to assess the expected impacts.

3.3 Reissue the Nationwide Permit Without Modifications

This alternative consists of reissuing the NWP without any modifications before it expires on March 18, 2022. This alternative also includes the mechanisms in the Corps' NWP program regulations where division and district engineers can modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis to

ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.5(c) and (d)).

4.0 Affected Environment

This environmental assessment is national in scope because the NWP may be used across the country, unless the NWP is revoked or suspended by a division or district engineer under the procedures in 33 CFR 330.5(c) and (d), respectively. For this NWP, the affected environment consists of aquatic ecosystems, including marine and estuarine ecosystems in the United States, as they have been directly and indirectly affected by past and present federal, non-federal, and private activities. The past and present activities include activities authorized by the various NWPs issued from 1977 to 2017, activities authorized by other types of Department of the Army (DA) permits, as well as other federal, tribal, state, and private activities that are not regulated by the Corps. Aquatic ecosystems are also influenced by past and present activities in uplands, because those land use/land cover changes in uplands and other activities in uplands have indirect effects on aquatic ecosystems (e.g., MEA 2005a, Reid 1993). Due to the large geographic scale of the affected environment (i.e., the entire United States), as well as the many past and present human activities that have shaped the affected environment, it is only practical to describe the affected environment in general terms. In addition, it is not possible to describe the environmental conditions for specific sites where the NWPs may be used to authorize eligible activities.

The total land area in the United States is approximately 2,260,000,000 acres, and the total land area in the contiguous United States is approximately 1,891,000,000 acres (Bigelow and Borchers 2017). Land uses in the United States as of 2012 is provided in Table 4.1 (Bigelow and Borchers 2017). Of the land area in the entire United States, approximately 60 percent (1,370,000,000 acres) is privately owned (Bigelow and Borchers 2017). Of the remaining lands in the United States, the federal government hold 28 percent (644,000,000 acres), state and local governments own 8 percent (189,000,000 acres), and 3 percent (63,000,000 acres) is held in trust by the Bureau of Indian Affairs (Bigelow and Borchers 2017).

Table 4.1. Major land uses in the United States – 2012 (Bigelow and Borchers 2017).

Land Use	Acres	Percent of Total
Agriculture	1,186,000,000	52.5
Forest land	502,000,000	22.2
Transportation use	27,000,000	1.2
Recreation and wildlife areas	254,000,000	11.2
National defense areas	27,000,000	1.2
Urban land	70,000,000	3.1
Miscellaneous use	196,000,000	8.5
Total land area	2,260,000,000	100.0

4.1 Quantity of Aquatic Ecosystems in the United States

There are approximately 283.1 million acres of wetlands in the United States; 107.7 million acres are in the conterminous United States and the remaining 175.4 million acres are in Alaska (Mitsch and Hernandez 2013). Wetlands occupy less than 9 percent of the global land area (Zedler and Kercher 2005). According to Dahl (2011), wetlands and deepwater habitats cover approximately 8 percent of the land area in the conterminous United States. Rivers and streams comprise approximately 0.52 percent of the total land area of the continental United States (Butman and Raymond 2011). Therefore, the wetlands, streams, rivers, and other aquatic habitats that are potentially waters of the United States and subject to regulation by the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 comprise a minor proportion of the land area of the United States. The remaining land area of the United States (more than 92 percent, depending on the proportion of wetlands, streams, rivers, and other aquatic habitats that are subject to regulation under those two statutes) is outside the Corps' regulatory authority.

Frayer et al. (1983) evaluated wetland status and trends in the United States during the period of the mid-1950s to the mid-1970s. During that 20-year period, approximately 7.9 million acres of wetlands (4.2 percent) were lost in the conterminous United States. Much of the loss of estuarine emergent wetlands was due to changes to estuarine subtidal deepwater habitat, and some loss of estuarine emergent wetlands was due to urban development.

The U.S. Fish and Wildlife Service also examined the status and trends of wetlands in the United States during the period of the mid-1970s to the 1980s, and found that there was a net loss of more than 2.6 million acres of wetlands (2.5 percent) during that time period (Dahl and Johnson 1991). Freshwater wetlands comprised 98 percent of those wetland losses (Dahl and Johnson 1991). During that time period, losses of estuarine wetlands were estimated to be 71,000 acres, with most of that

loss due to changes of emergent estuarine wetlands to open waters caused by shifting sediments (Dahl and Johnson 1991).

Between 2004 and 2009, there was no statistically significant difference in wetland acreage in the conterminous United States (Dahl 2011). According to the 2011 wetland status and trends report, during the period of 2004 to 2009 urban development accounted for 11 percent of wetland losses (61,630 acres), rural development resulted in 12 percent of wetland losses (66,940 acres), silviculture accounted for 56 percent of wetland losses (307,340 acres), and wetland conversion to deepwater habitats caused 21 percent of the loss in wetland area (115,960 acres) (Dahl 2011). Some of the losses occurred to wetlands that are not subject to Clean Water Act jurisdiction and some losses are due to activities not regulated under Section 404 of the Clean Water Act, such as unregulated drainage activities, exempt forestry activities, or water withdrawals. From 2004 to 2009, approximately 100,020 acres of wetlands were gained as a result of wetland restoration and conservation programs on agricultural land (Dahl 2011). Another source of wetland gain is conversion of other uplands to wetlands, resulting in a gain of 389,600 acres during the period of 2004 to 2009 (Dahl 2011). Inventories of wetlands, streams, and other aquatic resources are incomplete because the techniques used for those studies cannot identify some of those resources (e.g., Dahl (2011) for wetlands; Meyer and Wallace (2001) for streams).

Losses of vegetated estuarine wetlands due to the direct effects of human activities have decreased significantly due to the requirements of Section 404 of the Clean Water Act and other laws and regulations (Dahl 2011). During the period of 2004 to 2009, less than one percent of estuarine emergent wetlands were lost as a direct result of human activities, while other factors such as sea level rise, land subsidence, storm events, erosion, and other ocean processes caused substantial losses of estuarine wetlands (Dahl 2011). The indirect effects of other human activities, such as oil and gas development, water extraction, development of the upper portions of watersheds, and levees, have also resulted in coastal wetland losses (Dahl 2011). Eutrophication of coastal waters can also cause losses of emergent estuarine wetlands, through changes in growth patterns of marsh plants and decreases in the stability of the wetland substrate, which changes those marshes to mud flats (Deegan et al. 2012).

The Emergency Wetlands Resources Act of 1986 (Public Law 99-645) requires the U.S. Fish and Wildlife Service (USFWS) to submit wetland status and trends reports to Congress (Dahl 2011). The latest status and trends report, which covers the period of 2004 to 2009, is summarized in Table 4.2. The USFWS status and trends report only provides information on acreage of the various aquatic habitat categories and does not assess the quality or condition of those aquatic habitats (Dahl 2011).

Table 4.2. Estimated aquatic resource acreages in the conterminous United States in 2009 (Dahl 2011).

Aquatic Habitat Category	Estimated Area in 2009 (acres)
Marine intertidal	227,800
Estuarine intertidal non-vegetated	1,017,700
Estuarine intertidal vegetated	4,539,700
All intertidal waters and wetlands	5,785,200
Freshwater ponds	6,709,300
Freshwater vegetated	97,565,300
• Freshwater emergent wetlands	27,430,500
• Freshwater shrub wetlands	18,511,500
• Freshwater forested wetlands	51,623,300
All freshwater wetlands	104,274,600
Lacustrine deepwater habitats	16,859,600
Riverine deepwater habitats	7,510,500
Estuarine subtidal habitats	18,776,500
All wetlands and deepwater habitats	153,206,400

The acreage of lacustrine deepwater habitats does not include the open waters of Great Lakes (Dahl 2011).

The Federal Geographic Data Committee has established the Cowardin system developed by the USFWS (Cowardin et al. 1979) as the national standard for wetland mapping, monitoring, and data reporting (Dahl 2011) (see Federal Geographic Data Committee (2013)). The Cowardin system is a hierarchical system which describes various wetland and deepwater habitats, using structural characteristics such as vegetation, substrate, and water regime as defining characteristics. Wetlands are defined by plant communities, soils, or inundation or flooding frequency. Deepwater habitats are permanently flooded areas located below the wetland boundary. In rivers and lakes, deepwater habitats are usually more than two meters deep. The Cowardin et al. (1979) definition of “wetland” differs from the definition used by the Corps and U.S. EPA for the purposes of implementing Section 404 of the Clean Water Act. The Corps-U.S. EPA regulations defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” [33 CFR 328.3(c)(4); 40 CFR 230.3(o)(3)(iv)] The Cowardin et al. (1979) requires only one factor (i.e., wetland vegetation, soils, hydrology) to be present for an area to be a wetland, while the Corps-U.S. EPA wetland definition

requires all three factors to be present under normal circumstances (Tiner 2017, Mitsch and Gosselink 2015). The NWI produced by applying the Cowardin et al. (1979) definition is the only national scale wetland inventory available. There is no national inventory of wetland acreage based on the Corps' wetland definition at 33 CFR 328.3(c)(16).

There are five major systems in the Cowardin classification scheme: marine, estuarine, riverine, lacustrine, and palustrine (Cowardin et al. 1979). The marine system consists of open ocean on the continental shelf and its high energy coastlines. The estuarine system consists of tidal deepwater habitats and adjacent tidal wetlands that are usually partially enclosed by land, but may have open connections to open ocean waters. The riverine system generally consists of all wetland and deepwater habitats located within a river channel. The lacustrine system generally consists of wetland and deepwater habitats located within a topographic depression or dammed river channel, with a total area greater than 20 acres. The palustrine system generally includes all non-tidal wetlands and wetlands located in tidal areas with salinities less than 0.5 parts per thousand; it also includes ponds less than 20 acres in size. Approximately 95 percent of wetlands in the conterminous United States are freshwater wetlands, and the remaining 5 percent are estuarine or marine wetlands (Dahl 2011).

The National Resources Inventory (NRI) is a statistical survey conducted by the Natural Resources Conservation Service (NRCS) (USDA 2018) of natural resources on non-federal land in the United States. The NRCS defines non-federal land as privately owned lands, tribal and trust lands, and lands under the control of local and state governments. Acreages of palustrine and estuarine wetlands and the land uses those wetlands are subjected to are summarized in Table 4.3. The 2015 NRI estimates that there are 110,638,500 acres of palustrine and estuarine wetlands on non-Federal land and water areas in the United States (USDA 2018). The 2015 NRI estimates that there are 49,598,800 acres of open waters on non-Federal land in the United States, including lacustrine, riverine, and marine habitats, as well as estuarine deepwater habitats.

Table 4.3. The 2015 National Resources Inventory acreages for palustrine and estuarine wetlands on non-federal land, by land cover/use category (USDA 2018).

National Resources Inventory Land Cover/Use Category	Area of Palustrine and Estuarine Wetlands (acres)
cropland, pastureland, and Conservation Reserve Program land	17,300,000
forest land	65,800,000
rangeland	7,800,000
other rural land	14,600,000
developed land	1,500,000
water area	3,600,000
Total	111,000,000

The land cover/use categories used by the 2015 NRI are defined below (USDA 2018). Croplands are areas used to produce crops grown for harvest. Pastureland is land managed for livestock grazing, through the production of introduced forage plants. Conservation Reserve Program land is under a Conservation Reserve Program contract. Forest land is comprised of at least 10 percent single stem woody plant species that will be at least 13 feet tall at maturity. Rangeland is land on which plant cover consists mostly of native grasses, herbaceous plants, or shrubs suitable for grazing or browsing, and introduced forage plant species. Other rural land consists of farmsteads and other farm structures, field windbreaks, marshland, and barren land. Developed land is comprised of large urban and built-up areas (i.e., urban and built-up areas 10 acres or more in size), small built-up areas (i.e., developed lands 0.25 to 10 acres in size), and rural transportation land (e.g., roads, railroads, and associated rights-of-way outside urban and built-up areas). Water areas are comprised of waterbodies and streams that are permanent open waters.

The wetlands data from the Fish and Wildlife Service's Status and Trends study and the Natural Resources Conservation Service's National Resources Inventory should not be compared, because they use different methods and analyses to produce their results (Dahl 2011).

Activities authorized by NWPs will adversely affect a smaller proportion of the Nation's wetland base than indicated by the wetlands acreage estimates provided in the most recent status and trends report, or the NWI maps for a particular region.

Not all wetlands, streams, and other types of aquatic resources are subject to federal jurisdiction under the Clean Water Act (Mitsch and Gosselink 2015). Two

U.S. Supreme Court decisions have identified limits to Clean Water Act jurisdiction. In 2001, in *Solid Waste Agency of Northern Cook County v. Army Corps of Engineers* (531 U.S. 159) the U.S. Supreme Court held that the use of isolated, non-navigable, intrastate waters by migratory birds is not, by itself a sufficient basis for exercising federal regulatory authority under the Clean Water Act (see 80 FR 37056). In the Supreme Court's 2006 decision in *Rapanos* v. *United States,* (547 U.S. 715), one justice stated that waters and wetlands regulated under the Clean Water Act must have a "significant nexus" to downstream traditional navigable waters. Four justices (the plurality) concluded that Clean Water Act jurisdiction applies only to relatively permanent waters connected to traditional navigable waters and to wetlands that have a continuous surface connection to those relatively permanent waters. The remaining justices in *Rapanos* stated that Clean Water Act jurisdiction applies to waters and wetlands that meet either the significant nexus test or the Plurality's test.

There are 94,133 miles of shoreline in the United States (NOAA 1975). Of that shoreline, 88,633 miles are tidal shoreline and 5,500 miles are shoreline along the Great Lakes and rivers that connect those lakes to the Atlantic Ocean. More recently, Gittman et al. (2015) estimated that there are 99,524 miles of tidal shoreline in the conterminous United States.

4.2 Quality of Aquatic Ecosystems in the United States

The USFWS status and trends study does not assess the condition or quality of wetlands and deepwater habitats (Dahl 2011). Information on water quality in waters and wetlands, as well as the causes of water quality impairment, is collected by the U.S. EPA under Sections 305(b) and 303(d) of the Clean Water Act. Table 4.4 provides U.S. EPA's most recent national summary of water quality in the Nation's waters and wetlands.

Table 4.4. National summary of water quality data (U.S. EPA, https://iaspub.epa.gov/waters10/attains_nation_cy.control accessed 11/27/2020).

Category of water	Total waters	Total waters assessed	Percent of waters assessed	Good waters	Threatened waters	Impaired waters
Rivers and streams	3,533,205 miles	1,110,961 miles	31.4	518,293 miles	4,495 miles	588,173 miles
Lakes, reservoirs and ponds	41,666,049 acres	18,629,795 acres	44.7	5,390,570 acres	30,309 acres	13,208,917 acres
Bays and estuaries	87,791 square miles	56,141 square miles	63.9	11,516 square miles	0 square miles	44,625 square miles
Coastal	58,618	4,627	7.9	1,298	0 miles	3,329

shoreline	miles	miles		miles		miles
Ocean and near coastal waters	54,120 square miles	6,944 square miles	12.8	726 square miles	0 square miles	6,218 square miles
Wetlands	107,700,000 acres	1,242,252 acres	1.2	569,328 acres	0 acres	672,924 Acres
Great Lakes shoreline	5,202 miles	4,460 miles	85.7	106 miles	0 miles	4,354 miles
Great Lakes open waters	196,343 square miles	39,231 square miles	20.0	1 square mile	0 square miles	39,230 square miles

Waters and wetlands classified by states as “good” meets all their designated uses. Waters classified as “threatened” currently support all of their designated uses, but if pollution control measures are not taken one or more of those uses may become impaired in the future. A water or wetland is classified by the state as “impaired” if any one of its designated uses is not met. The definitions of “good,” “threatened,” and “impaired” are applied by states to describe the quality of their waters (the above definitions were found in the metadata in U.S. EPA (2015)). Designated uses include the “protection and propagation of fish, shellfish and wildlife,” “recreation in and on the water,” the use of waters for “public water supplies, propagation of fish, shellfish, wildlife, recreation in and on the water,” and “agricultural, industrial and other purposes including navigation.” (40 CFR 130.3). These designated uses are assessed by states in a variety of ways, by examining various physical, chemical and biological characteristics, so it is not possible to use the categories of “good,” “threatened,” and “impaired” to infer the level of ecological functions and services these waters perform.

According to the latest U.S. EPA national summary data, 52.9 percent of assessed rivers and streams, 70.9 percent of assessed lakes, reservoirs, and ponds, 79.5 percent of assessed bays and estuaries, 71.9 percent of assessed coastal shoreline, 89.5 percent of assessed ocean and near coastal waters, 54.2 percent of assessed wetlands, 97.6 percent of assessed Great Lakes shoreline, and 100 percent of Great Lakes open water are impaired.

For rivers and streams, 34 causes of impairment were identified, and the top 10 causes are pathogens, sediment, nutrients, organic enrichment/oxygen depletion, temperature, metals (other than mercury), polychlorinated biphenyls, mercury, habitat alterations, and turbidity. The top 10 primary sources of impairment for the assessed rivers and streams are: unknown sources, agriculture, hydromodification, atmospheric deposition, habitat alterations not directly related to hydromodification, unspecified non-point source, municipal discharges/sewage, natural/wildlife, urban-related runoff/stormwater, and silviculture (forestry).

Thirty-three causes of impairment were identified for lakes, reservoirs, and ponds.

The top 10 causes of impairment for these waters are: mercury, nutrients, polychlorinated biphenyls, turbidity, organic enrichment/oxygen depletion, metals (other than mercury), pH/acidity/caustic conditions, salinity/total dissolved solids/chlorides/sulfates, algal growth, and nuisance exotic species. For lakes, reservoirs, and ponds, the top 10 sources of impairment are: atmospheric deposition, unknown sources, agriculture, natural/wildlife, unspecified non-point source, other sources, urban-related runoff/stormwater, legacy/historic pollutants, municipal discharges/sewage, and hydromodification.

Twenty-eight causes of impairment were identified for bays and estuaries. The top 10 causes of impairment for these waters are: polychlorinated biphenyls, nutrients, mercury, turbidity, dioxins, toxic organics, metals (other than mercury), pesticides, pathogens, and organic enrichment/oxygen depletion. For bays and estuaries, the top 10 sources of impairment are: legacy/historic pollutants, urban-related runoff/stormwater, unknown sources, atmospheric deposition, municipal discharges/sewage, unspecified non-point sources, other sources, natural/wildlife, agriculture, and industrial.

Coastal shorelines were impaired by 16 identified causes, the top 10 of which are: mercury, pathogens, turbidity, organic enrichment/oxygen depletion, pH/acidity/caustic conditions, nutrients, oil and grease, temperature, cause unknown – impaired biota, and algal growth. The top 10 sources of impairment of coastal shorelines are municipal discharges/sewage, urban-related runoff/stormwater, unknown sources, recreational boating and marinas, hydromodification, industrial, unspecified non-point sources, agriculture, legacy/historic pollutants, and land application/waste sites/tanks.

Ocean and near coastal waters were impaired by 16 identified causes, the top 10 of which are: mercury, organic enrichment/oxygen depletion, pathogens, metals (other than mercury), pesticides, turbidity, nuisance exotic species, total toxics, pH/acidity/caustic conditions, and polychlorinated biphenyls. The top 10 sources of impairment of ocean and near coastal waters are: atmospheric deposition, unknown sources, unspecified non-point sources, other sources, recreation and tourism (non-boating), recreational boating and marinas, urban-related runoff/stormwater, hydromodification, municipal discharges/sewage, and construction.

For wetlands, 23 causes of impairment were identified, and the top 10 causes are: organic enrichment/oxygen depletion, mercury, metals (other than mercury), salinity/total dissolved solids/chlorides/sulfates, pathogens, nutrients, toxic inorganics, temperature, pH/acidity/caustic conditions, and turbidity. The 10 primary sources for wetland impairment are: unknown sources, natural/wildlife, agriculture, atmospheric deposition, resource extraction, hydromodification, unspecified non-point sources, other, land application/waste sites/tanks, and groundwater loadings/withdrawals.

For Great Lakes shorelines, 12 causes of impairment were identified, and the top 10

causes are: polychlorinated biphenyls, dioxins, mercury, pesticides, toxic organics, pathogens, nutrients, nuisance exotic species, sediment, and habitat alterations. The 10 primary sources for Great Lakes shoreline impairment are: atmospheric deposition, unknown sources, legacy/historic pollutants, agriculture, municipal discharges/sewage, hydromodification, urban-related runoff/stormwater, habitat alterations (not directly related to hydromodifications), industrial, and unspecified non-point sources.

For Great Lakes open waters, 8 causes of impairment were identified, and those causes are: polychlorinated biphenyls, mercury, dioxins, pesticides, toxic organics, nutrients, metals (other than mercury), and sediment. The 8 sources for Great Lakes open water impairment are: atmospheric deposition, unknown sources, agriculture, municipal discharges/sewage, unspecified non-point sources, industrial, urban-related runoff/stormwater, and legacy/historic pollutants.

Water quality standards are established by states, with review and approval by the U.S. EPA (see Section 303(c) of the Clean Water Act and the implementing regulations at 40 CFR part 131). Under Section 401 of the Clean Water Act States review proposed discharges to determine compliance with applicable water quality standards.

Most causes and sources of impairment identified by states in the water quality summary discussed above are not due to activities regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Inputs of sediments into aquatic ecosystems can result from erosion occurring within a watershed (Beechie et al. 2013, Gosselink and Lee 1989). As water moves through a watershed it carries sediments and pollutants to streams (e.g., Allan 2004, Dudgeon et al. 2005, Paul and Meyer 2001) and wetlands (e.g., Zedler and Kercher 2005, Wright et al. 2006). Non-point sources of pollution (i.e., pollutants carried in runoff from farms, roads, and urban areas) are largely uncontrolled (Brown and Froemke 2012) because the Clean Water Act only requires permits for point sources discharges of pollutants (i.e., discharges of dredged or fill material regulated under section 404 and point source discharges of other pollutants regulated under section 402). Estuaries across the world have been substantially degraded by human activities (NRC 2010). Habitat alterations as a cause or source of impairment may be the result of activities regulated under section 404 and section 10 because they involve discharges of dredged or fill material or structures or work in navigable waters, but habitat alterations may also occur as a result of activities not regulated under those two statutes, such as the removal of vegetation from upland riparian areas. Hydrologic modifications may or may not be regulated under section 404 or section 10.

The indirect effects of changes in upland land use (which are highly likely not to be subject to federal control and responsibility, at least in terms of the Corps Regulatory Program), including the construction and expansion of upland developments, have substantial adverse effects on the quality (i.e. the ability to

perform hydrologic, biogeochemical, and habitat functions) of jurisdictional waters and wetlands because those upland activities alter watershed-scale processes. Those watershed-scale processes include water movement and storage, erosion and sediment transport, and the transport of nutrients and other pollutants.

Habitat alterations as a cause or source of impairment may be the result of activities regulated under section 404 and section 10 because they involve discharges of dredged or fill material into jurisdictional waters or structures or work in navigable waters, but habitat alterations may also occur as a result of activities not regulated under those two statutes, such as the removal of vegetation from upland riparian areas. Hydrologic modifications may or may not be regulated under section 404 or section 10, depending on whether those hydrologic modifications are the result of discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act or structures or work in navigable waters of the United States regulated under Section 10 of the Rivers and Harbors Act of 1899. When states, tribes, or the U.S. EPA establish total maximum daily loads (TMDLs) for pollutants and other impairments for specific waters, there may be variations in how these TMDLs are defined (see 40 CFR part 130).

As discussed below, many anthropogenic activities and natural processes affect the ability of jurisdictional waters and wetlands to perform ecological functions. Stream and river functions are affected by activities occurring in their watersheds, including the indirect effects of land uses changes (Beechie et al. 2013, Allan 2004, Paul and Meyer 2001). Booth at al. (2004) found riparian land use in residential areas also strongly affects stream condition because many landowners clear vegetation up to the edge of the stream bank. The removal of vegetation from upland riparian areas and other activities in those non-jurisdictional areas do not require DA authorization. Wetland functions are also affected by indirect effects of land use activities in the land area that drains to the wetland (Zedler and Kercher 2005, Wright et al. 2006). Human activities within a watershed or catchment that have direct or indirect adverse effects on rivers, streams, wetlands, and other aquatic ecosystems are not limited to discharges of dredged or fill material into waters of the United States or structures or work in a navigable waters. Human activities in uplands have substantial indirect effects on the structure and function of aquatic ecosystems, including streams and wetlands, and their ability to sustain populations of listed species. It is extremely difficult to distinguish between degradation of water quality caused by upland activities and degradation of water quality caused by the filling or alteration of wetlands (Gosselink and Lee 1989).

4.3 Aquatic Resource Functions and Services

Functions are the physical, chemical, and biological processes that occur in ecosystems (33 CFR 332.2). Wetland functions occur through interactions of their physical, chemical, and biological features (Smith et al. 1995). Wetland functions depend on a number of factors, such as the movement of water through the

wetland, landscape position, surrounding land uses, vegetation density within the wetland, geology, soils, water source, and wetland size (NRC 1995). In its evaluation of wetland compensatory mitigation in the Clean Water Act Section 404 permit program, the National Research Council (2001) recognized five general categories of wetland functions:

- Hydrologic functions
- Water quality improvement
- Vegetation support
- Habitat support for animals
- Soil functions

Hydrologic functions include short- and long-term water storage and the maintenance of wetland hydrology (NRC 1995). Water quality improvement functions encompass the transformation or cycling of nutrients, the retention, transformation, or removal of pollutants, and the retention of sediments (NRC 1995). Vegetation support functions include the maintenance of plant communities, which support various species of animals as well as economically important plants. Wetland soils support diverse communities of bacteria and fungi which are critical for biogeochemical processes, including nutrient cycling and pollutant removal and transformation (NRC 2001). Wetland soils also provide rooting media for plants, as well as nutrients and water for those plants. These various functions generally interact with each other, to influence overall wetland functioning, or ecological integrity (Smith et al. 1995; Fennessy et al. 2007). As discussed earlier in this report, the Corps regulations at 33 CFR 320.4(b) list wetland functions that are important for the public interest review during evaluations of applications for DA permits, and for the issuance of general permits.

Not all wetlands perform the same functions, nor do they provide functions to the same degree (Smith et al. 1995). Therefore, it is necessary to account for individual and regional variation when evaluating wetlands and the functions and services they provide. The types and levels of functions performed by a wetland are dependent on its hydrologic regime, the plant species inhabiting the wetland, soil type, and the surrounding landscape, including the degree of human disturbance of the landscape (Smith et al. 1995).

Ecosystem services are the benefits that humans derive from ecosystem functions (33 CFR 332.2). The Millennium Ecosystem Assessment (2005a) describes four categories of ecosystem services: provisioning services, regulating services, cultural services, and supporting services. For wetlands and open waters, provisioning services include the production of food (e.g., fish, shellfish, game), fresh water storage, food and fiber production, production of chemicals that can be used for medicine and other purposes, and supporting genetic diversity for resistance to disease. Regulating services relating to open waters and wetlands consist of climate regulation, control of hydrologic flows, water quality through the removal, retention, and recovery of nutrients and pollutants, erosion control, mitigating natural hazards such as floods, and providing habitat for pollinators.

Cultural services that come from wetlands and open waters include spiritual and religious values, recreational opportunities, aesthetics, and education. Wetlands and open waters contribute supporting services such as soil formation, sediment retention, and nutrient cycling.

Aquatic ecosystems in the current affected environment provide a wide variety of ecological functions and services to differing degrees (MEA 2005a) to human communities. Degraded ecosystems can provide ecological functions and services that continue to provide some conservation value (Weins and Hobbs 2015).

Examples of services provided by wetland functions include flood damage reduction, maintenance of populations of economically important fish and wildlife species, maintenance of water quality (NRC 1995, MEA 2005a) and the production of populations of wetland plant species that are economically important commodities, such as timber, fiber, and fuel (MEA 2005a). Wetlands can also provide important climate regulation and storm protection services (MEA 2005a).

Marine ecosystems provide a number of ecosystem services, including fish production; materials cycling (e.g., nitrogen, carbon, oxygen, phosphorous, and sulfur); transformation, detoxification, and sequestration of pollutants and wastes produced by humans; support of ocean-based recreation, tourism, and retirement industries; and coastal land development and valuation, including aesthetics related to living near the ocean (Peterson and Lubchenco 1997).

Seagrasses provide ecological services such as organic carbon production, detrital export, nutrient cycling, sediment stabilization, increased biodiversity, habitat for a variety of aquatic organisms (including fish species of recreational and commercial importance), and energy exchanges with other aquatic habitats (Orth et al. 2006).

Bivalve molluscs provide ecological services such as such as improved water quality by reducing water turbidity and nutrients that contribute to eutrophication, facilitating plant growth by providing nutrients, denitrification, carbon sequestration, providing structural habitat for a variety of fish, crustaceans, and epibiotic organisms, and habitat and shoreline stabilization (NRC 2010). Bivalve molluscs also contribute to provisioning services through secondary production that provides food to a variety of aquatic and terrestrial organisms, including people. In coastal waters that have been altered by human activities and where conditions still exist for production of bivalve shellfish that are safe for human consumption, commercial bivalve shellfish mariculture activities can be an alternative means for providing a variety of ecosystem functions and services when resources for traditional restoration activities are not available (Alleway et al. 2019).

Costanza et al. (2014) estimated the value of ecosystem services, by general categories of ecosystem type. Their estimates, based on data analysis conducted in 2011 and using the 2007 value of the U.S. dollar, are provided in Table 4.5. The ecosystem categories providing the highest values of ecosystem services by acre

per year were coral reefs ($142,661 per acre per year), followed by tidal marshes and mangrove wetlands ($78,506 per acre per year). Forested and floodplain wetlands had a value of $10,401 per acre per year.

Table 4.5 – Estimates of the value of ecosystem services, by ecosystem category (Costanza et al. 2014)

Ecosystem category	2007$ per acre per year
Marine	554
open ocean	24
coastal	3,622
• estuaries	11,711
• seagrass/algae beds	11,711
• coral reefs	142,661
• coastal shelf	900
Terrestrial	1,985
forest	1,539
• tropical	2,180
• temperate/boreal	1,270
grass/rangelands	1,687
wetlands	56,770
• tidal marsh/mangroves	78,506
• swamps/floodplains	10,401
lakes/rivers	5,067
desert	-
tundra	-
ice/rock	-
cropland	2,255
urban	2,698

When natural ecosystems are converted to human-dominated ecosystems, there are tradeoffs between the losses in ecosystem services provided by natural ecosystems and the gains in goods and services provided by land use changes, resource extraction, harvesting, and other activities (MEA 2005c). For thousands of years, human communities have altered landscapes and ecosystems to serve their needs, such as food, safety, and commerce, and made trade-offs by increasing certain ecosystem functions and services while reducing other ecosystem functions and services (Karieva et al. 2007).

This NWP authorizes activities in waters of the United States, including navigable waters. The waters in which this NWP would normally be used are the estuarine and marine systems of the Cowardin classification system.

Activities authorized by this NWP will provide a wide variety of goods and services that are valued by society. For example, commercial shellfish mariculture activities provide sources of protein and other nutrients to human populations. Commercial shellfish mariculture activities can also produce other compounds that are used by society. Commercial shellfish mariculture activities can help restore the ecological

services that were historically provided by natural populations of bivalve molluscs before populations of those molluscs were substantially reduced by overfishing and other human activities (NRC 2010). These ecosystem services include improving water quality, carbon sequestration, providing habitat for other aquatic species, and helping to stabilize shoreline habitats (NRC 2010, van der Schatte Olivier et al. 2018). However, benefits will be limited to the time period over which cultivation of shellfish continues because ecosystem services such as water filtration will end once harvest occurs and harvesting techniques may have adverse effects to resources such as benthic habitats. These ecosystem services are complementary to—but not a replacement for—those provided by natural habitats, such as seagrasses or oyster reefs (Alleway et al. 2019).

4.4 Human Activities and Natural Factors that Affect the Quantity and Quality of Aquatic Ecosystems in the United States

The affected environment is the current environmental setting against which the environmental effects of the proposed action is evaluated, to determine whether the issuance of the NWP will have a significant impact on the quality of the human environment. The affected environment is also used as a basis for comparison to determine whether activities authorized by the NWP will result in no more than minimal individual and cumulative adverse environmental effects when added to the current environmental setting.

For thousands of years, humans have caused substantial impacts on ecosystems and the ecological functions and services they provide (Ellis et al. 2010, Evans and Davis 2018). Around the beginning of the 19th century, the degree of impacts of human activities on the Earth's ecosystems began to exceed the degree of impacts to ecosystems caused by natural disturbances and variability (Steffen et al. 2007). All of the Earth's ecosystems have been affected either directly or indirectly by human activities (Vitousek et al. 1997). Over 75 percent of the ice-free land on Earth has been altered by human occupation and use (Ellis and Ramankutty 2008). Approximately 33 percent of the Earth's ice-free land consists of lands heavily used by people: urban areas, villages, lands used to produce crops, and occupied rangelands (Ellis and Ramankutty 2008). For marine ecosystems, Halpern et al. (2008) determined that there are no marine waters that are unaffected by human activities, and that 41 percent of the area of ocean waters are affected by multiple anthropogenic stressors (e.g., land use activities that generate pollution that go to coastal waters, marine habitat destruction or modification, and the extraction of resources). The marine waters most highly impacted by human activities are continental shelf and slope areas, which are affected by both land-based and ocean-based human activities (Halpern et al. 2008). Human population density is a good indicator of the relative effect that people have had on local ecosystems, with lower population densities causing smaller impacts to ecosystems and higher population densities having larger impacts on ecosystems (Ellis and Ramankutty 2008). Human activities such as urbanization, agriculture, and forestry alter

ecosystem structure and function by changing their interactions with other ecosystems, their biogeochemical cycles, and their species composition (Vitousek et al. 1997). Changes in land use reduce the ability of ecosystems to produce ecosystem services, such as food production, reducing infectious diseases, and regulating climate and air quality (Foley et al. 2005).

Ecosystems are not separate from human communities, and they are interdependent and comprise a single social-ecological system (Folke et al. 2011). Social-ecological systems are altered by human activities, as well as natural perturbations and changing environmental conditions, but they possess resilience and adaptive capacities that allow them to continue to provide ecological functions and services when properly managed (Chapin et al. 2010). Social-ecological systems exist at a number of scales, ranging from local to regional to global (Folke et al. 2010). Despite the prevalence of human activities altering landscapes and seascapes and the ecosystems within those landscapes and seascapes over long periods of time, many of those ecosystems continue to provide ecological functions and services to varying degrees (Clewell and Aronson 2013). Disturbances to ecosystems, landscapes, and seascapes may result in those systems recovering to their original state through biotic and abiotic characteristics and processes that provide resilience, or those systems may be transformed to a different ecological state (i.e., an alternative stable state) (van Andel and Aronson 2012). From the perspective of social-ecological systems, resilience is defined by Folke et al. (2010) as the capacity of a social-ecological system to withstand disturbance and undergo changes, while retaining its ability to exhibit similar structure, functions, and interactions. If the ecosystem, landscape, or seascape changes to an alternative stable state, the alternative stable state may be considered an improvement or degradation, depending on the perspective of the person evaluating the change (Backstrom et al. 2018, van Andel and Aronson 2012). This NWP will be used to authorize certain activities that require DA authorization in these social-ecological systems, and the potential environmental consequences of the reissuance of this NWP is evaluated under the current environmental setting and the potential impacts to jurisdictional waters and wetlands that may occur during the 5-year period this NWP is anticipated to be in effect. The environmental consequences of the reissuance of this NWP is also considered for the various public interest review factors in section 6.0 of this document, which include social and ecological components.

Recent changes in climate have had substantial impacts on natural ecosystems and human communities (IPCC 2014). Climate change, both natural and anthropogenic, is a major driving force for changes in ecosystem structure, function, and dynamics (Millar and Brubaker 2006). However, there are other significant drivers of change to aquatic and terrestrial ecosystems. In addition to climate change, aquatic and terrestrial ecosystems are also adversely affected by land use and land cover changes, natural resource extraction (including water withdrawals), pollution, species introductions, and removals of species (NAS and RS 2019, Staudt et al. 2013, Bodkin 2012, MEA 2005a) and changes in nutrient cycling (Julius et al. 2013).

During the past century, changes to ecosystems have been driven primarily by changes in biological factors, such as land use/land cover changes and the spread of non-native species, but in the future changes in abiotic processes, such as climate change and nitrogen deposition, may become predominant drivers of ecosystem change (Radeloff et al. 2015). The current contribution of climate change to changes in ecosystems is small compared to other anthropogenic causes of change to ecosystems (Radeloff et al. 2015, Williams et al. 2019) that are identified above, especially land use and land cover changes.

The affected environment (i.e., the current environmental setting) has been shaped by a wide variety of human activities. Wetlands, streams, and other aquatic resources and the ecological functions and services they provide are directly and indirectly affected by changes in land use and land cover, alien species introductions, overexploitation of species, pollution, eutrophication due to excess nutrients, resource extraction including water withdrawals, climate change, and various natural disturbances (MEA 2005a). A more detailed list of activities is provided below in Table 4.6. Activities regulated and authorized by the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 through NWPs, individual permits, letters of permission, and regional general permits comprise a small subset of those activities. The impacts of human activities have altered, to some degree, all ecosystems, including the quantity and quality of wetlands, streams, and other aquatic resources in the United States, and the ecological functions and services they provide. Other federal, non-federal, and private activities also contribute to the current environmental setting by changing the quantity and quality of aquatic resources and the ecological functions and services they provide. Human activities that have affected ecosystems, landscapes, and seascapes may have legacy effects that continue under the current environmental setting and affected the quantity of those resources and the ecological functions and services they provide.

Table 4.6 – Human activities and natural factors that cause changes in aquatic ecosystems and the functions and services they perform

Resource type(s)	Human activities and natural factors that drive ecosystem change	Reference(s)
wetlands and waters (generally)	• land use/land cover changes • alien species introductions • species overexploitation • pollution • eutrophication • resource extraction (e.g., water withdrawals) • climate change • natural disturbances	MEA (2005a)

Resource type(s)	Human activities and natural factors that drive ecosystem change	Reference(s)
wetlands, including estuaries	• wetland conversion through drainage, dredging, and filling • hydrologic modifications that change wetland hydrology and hydrodynamics • pollutants (point source and non-point source), including nutrients and contaminants • waterfowl and wildlife management activities • agriculture and aquaculture activities • flood control and stormwater protection (e.g., severing hydrologic connections between rivers and floodplain wetlands) • silvicultural activities • agricultural activities • urban development • mining activities • water withdrawals, aquifer depletion • river management (e.g., channelization, navigation improvements, dams, locks, weirs) • altered sediment transport • introductions of non-native species • land subsidence, erosion	Mitsch and Gosselink (2015) Mitsch and Hernandez (2013) Wright et al. (2006) Zedler and Kercher (2005) Brinson and Malvárez (2002)
seagrass beds	• dredging • coastal development activities • degradation of water quality • sediment and nutrient runoff from adjacent lands • physical disturbances • natural processes, such as herbivore grazing, physical disturbances caused by waves and tidal currents • invasive species • diseases • commercial fishing activities • aquaculture • algal blooms • low light availability • nutrient limitations • global climate change	Borum et al. (2013) Waycott et al. (2009) Orth et al. (2006)

coral reefs	• overexploitation/overfishing • destructive fishing practices • nutrients, sediments, pesticides, and other pollutants (point source and non-point source) • nutrient loading • changes in storm frequency and intensity • increasing ocean surface temperatures • ocean acidification • coastal land uses, including development and agriculture • coral mining • sea level rise • invasive species • diseases • bleaching • global climate change	Sheppard (2014) MEA (2005a) Hughes et al. (2003)
coastal areas	• development activities, including the construction of residences, commercial buildings, industrial facilities, resorts, and port developments • agricultural and forestry activities • point source and non-point source pollution (nutrients, organic matter, other pollutants) • aquaculture • fishing activities • overharvesting of species • intentional and unintentional introductions of non-native species • dredging • reclamation • shore protection and other structures • habitat modifications • changes to hydrology and hydrodynamics • global climate change • shoreline erosion • pathogens and toxins • debris and litter	Robb (2014) Day et al. (2013) Lotze et al. (2006) MEA (2005b) NRC (1994)
oceans	• pollution (point and non-point source) • fishing activities • changes in sea temperatures • ultraviolet light • ocean acidification • species invasions • commercial activities • other human activities • benthic structures • offshore energy infrastructure (e.g., wind farms, pipelines)	Halpern et al. (2015) Halpern et al. (2008)

Wetlands, streams, and other aquatic resources and the functions and services they provide are directly and indirectly affected by changes in land use and land cover, alien species introductions, overexploitation of species, pollution, eutrophication due

to excess nutrients, resource extraction including water withdrawals, climate change, and various natural disturbances (MEA 2005a). Freshwater ecosystems such as lakes, rivers, and streams are altered by changes to water flow, climate change, land use changes, additions of chemicals, resource extraction, and aquatic invasive species (Carpenter et al. 2011). Cumulative effects to wetlands, streams, and other aquatic resources that form the current environmental setting are the result of landscape-level processes (Gosselink and Lee 1989). As discussed in more detail below, cumulative or aggregate effects to aquatic resources are caused by a variety of activities (including activities that occur entirely in uplands) that take place within a landscape unit, such as the watershed for a river or stream (e.g., Allan 2004, Paul and Meyer 2001, Leopold 1968) or the contributing drainage area for a wetland (e.g., Wright et al. 2006, Brinson and Malvárez 2002, Zedler and Kercher 2005).

There is little national-level information on the current ecological state of the Nation's wetlands, streams, and other aquatic resources, or the general degree to which they perform various ecological functions, although reviews have acknowledged that most of these aquatic resources are degraded to some degree (Zedler and Kercher 2005, Allan 2004) or impaired (U.S. EPA 2015) because of various activities, disturbances, and other stressors. Therefore, the analysis in this environmental assessment is a qualitative analysis.

There is a wide variety of causes and sources of impairment of the Nation's rivers, streams, wetlands, lakes, estuarine waters, and marine waters (U.S. EPA 2015), which also contribute to cumulative effects to these aquatic resources. Many of those causes of impairment are point and non-point sources of pollutants that are not regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Two common causes of impairment for rivers and streams, habitat alterations and flow alterations, may be due in part to activities regulated by the Corps under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. Habitat and flow alterations may also be the caused by activities that do not involve discharges of dredged or fill material or structures or work in navigable waters. For wetlands, impairment due to habitat alterations, flow alterations, and hydrology modifications may involve activities regulated under section 404, but these causes of impairment may also be due to unregulated activities, such as changes in upland land use that affects the movement of water through a watershed or contributing drainage area or the removal of vegetation.

The Millennium Ecosystem Assessment (MEA 2005a) broadly defines wetlands as inland wetlands (e.g., swamps, marshes, lakes, rivers, peatlands, and underground water habitats), coastal and near-shore marine wetlands (e.g., coral reefs, mangroves, seagrass beds, and estuaries), and human-made wetlands (e.g., rice fields, dams, reservoirs, and fish ponds). According to the MEA (2005a), the principal drivers of direct change to estuarine and marine wetlands include the conversion of saltwater marshes, mangroves, seagrass meadows, and coral reefs

to other land uses, diversions of freshwater flows, increased inputs of nitrogen, overharvesting various species, water temperature changes, and species introductions. These changes are indirectly driven by increases in human populations in coastal areas (MEA 2005a). Robb (2014) identified a number of threats to estuaries and estuarine habitats such as salt marshes, seagrass beds, and sand flats. Those threats include land-based activities in surrounding watersheds, such as development activities, agricultural activities, forestry activities, pollution, freshwater diversions, shoreline stabilization, waterway impairments, and inputs of debris and litter. With respect to activities occurring directly in coastal waters, Robb (2014) identified the following threats: shoreline development, the construction and operation of port facilities, dredging, marine pollution, aquaculture activities, resource extraction activities, species introductions, and recreational activities. Changing climate conditions also pose threats to estuaries through sea level rise, changing water temperatures, ocean acidification, and changing precipitation patterns (Robb 2014).

Marine and coastal waters are affected by human activities in the ocean, coastal areas, and watersheds that drain to those marine and coastal waters (Korpinen and Andersen 2016). In marine and coastal environments, human activities and other disturbances that affect resources in those waters can come from a variety of sources, including water-based activities (e.g., transportation, fishing, mariculture, power generation, and tourism) and land-based activities (e.g., urban and suburban development, agriculture, non-point source pollution, forestry activities, power generation, and mining activities) (Clark Murray et al. 2014).

Activities that affect wetland quantity and quality include: land use changes that alter local hydrology (including water withdrawal), clearing and draining wetlands, constructing levees that sever hydrologic connections between rivers and floodplain wetlands, constructing other obstructions to water flow (e.g., dams, locks), constructing water diversions, inputs of nutrients and contaminants, and fire suppression (Brinson and Malvárez 2002). Wetland loss and degradation is caused by hydrologic modifications of watersheds, drainage activities, logging, agricultural runoff, urban development, conversion to agriculture, aquifer depletion, river management, (e.g., channelization, navigation improvements, dams, weirs), oil and gas development activities, levee construction, peat mining, and wetland management activities (Mitsch and Hernandez 2013). Upland development adversely affects wetlands and reduces wetland functionality because those activities change surface water flows and alter wetland hydrology, contribute stormwater and associated sediments, nutrients, and pollutants, cause increases in invasive plant species abundance, and decrease the diversity of native plants and animals (Wright et al. 2006). Many of the remaining wetlands in the United States are degraded (Zedler and Kercher 2005). Wetland degradation and losses are caused by changes in water movement and volume within a watershed or contributing drainage area, altered sediment transport, drainage, inputs of nutrients from non-point sources, water diversions, fill activities, excavation activities, invasion by non-native species, land subsidence, and pollutants (Zedler and

Kercher 2005). According to Mitsch and Gosselink (2015), categories of activities that alter wetlands include: wetland conversion through drainage, dredging, and filling; hydrologic modifications that change wetland hydrology and hydrodynamics; highway construction and its effects on wetland hydrology; peat mining; waterfowl and wildlife management; agriculture and aquaculture activities; water quality enhancement activities; and flood control and stormwater protection.

The ecological condition of rivers and streams is dependent on the state of their watersheds (NRC 1992), because they are affected by activities that occur in those watersheds, including agriculture, urban development, deforestation, mining, water removal, flow alteration, and invasive species (Palmer et al. 2010, Allan 2004). Land use changes affect rivers and streams through increased sedimentation, larger inputs of nutrients (e.g., nitrogen, phosphorous) and pollutants (e.g., heavy metals, synthetic chemicals, toxic organics), altered stream hydrology, the alteration or removal of riparian vegetation, and the reduction or elimination of inputs of large woody debris (Allan 2004). Agriculture is the primary cause of stream impairment, followed by urbanization (Foley et al. 2005, Paul and Meyer 2001). Agricultural land use adversely affects stream water quality, habitat, and biological communities (Allan 2004). Urbanization causes changes to stream hydrology (e.g., higher flood peaks, lower base flows), sediment supply and transport, water chemistry, and aquatic organisms (Paul and Meyer 2001). Leopold (1968) found that land use changes affect the hydrology of an area by altering stream flow patterns, total runoff, water quality, and stream structure. Changes in peak flow patterns and runoff affect stream channel stability. Stream water quality is adversely affected by increased inputs of sediments, nutrients, and pollutants, many of which come from non-point sources (Paul and Meyer 2001, Allan and Castillo 2007).

The construction and operation of water-powered mills in the 17th to 19th centuries substantially altered the structure and function of streams in the eastern United States (Walter and Merritts 2008) and those effects have persisted to the present time. In urbanized and agricultural watersheds, the number of small streams has been substantially reduced, in part by activities that occurred between the 19th and mid-20th centuries (Meyer and Wallace 2001). Activities that affect the quantity and quality of small streams include residential, commercial, and industrial development, mining, agricultural activities, forestry activities, and road construction (Meyer and Wallace 2001), even if those activities are located entirely in uplands.

Waycott et al. (2009) estimated that the areal extent of seagrass beds across the world has declined by nearly 30 percent since the late 19th century. They identified two main categories of causes for that decline: direct impacts from dredging and coastal development activities, and indirect impacts from degradation of water quality. Submersed aquatic vegetation is affected by a wide variety of human activities such as dredging in seagrass meadows, anchoring vessels in seagrass beds, coastal development activities, increased sediment inputs from a variety of sources including land development activities, habitat conversions resulting from mariculture activities, increased nutrient inputs to coastal waters, and climate

change (MEA 2005a). According to Orth et al. (2006), seagrasses are threatened by numerous stressors, such as sediment and nutrient runoff from adjacent lands, physical disturbances, overgrazing, invasive species, diseases, commercial fishing activities, aquaculture, algal blooms, and global climate change. Human activities that contribute to cumulative effects to submerged aquatic vegetation include coastal development, hard shore stabilization structures, land uses changes in surrounding watersheds that increase inputs of sediments, nutrients, and pollutants to waters inhabited (or could be inhabited) by seagrasses, discharges of pollutants directly into waters, aquaculture activities, and boating activities (Orth et al. 2017, Orth et al. 2006). Orth et al. (2017, 2006) did not quantify how frequently each of these stressors pose threats to seagrasses or the relative contributions of each of the identified human activities that affect seagrasses. Submersed aquatic vegetation may be affected by natural processes, such as herbivore grazing, physical disturbances caused by waves and tidal currents, and other stressors such as low light availability, higher temperatures, or nutrient limitations (Borum et al. 2013). Boating activities (e.g., mooring, use of propellers) and fish and shellfish harvesting activities can also contribute to cumulative impacts to submersed aquatic vegetation beds (Fonseca et al. 1998). The recovery of submersed aquatic vegetation from anthropogenic and natural disturbances can vary by species, and is dependent in part on the reproductive mechanisms of those species (Borum et al. 2013, Fonseca et al. 1998). At the meadow or landscape scale, seagrass beds can fully recover after disturbance within 5 years, but recovery can take longer if there are persistent environmental changes persist or seagrass seeds or other propagules are not available to reestablish seagrasses in the affected area (O'Brien et al. 2018).

A variety of human activities have caused, and are continuing to cause declines in corals and coral reefs. Coral reefs are adversely affected by pollution, including sedimentation, excess nutrients, oil discharges, pesticides, and sewage (Sheppard 2014; MEA 2005a; Hughes et al. 2003). Shoreline development activities, development activities in watersheds draining to coastal waters, and agriculture activities in coastal watersheds also contribute to declines in corals and coral reefs (Sheppard 2014; MEA 2005a; Hughes et al. 2003). The pollution may be in runoff from nearby lands or discharged directly into waters inhabited by corals. Corals and coral reefs are also harmed by overexploitation, including overfishing, as well as destructive fishing practices (MEA 2005a) and anchors used by boats (Sheppard 2014). Climate change and associated increases in storm frequency and intensity, diseases, water temperatures, and coral bleaching also contribute to declines in corals and coral reefs (Sheppard 2014; MEA 2005a; Hughes et al. 2003). Invasive species have also affected corals and coral reefs (Sheppard 2014).

For aquatic ecosystems, climate change affects water quality, biogeochemical cycling, and water storage (Julius et al. 2013). Climate change will also affect the abundance and distribution of wetlands across the United States, as well as the functions they provide (Mitsch and Gosselink 2015). Climate change results in increases in water temperatures, more waterbodies with anoxic conditions,

degradation of water quality, and increases in flood and drought frequencies (Julius et al. 2013). The increasing carbon dioxide concentration in the atmosphere also changes the pH of the oceans, resulting in ocean acidification (RS and NAS 2014), which adversely affects corals and some other marine organisms.

In the United States, approximately 39 percent of its population lives in counties that are next to coastal waters, the territorial seas, or the Great Lakes (NOAA 2013). Those counties comprise less than 10 percent of the land area of the United States (NOAA 2013). Humans have been altering estuarine waters and coastal areas for millennia, but those changes have rapidly accelerated over the past 150 to 300 years (Lotze et al. 2006). Coastal waters are also affected by a wide variety of activities. Day et al. (2013) identified the following general categories of human activities that impact estuaries: physical alterations (e.g., habitat modifications and changes in hydrology and hydrodynamics), increases in inputs of nutrients and organic matter (enrichment), releases of toxins, and changes in biological communities as a result of harvesting activities and intentional and unintentional introductions of new species. The major drivers of changes to coastal areas are: development activities that alter coastal forests, wetlands, and coral reef habitats for aquaculture and the construction of urban areas, industrial facilities, and resort and port developments (MEA 2005b). Dredging, reclamation, shore protection and other structures (e.g., causeways and bridges), and some types of fishing activities also cause substantial changes to coastal areas (MEA 2005b). Nitrogen pollution to coastal zones change coral reef communities (MEA 2005b). Adverse effects to coastal waters are caused by habitat modifications, point source pollution, non-point source pollution, changes to hydrology and hydrodynamics, exploitation of coastal resources, introduction of non-native species, global climate change, shoreline erosion, and pathogens and toxins (NRC 1994). Over the course of history, in estuarine waters human activities caused declines of greater than 90 percent of important species, losses of more than 65 percent of seagrasses and wetland habitat, substantially degraded water quality, and facilitated introductions of new species (Lotze et al. 2006).

Substantial alterations of coastal hydrology and hydrodynamics are caused by land use changes in watersheds draining to coastal waters, the channelization or damming of streams and rivers, water consumption, and water diversions (NRC 1994). Approximately 52 percent of the population of the United States lives in coastal watersheds (NOAA 2013). Eutrophication of coastal waters is caused by nutrients contributed by waste treatment systems, non-point sources, and the atmosphere, and may cause hypoxia or anoxia in coastal waters (NRC 1994). Changes in water movement through watersheds may also alter sediment delivery to coastal areas, which affects the sustainability of wetlands and intertidal habitats and the functions they provide (NRC 1994). Most inland waters in the United States drain to coastal areas, and therefore activities that occur in inland watersheds affect coastal waters (NRC 1994). Inland land uses, such as agriculture, urban development, and forestry, adversely affect coastal waters by diverting fresh water from estuaries and by acting as sources of nutrients and pollutants to coastal waters

(MEA 2005b).

Coastal wetlands have been substantially altered by urban development and changes to the watersheds that drain to those wetlands (Mitsch and Hernandez 2013). Coastal habitat modifications are the result of dredging or filling coastal waters, inputs of sediment via non-point sources, changes in water quality, or alteration of coastal hydrodynamics (NRC 1994). Coastal development activities, including those that occur in uplands, affect marine and estuarine habitats (MEA 2005a). The introduction of non-native species may change the functions and structure of coastal wetlands and other habitats (MEA 2005a). Fishing activities may also modify coastal habitats by changing habitat structure and the biological communities that inhabit those areas (NRC 1994).

In order to effectively understand and manage ecosystems, including aquatic ecosystems, it is necessary to take into account how people and societies have reshaped aquatic and terrestrial resources over time (Ellis 2015), through the effects of human activities on those ecosystems. This includes permitting programs that regulate activities in aquatic resources and other types of natural resources. The current state of an ecosystem (e.g., a wetland or an estuary) can range from “near natural” (i.e., minimally disturbed) to semi-natural to production systems such as agricultural lands to overexploited (i.e., severely impaired) (van Andel and Aronson 2012). Degradation occurs when an ecosystem is subjected to a prolonged disturbance (Clewell and Aronson 2013), and the degree of degradation can be dependent, in part, on the severity of disturbance. Disturbances can be caused by human activities or by natural events, such as changes to ecosystems caused by ecosystem engineers (e.g., beavers) and other organisms, storms, fires, or earthquakes. Two important factors that affect how aquatic ecosystems and other ecosystems respond to disturbances are resistance and resilience.

For ecosystems, stability is the ability of an ecosystem to return its starting state after one or more disturbances cause a significant change in environmental conditions (van Andel et al. 2012). Resistance is the ability of an ecosystem to exhibit little or no change in structure or function when exposed to a disturbance (van Andel et al. 2012). Resilience is the ability of an ecosystem to regain its structural and functional characteristics in a relatively short amount of time after it has been exposed to a disturbance (van Andel et al. 2012). Human activities can change the resilience of ecosystems (Gunderson 2000). In some situations, resilience can be a positive attribute (e.g., the ability to withstand disturbances), and in other situations, resilience can be a negative attribute (e.g., when it is not possible to restore ecosystem because it has changed to the degree where it is resistant to being restored) (Walker et al. 2004). The concept of ecological resilience presumes the existence of multiple stable states, and the ability of ecosystems to tolerate some degree of disturbance before transitioning to an alternative (different) stable state (Gunderson 2000). A regime shift (i.e., a change from one stable state to an alternative stable state) can occur when human activities reduce the resilience of an ecosystem, or functional groups of species within that

ecosystem, or when there are changes in the magnitude, frequency, and duration of disturbances (Folke et al. 2004). Folke et al. (2004) and Gunderson (2000) provide examples of aquatic ecosystems that can exist in multiple stable states.

An example of a regime change in an estuary is a shift from an estuary with clear waters and benthic communities dominated by seagrasses, to an estuary with turbid waters dominated by phytoplankton that has insufficient light for seagrasses to grow and persist (Folke et al. 2004). Another example of a regime shift is where an increase in nutrients to a wetland (likely from many sources in the area draining to that wetland) causes a wetland's plant community from a diverse plant community dependent on low nutrient levels to a monotypic plant community dominated by an invasive species that can persist under the higher nutrient levels (Gunderson 2000).

Determining whether an ecosystem altered by human activities is degraded or in an alternative stable state depends on the perspective of the person making that judgment (Hobbs 2016). That judgment is dependent in part on the ecological functions and services currently being provided by the alternative stable state and the value local stakeholders place on those ecosystem functions and services. In other words, different people may have different views on the current ecological state of a particular ecosystem (Hobbs 2016, Walker et al. 2004): some people may think it is degraded and other people may think it continues to provide important ecological functions and services. It is also important to understand that degradation falls along a continuum, ranging from minimally degraded to severely degraded, since all ecosystems have been directly or indirectly altered by human activities to some degree. Degraded ecosystems can continue to provide important ecological functions and services, although they may be different from what they provided historically. In summary, the affected environment or current environmental setting consists of a variety of aquatic and terrestrial resources that have been subjected to varying degrees of disturbance by human activities, and provide different degrees of aquatic resource functions and services.

5.0 Environmental Consequences

5.1 General Evaluation Criteria

This document contains a general assessment of the reasonably foreseeable effects of the individual activities authorized by this NWP and the anticipated cumulative effects of the activities authorized by this NWP during the 5-year period it is anticipated to be in effect. In the assessment of these individual and cumulative effects, the terms and limits of the NWP, pre-construction notification requirements, and the standard NWP general conditions are considered. The NWP general conditions include mitigation measures that reduce individual and cumulative adverse environmental effects. The supplemental documentation provided by division engineers will address how regional conditions affect the individual and

cumulative effects of the NWP.

The environmental effects of proposed activities are evaluated by assessing the direct and indirect effects that those activities have on the current environmental setting (Canter 1996). The current environmental setting is the product of the cumulative or aggregated effects of human activities that have persisted over time, as well as the natural processes that have influenced, and continue to influence, the structure, functions, and dynamics of ecosystems. The current environmental setting includes the present effects of past activities authorized by previously issued versions of this NWP and other NWPs. The current environmental setting can vary substantially in different areas of the country and in different waterbodies. The current environmental setting is dependent in part on the degree to which past and present human activities have altered aquatic and terrestrial resources in a particular geographic area over time. For a particular site in which an NWP may take place, the current environmental setting can range from highly developed/overexploited (e.g., urban areas, where human impacts to ecosystems are highest) to production systems (e.g., agricultural lands) to seminatural (e.g., parks) to near natural (e.g., wilderness areas, where human impacts to ecosystems are lowest) (van Andel and Aronson 2012). Human impacts on semi-natural ecosystems are lower than human impacts to production ecosystems (van Andel and Aronson 2012). Since humans have altered aquatic and terrestrial environments in numerous, substantial ways for thousands of years (e.g., Evans and Davis 2018, Ellis 2015), the current environmental setting takes into account how human activities and changing biotic and abiotic conditions have modified existing aquatic and terrestrial resources.

The terms “cumulative effects” and “cumulative impacts” have been defined in various ways. For example, the National Research Council (NRC) (1986) defined “cumulative effects” as the on-going degradation of ecological systems caused by repeated perturbations or disturbances. MacDonald (2000) defines “cumulative effects” as the result of the combined effects of multiple activities that occur in a particular area that persist over time. Cumulative effects are caused by the interaction of multiple activities in a landscape unit, such as a watershed or ecoregion (Gosselink and Lee 1989). Cumulative effects can accrue in a number of ways. Cumulative effects can occur when there are repetitive disturbances at a single site over time, and the resource is not able to fully recover between each disturbance. Cumulative effects can also occur as a result of multiple activities occurring in a geographic area over time.

Consistent with the definitions cited above, the cumulative impacts of this NWP are the product of how many times this NWP is used to authorize structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States across the country during the 5-year period this NWP is anticipated to be in effect. In section 8.2.2 of this document, the Corps estimates the number of times this NWP will be used during the 5-year period it is expected to be in effect, as well as estimates of the acreage of permanent and temporary impacts,

and the acreage of compensatory mitigation required by district engineers to offset losses of jurisdictional waters and wetlands. The individual and cumulative impacts of activities authorized by this NWP are evaluated against the current environmental setting. This approach is consistent with the Council on Environmental Quality's definition of "effects or impacts" at 40 CFR 1508.1(g): "Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives." The estimated use of this NWP, as well as the estimated authorized impacts and required compensatory mitigation, over the next 5 years are reasonably foreseeable and have a reasonably close causal relationship to the reissuance of this NWP.

The following evaluation comprises the NEPA analysis, the public interest review specified in 33 CFR 320.4(a)(1) and (2), and the impact analysis specified in Subparts C through F of the 404(b)(1) Guidelines (40 CFR Part 230).

The issuance of an NWP is based on a general assessment of the effects on public interest and environmental factors that are likely to occur as a result of using this NWP to authorize activities in waters of the United States. As such, this assessment must be speculative or predictive in general terms. Since NWPs authorize activities across the nation, projects eligible for NWP authorization may be constructed in a wide variety of environmental settings, and affect waters and wetlands of varying quality, from severely degraded to performing one or more functions to a high degree. Nationwide permit activities may result in permanent or temporary losses of aquatic resources, or partial or complete losses of aquatic resources. Therefore, it is difficult to predict all of the direct and indirect impacts that may be associated with each activity authorized by an NWP. For example, the NWP that authorizes 25 cubic yard discharges of dredged or fill material into various types of waters of the United States may be used to fulfill a variety of project purposes, and the direct and indirect effects may vary depending on the specific activity and the environmental characteristics of the site in which the activity takes place. Therefore, certain NWPs require pre-construction notification for certain activities to provide district engineers the opportunity to review proposed activities on a case-by-case basis and determine whether they will result in no more than minimal individual and cumulative adverse environmental effects.

Indication that a factor is not relevant to a particular NWP does not necessarily mean that the NWP would never have an effect on that factor, but that it is a factor not readily identified with the authorized activity. Factors may be relevant, but the adverse effects on the aquatic environment are negligible, such as the impacts of a boat ramp on water level fluctuations or flood hazards. Consistent with 40 CFR 1501.8(g), only the reasonably foreseeable effects or impacts that have a reasonably close causal relationship to the activities authorized as a result of the reissuance of this NWP are evaluated in detail in the environmental assessment for this NWP. Division and district engineers will impose, as necessary, additional conditions on the NWP authorization or exercise discretionary authority to address

regionally or locally important factors or to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects. In any case, adverse effects will be controlled by the terms, conditions, and additional provisions of the NWP. For example, Section 7 Endangered Species Act consultation will be required for all activities that may affect endangered or threatened species or critical habitat (see 33 CFR 330.4(f) and NWP general condition 18).

In a specific watershed, division or district engineers may determine that the cumulative adverse environmental effects of activities authorized by this NWP are more than minimal. Division and district engineers will conduct more detailed assessments for geographic areas that are determined to be potentially subject to more than minimal cumulative adverse environmental effects. Division and district engineers have the authority to require individual permits in watersheds or other geographic areas where the cumulative adverse environmental effects are determined to be more than minimal, or add conditions to the NWP either on a case-by-case or regional basis to require mitigation measures to ensure that the cumulative adverse environmental effects of these activities are no more than minimal. When a division or district engineer determines, using local or regional information, that a watershed or other geographic area is subject to more than minimal cumulative adverse environmental effects due to the use of this NWP, he or she will use the revocation and modification procedure at 33 CFR 330.5. In reaching the final decision, the division or district engineer will compile information on the cumulative adverse effects and supplement the information in this document.

The Corps expects that the convenience and time savings associated with the use of this NWP will encourage applicants to design their projects within the scope of the NWP rather than request individual permits for projects which could result in greater adverse impacts to the aquatic environment. The minimization encouraged by the issuance of this NWP, as well as compensatory mitigation that may be required for specific activities authorized by this NWP, is likely to help reduce cumulative effects to the Nation's wetlands, streams, and other aquatic resources.

5.2 Impact Analysis

This NWP authorizes structures, work, and discharges of dredged or fill material into navigable waters of the United States for commercial shellfish mariculture activities. The impact analysis in this environmental assessment focuses on the impacts or effects that are likely to be caused by commercial shellfish mariculture activities that are authorized by the Corps under its permitting authorities (i.e., structures or work in navigable waters regulated under Section 10 of the Rivers and Harbors Act of 1899 and discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act).

The potential impacts of activities authorized by this NWP on the Corps' public interest review factors listed in 33 CFR 320.4(a)(1) are discussed in more detail in section 6.0 of this document. The potential impacts on the aquatic environment that could be caused by discharges of dredged or fill material into waters of the United States authorized by this NWP are discussed, in general terms, in section 8.0 of this document in the Clean Water Act Section 404(b)(1) Guidelines analysis.

The terms of this NWP, including any acreage limits or any other quantitative limits in the text of the NWP, the protections provided by many of the NWP general conditions, plus any regional conditions imposed by division engineers and activity-specific conditions imposed by district engineers will help ensure that the activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects. An additional safeguard is the ability of district engineers to exercise discretionary authority and require project proponents to obtain individual permits for proposed activities whenever a district engineer determines that a proposed activity will result in more than minimal individual or cumulative adverse environmental effects after considering any mitigation proposed by the applicant (see 33 CFR 330.1(e)(3)).

The Council on Environmental Quality's NEPA regulations at 40 CFR 1508.1(g) defines "effects or impacts' as "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." Furthermore, 40 CFR 1508.1(g)(2) states that:

> [a] "but for" causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. Effects should generally not be considered if they are remote in time, geographically remote, or the product of a lengthy causal chain. Effects do not include those effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action.

Therefore, the impact analysis in this environmental assessment focuses on the impacts or effects that are reasonably foreseeable and have a reasonably close causal relationship to the activities authorized by this NWP under the Corps' permitting authorities (i.e., work in navigable waters regulated under Section 10 of the Rivers and Harbors Act of 1899 and/or discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act).

This NWP authorizes structures or work in navigable waters of the United States. Structures or work in navigable waters of the United States that may alter the ecological functions and services performed by those navigable waters. The Corps'

regulations for Section 10 of the Rivers and Harbors Act of 1899 in 33 CFR part 322 define the term “structure” as including, “without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other obstacle or obstruction.” [33 CFR 322.2(b)] The Corps’ section 10 regulations define the term “work” as including, “without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.” [33 CFR 322.2(c)] Under this NWP, the section 10 authorization applies to discharges of dredged or fill material into waters of the United States that are also navigable waters under Section 10 of the Rivers and Harbors Act of 1899.

Structures or work in navigable waters of the United States does not typically result in losses of navigable waters, but they may change the ecological functions and services performed by those waters. Examples of exceptions would include fills in navigable waters to create fast land along the shoreline, or artificial islands. Structures and work in navigable waters may alter the physical, chemical, and biological characteristics of those waters, but they generally do not result in a loss in the quantity of navigable waters. Structures and work in navigable waters may alter the ecological functions and services provided by those waters. Those alterations will vary, depending on the specific characteristics of the specific activity authorized by this NWP and the environmental setting in which the NWP activity may occur. The environmental setting will vary from site to site, and from region to region across the country.

Certain commercial bivalve shellfish mariculture activities involve structures regulated under section 10, such as racks, cages, bags, lines, nets, and tubes, when those structures are placed in navigable waters. Dredging activities for commercial shellfish mariculture activities, including dredging for harvesting and bed preparation, are regulated under section 10 as work. Placing fill material in navigable water, including shell or gravel to provide suitable substrate for bivalve shellfish larvae to attach to and grow, is also regulated under section 10 as “work.” This is an on-bottom cultivation technique that can involve placing a relatively thin layer of shell, gravel, or other suitable material on the bottom of the waterbody, or placing that fill material to create mounds that reduce the likelihood of sedimentation that could smother bivalve shellfish larvae or older shellfish.

The installation and use of structures such as racks, cages, bags, lines, nets, and tubes, in navigable waters for commercial bivalve shellfish mariculture activities in navigable waters requires DA authorization under Section 10 of the Rivers and Harbors Act of 1899. Those structures may be floating or suspended in navigable waters, placed on the bottom of the waterbody, or installed in the substrate of the waterbody. The placement of mariculture structures in the water column or on the bottom of a waterbody does not result in a discharge of dredged or fill material that is regulated under section 404. While the presence of these structures in a waterbody may alter water movement and cause sediment to fall out of suspension

onto the bottom of the waterbody, that sediment deposition is not considered a discharge of dredged or fill material because those sediments were not discharged from a point source. In general, the placement of bivalve shellfish mariculture structures on the bottom of a navigable waterbody, or into the substrate of a navigable waterbody does not result in discharges of dredged or fill material into waters of the United States that are regulated under Section 404 of the Clean Water Act.

This NWP also authorizes discharges of dredged or fill material into waters of the United States. The Corps' regulations define "dredged material" as "material that is excavated or dredged from waters of the United States." [33 CFR 323.2(c)] The term "discharge of dredged material" means "any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States." [33 CFR 323.2(d)(1)] The term "discharge of dredged material" includes, but is not limited to, (1) the addition of dredged material to a specified discharge site located in waters of the United States; (2) the runoff or overflow from a contained land or water disposal area; and (3) any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized land clearing, ditching, channelization, or other excavation. [33 CFR 323.2(d)(1)]

Under 33 CFR 323.2(d)(2), the term "discharge of dredged material" does not include any of the following:

> (1) discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402 of the Clean Water Act even though the extraction and deposit of such material may require a permit from the Corps or applicable State section 404 program.
>
> (2) Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chainsawing) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material.
>
> (3) Incidental fallback.

The term "fill material" is defined at 33 CFR 323.2(e)(1) as meaning "material placed in waters of the United States where the material has the effect of: (1) replacing any portion of a water of the United States with dry land; or (2) changing the bottom elevation of any portion of a water of the United States. Examples of fill material include: "rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any

structure or infrastructure in the waters of the United States." [33 CFR 323.2(e)(2)] "Fill material" does not include trash or garbage (see 33 CFR 323.2(e)(3)). Discharges of trash or garbage may be regulated under Section 402 of the Clean Water Act or other federal, state, or local laws and regulations.

The Corps' regulations define the term "discharge of fill material" as meaning "the addition of fill material into waters of the United States." [33 CFR 323.2(f)] Examples of discharges of fill material provided in section 323.2(f) include, but are not limited to, the following activities: (1) the placement of fill that is necessary for the construction of any structure or infrastructure in a water of the United States; (2) the building of any structure, infrastructure, or impoundment requiring rock, sand, dirt, or other material for its construction; (3) site-development fills for recreational, industrial, commercial, residential, or other uses; (4) causeways or road fills; (5) dams and dikes; (6) artificial islands; (7) property protection and/or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; (8) beach nourishment; (9) levees; (10) fill for structures such as sewage treatment facilities, intake and outfall pipes associated with power plants and subaqueous utility lines; (11) placement of fill material for construction or maintenance of any liner, berm, or other infrastructure associated with solid waste landfills; (12) placement of overburden, slurry, or tailings or similar mining-related materials; and (13) artificial reefs. Under 33 CFR 323.2(f), the term "discharge of fill material" does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products.

Discharges of dredged or fill material into a jurisdictional water or wetland authorized under Section 404 of the Clean Water Act may result in the complete or partial loss of stream bed, wetland area, or area of another type of aquatic resource. That complete or partial loss of aquatic ecosystem area may result in a complete or partial loss of aquatic resource functions and services. The direct effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may change those waters and wetlands to components of the built environment or uplands, convert an aquatic resource type to another aquatic resource type, or alter the functions and services provided by those waters and wetlands. The direct effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may be permanent or temporary. The indirect effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may also convert an aquatic resource type to another aquatic resource type. The indirect effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may be permanent or temporary. The contribution of activities authorized by this NWP to cumulative or aggregate effects to ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources is also dependent on the degree or magnitude to which the potentially affected aquatic resources perform ecological functions and services. Nearly all ocean waters, estuaries, lakes, wetlands, streams, and other aquatic resources have been directly and indirectly affected by human activities over time (e.g., Halpern et al. 2008 for oceans, Lotze et al. 2006 for estuaries, Zedler and Kercher (2005) for wetlands, Allan 2004 for streams), including land

uses in areas that drain to these aquatic resources.

Discharges of dredged or fill material into waters of the United States authorized by this NWP may alter the ecological functions and services performed by those jurisdictional waters and wetlands. Some ecological functions and services may be enhanced, some ecological functions and services may be diminished or eliminated, and other ecological functions and services might not be affected by specific activities authorized by this NWP. Some discharges of dredged or fill material into jurisdictional waters and wetlands authorized by this NWP may convert those waters and wetlands to dry lands while other discharges of dredged or fill material may change the structure and functions of those waters and wetlands, while allowing those waters and wetlands to continue to exist as waters of the United States and provide some ecological functions and services.

Some commercial shellfish mariculture activities involve mechanical or hydraulic harvesting techniques that may result in discharges of dredged material into jurisdictional waters and wetlands. As discussed above, on-bottom bivalve shellfish mariculture activities may involve placing fill material such as shell or gravel to provide suitable substrate for bivalve shellfish larvae to attach to and grow on the bottom of the waterbody. These fill activities may require section 404 authorization.

The term “shellfish seeding” is defined in Section E of the NWPs as the “placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.” This definition was adopted in the NWPs in 2007 (see 72 FR 11197). Other materials may be used for bivalve shellfish seeding such as nets, bags, and ropes. Shellfish seed can be produced in a hatchery. Shellfish seed can also be produced in waterbodies where bivalve larvae can attach to appropriate materials, such as shell pieces, bags, or ropes.

Placing shellfish seed on the bottom of a waterbody is not a “discharge of fill material” and thus does not require a section 404 permit. Placing gravel or shell on the bottom of a waterbody to provide suitable substrate for bivalve larvae to attach to is considered to be a “discharge of fill material” and would require section 404 authorization. The shellfish themselves, either growing on the bottom of a waterbody or in nets, bags, or on ropes, are not considered to be “fill material” and do not require a section 404 permit to be emplaced, remain in place, or to be removed from a waterbody.

Discharges of dredged or fill material that convert wetlands, estuarine waters, marine waters, and other aquatic resources to upland areas may result in permanent losses of aquatic resource functions and services. Temporary fills and fills that do not convert waters or wetlands to dry land may cause short-term or partial losses of aquatic resource functions and services.

The individual environmental impacts are the environmental impacts caused by an activity authorized by this NWP, including the direct and indirect impacts caused by the specific NWP activity at the project site. When multiple PCNs are submitted by an applicant for contiguous project areas, the Corps' analysis will consider the cumulative effects of the commercial shellfish mariculture activities across those contiguous project areas, as well as other NWP 48 activities in the waterbody. In the context of the Corps' public interest review (33 CFR 320.4(a)(1) and Section 404(e) of the Clean Water Act, the cumulative environmental impacts are the environmental impacts caused by the activities authorized by this NWP during the 5-year period the NWP is anticipated to be in effect. Both the individual and cumulative environmental impacts are evaluated against the current environmental setting, which is described at a national scale in section 4.0 of this document. The current environmental setting varies substantially throughout the United States. In some areas of the country, the current environmental setting is the result of substantial alteration of waterbodies and other ecosystems by various human activities, but in other areas of the country, the current environmental setting has been less affected by various human activities, and those alterations are more subtle and more difficult to discern (Clewell and Aronson 2013). The categories of human activities that have altered aquatic ecosystems are discussed in section 4.4 of this document, and are summarized in Table 4.6. The types of ecological functions and services provided by aquatic ecosystems also vary considerably by region and by specific ecosystems, with some ecosystems performing ecological functions and services to a high degree, and other ecosystems performing ecological functions and services to a lesser degree.

The analysis of environmental consequences in this environmental assessment is a qualitative analysis because of the lack of quantitative data at a national scale on the various human activities and natural factors that may concurrently alter the current environmental setting during the 5-year period this NWP is expected to be in effect. As discussed in section 4.4, the activities authorized by this NWP are just one category among many categories of human activities and natural factors that affect ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources, and the ecological functions and services they provide.

As discussed in section 4.0 of this document and the Millennium Ecosystem Assessment (2005c), all ecosystems have been affected by human activities to some degree. According to Clewell and Aronson (2013), anthropogenic and natural disturbances to ecosystems can be placed in three categories: (1) stress with maintenance of ecosystem integrity; (2) moderate disturbance where the ecosystem can recover in time through natural processes; and (3) impairment, which may result in a more severe disturbance that may require human intervention (e.g., restoration) to prevent the ecosystem from changing into an alternative, perhaps less functional ecological state. Ecosystems can often tolerate gradual changes and continue to provide ecological functions and services before those changes reach a threshold, that when crossed, causes the ecosystem to change abruptly into an

alternative stable state (Scheffer et al. 2001). For some ecosystems, multiple impacts or disturbances can cause an ecosystem to pass a threshold can result in substantial changes to that ecosystem, but for other ecosystems the changes may be more subtle (Folke et al. 2004). It is difficult to predict where these thresholds are, and ecosystems may exhibit little change before that threshold is reached (Scheffer et al. 2009).

The severity of potential impacts to aquatic resources caused by NWP activities is dependent, in part, on ecosystem resilience and resistance, whether the permitted impacts are temporary or permanent, and how the affected resources respond to the permitted impacts. Impacts to aquatic resources caused by NWP activities may result in a partial, total, or no loss of aquatic resource functions and services, depending on the specific characteristics of the NWP activity and the environmental setting in which those impacts occur. In addition, the duration of the adverse effects (temporary or permanent) caused by NWP activities, can be influenced by the resilience and resistance of the aquatic resource to disturbances caused by those NWP activities. Since there is considerable variation across the country in terms of the types of aquatic resources, the ecological functions and services they provide, and their resilience and resistances to disturbances caused by NWP activities, other human activities, and natural disturbances, the environmental consequences of the issuance of this NWP will vary by site and by region. Given the geographic scope in which this NWP can be used to authorize activities that require DA authorization and the wide variability in aquatic resource structure, functions, and dynamics from site to site and from region to region, the analysis of environmental consequences is a qualitative analysis.

The environmental effects or impacts that are likely to be caused by individual activities authorized by this NWP are evaluated against the current environmental setting (i.e., the affected environment, which is described at a national scale in section 4.0 of this document). The current environmental setting is the result of human activities altering ecosystems over thousands of years (Perring and Ellis 2013), as well as natural changes in environmental conditions that have occurred over time. Since historical baselines (i.e., the state of ecosystems in the absence of modifications caused by human activities) no longer exist in most areas, ecosystem management decisions should be made by using contemporary baselines that acknowledge how humans have dominated and changed ecosystems over long periods of time (Kopf et al. 2015). Permit decisions are an example of management decisions for ecosystems such as oceans, estuaries, lakes, rivers, streams, and wetlands, where the proposed impacts that require a permit are evaluated against the current environmental setting to decide whether the permit (e.g., an NWP authorization) should be issued by the regulatory authority.

The impacts of activities authorized by this NWP during the 5-year period it is anticipated to be in effect are evaluated against the current affected environment, to determine the potential severity of those anticipated impacts in light of the human alterations and natural changes to aquatic ecosystems that have occurred over time

and space. This evaluation takes into account how the activities authorized by this NWP might affect aquatic ecosystems, the resilience of aquatic ecosystems, and the ability of aquatic ecosystems to continue to provide ecological functions and services after the authorized activities have occurred. When evaluating pre-construction notifications, district engineers should be taking into account the current environmental setting, as well as how the jurisdictional waters and wetlands might respond as a result of conducting the NWP activity, including how resilient those waters and wetlands are to disturbances caused by discharges of dredged or fill material and/or structures or work in navigable waters.

Compensatory mitigation required by district engineers for specific activities authorized by this NWP may help reduce the contribution of those activities to the cumulative effects caused by NWPs on the Nation's wetlands, streams, and other aquatic resources, by providing ecological functions to partially or fully replace some or all of the aquatic resource functions lost as a result of those activities. Mitigation requirements, including compensatory mitigation requirements for the NWPs, are described in general condition 23. Compensatory mitigation projects must also comply with the applicable provisions of 33 CFR part 332. District engineers will establish compensatory mitigation requirements on a case-by-case basis, after evaluating pre-construction notifications. Compensatory mitigation requirements for individual NWP activities will be specified through permit conditions added to NWP authorizations. When compensatory mitigation is required, the permittee is required to submit a mitigation plan prepared in accordance with the requirements of 33 CFR 332.4(c). Credits from approved mitigation banks or in-lieu fee programs may also be used to satisfy compensatory mitigation requirements for NWP authorizations. Monitoring is required to demonstrate whether the permittee-responsible mitigation project, mitigation bank, or in-lieu fee project is meeting its objectives and providing the intended aquatic resource structure and functions. If the compensatory mitigation project is not meeting its objectives, adaptive management will be required by the district engineer. Adaptive management may involve taking actions, such as site modifications, remediation, or design changes, to ensure the compensatory mitigation project meets its objectives (see 33 CFR 332.7(c)).

The estimated use of this NWP during the 5-year period the NWP is expected to be in effect and the estimated impacts to wetlands, streams, and other aquatic resources in the United States, plus the estimated acreage of compensatory mitigation, is provided in section 8.2.2 of this document. Division and district engineers will monitor the use of this NWP on a regional and case-specific basis, and under their authorities in 33 CFR 330.5(c) and (d), modify, suspend, or revoke NWP authorizations in situations when the use of the NWP will result in more than minimal cumulative adverse environmental effects. Because the activities authorized by this NWP constitute only a small proportion of the categories of human activities that directly and indirectly affect ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources, the activities authorized by this NWP over the next 5 years are likely to result in only a minor incremental change to the current environmental setting for ocean waters, estuarine waters,

lakes, wetlands, streams, and other aquatic resources and the ecological functions and services they provide.

Under 33 CFR 330.4(f)(2), for an NWP activity proposed by a non-federal permittee, the district engineer will review the pre-construction notification and if she or he determines the proposed NWP activity may affect listed species or designated critical habitat, section 7 consultation will be conducted with the U.S. Fish and Wildlife Service (U.S. FWS) or National Marine Fisheries Service (NMFS) depending on which species the district engineer determined may be affected by the proposed NWP activity. During the ESA section 7 consultation process the U.S. FWS or NMFS will evaluate the effects caused by a proposed NWP activity, the environmental baseline, the status of the species and critical habitat, and the effects of any future state or private activities that are reasonably certain to occur within the action area. For formal ESA section 7 consultations, the U.S. FWS or NMFS will formulate their opinion as to whether the proposed NWP activity is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat (see 50 CFR 402.14(g)). The ESA section 7 consultation requirements may also be fulfilled through informal consultation, when the U.S. FWS or NMFS provide their written concurrence that the proposed activity is not likely to adversely affect endangered or threatened species or their designated critical habitat (see 50 CFR 402.13(c)). The project proponent may be required to obtain separate incidental take authorizations under the Marine Mammals Protection Act.

When determining whether a proposed NWP activity will cause no more than minimal individual and cumulative adverse environmental effects, the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by the NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. These criteria are listed in the NWPs in Section D, “District Engineer’s Decision.” The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

Additional conditions can be placed on proposed activities on a regional or case-by-

case basis by division or district engineers to ensure that the activities have no more than minimal individual and cumulative adverse environmental effects. Regional conditions added to this NWP will be used to account for differences in aquatic resource functions, services, and values across the country, ensure that the NWP authorizes only those activities with no more than minimal individual and cumulative adverse environmental effects, and allow each Corps district to prioritize its workload based on where its efforts will best serve to protect the aquatic environment. Regional conditions can prohibit the use of an NWP in certain waters (e.g., high value waters or specific types of wetlands or waters. Specific NWPs can also be revoked on a geographic or watershed basis where the individual and cumulative adverse environmental effects resulting from the use of those NWPs are more than minimal.

Commercial shellfish mariculture activities can have temporary and permanent impacts on the aquatic environment, including the species that inhabit coastal waters. These impacts are discussed in more detail below. The severity of the impacts, both negative and positive, can vary as a result of scale and location of the bivalve shellfish mariculture operation(s), the species being cultivated, the equipment and techniques used by the grower, and the hydrodynamic and physical characteristics of the bivalve mariculture site (NRC 2010). In its 2010 report titled "Ecosystem Concepts for Sustainable Bivalve Mariculture" the National Research Council (NRC) recommended that the impacts should be evaluated in a policy context that examines the relative costs and benefits of seafood production for human consumption and altering aquatic ecosystems. In their examination of oyster mariculture activities on the west coast, Simenstad and Fresh (1995) found that many disturbances caused by these activities were within the natural range of variation for disturbances to estuarine ecosystems. Intensive bivalve shellfish mariculture activities can cause larger scale disturbances to species that are not being cultivated, but impacts to those species should be assessed in the context of their ability to tolerate disturbances (Simenstad and Fresh 1995). Bivalve shellfish mariculture activities cause disturbances that are within the range of natural disturbances (such as severe storms) that occur in coastal waters, and seagrasses are naturally adapted to that range of disturbances (Dumbauld and McCoy 2015). While species of submerged aquatic vegetation can be relatively sensitive to disturbances, they also have the ability to recover from disturbances through various reproductive mechanisms (e.g., Tallis et al. 2009, O'Brien et al. 2018). O'Brien et al. (2018) identified four paths by which seagrasses could recover after disturbance(s) are removed rapid recovery (within 1 year), full recovery within 5 years, delayed recovery (longer than 5 years), and recalcitrant degradation. Recalcitrant degradation occurs when the cause(s) of seagrass bed degradation persists and prevent seagrasses from recolonizing the affected area. Recalcitrant degradation can be viewed as a permanent loss, even though there may be potential for recovery (O'Brien et al. 2018).

Temporary impacts may include temporary structures placed in navigable waters, such as bags, cages, trays, and racks; stakes; and long lines that are supported by

stakes or piles. However, some of these structures may be installed in waters for longer periods of time (e.g., months or years) and may be considered permanent impacts when in place for long periods of time, Temporary impacts also include dredging, and the duration of those impacts can vary depending on the intensity and duration of dredging. Permanent impacts can include permanent structures such as piles that are installed in the waterbody to provide a permanent structure to attach equipment to, and shell or gravel that is discharged into the waterbody to provide suitable substrate for larval bivalve shellfish to attach to and grow. The species cultivated by commercial shellfish mariculture activities also affect the aquatic environment and other species, for example by altering water quality through suspension feeding or competition for space. Those impacts can be positive, negative, or neutral, and can vary the techniques used for commercial shellfish mariculture activities. There is a growing body of scientific literature regarding the interactions between commercial shellfish mariculture activities and submerged aquatic vegetation that has shown that the impacts of these activities on submerged aquatic vegetation can in certain instances be temporary, some of which is discussed below. Additional research is needed to evaluate the magnitude and duration of these impacts for all regions of the United States and for all species of submerged aquatic vegetation.

Commercial shellfish mariculture activities can disturb benthic plants and animals, modify biogeochemical processes, change water flows, alter substrate composition, and provide structures with hard habitat that attracts fish and invertebrates, which may include both native and non-native species (NRC 2010). Impacts to submerged aquatic vegetation caused by oyster cultivation activities can be reduced through by using cultivation techniques that result in fewer impacts or by reducing oyster planting densities (Tallis et al. 2009). Commercial shellfish mariculture activities are similar to other food production activities, in that they involve trade-offs with the ecosystems being affected by those activities (Tallis et al. 2009), in order to provide food for people. Appropriate siting of commercial shellfish mariculture activities can allow for active avoidance of many trade-offs and ensure activities occur in areas with the least potential impact (Wickliffe et al. 2019). Standards and best management practices can be implemented by growers to minimize the adverse environmental effects of commercial shellfish mariculture operations (NRC 2010). Such standards and best management practices may added to DA permits as permit conditions if they satisfy the criteria for permit conditions at 33 CFR 325.4(a): that is they are necessary to satisfy legal requirements, and are directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable.

As discussed above, commercial shellfish mariculture activities have both positive and negative environmental effects, including effects on certain species that inhabit coastal waters. The severity of those impacts can vary by the bivalve mariculture method and location, as well as the intensity and duration of the operation (NRC 2010). Commercial shellfish mariculture techniques vary, and some species can be grown through a variety of techniques. Commercial shellfish mariculture techniques

include on-bottom and off-bottom culture methods, and some bivalve shellfish mariculture methods involve dredging whereas others do not. The adverse effects of dredging associated with commercial shellfish mariculture activities, including harvesting, vary with intensity and duration of the dredging, as well as the type of substrate and which species are present in the area (NRC 2010). Both on-bottom and off-bottom bivalve shellfish mariculture techniques may involve the use of bags, racks, cages, and trays. The various commercial shellfish mariculture methods can exhibit substantial differences in impacts to the aquatic environment, and to species that inhabit coastal waters. Commercial shellfish mariculture operations may use chemicals to control fouling organisms (NRC 2010). Operators may also use pesticides to control predators, but the discharge of pesticides into navigable waters is regulated under Section 402 of the Clean Water Act, not section 404.

On-bottom commercial shellfish mariculture techniques include adding shell, gravel, or other material to create substrate for larval bivalve molluscs to attach to and grow until they are harvested, either by dredging or by hand. The shell, gravel, or other material may be deposited in a manner to create hummocks, or the material may be deposited so that it is relatively flat. On-bottom methods also involve placing cages, racks, and bags on the bottom of the waterbody. When the bivalves are ready to be harvested, the cages, racks, and bags are removed until they are ready to be used for the next growing cycle. In general, dredging is not used with bottom culture that uses cages, racks, and bags (NRC 2010). On-bottom culture using cages, racks, and bags usually does not involve substantial disturbance of the substrate. The placing of shell, gravel, or other material for bottom culture generally has longer lasting impacts compared to the use of cages, racks, and bags. The deposited shell or gravel can bury submerged aquatic vegetation and other benthic organisms. Cages, racks, and bags can also cover submerged aquatic vegetation and other benthic organisms, but with a lesser degree of disturbance where recovery can occur more quickly than when dredging is used during commercial shellfish mariculture operations. There may also be foot traffic in intertidal areas where bags and racks are used for bottom culture, to maintain those structures and to harvest the bivalve shellfish. The use of cages, bags, and racks can also alter water flow through the site, and well as sediment deposition (NRC 2010). The placement of bags in the intertidal zone may also reduce foraging habitat for shorebirds (NRC 2010), and those adverse effects may cease after the bags are removed. On-bottom culture is used for clam, including geoducks. Geoducks are cultivated in the intertidal zone in plastic tubes covered by netting to keep predators from eating the geoduck (Dumbauld et al. 2009). Geoducks are harvested by jetting water into the substrate and pulling out the geoduck (NRC 2010).

Off-bottom commercial shellfish mariculture techniques involve the use of floating containers, suspended containers, or lines. These methods are typically used in deeper waters (Dumbauld et al. 2009). The floating or suspended containers may be bags, cages, and racks that are supported in the water column. Off-bottom cultivation methods can shade submerged aquatic vegetation and other benthic organisms but they typically do not disturb the substrate. Anchors and moorings

used for off-bottom cultivation methods can disturb the substrate. Shading effects associated with floating or suspended containers will cease after they are removed, but the ability of submerged aquatic vegetation to recover depends on multiple factors. Shading from in-water structures also leads to effects that may be short- or long-term, depending on the length of time shading occurs and the species of submerged aquatic vegetation affected. The shading impacts will cease after the floating or suspended containers are removed. They can also interfere with navigation. The suspended and floating containers can act as attractants for fish and large crustaceans (e.g., crabs), which may feed on the fouling (epibiotic) organisms that attach to the bags, cages, racks, and lines (NRC 2010). These off-bottom structures may also have positive and negative effects on birds, marine mammals, and marine turtles (NRC 2010), such as attracting prey species that those organisms can feed on or by posing a risk of entanglement and drowning. Long lines can be used to cultivate oysters and mussels, where the long line is supported by stakes, and other lines hang vertically in the water column that hold the seeds of the bivalves to be cultivated so that they can feed and grow (Dumbauld et al. 2009). Long lines can alter the hydrodynamics in the vicinity of the commercial shellfish mariculture operation, and increase sedimentation in the area (NRC 2010). After the long lines are removed, the hydrodynamics and sedimentation are likely to recover. When long lines are used for commercial shellfish mariculture activities, harvesting is usually done by hand (Dumbauld et al. 2009).

Structures used for commercial shellfish mariculture activities can provide habitat for a wide variety of organisms, and serve as attractants for fish, mobile crustaceans, birds, and other organisms (NRC 2010, Gentry et al. 2020) over the time the structures are in place or prior to any harvesting activities. Harvesting activities may result in disturbance of benthic habitats that could negate any short-term benefits. Fouling organisms such as barnacles, tunicates, sponges, and bryozoans may establish and grow on these structures, and provide food for fish and motile crustaceans (Hosack et al. 2006, Forrest et al. 2009), as well as birds NRC (2010). They can also provide hiding places to avoid predators. Lines and nets used for commercial shellfish mariculture activities may pose a risk of entanglement for birds, marine mammals, and marine turtles (NRC 2010, Price et al. 2016).

Commercial shellfish mariculture techniques may involve dredging, and the duration and intensity of the impacts of dredging can vary by substrate type (NRC 2010). Submerged aquatic vegetation can recover after being impacted by dredging for commercial shellfish mariculture activities, and recovery may take a few years or longer, or may not occur (Dumbauld et al. 2009). Compared to other techniques, commercial shellfish mariculture activities that involve dredging can have more substantial impacts on estuaries and the organisms that inhabit those estuaries. Oysters can be harvested by hand or by using machines (Tallis et al. 2009). Mechanical harvesting can include grading, tilling, and dredging the substrate of the waterbody. Floating and bottom culture commercial shellfish mariculture techniques that use lines, cages, bags, rafts, and racks do not require dredging of the substrate (NRC 2010). Recovery of areas disturbed by these floating and bottom culture

commercial shellfish mariculture techniques that do not involve dredging can in some instances occur rather quickly as long as there is minimal disturbance of the substrate, depending on the submerged aquatic vegetation species affected, environmental setting, and other factors. For example, shading effects are typically quickly reversed after the bags, cages, racks, and long lines are removed from the waterbody, however the ability of submerged aquatic vegetation to recover depends on multiple factors.

Impacts to estuarine ecosystems caused by commercial shellfish mariculture activities, such as seeding and harvesting, that have been evaluated in previous studies tend to be mostly short-term, pulse disturbances (i.e., temporary impacts), with few long-term, press disturbances (i.e., permanent impacts) (Dumbauld et al. 2009). Commercial shellfish mariculture activities conducted using structures such as cages, racks, and bags, including on-bottom and suspended culture, have less severe impacts on the substrate (NRC 2010) because they are either placed on the substrate without minimal disturbance or they are suspended or floating above the substrate. If commercial shellfish mariculture activities cease in an estuary inhabited by submerged aquatic vegetation, the submerged aquatic vegetation that was impacted by those commercial shellfish mariculture activities may recover within a few years, depending upon the degree of disturbance, other stressors in the area, and the species of seagrass affected (sensu Dumbauld et al. 2009). These situations occur when the grower is letting the bottom of the waterbody go fallow for a period of time or has decided to cease commercial shellfish mariculture operations altogether in that area. After disturbance, recovery of submerged aquatic vegetation may be through asexual reproduction (i.e., the spread of rhizomes) or sexual reproduction (i.e., the production of seeds and subsequent germination) (Wisehart et al. 2007). Both natural and human-induced disturbances, including commercial shellfish mariculture and harvesting activities, stimulate sexual reproduction of some submerged aquatic vegetation species (NRC 2010). Tallis et al. (2009) observed that eelgrass exhibited higher growth rates in areas where shellfish were dredged or hand-picked from the bottom than eelgrass inhabiting areas where no bivalve shellfish harvesting was occurring.

Commercial shellfish mariculture activities have been occurring in the United States for more than 100 years (NRC 2010), and submerged aquatic vegetation has continued to persist in waterbodies where there these activities are conducted (Ferriss et al. 2019). Submerged aquatic vegetation beds are dynamic, and often vary from year to year even in waters where water quality is high (Orth et al. 2006), so changes in submerged aquatic vegetation beds may result from anthropogenic and/or natural causes at various temporal and spatial scales. This depends on the species of seagrass and geographic location due to physical factors such as temperature. In some cases, while there may not be evidence of seagrass on the seafloor, a seed bank is present that will be lost if dredging occurs. Dumbauld et al. (2009) concluded that eelgrass and bivalve shellfish mariculture have co-existed in west coast estuaries for decades. These west coast estuaries had substantial populations of native oysters, and after those native oysters were overharvested,

they did not recover (Dumbauld et al. 2009) to historic population sizes. Tallis et al. (2009) concluded that there are trade-offs to be considered when evaluating commercial shellfish mariculture activities and their impacts on submerged aquatic vegetation. When district engineers evaluate permit applications and general permit verification requests for commercial shellfish mariculture activities requiring DA authorization, they should consider the ecological functions and services provided by the cultivated bivalves and the ecological functions and services provided by submerged aquatic vegetation and other species inhabiting the affected waterbodies. That evaluation can occur during the public interest review for an individual permit or when determining whether to exercise discretionary authority for a proposed general permit activity.

If commercial shellfish mariculture activities occur within estuarine or marine waters inhabited by submerged aquatic vegetation, there will be competition between the bivalves and submerged aquatic vegetation for space (Ferriss et al. 2019), unless the commercial shellfish mariculture activities can avoid areas inhabited by submerged aquatic vegetation (i.e., through improved siting (Wickliffe et al. 2019)). Competition for space in estuaries and coastal waters between bivalve molluscs and seagrasses has occurred naturally because both of these groups of organisms have historically been present in these waters. Competition for space is a natural ecological process (Odum and Barrett 2005), and it can be affected by human activities such as habitat modifications and overexploitation of species such as oysters, mussels, clams, and scallops. As oysters, clams, and other bivalves have been harvested and overexploited over the centuries (e.g., Zu Ermgassen et al. 2012, Lotze et al. 2006), their removal has created openings for seagrasses and other organisms to colonize benthic habitats that were previously occupied by bivalves. However, loss of natural oyster reefs and other bivalves that have historically provided water clarification benefits paired with other synergistic environmental stressors (e.g., eutrophication) have also contributed to degraded water quality conditions that have reduced suitable habitat for, and extent of, seagrasses and other benthic species (Beck et al. 2011, Sharma et al. 2016).

In west coast estuaries, eelgrass co-exist with shellfish on intertidal flats at the low densities typically practiced for commercial shellfish mariculture activities (Dumbauld et al. 2009). Tallis et al. (2009) observed that eelgrass density decreased with increasing commercial shellfish mariculture activity density because of competition for space. Introduced Pacific oysters now occupy areas that were historically extensive beds of native oysters (Dumbauld et al. 2009), so this competition for space has occurred under both natural conditions and during shellfish mariculture operations. In the Chesapeake Bay, expanding oyster mariculture efforts can compete with submerged aquatic vegetation for space in shallow waters (Orth et al. 2017), but current oyster populations in that waterbody are approximately 1 percent of their historical level (using the early 1800s as a baseline) because of overfishing, habitat loss, and disease (Wilberg 2011). If commercial shellfish mariculture activities cease temporarily (e.g., during fallow periods) or permanently (e.g., by terminating those activities), the submersed

aquatic vegetation is likely to recover unless other stressors (e.g., increased turbidity) prevent submerged aquatic vegetation beds from re-establishing themselves.

The responses of one genus of submerged aquatic vegetation (*Zostera* spp.) to bivalve mariculture activities varies by region and by mariculture techniques (Ferriss et al. 2019). In waterbodies inhabited by submerged aquatic vegetation where commercial shellfish mariculture activities are conducted, seagrass is in dynamic equilibrium with those mariculture activities (Dumbauld et al. 2009). The amount of time it takes for submerged aquatic vegetation to recover from disturbances caused by commercial shellfish mariculture activities varies by plant species, the extent of the disturbance, the intensity of the disturbance, the seasonal timing of disturbance, and sediment characteristics (NRC 2010). In their review of the effects of commercial shellfish mariculture activities on seagrasses in estuaries on the west coast of the United States, Dumbauld et al. (2009) found that the amount of time it took eelgrass to recover to pre-disturbance levels varied from less than 2 years to more than 5 years. In estuaries on the west coast of the United States, commercial shellfish mariculture activities have been undertaken for over a century and have not been found to cause estuarine waterbodies to change to an alternative state or exhibit a decreased ability to recover from disturbances (Dumbauld et al. 2009).

Pre-construction notification is required for commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. The pre-construction notification requirement provides the district engineer with an opportunity to review those activities on a case-by-case basis and assess potential impacts on submerged aquatic vegetation and ensure that the authorized activity results in no more than minimal adverse environmental effects. The activities authorized by this NWP would also require pre-construction notification if one of the pre-construction notification thresholds in one of the NWP general conditions is triggered. For example, paragraph (c) of general condition 18, endangered species, requires a non-federal permittee to submit a pre-construction notification if any listed species or designated critical habitat might be affected by the proposed NWP activity or is in the vicinity of the proposed NWP activity, or if the activity is located in designated critical habitat.

Activities authorized by this NWP may directly and indirectly alter ecosystems and the functions and services they provide, through permanent and temporary impacts caused by discharges of dredged or fill material into jurisdictional waters and wetlands, and structures or work in navigable waters of the United States. Direct impacts to ecosystems may include permanent or temporary losses of ecological functions and services performed by those ecosystems. Direct impacts to ecosystems may result in complete or partial losses of ecological functions and services. Indirect impacts to ecosystems may occur later in time, or at some distance from the direct impacts authorized by this NWP, and they may be permanent or temporary in duration, or result in complete or partial losses of ecological functions and services.

The potential effects of activities authorized by this NWP on the Corps' public interest review factors listed in 33 CFR 320.4(a)(1) are discussed in more detail in section 6.0 of this document.

The pre-construction notification requirement allows district engineers to review proposed activities on a case-by-case basis to ensure that the individual and cumulative adverse environmental effects of those activities are no more than minimal. If the district engineer determines that the individual and cumulative adverse environmental effects of a particular project are more than minimal after considering mitigation, then discretionary authority will be asserted and the applicant will be notified that another form of DA authorization, such as a regional general permit or individual permit, is required (see 33 CFR 330.4(e) and 330.5).

When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. These criteria are listed in the NWPs in Section D, "District Engineer's Decision." The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

Additional conditions can be placed on proposed activities on a regional or case-by-case basis to ensure that the activities have no more than minimal individual and cumulative adverse environmental effects. Regional conditioning of this NWP will be used to account for differences in aquatic resource functions, services, and values across the country, ensure that the NWP authorizes only those activities with no more than minimal individual and cumulative adverse environmental effects, and allow each Corps district to prioritize its workload based on where its efforts will best serve to protect the aquatic environment. Regional conditions can prohibit the use of an NWP in certain waters (e.g., high value waters or specific types of wetlands or waters), lower pre-construction notification thresholds, or require pre-construction notification for some or all NWP activities in certain watersheds or types of waters. Specific NWPs can also be revoked on a geographic or watershed basis where the

individual and cumulative adverse environmental effects resulting from the use of those NWPs are more than minimal.

In high value waters, division and district engineers can: 1) prohibit the use of the NWP in those waters and require an individual permit or regional general permit; 2) impose an acreage limit on the NWP; 3) lower the notification threshold of the NWP to require pre-construction notification for activities with smaller impacts in those waters; 4) require pre-construction notification for some or all NWP activities in those waters; 5) add regional conditions to the NWP to ensure that the individual and cumulative adverse environmental effects are no more than minimal; or 6) for those activities that require pre-construction notification, add special conditions to NWP authorizations, such as compensatory mitigation requirements, to ensure that the adverse environmental effects are only minimal. Nationwide permits can authorize activities in high value waters as long as the individual and cumulative adverse environmental effects are no more than minimal.

The construction and use of fills for temporary access for construction may be authorized by NWP 33 or regional general permits issued by division or district engineers. The related activity must meet the terms and conditions of the specified permit(s). If the activity is dependent on portions of a larger project that require an individual permit, this NWP will not apply. [See 33 CFR 330.6(c) and (d)]

5.3 Impact Analysis for Alternatives to the Proposed Action

5.3.1 No Action Alternative (Do Not Modify or Reissue the Nationwide Permit)

The no action alternative would not achieve one of the goals of the Corps' Nationwide Permit Program, which is to regulate with little, if any, delay or paperwork certain activities having minimal impacts (33 CFR 330.1(b)). The no action alternative would also reduce the Corps' ability to pursue the current level of review for other activities that have greater adverse effects on the aquatic environment, including activities that require individual permits as a result of division or district engineers exercising their discretionary authority under the NWP program. The no action alternative would also reduce the Corps' ability to conduct compliance actions.

If this NWP is not available, substantial additional resources would be required for the Corps to evaluate these minor activities through the individual permit process, and for the public and federal, tribal, and state resource agencies to review and comment on the large number of public notices for these activities. In a considerable majority of cases, when the Corps publishes public notices for proposed activities that result in no more than minimal adverse environmental effects, the Corps typically does not receive responses to these public notices from either the public or federal, tribal, and state resource agencies. Therefore, processing individual permits for these minimal impact activities is not likely to result

in substantive changes to those activities. Another important benefit of the NWP program that would not be achieved through the no action alternative is the incentive for project proponents to design their projects so that those activities meet the terms and conditions of an NWP. The Corps believes the NWPs have significantly reduced adverse effects to the aquatic environment because most applicants modify their activities that require DA authorization to comply with the NWPs and avoid the longer permit application review times and larger costs typically associated with the individual permit process.

Under the no action alternative, district engineers may issue regional general permits or programmatic general permits to authorize similar categories of activities that would have no more than minimal adverse environmental effects that could have been authorized by this NWP. However, those regional general permits or programmatic general permits may have different quantitative limits, different restrictions, and other permit conditions, and those quantitative limits, restrictions, and permit conditions may result in the authorization of activities that have greater, similar, or lesser adverse environmental effects than the activities that would have been authorized by this NWP. Under the no action alternative, there may be differences in consistency in implementation of the Corps Regulatory Program among Corps districts. District engineers can tailor their regional general permits and programmatic general permits to effectively address the specific categories of aquatic resources found in their geographic areas of responsibility, the specific categories of activities that occur in those geographic areas, and the ecological functions and services those categories of aquatic resources provide. The environmental consequences of this aspect of the no action alternative are more difficult to predict because of the potential variability of regional general permits and programmatic general permits among Corps districts across the country, when such general permits are available to authorize a similar category of activities as this NWP authorizes.

If this NWP is not reissued, districts would have to draft, propose, and issue regional general permits or programmatic general permits through the public notice and comment process and prepare applicable environmental documentation to support their decisions on whether to issue those regional general permits or programmatic general permits. It would take a substantial amount of time to issue those regional general permits and programmatic general permits, and in the interim proposed activities would have to be authorized through the individual permit process.

5.3.2 Reissue the Nationwide Permit With Modifications

This NWP was developed to authorize structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for commercial shellfish mariculture activities that have no more than minimal individual and cumulative adverse environmental effects. The Corps has considered changes to the terms and conditions of this NWP suggested by comments received

in response to the proposed rule, as well as modifying or adding NWP general conditions, as discussed in section 1.4 of this document and the preamble of the Federal Register notice announcing the modification and reissuance of this NWP.

Changing the terms and conditions of this NWP would likely result in changes the number of activities authorized by this NWP, and the environmental impacts of authorized activities. The environmental consequences of changing the terms and conditions of this NWP may vary, depending on whether modifications for the reissued NWP are more restrictive, less restrictive, or is similarly restrictive compared to previously issued versions of this NWP. The environmental consequences of changing the terms and conditions of this NWP are also dependent on the application of existing tools used to ensure that activities authorized by this NWP will only have no more than minimal adverse environmental effects. Those tools include the quantitative limits of the NWP, the pre-construction notification process, and the ability of division and district engineers to modify, suspend, or revoke this NWP on a regional or case-by-case basis.

Changing the national terms and conditions of this NWP may change the incentives for project proponents to reduce their proposed impacts to jurisdictional waters and wetlands to qualify for NWP authorization, and receive the required DA authorization for regulated activities in less time than it would take to receive individual permits for those activities. Under the individual permit process, the project proponent may request authorization for activities that have greater impacts on jurisdictional waters and wetlands, and may result in larger losses of aquatic resource functions and services.

The environmental consequences of division engineers exercising their discretionary authority to modify, suspend, or revoke this NWP on a regional basis may be a reduction in the number of activities that could be authorized by this NWP in a region or more NWP activities requiring pre-construction notification through regional changes in the PCN requirements for this NWP. The environmental consequences are likely to include reduced losses of waters of the United States because regional conditions can only further condition or restrict the applicability of an NWP (see 33 CFR 330.1(d)). The modification, suspension, or revocation of this NWP on a regional basis by division engineers may also reduce the number of activities authorized by this NWP, which may increase the number of activities that require standard individual permits. If more activities require standard individual permits, permitted losses of jurisdictional waters and wetlands may increase because standard individual permits have no quantitative limits.

An environmental consequence of regional conditions added to the NWPs by division engineers is the enhanced ability to address differences in aquatic resource functions, services, and values among different regions across the nation. Corps divisions may add regional conditions to the NWPs to enhance protection of the aquatic environment in a region (e.g., a Corps district, state, or watershed) and address regional concerns regarding jurisdictional waters and wetlands and other

resources (e.g., listed species or cultural resources) that may be affected or impacted by the activities authorized by this NWP. Division engineers can also revoke an NWP in a region if the use of that NWP results in more than minimal adverse environmental effects, especially in high value or rare waters or wetlands. When an NWP is issued or reissued by the Corps, division engineers issue supplemental documents that evaluate potential impacts of the NWP at a regional level, and assess cumulative impacts caused by this NWP on a regional basis during the period this NWP is in effect. [33 CFR 330.5(c)]

An environmental consequence of district engineers modify, suspending, or revoking this NWP on a case-by-case basis is the ability of district engineers to address site-specific conditions, including the degree to which aquatic resources on the project site provide ecological functions and services. Activity-specific modifications may also address site-specific resources (e.g., listed species or cultural resources) that may be affected by NWP activities. The environmental consequences of modification of this NWP on an activity-specific basis by district engineers may be further reductions in losses of waters of the United States for specific activities authorized by NWP because of mitigation required by district engineers during their reviews of PCNs to ensure that those activities result in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). Examples of mitigation that may be required by district engineers include permit conditions requiring compensatory mitigation to offset losses of waters of the United States or conditions added to the NWP authorization to prohibit the permittee from conducting the activity during specific times of the year to protect spawning fish and shellfish. If a proposed NWP activity will result in more than minimal adverse environmental effects, then the district engineer will exercise discretionary authority and require an individual permit. The individual permit review process requires a project-specific alternatives analysis, including the consideration of off-site alternatives, and a public interest review.

5.3.3 Reissue the Nationwide Permit Without Modifications

Retaining the current terms and conditions of this NWP would likely result in little or no changes in the number of activities authorized by this NWP, and the environmental impacts of authorized activities. Project proponents would likely continue to design their project to qualify for NWP authorization. Retaining the current national terms and conditions of this NWP would likely continue to provide incentives for project proponents to reduce their proposed impacts to jurisdictional waters and wetlands to qualify for NWP authorization, and receive the required DA authorization for regulated activities in less time than it would take to receive individual permits for those activities. Under this alternative, for those activities that require individual permits project proponents may request authorization for activities that have greater impacts on jurisdictional waters and wetlands, and may result in larger losses of aquatic resource functions and services.

Under this alternative, the environmental consequences of division engineers

exercising their discretionary authority to modify, suspend, or revoke this NWP on a regional basis would be similar to the environmental consequences discussed in section 5.3.2. Corps divisions may add regional conditions to the NWPs to enhance protection of the aquatic environment in a region (e.g., a Corps district, state, or watershed) and address regional concerns regarding jurisdictional waters and wetlands and other resources (e.g., listed species or cultural resources) that may be affected or impacted by the activities authorized by this NWP. Division engineers can also revoke an NWP in a region if the use of that NWP results in more than minimal adverse environmental effects, especially in high value or rare waters or wetlands. When an NWP is issued or reissued by the Corps, division engineers issue supplemental documents that evaluate potential impacts of the NWP at a regional level, and assess cumulative impacts caused by this NWP on a regional basis during the period this NWP is in effect. [33 CFR 330.5(c)]

Under this alternative, the ability of district engineers to modify, suspended, or revoke this NWP on a case-by-case to address site-specific conditions, including the degree to which aquatic resources on the project site provide ecological functions and services, is likely to have environmental consequences similar to the environmental consequences of the alternative identified in section 3.2. Activity-specific modifications under this alternative may also address site-specific resources (e.g., listed species or cultural resources) that may be affected by NWP activities. Activity-specific modifications may also include mitigation requirements similar to the potential mitigation requirements discussed in section 5.3.2.

The modification and reissuance of this NWP adopts the alternative identified in section 3.2 of this document. The Corps has considered the comments received in response to the proposed rule, and made changes to the NWPs, general conditions, and definitions to address those comments. Division engineer may add regional conditions to this NWP to help ensure that the use of the NWPs in a particular geographic area will result in no more than minimal individual and cumulative adverse environmental effects. District engineers may also add regional conditions to this NWP to help ensure compliance with other applicable laws, such as Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, and the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act. Division engineers may also add regional conditions to this NWP to fulfill its tribal trust responsibilities.

Corps divisions and districts also monitor the use of this NWP and the authorized impacts identified in NWP verification letters. At a later time, if warranted, a division engineer may add regional conditions to further restrict or prohibit the use of this NWP to ensure that it does not authorize activities that result in more than minimal adverse environmental effects in a particular geographic region (e.g., a watershed, landscape unit, or seascape unit). To the extent practicable, division and district engineers will use regulatory automated information systems and institutional knowledge about the typical adverse effects of activities authorized by this NWP, as well as substantive public comments, to assess the individual and cumulative

adverse environmental effects resulting from regulated activities authorized by this NWP.

6.0 Public Interest Review

6.1 Public Interest Review Factors (33 CFR 320.4(a)(1))

For each of the 20 public interest review factors, the extent of the Corps consideration of expected impacts resulting from the use of this NWP is discussed, as well as the reasonably foreseeable cumulative adverse effects that are expected to occur. The Corps decision-making process involves consideration of the benefits and detriments that may result from the activities authorized by this NWP.

(a) Conservation. The activities authorized by this NWP are likely to result in minor changes to the natural resource characteristics of the project area, since the NWP authorizes commercial shellfish mariculture activities. Commercial shellfish mariculture activities can contribute to conservation efforts in estuaries and other coastal waters as restorative measures (NRC 2010) because they perform many of the same ecological functions and services that were provided by natural populations of bivalve molluscs before those bivalves were overfished by humans over the centuries (van der Schatte Olivier et al. 2020). Mitigation measures may be required by district engineers to minimize impacts to conservation values. Dumbauld and McCoy (2015) recommend examining the effects of oyster mariculture activities on eelgrass at the scale of estuarine ecosystems because such a perspective indicates that those mariculture activities have relatively small impacts on seagrasses and that seagrasses recover quickly after disturbance. Simenstad and Fresh (1995) concluded that the many of the impacts of commercial shellfish mariculture activities on coastal waters were within the range of natural variation for these dynamic ecosystems.

Commercial shellfish mariculture activities may help restore ecological functions and services to coastal waters in areas where overexploitation of bivalve molluscs has substantially reduced populations of those organisms (NRC 2010). The cultivated species can provide many of the same ecosystem functions and services as wildly occurring species (Froehlich et al. 2017), which may have been overharvested by local communities over time. Estuarine and marine habitats are often substantially degraded and it might not be feasible to conduct traditional restoration efforts for these aquatic ecosystems, so bivalve shellfish mariculture activities have potential to improve a variety of ecosystem services that might not otherwise be enhanced in these waterbodies (Alleway et al. 2019). Some mariculture activities can help restore biogenic habitats that can help improve ecosystems functions and services (Froehlich et al. 2017).

Commercial shellfish mariculture activities may facilitate the introduction of non-

native species (NRC 2010) to a waterbody or region. For example, in a review of the environmental effects of mussel mariculture activities, McKindsey et al. (2011) stated that these activities can facilitate introduction of non-native species to coastal waters, including invasive tunicate, ascidian, algal, and molluscan species. Aquaculture activities, including commercial shellfish mariculture activities, has been the cause of numerous introductions of non-native species of seaweeds, fish, invertebrates, parasites, and pathogens (Naylor 2001). With respect to commercial bivalve shellfish mariculture activities, during the past several decades there have been no introductions of non-native bivalve species into U.S. waters for commercial production activities (NRC 2010).

Non-native bivalve shellfish species used for commercial mariculture activities can have effects on native species communities and ecological processes, with subsequent ecological and economic impacts (NRC 2010). The effects of non-native species on ecological processes, as well as biodiversity, can be positive, negative, or neutral (Shackelford et al. 2013). Non-native species can provide important ecological functions and services, especially in ecosystems that have been severely modified through human activities and native species are less abundant because of those human modifications (Ewel and Putz 2004). Decisions regarding management of non-native species should be based on impacts, not origin (Davis et al. 2011).

Heck et al. (2003) examined the potential nursery functions (abundance, growth, and survival of juvenile aquatic animals) of seagrass beds and compared them to the potential nursery functions of other structured habitats such as oyster reefs or macroalgal beds. They found few significant differences existed in juvenile animal abundance, growth or survival when comparing seagrass beds with the structured habitats. Thus, the enhanced survival of organisms in seagrass beds compared to unvegetated habitats appeared to be the result of the availability of structural habitat, which can provide aquatic organisms places to hide from predators and places for food sources (e.g., epibiotic organisms) to establish and grow.

Standards and best management practices can be implemented by growers to minimize the adverse environmental effects of commercial shellfish mariculture operations (NRC 2010). Standards and best management practices would be more appropriately developed for certain species or regions (Simenstad and Fresh 1995) because these standards and practices can vary in effectiveness for different species or groups of species. Species-specific or regional standards and best management practices may be appropriate as regional conditions approved by division engineers through the processes at 33 CFR 330.5(c). Species-specific or resource-specific conditions can be added to individual NWP authorizations through permit conditions imposed by district engineers (33 CFR 330.5(d)). Such standards and best management practices may added to DA permits as permit conditions if they satisfy the criteria for permit conditions at 33 CFR 325.4(a): that is they are necessary to satisfy legal requirements, and are directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably

enforceable. Thoughtfully planned and sustainable mariculture activities can help provide conservation values (Froehlich et al. 2017).

(b) Economics. Commercial shellfish mariculture activities will have positive impacts on the local economy. These activities will generate jobs and revenue for local growers as well as revenue to supply companies that sell materials used for these activities. Commercial shellfish mariculture activities supply seafood for restaurants and other consumers, which can provide economic benefits for entities that sell bivalves to restaurants and food markets, and the people that work in restaurants and food markets. The authorized mariculture activities will also benefit the community by improving the local economic base, which is affected by employment, tax revenues, community services, and property values. Bivalve shellfish mariculture activities can provide materials for a variety of beneficial uses, such as shell used for building materials (e.g., lime for cement), medicines, and substrate for restoration activities, (Alleway et al. 2019). Bivalve shellfish mariculture activities can provide jobs and other economic benefits in isolated communities, as well as communities that are impoverished or otherwise disadvantaged (Alleway et al. 2019). Both mariculture industry representatives and members of the public that are not directly involved in the mariculture industry recognize the economic benefits of bivalve mariculture (D'Anna and Murray 2015).

(c) Aesthetics. Commercial shellfish mariculture activities may alter the visual character of some waters of the United States. The extent and perception of these changes will vary, depending on the size and configuration of the mariculture activity, the nature of the surrounding area, and the public uses of the area. The use of the project area and the surrounding land may also alter local aesthetic values. Impacts on aesthetics can be positive, negative, or neutral, and may depend on the perspectives of people who live in the vicinity of the commercial shellfish aquaculture activity, or are visitors to the area. In areas where commercial shellfish mariculture activities have been conducted for many years, long-term residents may view the aesthetic impacts as positive or neutral because they have become accustomed to those activities (NRC 2010). In these areas, newer residents may consider the effects of these activities on aesthetics to be negative because they do not want to see these activities in waters near the places they live and work (NRC 2010). Commercial shellfish mariculture equipment, such as PVC tubes, plastic lines, and canopy nets may break away from the operation and may impair the aesthetics of the waters and shoreline in the vicinity of the operation. Some regulatory authorities may require mariculture equipment to be marked to identify the operator so that equipment that went astray can be returned to the operator. Operators of commercial shellfish mariculture activities can work with local communities to reduce the visual impacts of these activities (NRC 2010).

General condition 13 requires, to the maximum extent practicable, the removal of temporary structures after their use has been discontinued. Under Section 404 of the Clean Water Act, the Corps does not regulate the placement of trash or garbage into waters of the United States, because trash or garbage is specifically excluded

from the definition of “fill material” at 33 CFR 323.2(e). Discharges of trash or garbage into waters of the United States, including navigable waters, may be regulated by EPA and approved states under Section 402 of the Clean Water Act.

The commercial shellfish mariculture activities authorized by this NWP may affect various aesthetic characteristics of coastal areas, such as visual, noise, and smell. Coastal property owners may perceive that these activities have positive, negative, or neutral effects on local aesthetics. Some property owners may object to commercial shellfish mariculture activities occurring in coastal waters near their homes or businesses (NRC 2010).

(d) General environmental concerns. Activities authorized by this NWP will likely have positive, negative, or neutral effects on general environmental concerns, such as water, air, noise, and land pollution. Commercial shellfish mariculture activities can have positive and negative environmental effects on coastal waters (NRC 2010). By consuming phytoplankton and converting nutrients into biomass, the cultivated bivalves can help reduce eutrophication in coastal waters and reduce some of the adverse effects of eutrophication (NRC 2010, Gentry et al. 2020). The authorized activities may also affect the physical, chemical, and biological characteristics of the aquatic environment. Bivalve mariculture industry representatives and members of the public have different perceptions of the environmental impacts of bivalve mariculture activities, with industry members generally having positive views (while acknowledging some negative environmental impacts) and non-industry members of the public having negative or uncertain views of environmental impacts (D’Anna and Murray 2015). The adverse effects of the activities authorized by this NWP on general environmental concerns are likely to be minor since district engineers retain discretionary authority to require individual permits for proposed activities that have more than minimal adverse environmental effects. Sustainable mariculture activities can be conducted through careful and thoughtful site selection, establishing an appropriate size for the mariculture operation, and selecting appropriate species to cultivate (Froehlich et al. 2017).

At moderate population densities, commercially produced shellfish populations may improve general environmental concerns, such as water and habitat quality, within navigable waters by removing suspended materials and plankton from the water column in waters subject to eutrophication and by providing physical structure to the waterbody that can be used as habitat by some aquatic organisms (Dumbauld et al. 2009, Forrest et al. 2009). Adverse effects to the chemical composition of the aquatic environment will be controlled by general condition 6, which states that the material used for construction must be free from toxic pollutants in toxic amounts. General condition 23 requires mitigation to minimize adverse effects to the aquatic environment through avoidance and minimization at the project site. Mitigation, such as best management practices and on-site avoidance and minimization measures may be required by district engineers through the addition of conditions to the NWP authorization to ensure that the net adverse effects on the aquatic environment are

minimal. Production of bivalve molluscs through commercial shellfish mariculture operations can sequester carbon through shell formation and growth (NRC 2010). Specific environmental concerns are also addressed in other sections of this document.

The impacts of commercial shellfish mariculture activities on the environment are dependent on the species being cultivated, the characteristics of the affected waterbody, and the scale of the commercial shellfish mariculture activity (NRC 2010), as well as the cultivation techniques that are used and the other types of aquatic organisms living in or near the project area. Some commercial shellfish mariculture activities involve the use of protective structures such as fences and netting that can alter water flows, increase sediment deposition, and provide structural habitat to which fouling organisms can attach (NRC 2010).

Pesticides may be used for bivalve mariculture activities (NRC 2010, Simenstad and Fresh 1995). Herbicides may be used to control invasive plants that may interfere with bivalve mariculture activities (Patten 2014). The application of pesticides and herbicides into waters of the United States may be regulated by the U.S. EPA or approved states under Section 402 of the Clean Water Act. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the U.S. EPA may also regulate pesticide distribution, sale, and use. The Corps does not have the legal authority to regulate the use of pesticides, herbicides, and other chemicals such as antifouling agents, that may be used during the operation of commercial shellfish mariculture activities to control other organisms, such as diseases and fouling organisms. Antifouling agents may be used to clean structures used for bivalve mariculture activities. The Corps does not have the authority to prevent the use of antifouling agents during commercial shellfish mariculture operations.

The Corps does not have the legal authority to control the placement of trash or garbage in navigable waters of the United States. The placement of trash or garbage into navigable waters of the United States may be regulated under Section 402 of the Clean Water Act. The Corps' regulations at 33 CFR 323.3(e)(3) state that trash and garbage are not considered "fill material" for the purposes of Section 404 of the Clean Water Act. Therefore, the Corps does not have the legal authority to control the placement of trash or garbage into waters of the United States. However, the Corps does have the legal authority to require that temporary structures placed in navigable waters of the United States and temporary discharges of dredged or fill material into waters of the United States to be removed after completion of the authorized work. Some regulatory authorities may require the mariculture operator to periodically retrieve debris. General condition 13 requires temporary structures to be removed after their use has been discontinued.

Materials used for commercial shellfish mariculture activities may become dislodged because of storms or strong water movements, and they may be abandoned or left to litter the waterbody or the shoreline. Section 13 of the Rivers and Harbors Act of 1899 (33 U.S.C. 407), also known as the Refuse Act, required permits for

discharges of refuse into navigable waters. The Corps' permitting authority under section 13 has been superseded by the permitting authority provided to the U.S. Environmental Protection Agency and states under Sections 402 and 405 of the Clean Water Act. Therefore, trash or garbage from commercial shellfish mariculture activities is not regulated by the Corps under is permit authorities, and may be regulated by U.S. EPA and the states under other sections of the Clean Water Act. Under Section 404 of the Clean Water Act, the term "fill material" does not include trash or garbage (see 33 CFR 323.2(e)(3)).

When evaluating the individual and cumulative effects of shellfish mariculture activities on estuarine and marine ecosystems, including submerged aquatic vegetation, several investigators have recommending conducting these evaluations at an ecosystem or landscape/seascape scale (e.g., NRC 2010, Simenstad and Fresh 1995, Dumbauld et al. 2015), rather than focusing on only the immediate site where the shellfish mariculture activities are occurring. The geographic scope for the assessment of cumulative effects can be a waterbody or a portion of a large waterbody. Using an ecosystem or landscape/seascape scale approach for assessing the cumulative effects of shellfish mariculture activities helps take into account the highly dynamic nature of coastal waters, and the various ecological components of those waters (e.g. water quality, seagrasses, finfish species, and invertebrate species) and how they change over time and space as a result of natural and anthropogenic disturbances. A cumulative effects analysis would also provide context on the degree to which commercial shellfish mariculture activities, compared to A cumulative effects analysis should also take into account how other human activities such as urban, suburban, and agricultural land uses in coastal watersheds, forestry activities in coastal watersheds, shoreline alteration activities, and point and non-point sources of pollution, have shaped the current environmental setting (i.e., the environmental baseline) in a waterbody or a specific area of coastal waters. An ecosystem or landscape/seascape approach for assessing the cumulative effects of shellfish mariculture activities would provide a better understanding of the scale and intensity of the effects of those mariculture activities on the structure, functions, and dynamics of coastal waters (NRC 2010), and assist the Corps in determining whether NWP 48 activities are resulting in no more than minimal cumulative adverse environmental effects. Further discussion of cumulative effects analysis for activities authorized by this NWP is provided elsewhere in this document.

A cumulative effects analysis will be particularly important in a waterbody or specific area of coastal waters where an applicant submits multiple PCNs for projects in contiguous areas, and where other entities are conducting commercial shellfish mariculture activities authorized by NWP 48. However, it will be important to determine the geographic scale at which a robust cumulative effects assessment can be conducted. For example, it would be inappropriate to analyze cumulative effects across an entire region if commercial shellfish mariculture operations are being concentrated in specific waterbodies or other smaller geographic areas. Cumulative effects analyses for NWP 48 activities should take into account other

human activities that result in similar stressors to those that may result from commercial shellfish mariculture operations, such as the use of vessels, changes in water quality in coastal and nearshore areas from point and non-point sources of pollution, and in-water construction and operation of in-water structures.

McKindsey at al. (2011) identified a number of environmental effects that floating and suspended mussel mariculture activities have on coastal waters, and they recognize that some of those effects are negative and some of those effects are positive. They stated that it is important to consider the trade-offs of the various positive and negative effects of these activities and what is important in terms of making management decisions for these coastal waters. There are social aspects that need to be considered for management decisions, including the values different segments of society place on coastal waters and the ecological functions and services (including food production through commercial shellfish mariculture activities) coastal waters can provide. From the Corps' perspective the public interest review is a mechanism for making permit decisions for activities that require DA authorization under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. The Corps' public interest review is a framework for evaluating the benefits which reasonably may be expected to accrue from an activity requiring Corps authorization against its reasonably foreseeable detriments (see 33 CFR 320.4(a)(1)). Reasonably foreseeable impacts to one or more public interest review factors can be a basis for a division or district engineer exercising discretionary authority to modify, suspend, or revoke NWP authorizations (33 CFR 330.1(d)). Locating commercial shellfish mariculture activities in degraded coastal waters has the potential to help improve the ability of those waters to provide ecosystem services such as habitat and nutrient reduction (water quality) (Alleway et al. 2019). Structures used for commercial shellfish mariculture activities, such as long lines and floating racks and cages, may alter current patterns and water circulation in the vicinity of the operation (NRC 2010). Dredging for bivalve shellfish harvesting can have adverse effects on coastal habitat and the organisms that utilize those habitats (NRC 2010).

The design of commercial shellfish mariculture activities, along with operational standards (e.g., stocking densities, rotational practices, biosecurity measures), can help reduce the adverse effects of these activities on marine and coastal environments and facilitate production of ecosystem services (Alleway et al. 2019). Some of these operational standards may be added to NWP 48 authorizations through conditions added by district engineers, or regional conditions imposed by division engineers, when those operational standards apply to the activities authorized by the Corps and are reasonably enforceable by the Corps. For those commercial shellfish mariculture activities that require ESA Section 7 consultation, additional conditions may be imposed on the operator to avoid and minimize potential effects to ESA-listed species or designated critical habitat. In cases where mariculture activities are likely to adversely affect ESA-listed species, measures will be required to minimize incidental take of endangered or threatened species. In cases where mariculture activities are likely to adversely affect critical habitat, the

proposed commercial shellfish mariculture activity cannot destroy or adversely modify designated critical habitat. For commercial shellfish mariculture activities that may adversely affect essential fish habitat designated under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act, district engineers may add permit conditions to avoid, minimize, or offset impacts to essential fish habitat to conserve the habitat of fish species subject to approved fishery management plans.

Some activities authorized by this NWP may adversely affect macroalgae if the commercial shellfish mariculture activity is conducted in a waterbody inhabited by macroalgae. The bivalve molluscs cultivated through commercial shellfish mariculture activities will consume plankton, which includes macroalgae suspended in the water column. Planktonic microalgae is consumed through the filter feeding by bivalves, which convert the microalgae into biomass and energy, for metabolism, growth, and reproduction. Consumption of planktonic microalgae by bivalve molluscs can also improve water clarify and reduce eutrophication (NRC 2010).

(e) Wetlands. This NWP does not authorize activities in non-tidal wetlands or waters, so it is unlikely that the activities authorized by this NWP will adversely affect non-tidal waters and wetlands. The commercial shellfish mariculture activities authorized by this NWP may result in impacts to emergent tidal wetlands. However, impacts to emergent tidal wetlands are likely to be minor since these activities generally occur in subtidal or intertidal waters, seaward of fringe tidal wetlands. However, in some areas of the country, commercial shellfish mariculture activities may occur in intertidal areas, which may be inhabited by seagrasses (Ferriss et al. 2019). In many cases the impacts to tidal wetlands and intertidal seagrasses will be temporary since commercial shellfish mariculture activities primarily utilize temporary structures. This NWP does not authorize attendant features that might result in the permanent loss of fringe emergent wetlands, such as boat ramps, stockpiles, or staging areas. Those activities may be authorized by other NWPs, regional general permits, or individual permits, and the effects to emergent tidal wetlands will be evaluated through those other permitting processes. Emergent tidal wetlands may also be adversely affected by shellfish harvesting activities, and many of those impacts may be temporary as the tidal wetlands recover after disturbance.

Wetlands provide habitat, including foraging, nesting, spawning, rearing, and resting sites for aquatic and terrestrial species. The loss or alteration of wetlands may alter natural drainage patterns. Wetlands reduce erosion by stabilizing the substrate. Wetlands also act as storage areas for stormwater and flood waters. The loss of wetland vegetation will adversely affect water quality because these plants trap sediments, pollutants, and nutrients and transform chemical compounds. Wetland vegetation also provides habitat for microorganisms that remove nutrients and pollutants from water. Wetlands, through the accumulation of organic matter, act as sinks for some nutrients and other chemical compounds, reducing the amounts of these substances in the water.

The activities authorized by this NWP may result in impacts to submersed aquatic vegetation (e.g., seagrasses) that inhabit intertidal and subtidal waters. This NWP requires pre-construction notification for commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. This pre-construction notification requirement provides the district engineer with an opportunity to review those activities and assess potential impacts on submerged aquatic vegetation and ensure that the authorized activity results in no more than minimal adverse environmental effects.

Discharges of dredged or fill material into waters of the United States for commercial shellfish mariculture activities may cover submersed aquatic vegetation, when on-bottom culture methods involve discharges of shell, gravel, and other materials to create flats or mounds to which bivalve shellfish larvae can attach to and grow. Seagrasses may also be disturbed or removed through regulated bivalve shellfish harvesting activities, such as hydraulic and mechanical dredging and harvesting cultivated shellfish by hand or hand tools. Submerged aquatic vegetation impacted by bivalve harvesting activities may recover, although the time frame for recovery can vary and is dependent on a number of factors (e.g., Ferriss et al. 2019, Tallis et al. 2009). In a study of oyster mariculture in a west coast estuary, Dumbauld and McCoy (2015) determined that eelgrass can recover within one to four years after mechanical disturbances occur, with the rate of recovery dependent on the severity of the impact, the location in the estuary, and the reproductive mechanism used (e.g., seed germination versus vegetative reproduction through rhizomes). Dredge harvesting activities can stimulate growth of submersed aquatic vegetation (Tallis et al. 2009), even though it breaks the stems, leaves, and rhizomes of seagrasses and reduces seagrass density. which can negatively impact seagrass beds. Mechanical harvesting techniques can have greater impacts on seagrasses than hand harvesting methods, as well as longer seagrass recovery times (Ferriss et al. 2019). Long lines and hand harvesting generally have less impact on submersed aquatic vegetation than dredge harvesting (Tallis et al. 2009). The responses of one genus of submerged aquatic vegetation (i.e., *Zostera* spp.) to bivalve mariculture activities varied regionally and by cultivation methods (Ferriss et al. 2019).

For on-bottom bivalve shellfish mariculture techniques that involve the placement of structures such as long-lines, bags, and cages on the bottom of the waterbody, submersed aquatic vegetation may be covered by those structures. Seagrasses may grow in subtidal and intertidal waters between the structures. Long lines, suspended bags, and floating bags used for commercial shellfish mariculture activities can shade submersed aquatic vegetation, but the severity of those shading effects on seagrasses depends on the configuration of those structures (Skinner et al. 2014). In a global metanalysis of interactions between bivalve mariculture activities and eelgrass, Ferriss et al. (2019) found that on-bottom bivalve mariculture was associated with significant increases in eelgrass growth rates and reproduction, with decreases eelgrass density and biomass—indicators of negative overall impacts to eelgrass. General condition 13 requires, to the maximum extent

practicable, the removal of temporary structures after their use has been discontinued, and seagrasses may be able to grow back in the affected area after those structures are removed, depending on multiple factors.

Off-bottom bivalve shellfish mariculture techniques, such as floating bags, racks, and cages, may shade submerged aquatic vegetation, affecting its distribution and abundance (e.g., NRC 2010). Those adverse effects on seagrass distribution and abundance may be temporary if seagrasses are able to successfully recover after the floating structures are removed. Seagrasses may also grow and persist in areas between the floating or suspended shellfish mariculture structures, where light can penetrate the water column between those structures. Off-bottom bivalve mariculture practices caused significant decreases in density, percent cover, and reproduction for a genus of seagrasses (*Zostera* spp.) (Ferriss et al. 2019), as a result of shading.

In some west coast estuaries, seagrasses coexist with commercial oyster mariculture activities (Dumbauld et al. 2015). The removal of burrowing shrimp as a result of control methods used for commercial shellfish mariculture activities can increase seagrasses in those areas (Tallis et al. 2009, Simenstad and Fresh 1995). Nutrients in biodeposits or excreta from cultivated bivalve shellfish can enhance growth of seagrasses (NRC 2010), and may contribute to productivity in coastal waters with lower nutrient levels. These benthic invertebrates may be consumed by fish and large, motile crustaceans such as crabs.

Seagrasses provide important ecological functions and services such as organic carbon production and export, nutrient cycling, sediment stabilization, enhanced biodiversity, and transfers of energy between adjacent habitats (Orth et al. 2006). Dumbauld and McCoy (2015) identified the following ecological functions performed by seagrasses: enhanced biodiversity, structured habitat for fish and invertebrates (nurseries, refuge from predation), sediment accretion and erosion control by dampening water currents, carbon sequestration, and foraging areas for waterfowl and shorebirds.

Dumbauld and McCoy (2015) found that while oyster mariculture has a negative effect on eelgrass populations in an estuary in Washington State, that negative effect is small when considered in light of the large areas occupied by eelgrass and oysters within that estuary. They observed that disturbances on eelgrass caused by oyster mariculture activities were fairly small, both spatially and temporally, and eelgrass was present within the oyster mariculture beds. Tallis et al. (2009) concluded that eelgrass populations in estuaries were affected by biological and physical factors caused by shellfish mariculture activities, and eelgrass co-exists with oyster mariculture in vigorous populations. The abundance and distribution of seagrasses may be affected by suspended or floating mussel mariculture activities through a variety of mechanisms, such as shading from floating or suspended mariculture structures, altered nutrient levels, changes in water turbidity, changes in sediment biogeochemistry, physical disturbances caused by harvesting activities

and operational activities, and changes in sediment stability (McKindsey et al. 2011).

General condition 23 requires avoidance and minimization of impacts to waters of the United States, including wetlands, at the project site. Division engineers can regionally condition this NWP to restrict or prohibit the use of this NWP in high value tidal wetlands. District engineers will also exercise discretionary authority to require an individual permit if the wetlands to be filled are high value and the activity will result in more than minimal adverse environmental effects. District engineers can also add case-specific special conditions to the NWP authorization to provide protection to wetlands.

(f) Historic properties. General condition 20 states that in cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act have been satisfied. There may be situations where commercial shellfish mariculture activities are proposed in waters next to historic districts on the National Register, and if those proposed activities might have the potential to affect historic properties then pre-construction notification to the district engineer is required (see paragraph (c) of NWP general condition 20), so that the district engineer can determine whether section 106 consultation is required before the activity can be authorized by NWP.

(g) Fish and wildlife values. This NWP authorizes activities in tidal waters of the United States, which provide habitat to many species of fish and wildlife. Some fish and wildlife may be attracted to structures used for commercial shellfish mariculture activities, which can provide structural habitat that supports epibiotic organisms that are food for fish and wildlife (NRC 2010). Birds, marine turtles, and marine mammals may be entangled in gear used for commercial shellfish mariculture activities, such as long lines and netting (NRC 2010). Activities authorized by this NWP may alter the habitat characteristics of tidal waters. Some species of aquatic organisms will benefit from those changes, while other species will be adversely affected (Dumbauld et al. 2009). Tidal waters, including tidal wetlands and vegetated shallows, provides food and habitat for many species, including foraging areas, resting areas, corridors for fish movement, and nesting and breeding grounds. Open waters provide habitat for fish and other aquatic organisms. Equipment used for commercial shellfish mariculture activities, such as canopy nets, may impede bird feeding activity and trap birds. On the other hand, structures used for commercial shellfish activities may also become encrusted with fouling organisms, which may be a food source for some bird species.

Shellfish seeding activities associated with commercial shellfish mariculture activities may enhance local populations of bivalve molluscs, which can provide ecological functions and services along with naturally occurring bivalve molluscs. Commercial shellfish mariculture activities may adversely affect benthic invertebrate communities, and the type and severity of those adverse effects may be dependent

on the scale of the mariculture activities, the bivalve species cultivated, the cultivation techniques used, and the physical characteristics of the site used for those operations (NRC 2010). On the other hand, the structures used for commercial shellfish mariculture activities, and the bivalve molluscs themselves, can provide positive effects such as increases in structured habitat for benthic organisms, including epibiotic organisms that may serve as food for other benthic organisms (NRC 2010). For example, in a study of utilization of structured habitat provided by mesh used for clam mariculture activities, Powers et al. (2007) found that clam mariculture structures (which were occupied by epibiotic organisms) and seagrass beds supported higher abundances of juvenile fish and motile invertebrates than unstructured to sand flat habitat.

The faunal and floral communities that attach to, or are attracted to, the structural habitat provided by mussel mariculture equipment are functionally similar to the benthic communities that are found in other hard structural habitats in coastal waters (McKindsey et al. 2011). The structural habitat provided by mussel mariculture equipment can provide substrate for epibenthic organisms that (e.g., invertebrates and algae) are food sources for fish and other invertebrates, and provide refuge areas for aquatic animals to hide from predators. Benthic habitat used by fish and invertebrates may also be enhanced on the bottom of the waterbody below suspended bivalve mariculture structures by cultivated molluscs dropping off of the mariculture structures and aggregating on the substrate (McKindsey et al. 2011).

D'Amours et al. (2008) examined abundances of epibenthic macroinvertebrates and fish in the vicinity of mussel mariculture activities using suspended cultivation techniques and they found greater abundances of these organisms near these activities compared to benthic habitats more than 50 meters from the mussel mariculture activities. They concluded that these organisms were attracted to increased food supply attached to the mussel cultivation structures. Mariculture structures can provide habitat for organisms in a manner similar to artificial reefs (e.g., Dealteris et al. 2004, D'Amours et al. 2008, Forrest et al. 2009), by attracting epibiotic organisms as well as mobile invertebrates, such as crabs, and fish to areas that previously had no structural habitat (e.g., sand flats without submersed aquatic vegetation). Mariculture structures can also provide refuge from predators, by giving aquatic organisms places to hide (D'Amours et al. 2008, Powers et al. 2007)

The hard habitat provided by bivalve mollusc mariculture structures can serve as substitute nursery habitat for numerous species and help sustain populations of these species while losses of natural structural habitat occur (Powers et al. 2007). Compared to mudflats, areas with oyster bottom culture generally support more diverse communities of benthic and epibenthic organisms through the complex habitat provided by oyster shells (Simenstad and Fresh 1995), and these more diverse benthic and epibenthic communities can support fish and wildlife. Bivalve shellfish mariculture activities may indirectly cause decreases in fish biomass if the mariculture structures attract fish and those fish become easier to capture by

humans or other predators (Alleway et al. 2019). Organisms growing on commercial shellfish mariculture structures can act as a food source for birds and other organisms, and provide other habitat functions such as shelter, roosting, and haul-out sites for birds and some marine mammals (NRC 2010). Off-bottom bivalve mariculture activities can support larger numbers of individuals and species because they provide more substrate for epibiotic organisms that attract fish, crustaceans, and other aquatic organisms (NRC 2010). However, these structures may also increase the risk of entanglement of marine animals.

In a review of the effects of off-bottom and suspended mussel culture on benthic communities, McKindsey et al. (2011) found that long line and bouchot mussel cultivation methods added substantial amounts of structural habitat that was used by a variety of benthic organisms. Structural habitat can be provided by rafts, bouchots, and long lines, including the anchors that hold long lines in place and the floats that suspend the long line in the water column. The lines or socks that mussels attach to and grow may also provide structural habitat for a variety of aquatic organism, including fouling organisms. The mussels themselves can provide some structural habitat for other organisms. They cite numerous studies that found larger abundances of fish in the vicinity of bivalve shellfish mariculture structures compared to unstructured estuarine and marine habitat.

Dumbauld et al. (2015) found no significant differences in the use of intertidal unstructured benthic habitat (e.g., mudflats), seagrass beds, and oyster mariculture sites for foraging by juvenile salmon and other finfish. Hosack et al. (2006) compared fish and invertebrate communities in three types of estuarine habitat: seagrass beds, areas occupied by non-native cultured oysters, and unvegetated mudflats. They found that invertebrates that serve as prey for decapod crustaceans and fish occurred at significantly greater densities in seagrass beds and cultivated oyster beds compared to unvegetated mudflats. They also found that species richness and size for fish and decapod crustaceans was not significantly different in seagrass beds, cultivated oyster beds, or unvegetated mudflats. Dumbauld et al. (2015) concluded that the temporary disturbances to benthic habitats, such as those caused by bivalve shellfish mariculture activities, do not have significant adverse effects on utilization of those habitats by salmon.

Bivalve shellfish mariculture activities can have positive and negative effects on large marine vertebrates, such as birds, turtles, and mammals; most of these effects have been inferred from studies that did not directly evaluate mariculture activities (NRC 2010). For example, there is potential for larger marine vertebrates to become entangled in lines and netting used for commercial shellfish mariculture activities (Price et al. 2016). Commercial shellfish mariculture activities may also produce litter that may be ingested birds, marine mammals, and marine turtles (NRC 2010), and may increase the susceptibility of these marine vertebrates to mortality. Anti-predator nets used for some forms of commercial bivalve mollusc mariculture activities may also affect feeding behaviors by fish and wildlife (Ferriss et al. 2015).

Human activities in and around commercial shellfish mariculture activities may cause some fish and wildlife species to avoid areas where those activities are occurring, but avoidance might not occur or may be at a lesser degree if there are not suitable alternative habitats available to those vertebrate species (NRC 2010), especially in coastal areas with substantial human presence. Predator exclusion nets used for commercial shellfish mariculture activities can help enhance populations of other epibenthic organisms (Simenstad and Fresh 1995), by providing substrate that they can attach to and grow. These nets may pose an entanglement risk or affect bottom habitat, depending on the types of anchors used to secure the nets.

Mussel mariculture activities may alter benthic infaunal communities, especially through nutrient enhancement caused by increased biodeposits from suspended or floating culture (McKindsey et al. 2011), with filter feeders potentially being replaced to some degree by deposit-feeding organisms and the effects varying by characteristics of the mariculture activity and the site in which the operation is located. The impacts to benthic infaunal communities are generally limited to the footprint of the mussel mariculture operation.

General condition 2 will reduce adverse effects to fish and other aquatic species by prohibiting activities that substantially disrupt the movement of indigenous aquatic species, unless the primary purpose of the activity is to impound water. Compliance with general conditions 3 and 5 will ensure that the authorized activity has no more than minimal adverse effects on spawning areas and shellfish beds, respectively. The authorized activity cannot have more than minimal adverse effects on breeding areas for migratory birds, due to the requirements of general condition 4.

For an NWP activity, compliance with the Bald and Golden Eagle Protection Act (16 U.S.C. 668(a)-(d)), the Migratory Bird Treaty Act (16 U.S.C. 703; 16 U.S.C. 712), and the Marine Mammal Protection Act (16 U.S.C. 1361 et seq.) is the responsibility of the project proponent. General condition 19 states that the permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

Consultation pursuant to the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act will occur as necessary for proposed NWP activities that may adversely affect essential fish habitat. Consultation may occur on a case-by-case or programmatic basis. Division and district engineers can impose regional and special conditions to ensure that activities authorized by this NWP will result in only minimal adverse effects on essential fish habitat.

(h) Flood hazards. The activities authorized by this NWP will have little or no adverse effects on the flood-holding capacity of 100-year floodplains, since these

activities occur in either open navigable waters or intertidal waters. Compliance with general condition 9 will reduce flood hazards. This general condition requires the permittee to maintain, to the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters, except under certain circumstances.

(i) Floodplain values. Activities authorized by this NWP will have negligible adverse effects on the flood-holding capacity of the floodplain, as well as other floodplain values, since it authorizes only commercial shellfish mariculture activities, which occur in open waters. For those activities that require pre-construction notification, district engineers will review the proposed activities to ensure that those activities result in no more than minimal adverse effects on floodplain values. General condition 23 requires avoidance and minimization of impacts to waters of the United States to the maximum extent practicable at the project site, which will reduce losses of floodplain values.

(j) Land use. Activities authorized by this NWP will have little or no adverse effect on terrestrial land use, since it is limited to commercial shellfish mariculture activities, and those activities usually occur in navigable waters identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any other easement, lease, deed, or contract which establishes an enforceable property interest for the grower. Since the primary responsibility for land use decisions is held by state, local, and tribal governments, the Corps' control and responsibility is limited to significant issues of overriding national importance, such as navigation and water quality (see 33 CFR 320.4(j)(2)). Bivalve shellfish mariculture activities may utilize fairly large areas of subtidal lands (e.g., 25 to 50 acres) (Robinson et al. 2016), which may result in conflicts about use of submerged lands, which are often held in the public trust by state governments.

Regulations regarding the use of coastal areas for commercial shellfish mariculture activities vary from state to state and may also vary among local governments within a particular state (NRC 2010). Most commercial shellfish mariculture activities occur in submerged lands that are owned by state governments, although some tidelands may be under private ownership (NRC 2010). Leases from state or local governments may be required to conduct commercial shellfish mariculture activities in publicly held lands. To be financially viable, bottom culture for large-scale scallop production may require the ability to lease large areas of submerged lands (Robinson et al. 2016) because scallops are capable of swimming and may swim away from the cultivation site if it is too small. Commercial shellfish mariculture activities may impair some public uses of portions of coastal waters (NRC 2010), such as boating, beachcombing, and fishing. Shafer et al. (2010) found that people who live closest to nearshore mariculture facilities tended to have negative perceptions about those facilities, while acknowledging the economic benefits mariculture operations can have for local communities. Commercial shellfish mariculture operators usually must have leases or other instruments that grant them the rights to use submerged or intertidal lands for bivalve shellfish mariculture

activities. In some states, shellfish growers may have ownership rights over submerged lands and therefore do not need leases or other instruments to cultivate shellfish on those submerged lands. Corps permits, including NWP authorizations, do not convey any property rights.

(k) Navigation. Activities authorized by this NWP may adversely affect navigation, by creating obstructions impede vessel traffic or require vessels to navigate around the floating or suspended mariculture structures, or long lines. These activities may also occur in navigable waters that are too shallow for most vessels, or in intertidal waters. For some bivalve mariculture activities, fencing may be used to keep motile predators, such as starfish, from consuming bottom cultured scallops (Robinson et al. 2016), which may have adverse effects on navigation. Netting may be another anti-predation tool that could have adverse effects on navigation. Activities authorized by this NWP must comply with general condition 1. If commercial shellfish mariculture activity has more than minimal adverse effects on navigation, the district engineer can exercise discretionary authority to require the project proponent to obtain an individual permit for the proposed activity. General condition 1 also allows the district engineer to require the project proponent to remove, relocate, or alter the structures or work to prevent any unreasonable obstruction to the free navigation of the navigable waters. For those activities that require pre-construction notification, the district engineer will need to review those activities on a case-by-case basis and determine if there will be any adverse effects on navigation.

(l) Shore erosion and accretion. The activities authorized by this NWP will have minor direct effects on shore erosion and accretion processes, since the NWP is limited to commercial shellfish mariculture activities that occur in open waters. These activities generally occur in tidal waters. However, NWP 13, regional general permits, or individual permits may be used to authorize bank stabilization projects associated with commercial shellfish mariculture activities. The effects of those bank stabilization projects on shore erosion and accretion will be evaluated through that authorization process.

Commercial shellfish mariculture activities in nearshore waters, especially those that involve suspended and floating culture methods, may in some cases contribute to dissipation of wave energy that reduces shore erosion and accretion (Alleway et al. 2019, NRC 2010). Therefore, the activities authorized by this NWP are unlikely to have adverse effects on shore erosion and accretion.

(m) Recreation. Activities authorized by this NWP may alter recreational uses of the waterbody, by occupying waters that can be used for recreational activities, including boating and fishing. However, since the NWP authorizes only commercial shellfish mariculture activities in areas that have already been identified through leases or permits issued by state or local government agencies, a treaty, or any other easement, lease, deed, or contract that establishes an enforceable property interest for the operator, the operator may have a stronger right to the use of the

leased or permitted area. Certain recreational activities, such as fishing, would likely still be available in the area. Those recreational activities may be enhanced by fish that are attracted to the structures used for commercial shellfish mariculture activities, for feeding and other activities. Some bird species may be attracted to areas where commercial shellfish mariculture activities are occurring, while other bird species may avoid those areas because of the presence of humans and disturbances. Therefore, potential effects on recreation activities such as bird watching and observing other types of wildlife may vary depending on the species and site-specific circumstances. People who live near coastal areas where mariculture activities may occur and who directly use those waters for recreation purposes tend to have more concerns about these activities (Shafer et al. 2010) than people who live farther away and are less likely to use these waters for recreation.

Other types of recreational activities, such as boating, kayaking, and swimming, may be adversely affected by shellfish mariculture operations in coastal waters (NRC 2010). Commercial shellfish mariculture activities may affect other recreational activities, such as bird watching and observing other types of wildlife, since some species may be attracted to the structures used for these activities if they serve as food sources by providing habitat for epibiotic organisms. Other wildlife species may avoid areas used for commercial shellfish mariculture activities because of the presence of humans conducting these operations or the presence of the mariculture structures in the waterbody reducing the amount of area available for foraging and other behaviors.

(n) Water supply and conservation. Activities authorized by this NWP are not likely to adversely affect surface water and groundwater supplies. This NWP authorizes commercial shellfish mariculture activities, which occur in tidal waters of various salinities. These activities will not increase demand for potable water in the region. Activities authorized by this NWP will not adversely affect the quality of water supplies, since these activities do not occur in freshwater ecosystems that may be a source of potable water.

(o) Water quality. Some commercial shellfish mariculture activities may have minor adverse effects on water quality, but other commercial shellfish mariculture activities may have beneficial effects on water qualify when the bivalve molluscs filter-feed (e.g., NRC 2010, Gentry et al. 2020). Filter-feeding removes phytoplankton, organic detritus, and inorganic particles from the water column (NRC 2010, Powers et al. 2007, Jackson et al. 2001), which can reduce turbidity. Bivalve molluscs may also remove suspended sediment from the water column. The production of large numbers of bivalve molluscs through mariculture activities has the potential to overload coastal waters with waste materials if there is not sufficient flushing to disperse those waters (NRC 2010), which can adversely affect water quality in those coastal waters. Mussel mariculture activities may modify nutrient fluxes and nutrient dynamics in coastal waters in the vicinity of these operations (McKindsey et al. 2011) and there is uncertainty regarding how far those effects would extend

beyond the footprint of the mariculture activity.

Bivalve molluscs also excrete waste materials and biodeposits, which can have positive or negative effects on water quality, depending on the quality and quantity of substances excreted by those organisms (NRC 2010, McKindsey et al. 2011). At lower levels, the nutrients in excreted substances and biodeposits (i.e., feces and pseudofeces) can be used by seagrasses for growth and reproduction, but at higher levels those materials they can create conditions that adversely affect benthic communities (NRC 2010). Large populations of the species raised through commercial shellfish mariculture activities can increase in nutrients and other substances in the water column, and for very large numbers of cultivated individuals the effects of those nutrients and other substances, including feces and pseudofeces, can be adverse. For example, feces and pseudofeces from cultivated bivalve molluscs can cause oxygen depletion in the water column if the amount of cultivated bivalves exceeds the waterbody's capacity for effectively processing and flushing those materials (NRC 2010, Powers et al. 2007). On the other hand, biodeposits produced by bivalve molluscs, including cultivated individuals, may also play a role in denitrification, and help reduce eutrophication (NRC 2010). It should also be noted that many estuaries have historically supported large populations of naturally occurring bivalve molluscs and those estuarine systems supported productive ecosystems that were overexploited by human communities (e.g., Zu Ermgassen et al. 2012; Wilberg et al. 2011).

The term "pollutant" does not include the placement of shellfish seed or bivalves at various stages of growth into jurisdictional waters, or the waste products (e.g., feces or pseudofeces, ammonium) excreted by bivalves. In *Association to Protect Hammersley, Eld, and Totten Inlets v. Taylor Res., Inc.*, 299 F.3d 1007 (9th Cir. 2002), the court concluded that Congress did not intend that living bivalves and the natural chemicals and particulate biological matter they release through normal physiological processes, or the shells that might be separated from living bivalves from time to time, be considered pollutants under the Clean Water Act. In other words, bivalve shells and natural waste products excreted by living bivalves are not "biological materials" under the Clean Water Act's definition of "pollutant" because these shells and natural waste products come from the natural growth and development of bivalves and not from a transformative human process.

Under Sections 305(b) and 303(d) of the Clean Water Act, the U.S. EPA compiles information from states on the causes and sources of impairment of broad categories of the Nation's waters, including bays and estuaries, coastal shorelines, and ocean and near coastal waters where commercial shellfish mariculture activities may occur. According to U.S. EPA's current national summary of water quality data (https://iaspub.epa.gov/waters10/attains_nation_cy.control accessed 11/27/2020), states identified 28 causes of impairment and 23 probable sources of impairment for 56,141 square miles of assessed bay and estuaries. Aquaculture activities were not included in the 28 causes of impairment for assessed bays and estuaries. For bays and estuaries, states identified only one square mile of the assessed 56,141 square

miles where aquaculture activities were a probable source of impairment. States assessed 4,627 miles of coastal shoreline and identified 16 causes of impairment and 17 probable sources of impairment. Aquaculture was not identified as a cause of impairment or a probable source of impairment for the 4,627 miles of assessed coastal shoreline. For ocean and near coastal waters, states identified 16 causes of impairment and 14 probable sources of impairment. Aquaculture was not identified as a cause of impairment or a probable source of impairment for the 4,627 miles of 6,944 square miles of coastal shoreline assessed by states. From the state data summarized by the U.S. EPA demonstrates that commercial shellfish mariculture activities has a very small contribution to the impairment of bays and estuaries and does not provide an identifiable contribution to the impairment of coastal shoreline or ocean and near coastal waters. In other words, the designated uses of these waters are rarely affected by commercial shellfish mariculture activities.

In-water physical removal of fouling organisms from bivalve mariculture gear may result in deposits of organic material on the bottom of the waterbody (NRC 2010) and adversely affect water quality as that organic matter decomposes. Chemicals, such as acetic acid brine, may be used to control fouling organisms on bivalve mariculture gear (NRC 2010), and those chemicals may reach the waterbody and alter water quality either directly or indirectly.

Some commercial bivalve shellfish mariculture activities may use pesticides to try to control predators and nuisance species (NRC 2010), such as burrowing shrimp. However, the Corps does not have the legal authority to regulate or control the application of pesticides under its permitting authorities under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Discharges of pesticides into navigable waters may be regulated under Section 402 of the Clean Water Act by EPA or approved states. Burrowing shrimp can bury oysters under sediment by moving sediment that covers oysters or by destabilizing the sediment so that oysters sink into the sediment (Simenstad and Fresh 1995). When considering the effects of pesticides used for commercial shellfish mariculture activities on estuarine ecosystems, those effects cannot be separated from the other effects these activities have on these ecosystems, such as the structural habitat provided by bivalve shellfish and structures used for their production, the effects bivalve filter feeding has on water quality, and the effects of pseudofeces on water quality and productivity (Simenstad and Fresh 1995). When evaluating the effects of commercial shellfish mariculture activities on the environment, all of the reasonably foreseeable benefits and detriments of those activities should be considered, to determine whether net environmental effects are positive, negative, or neutral. This evaluation should be conducted by evaluating those reasonably foreseeable environmental effects (positive, negative, or neutral) against the current environmental setting, which includes the present effects of past and present human activities that affect coastal waters, including point and non-point pollution from coastal watersheds and other human activities that occur, and have occurred, in these coastal waters.

During commercial shellfish mariculture operations, small amounts of oil and grease from production or harvesting equipment may be discharged into the waterway. Because most production or harvesting activities will occur during a relatively short period of time, the frequency and concentration of these discharges are not expected to have more than minimal adverse effects on overall water quality.

Activities authorized by this NWP, such as deposition of gravel and other materials for bed preparation for on-bottom commercial shellfish mariculture activities and certain harvesting activities, that may result in a discharge into waters of the United States will require water quality certification from the appropriate certifying authority (e.g., a state or approved tribe). Water quality certification may be issued (with or without conditions), waived, or denied. Most water quality concerns are addressed by the state or tribal water quality certification agency. In accordance with general condition 25, the permittee may be required to develop and implement water quality management measures that minimizes the degradation of the aquatic environment, including water quality. The district engineer may require water quality management measures to ensure that adverse effects to water quality are no more than minimal.

(p) Energy needs. The activities authorized by this NWP will result in negligible changes in energy consumption in the area, because the NWP authorizes only certain aspects of commercial shellfish mariculture activities, specifically structures or work in navigable waters and discharges of dredged or fill material into those waters. Therefore, consumption of electricity, natural gas, and petroleum products is likely to be minor, and limited to the operation of dredge harvesting equipment, boats, and other mechanized equipment. A portion of commercial shellfish mariculture activities are conducted by hand. Energy consumption may increase for the transportation of cultivated bivalve molluscs to seafood markets and restaurants, both locally and across the country.

(q) Safety. The activities authorized by this NWP will be subject to Federal, state, and local safety laws and regulations. Therefore, this NWP will not adversely affect the safety of the project area.

(r) Food and fiber production. Activities authorized by this NWP will normally increase food production, through the production of commercial shellfish species. The activities authorized by this NWP will not adversely affect fiber production. These activities will not change the amount of available agricultural land in the nation. The loss of farmland will be negligible, because the activities authorized by this NWP occur in coastal waters. Commercial shellfish mariculture activities may interfere with commercial and recreational fishing activities by excluding fishers from the waters where those mariculture activities occur (NRC 2010). Commercial bivalve shellfish mariculture activities can provide food for human populations (Alleway et al. 2019), and thus increase local and national food production. Bivalve shellfish mariculture activities can help support indigenous and traditional communities in their efforts to continue customary ways of life (Alleway et al. 2019),

and support traditional diets.

The activities authorized by this NWP, including the structures used for commercial shellfish mariculture activities, can provide structural habitat for a variety of pelagic and benthic organisms, such as fish, crustaceans, other molluscs, algae, and fouling organisms, which may indirectly enhance food production by supporting other commercially important aquatic species that are consumed by people.

(s) Mineral needs. Activities authorized by this NWP will have little or no adverse effects on demand for aggregates and stone, since these materials are usually not used for commercial shellfish mariculture activities. Activities authorized by this NWP may increase the demand for other materials, such as steel, aluminum, and copper, which are made from mineral ores.

(t) Considerations of property ownership. The NWP complies with 33 CFR 320.4(g), which states that an inherent aspect of property ownership is a right to reasonable private use. In many areas of the country, commercial shellfish mariculture operators are required to have leases from a state authority to use a portion of the waterbody for these activities (NRC 2010). Operators of commercial shellfish mariculture activities are usually required to obtain leases from state or local governments to secure the rights to cultivate bivalve molluscs in submerged lands or intertidal lands. In some areas of the country, the commercial shellfish mariculture operator may have ownership rights or similar rights over those submerged lands that give him or her exclusive rights to use those submerged lands for these activities. The nationwide permits do not NWPs do not grant any property rights or exclusive privileges (see 33 CFR 330.4(b)(3)). Nearby landowners may object to the activities authorized by this NWP because they may believe those activities have adverse effects on aesthetics and may potentially reduce the value of their property or the enjoyment of their property. The NWP provides expedited DA authorization for commercial shellfish mariculture activities, provided those activities comply with the terms and conditions of the NWP and result in no more than minimal individual and adverse environmental effects.

6.2 Additional Public Interest Review Factors (33 CFR 320.4(a)(2))

6.2.1 Relative extent of the public and private need for the proposed structure or work

This NWP authorizes activities in waters of the United States, especially navigable waters, for commercial shellfish mariculture activities as long as those activities have no more than minimal individual and cumulative adverse environmental effects. These activities satisfy public and private needs for food and other products. The need for this NWP is based upon the number of these activities that occur annually with only minimal individual and cumulative adverse environmental effects.

6.2.2 Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work

Most situations in which there are unresolved conflicts concerning resource use arise when environmentally sensitive areas are involved (e.g., special aquatic sites, including wetlands) or where there are competing uses of a resource. The nature and scope of the activity, when planned and constructed in accordance with the terms and conditions of this NWP, reduce the likelihood of such conflict. In the event that there is a conflict, the NWP contains provisions that are capable of resolving the matter (see Section 1.2 of this document).

Similar to most human activities in coastal waters, the alteration of natural ecosystems to increase food production can affect coastal habitats and the species that live in them (NRC 2010, Tallis et al. 2009), so there are trade-offs that need to be considered when making permit decisions for commercial shellfish mariculture activities. Commercial shellfish mariculture activities need to occur in coastal waters that provide the energy, materials, and environmental conditions that support the reproduction and growth of bivalve mollusc species. Therefore, there is unlikely to be no alternative locations where these activities can occur. General condition 23 requires permittees to avoid and minimize adverse effects to waters of the United States to the maximum extent practicable on the project site. Consideration of off-site alternative locations is not required for activities that are authorized by general permits. General permits authorize activities that have no more than minimal individual and cumulative adverse effects on the environment and the overall public interest. The district engineer will exercise discretionary authority and require an individual permit if the proposed activity will result in more than minimal adverse environmental effects on the project site. The consideration of off-site alternatives can be required during the individual permit process.

6.2.3 The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited

The nature and scope of the activities authorized by the NWP will most likely restrict the extent of the beneficial and detrimental effects to the area immediately surrounding the commercial shellfish mariculture activity. Activities authorized by this NWP will have no more than minimal individual and cumulative adverse environmental effects.

The terms, conditions, and provisions of the NWP were developed to ensure that individual and cumulative adverse environmental effects are no more than minimal. Specifically, NWPs do not obviate the need for the permittee to obtain other Federal, state, or local authorizations required by law. The NWPs do not grant any property rights or exclusive privileges (see 33 CFR 330.4(b) for further information).

Additional conditions, limitations, restrictions, and provisions for discretionary authority, as well as the ability to add activity-specific or regional conditions to this NWP, will provide further safeguards to the aquatic environment and the overall public interest. There are also provisions to allow suspension, modification, or revocation of the NWP.

7.0 Endangered and Threatened Species

No activity is authorized by any NWP if that activity is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), or to destroy or adversely modify the critical habitat of such species (33 CFR 330.4(f)). If the district engineer determines a proposed NWP activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) as appropriate. The proposed NWP activity is not authorized until the ESA section 7 consultation process is completed or the district engineer determines the proposed NWP activity will have no effect on listed species or designated critical habitat. Current local procedures in Corps districts are effective in ensuring compliance with ESA. Those local procedures include regional programmatic consultations and the development of Standard Local Operating Procedures for Endangered Species (SLOPES). The issuance or reissuance of an NWP, as governed by NWP general condition 18 (which applies to every NWP and which relates to endangered and threatened species and critical habitat) and 33 CFR 330.4(f), results in “no effect” to listed species or critical habitat, because no activity that “may affect” listed species or critical habitat is authorized by NWP unless ESA Section 7 consultation with the USFWS and/or NMFS has been completed. If the non-federal project proponent does not comply with 33 CFR 330.4(f)(2) and general condition 18, and does not submit the required PCN, then the activity is not authorized by NWP. In such situations, it is an unauthorized activity and the Corps district will determine an appropriate course of action under its regulations at 33 CFR part 326 to respond to the unauthorized activity. Unauthorized activities may also be subject to the prohibitions of Section 9 of the ESA.

Each activity authorized by an NWP is subject to general condition 18, which states that “[n]o activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation.” In addition, general condition 18 explicitly states that the NWP does not authorize “take” of threatened or endangered species, which will ensure that permittees do not mistake the NWP authorization as a Federal authorization to take threatened or endangered species. General condition 18 also requires a non-federal permittee to

submit a pre-construction notification to the district engineer if any listed species or designated critical habitat (or proposed species or proposed critical habitat) might be affected or is in the vicinity of the project, or if the project is located in designated or proposed critical habitat. The Corps established the “might affect” threshold in 33 CFR 330.4(f)(2) and paragraph (c) of general condition 18 because it is more stringent than the “may affect” threshold for section 7 consultation in the USFWS’s and NMFS’s ESA section 7 consultation regulations at 50 CFR part 402. The word “might” is defined as having “less probability or possibility” than the word “may” (Merriam-Webster’s Collegiate Dictionary, 10th edition). Since “might” has a lower probability of occurring, it is below the threshold (i.e., “may affect”) that triggers the requirement for ESA section 7 consultation for a proposed Federal action This general condition also states that, in such cases, non-federal permittees shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized.

Under the current Corps regulations (33 CFR 325.2(b)(5)), the district engineer must review all permit applications for potential impacts on threatened and endangered species or critical habitat. For the NWP program, this review occurs when the district engineer evaluates the pre-construction notification or request for verification. Nationwide permit general condition 18 requires a non-federal applicant to submit a pre-construction notification to the Corps if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat (or critical habitat proposed for such designation). Based on the evaluation of all available information, the district engineer will initiate consultation with the USFWS or NMFS, as appropriate, if he or she determines that the proposed activity may affect any threatened and endangered species or designated critical habitat. Consultation may occur during the NWP authorization process or the district engineer may exercise discretionary authority to require an individual permit for the proposed activity and initiate section 7 consultation during the individual permit process. If the district engineer determines a proposed NWP activity is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat, he or she will initiate a conference with the USFWS or NMFS. If ESA Section 7 consultation or conference is conducted during the NWP authorization process, then the applicant will be notified that he or she cannot proceed with the proposed NWP activity until section 7 consultation is completed.

If the district engineer determines that the proposed NWP activity will have no effect on any threatened or endangered species or critical habitat, then the district engineer will notify the applicant that he or she may proceed under the NWP authorization as long as the activity complies with all other applicable terms and conditions of the NWP, including applicable regional conditions. When the Corps makes a “no effect” determination, that determination is documented in the record for the NWP verification.

In cases where the Corps makes a “may affect” determination, formal or informal section 7 consultation is conducted before the activity is authorized by NWP. A non-federal permit applicant cannot begin work until notified by the Corps that the proposed NWP activity will have “no effect” on listed species or critical habitat, or until ESA Section 7 consultation has been completed (see also 33 CFR 330.4(f)). Federal permittees are responsible for complying with ESA Section 7(a)(2) and should follow their own procedures for complying with those requirements (see 33 CFR 330.4(f)(1)). Therefore, permittees cannot rely on complying with the terms of an NWP without considering ESA-listed species and critical habitat, and they must comply with the NWP conditions to ensure that they do not violate the ESA. General condition 18 also states that district engineers may add activity-specific conditions to the NWPs to address ESA issues as a result of formal or informal consultation with the USFWS or NMFS.

Each year, the Corps conducts thousands of ESA section 7 consultations with the USFWS and NMFS for activities authorized by NWPs. These section 7 consultations are tracked in ORM. During the period of March 19, 2017, to October 20, 2020, Corps districts conducted 1,294 formal consultations and 8,233 informal consultations under NWP PCNs where the Corps verified that the proposed activities were authorized by NWP. During that time period, the Corps also used regional programmatic consultations for 21,677 NWP verifications to comply with ESA section 7. Therefore, each year an average of 8,700 formal, informal, and programmatic ESA section 7 consultations are conducted with the USFWS and/or NMFS in response to NWP PCNs, including those activities that required PCNs under paragraph (c) of general condition 18. In a study on ESA section 7 consultations tracked by the USFWS, Malcom and Li (2015) found that during the period of 2008 to 2015, the Corps conducted the most formal and informal section 7 consultations, far exceeding the numbers of section 7 consultations conducted by other federal agencies.

Section 7 consultations are often conducted on a case-by-case basis for activities proposed to be authorized by NWP that may affect listed species or critical habitat, in accordance with the USFWS’s and NMFS’s interagency regulations at 50 CFR part 402. Instead of activity-specific section 7 consultations, compliance with ESA may also be achieved through formal or informal regional programmatic consultations. Compliance with ESA Section 7 may also be facilitated through the adoption of NWP regional conditions. In some Corps districts SLOPES have been developed through consultation with the appropriate regional offices of the USFWS and NMFS to make the process of complying with section 7 more efficient.

Corps districts have, in most cases, established informal or formal procedures with local offices of the USFWS and NMFS, through which the agencies share information regarding threatened and endangered species and their critical habitat. This information helps district engineers determine if a proposed NWP activity may affect listed species or their critical habitat and, when a “may affect” determination is made, initiate ESA section 7 consultation. Corps districts may utilize maps or

databases that identify locations of populations of threatened and endangered species and their critical habitat. Where necessary, regional conditions are added to one or more NWPs to require pre-construction notification for NWP activities that occur in known locations of threatened and endangered species or critical habitat. Any information provided by local maps and databases and any comments received during the pre-construction notification review process will be used by the district engineer to make a “no effect” or “may affect” determination for the pre-construction notification.

Based on the safeguards discussed in this section, especially general condition 18 and the NWP regulations at 33 CFR 330.4(f), the Corps believes that the activities authorized by this NWP comply with the ESA. Although the Corps continues to believe that these procedures ensure compliance with the ESA, the Corps has taken some steps to provide further assurance. Corps district offices meet with local representatives of the USFWS and NMFS to establish or modify existing procedures such as regional conditions, where necessary, to ensure that the Corps has the latest information regarding the existence and location of any threatened or endangered species or their critical habitat. Corps districts can also establish, through SLOPES or other tools, additional safeguards that ensure compliance with the ESA. Through ESA Section 7 formal or informal consultations, the Corps ensures that no activity is authorized by any NWP if that activity is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the ESA, or to destroy or adversely modify the critical habitat of such species. Other tools such as ESA section 7 conferences, SLOPES, the development of regional conditions added to the NWP by the division engineer, and conditions added to a specific NWP authorization by the district engineer help ensure compliance with the ESA.

If informal section 7 consultation is conducted, and the USFWS and/or NMFS issues a written concurrence that the proposed activity may affect, but is not likely to adversely affect, listed species or designated critical habitat based on conservation measures incorporated in the project to avoid or minimize potential effects to ESA resources, the district engineer will add conditions (e.g., conservation measures) to the NWP authorization. If the USFWS and/or NMFS does not issue a written concurrence that the proposed NWP activity “may affect, but is not likely to adversely affect” listed species or critical habitat, the Corps will initiate formal section 7 consultation if it changes its determination to “may affect, likely to adversely affect.”

If formal section 7 consultation is conducted and a biological opinion is issued, the district engineer will add conditions to the NWP authorization to incorporate appropriate elements of the incidental take statement of the biological opinion into the NWP authorization, if the biological opinion concludes that the proposed NWP activity is not likely to jeopardize the continued existence of listed species or adversely modify or destroy critical habitat. If the biological opinion concludes that the proposed NWP activity is likely to jeopardize the continued existence of listed

species or adversely modify or destroy critical habitat, the proposed activity cannot be authorized by NWP and the district engineer will instruct the applicant to apply for an individual permit. The incidental take statement includes reasonable and prudent measures and terms and conditions such as mitigation, monitoring, and reporting requirements that minimize incidental take. To fulfill its obligations under Section 7(a)(2) of the ESA, the Corps will determine which elements of an incidental take statement are appropriate to be added as permit conditions to the NWP authorization (see 33 CFR 325.4(a)). The appropriate elements of the incidental take statement are those reasonable and prudent measures and terms and conditions that: (1) apply to the activities over which the Corps has control and responsibility (i.e., structures or work in navigable waters and/or the discharges of dredged or fill material into waters of the United States), and (2) the Corps has the authority to enforce under its permitting authorities. Incorporation of the appropriate elements of the incidental take statement into the NWP authorization through binding, enforceable permit conditions may provide the project proponent an exemption from the “take” prohibitions in ESA Section 9 (see Section 7(o)(2) of the ESA).

The Corps can modify this NWP at any time that it is deemed necessary to protect listed species or their critical habitat, either through: 1) national general conditions or national-level modifications, suspensions, or revocations of the NWPs; 2) regional conditions or regional modifications, suspensions, or revocations of NWPs; or 3) activity-specific permit conditions (modifications) or activity-specific suspensions or revocations of NWP authorizations. Therefore, although the Corps has issued the NWPs, the Corps can address any ESA issue, if one should arise. The NWP regulations also allow the Corps to suspend the use of some or all of the NWPs immediately, if necessary, while considering the need for permit conditions, modifications, or revocations. These procedures are provided at 33 CFR 330.5.

8.0 Clean Water Act Section 404(b)(1) Guidelines Analysis

The 404(b)(1) Guidelines are provided at 40 CFR part 230, and compliance criteria specific to general permits are provided at 40 CFR 230.7. This 404(b)(1) Guidelines compliance analysis includes analyses of the direct, secondary, and cumulative effects on the aquatic environment caused by discharges of dredged or fill material authorized by this NWP. The level of documentation for the 404(b)(1) Guidelines analysis should reflect the significance and complexity of the discharge activity, and be commensurate with the proposed impacts (40 CFR 230.6(b)). The Guidelines do not require extensive testing, evaluation or analysis will be needed to make findings of compliance for minor, routine activities that have little, if any, potential for significant degradation of the aquatic environment (40 CFR 230.6(a)). In general, the 404(b)(1) Guidelines do not require quantitative analyses. The only quantitative analysis required for general permits is a prediction of the number of individual discharge activities likely to be regulated under a general permit until its expiration, including repetitions of individual discharge activities at a single location (40 CFR

230.7(b)(3)).

This NWP authorizes discharges of dredged or fill materials into waters of the United States under Section 404 of the Clean Water Act and structures and work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899. The 404(b)(1) Guidelines only apply to discharges of dredged or fill material into waters of the United States; they do not apply to structures and work regulated under Section 10 of the Rivers and Harbors Act of 1899, including dredging or disposal of dredged material, excavation activities, and filling activities in navigable waters of the United States that is considered “work” under 33 CFR 322.2(c).

For discharges of dredged or fill material into waters of the United States authorized by general permits, the analysis and documentation required by the 404(b)(1) Guidelines are to be performed at the time of issuance of a general permit, such as an NWP. The analysis and documentation under the 404(b)(1) Guidelines is not repeated for specific discharges of dredged or fill material into waters of the United States conducted under the NWP. The 404(b)(1) Guidelines do not require reporting or formal written communication at the time individual discharges of dredged or fill material into waters of the United States are conducted under the authorization provided by an NWP, but a particular NWP may require appropriate reporting. [40 CFR 230.6(d) and 230.7(b)]

8.1 Evaluation Process (40 CFR 230.7(b))

8.1.1 Alternatives (40 CFR 230.10(a))

General condition 23 requires permittees to avoid and minimize discharges of dredged or fill material into waters of the United States to the maximum extent practicable on the project site. The consideration of off-site alternatives is not directly applicable to general permits (see 40 CFR 230.7(b)(1)).

8.1.2 Prohibitions (40 CFR 230.10(b))

This NWP authorizes discharges of dredged or fill material into waters of the United States, which may require water quality certification. Water quality certification requirements will be met in accordance with the procedures at 33 CFR 330.4(c).

No toxic discharges are authorized by this NWP. General condition 6 states that the material must be free from toxic pollutants in toxic amounts.

This NWP does not authorize discharges of dredged or fill material into waters of the United States that are likely to jeopardize the continued existence of any listed threatened or endangered species or result in the destruction or adverse modification of critical habitat. Reviews of preconstruction notifications, regional

conditions, and local operating procedures for endangered species will ensure compliance with the Endangered Species Act. Refer to general condition 18 and to 33 CFR 330.4(f) for information and procedures.

This NWP will not authorize discharges of dredged or fill material into waters of the United States that violate any requirement to protect any marine sanctuary. Refer to section 8.2.3(j)(1) of this document for further information.

8.1.3 Findings of Significant Degradation (40 CFR 230.10(c))

Potential impact analysis (Subparts C through F): The potential impact analysis specified in Subparts C through F is discussed in section 8.2.3 of this document. Mitigation required by the district engineer will ensure that the adverse effects on the aquatic environment are no more than minimal.

Evaluation and testing (Subpart G): Because the terms and conditions of the NWP specify the types of discharges that are authorized, as well as those that are prohibited, individual evaluation and testing for the presence of contaminants will normally not be required. If a situation warrants, provisions of the NWP allow division or district engineers to further specify authorized or prohibited discharges and/or require testing. General condition 6 requires that materials used for construction be free from toxic pollutants in toxic amounts.

Based upon Subparts B and G, after consideration of Subparts C through F, and because NWPs can authorize only those discharges of dredged or fill material into waters of the United States that result in no more than minimal individual and cumulative adverse environmental effects, the discharges authorized by this NWP will not cause or contribute to significant degradation of waters of the United States.

8.1.4 Factual determinations (40 CFR 230.11)

The factual determinations required in 40 CFR 230.11 are discussed in section 8.2.3 of this document.

8.1.5 Appropriate and practicable steps to minimize potential adverse impacts (40 CFR 230.10(d))

As demonstrated by the information in this document, as well as the terms, conditions, and provisions of this NWP, actions to minimize adverse effects (Subpart H) have been thoroughly considered and incorporated into the NWP. General condition 23 requires permittees to avoid and minimize discharges of dredged or fill material into waters of the United States to the maximum extent practicable on the project site. Compensatory mitigation may be required by the district engineer to ensure that the net adverse effects on the aquatic environment are no more than minimal.

8.2 Evaluation Process (40 CFR 230.7(b))

8.2.1 Description of permitted activities (40 CFR 230.7(b)(2))

As indicated by the text of this NWP in section 1.0 of this document, and the discussion of potential impacts in section 5.0, the activities authorized by this NWP are sufficiently similar in nature and environmental impact to warrant authorization under a single general permit. Specifically, the purpose of the NWP is to authorize discharges of dredged or fill material into waters of the United States for commercial shellfish mariculture activities. The nature and scope of the impacts are controlled by the terms and conditions of the NWP.

Under section 404(e) of the Clean Water Act, the Corps may, after notice and opportunity for public hearing, issue general permits on a state, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if it determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. The statute does not provide direction on how broad or narrow that a category of activities authorized by an NWP or other general permit must be, so it is left to the discretion of the Corps to determine an appropriate category of activities for an NWP.

This NWP authorizes discharges of dredged or fill material into waters of the United States for commercial shellfish mariculture activities. For the purposes of Section 404 of the Clean Water Act the terms “dredged material,” “discharges of dredged material,” “fill material,” and “discharges of fill material” are defined in 33 CFR 323.2. The use of structures for commercial shellfish mariculture activities, such as long lines, cages, racks, bags, tubes, and netting are not regulated under Section 404 of the Clean Water Act because they do not constitute “dredged material” or “fill material” or result in discharges of dredged or fill material.

Discharges of dredged material into waters of the United States for commercial shellfish mariculture activities may occur during bivalve shellfish harvesting activities, as well as harrowing, raking, and levelling activities to smooth out the substrate for bivalve shellfish production. These activities may adversely affect water quality by releasing sediments into the water column. These activities may adversely affect benthic organisms such as seagrasses, algae, epibenthic invertebrates, benthic invertebrates that live in the substrate, and fish. These activities may also cause disturbances that cause fish, invertebrates, and other organisms to avoid the site of the NWP activity. Most of the impacts to benthic organisms may be temporary, as these organisms can recover after various natural and anthropogenic disturbances that occur in these dynamic coastal ecosystems. For example, certain seagrass species in certain locations have in some cases exhibited capacity to recover and reproduce after dredge harvesting activities for commercial shellfish mariculture activities (e.g., Tallis et al. 2009).

Discharges of fill material into waters of the United States for commercial shellfish mariculture activities may involve discharging fill material such as shell or gravel into waters of the United States to create or enhance substrate suitable for the production of bivalve molluscs, including suitable substrate for shellfish seeding activities. The term "discharge of fill material" does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products (see 33 CFR 323.2(f)), and this NWP authorizes discharges of fill material to produce bivalve molluscs as food for human consumption. Therefore, shellfish seeding activities by themselves are not considered to be discharges of fill material regulated under section 404. Discharges of dredged material may also occur during harvesting activities, which may involve the use of mechanical or hydraulic dredging equipment. Commercial shellfish mariculture activities that involve only the use of structures in navigable waters, such as racks, cages, bags, tubes, netting, rafts, stakes, bouchots, and long lines, for bivalve shellfish cultivation activities are not regulated under Section 404 of the Clean Water Act because they do not involve discharges of dredged or fill material into waters of the United States. If the placement of these structures in navigable waters causes changes in water circulation patterns and velocities, and causes suspended sediment to drop out of suspension because of slower water velocities, the accumulation of sediment on the bottom of the waterbody is not a discharge of dredged or fill material because there is no discharge from a point source (e.g., a person deliberately placing dredged or fill material into a waterbody). Structures used for on-bottom, suspended, or floating commercial shellfish mariculture activities do not constitute fill material under the Corps' regulations (see 33 CFR 323.2).

The activities authorized by this NWP are sufficiently similar in nature and environmental impact to warrant authorization by a general permit. The terms of the NWP authorize a specific category of activity (i.e., discharges of dredged or fill material for commercial shellfish mariculture activities) in a specific category of waters (i.e., waters of the United States). The restrictions imposed by the terms and conditions of this NWP will result in the authorization of activities that have similar impacts on the aquatic environment, namely the modification of aquatic habitats, such as estuarine and marine waters, through commercial shellfish mariculture activities.

If a situation arises in which the discharge of dredged or fill material into waters of the United States requires further review, or is more appropriately reviewed under the individual permit process, provisions of the NWPs allow division and/or district engineers to take such action.

8.2.2 Cumulative effects (40 CFR 230.7(b)(3))

The 404(b)(1) Guidelines at 40 CFR 230.11(a) define cumulative effects as "…the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material." For the issuance of general permits, such as this NWP, the 404(b)(1) Guidelines require the permitting

authority to "set forth in writing an evaluation of the potential individual and cumulative impacts of the categories of activities to be regulated under the general permit." [40 CFR 230.7(b)] More specifically, the 404(b)(1) Guidelines cumulative effects assessment for the issuance or reissuance of a general permit is to include an evaluation of "the number of individual discharge activities likely to be regulated under a general permit until its expiration, including repetitions of individual discharge activities at a single location." [40 CFR 230.7(b)(3)] If a situation arises in which cumulative effects are likely to be more than minimal and the proposed activity requires further review, or is more appropriately reviewed under the individual permit process, provisions of the NWPs allow division and/or district engineers to take such action.

Based on reported use of this NWP during the period of March 19, 2017, to March 18, 2019, the Corps estimates that this NWP will be used approximately 331 times per year on a national basis, resulting in impacts to approximately 13,684 acres of waters of the United States. The reported use includes pre-construction notifications submitted to Corps districts, as required by the terms and conditions of the NWP, including NWP general condition 18 when any listed species or designated critical habitat might be affected or is in the vicinity of the proposed activity, or if the proposed activity is located in designated critical habitat. Regional conditions imposed by division engineers may also require pre-construction notification for proposed activities. The reported use also includes voluntary notifications to submitted to Corps districts where the applicants request written verification in cases when pre-construction notification is not required. The reported use does not include activities that do not require pre-construction notification and were not voluntarily reported to Corps districts. The Corps estimates that 50 NWP 48 activities will occur each year that do not require pre-construction notification, and that these activities will impact 200 acres of jurisdictional waters each year.

Based on reported use of this NWP during that time period, the Corps estimates that no NWP 48 verifications will require compensatory mitigation to offset the authorized impacts to waters of the United States and ensure that the authorized activities resulted in only minimal adverse effects on the aquatic environment. The verified activities that do not require compensatory mitigation will have been determined by Corps district engineers to result in no more than minimal individual and cumulative adverse effects on the aquatic environment without compensatory mitigation. During 2021-2026, the Corps expects little change to the percentage of NWP 48 verifications requiring compensatory mitigation, because there have been no substantial changes in the mitigation general condition or the NWP regulations for determining when compensatory mitigation is to be required for NWP activities. The Corps estimates that no compensatory mitigation will be required to offset these impacts. The demand for these types of activities could increase or decrease over the five-year duration of this NWP.

Based on these annual estimates, the Corps estimates that approximately 1,805 activities could be authorized over a five year period until this NWP expires,

resulting in impacts to approximately 69,420 acres of waters of the United States, including jurisdictional wetlands. No compensatory mitigation is anticipated to be required to offset those impacts. Many commercial shellfish mariculture operations are ongoing and recurring activities in the same locations as they have been operating, often for many years. There is a relatively small number of new commercial shellfish mariculture activities that are likely to be authorized by this NWP after it goes into effect. In some areas of the United States, commercial shellfish mariculture activities have been occurring for over 100 years (NRC 2010). In Washington State, commercial shellfish mariculture activities have been conducted for more than 160 years (Washington Sea Grant 2015). The commercial shellfish mariculture activities that have been recurring for years are part of the current environmental setting, and the impacts of the activities authorized by this NWP during the five years it is anticipated to be in effect are evaluated against the affected environment/current environmental setting that includes those on-going activities. The authorized impacts are expected to result in only minor changes to the affected environment (i.e., the current environmental setting), which is described in section 4.0 of this document.

Compensatory mitigation is the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved (33 CFR 332.2). For activities authorized by NWPs, compensatory mitigation and other forms of mitigation may be used to ensure that the adverse environmental effects are no more than minimal, individually and cumulatively (33 CFR 330.1(e)(3); NWP general condition 23). Restoration is usually the first compensatory mitigation option considered because the likelihood of ecological success is greater (33 CFR 332.3(a)(2)). As discussed below, restoration of wetlands and streams can increase the ecological functions and services provided by those aquatic resources. However, restoration typically cannot return a degraded wetland or stream to a prior historic condition because of changes in environmental conditions at various scales over time (e.g., Higgs et al. 2014, Jackson and Hobbs 2009, Zedler and Kercher 2005; Palmer et al. 2014), and many of those environmental changes are beyond the control of the mitigation provider. Therefore, it is important to establish realistic goals and objectives for wetland and stream restoration projects (e.g., Hobbs 2007, Ehrenfeld 2000).

Rey Banayas et al. (2009) concluded that restoration activities can increase biodiversity and the level of ecosystem services provided. However, such increases do not approach the amounts of biodiversity and ecosystem services performed by undisturbed reference sites. The ability to restore ecosystems to provide levels of ecological functions and services similar to historic conditions or reference standard conditions is affected by human impacts (e.g., urbanization, agriculture) to watersheds or other landscape or seascape units and to the processes that sustain those ecosystems (Zedler et al. 2012, Hobbs et al. 2014). Those changes need to be taken into account when establishing goals and objectives for restoration

projects (Zedler et al. 2012), including compensatory mitigation projects. The ability to reverse ecosystem degradation to restore ecological functions and services is dependent on the degree of degradation of that ecosystem and the surrounding landscape or seascape, and whether that degradation is reversible (Hobbs et al. 2014). Most studies of the ecological performance of compensatory mitigation projects have focused solely on the ecological attributes of the compensatory mitigation projects, and few studies have also evaluated the aquatic resources impacted by permitted activities (Kettlewell et al. 2008), so it is difficult to assess whether compensatory mitigation projects have fully or partially offset the lost functions provided by the aquatic resources that are impacted by permitted activities.

Wetland restoration, enhancement, and establishment projects can provide wetland functions, as long as the wetland compensatory mitigation project is placed in an appropriate landscape position, has appropriate hydrology for the desired wetland type, and the watershed condition will support the desired wetland type (NRC 2001). Site selection is critical to find a site with appropriate hydrologic conditions and soils to support a replacement wetland that will provide the desired wetland functions and services (Mitsch and Gosselink 2015). In a meta-analysis of 70 wetland restoration studies, Meli et al. (2014) concluded that wetland restoration activities increase biodiversity and ecosystem service provision in degraded wetlands, but the degree of recovery is context dependent. They identified the following factors as influencing wetland restoration outcomes: wetland type, the main cause of degradation, the type of restoration action conducted, and the assessment protocol used to evaluate restoration outcomes. Moreno-Mateos et al. (2015) reviewed the recovery trajectories of 628 wetland restoration and creation projects and concluded that restoring or establishing wetland hydrology is of primary importance, and is more likely to be ecologically successful if wetland hydrology can be achieved by re-establishing water flows instead of extensive earthwork. In addition, they determined that, with respect to the plant community, natural revegetation is sufficient for recovery and development of most wetland types after wetland hydrology is restored or established.

The ecological performance of wetland restoration, enhancement, and establishment is dependent on practitioner's understanding of wetland functions, allowing sufficient time for wetland functions to develop, and allowing natural processes of ecosystem development (self-design or self-organization) to take place, instead of over-designing and over-engineering the replacement wetland (Mitsch and Gosselink 2015). The likelihood of ecological success in wetland restoration varies by wetland type, with the higher rates of success for coastal, estuarine, and freshwater marshes, and lower rates of success for forested wetlands and seagrass beds (Lewis et al. 1995). In its review, the NRC (2001) concluded that some wetland types can be restored or established (e.g., non-tidal emergent wetlands, some forested and scrub-shrub wetlands, seagrasses, and coastal marshes), while other wetland types (e.g., vernal pools, bogs, and fens) are difficult to restore and should be avoided where possible. Restored riverine and tidal

wetlands achieved wetland structure and function more rapidly than depressional wetlands (Moreno-Mateos et al. 2012). Because of its greater potential to provide wetland functions, restoration is the preferred compensatory mitigation mechanism (33 CFR 332.3(a)(2)). Bogs, fens, and springs are considered to be difficult-to-replace resources and compensatory mitigation should be provided through in-kind rehabilitation, enhancement, or preservation of these wetlands types (33 CFR 332.3(e)(3)).

In its review of outcomes of wetland compensatory mitigation activities, the NRC (2001) stated that wetland functions can be replaced by wetland restoration and establishment activities. They discussed five categories of wetland functions: hydrology, water quality, maintenance of plant communities, maintenance of animal communities, and soil functions. It is difficult to restore or establish natural wetland hydrology, and water quality functions are likely to be different than the functions provided at wetland impact sites (NRC 2001). Reestablishing or establishing the desired plant community may be difficult because of invasive species colonizing the mitigation project site (NRC 2001). The committee also found that establishing and maintaining animal communities depends on the surrounding landscape. Soil functions can take a substantial amount of time to develop, because they are dependent on soil organic matter and other soil properties (NRC 2001). The NRC (2001) concluded that the ecological performance in replacing wetland functions depends on the particular function of interest, the restoration or establishment techniques used, and the extent of degradation of the compensatory mitigation project site and its watershed.

The ecological performance of wetland restoration and enhancement activities is affected by the amount of changes to hydrology and inputs of pollutants, nutrients, and sediments within the watershed or contributing drainage area (Wright et al. 2006). Wetland restoration is becoming more effective at replacing or improving wetland functions, especially in cases where monitoring and adaptive management are used to correct deficiencies in these efforts (Zedler and Kercher 2005). Wetland functions take time to develop after the restoration or enhancement activity takes place (Mitsch and Gosselink 2015, Gebo and Brooks 2012), and different functions develop at different rates (Moreno-Mateos 2012, NRC 2001). Irreversible changes to landscapes, especially those that affect hydrology within contributing drainage areas or watersheds, cause wetland degradation and impede the ecological performance of wetland restoration efforts (Zedler and Kercher 2005). Gebo and Brooks (2012) evaluated wetland compensatory mitigation projects in Pennsylvania and compared them to reference standards (i.e., the highest functioning wetlands in the study area) and natural reference wetlands that showed the range of variation due to human disturbances. They concluded that most of the wetland mitigation sites were functioning at levels within with the range of functionality of the reference wetlands in the region, and therefore were functioning at levels similar to some naturally occurring wetlands. The ecological performance of mitigation wetlands is affected by on the landscape context (e.g., urbanization) of the replacement wetland and varies with wetland type (e.g., riverine or depressional) (Gebo and Brooks

2012). Moreno-Mateos et al. (2012) conducted a meta-analysis of wetland restoration studies and concluded that while wetland structure and function can be restored to a large degree, the ecological performance of wetland restoration projects is dependent on wetland size and local environmental setting. They found that wetland restoration projects that are larger in size and in less disturbed landscape settings achieve structure and function more quickly.

Under the Corps' regulations, streams considered to be are difficult-to-replace resources and compensatory mitigation should be provided through stream rehabilitation, enhancement, and preservation since those techniques are most likely to be ecologically successful (see 33 CFR 332.3(e)(3)). For the purposes of this section, the term "stream restoration" is used to cover river and stream rehabilitation and enhancement activities. Restoration can be done on large rivers and small streams, and sometimes entire stream networks (Wohl et al. 2015), in a variety of watershed land use settings, including urban and agricultural areas.

River and stream restoration activities can improve the functions performed by these aquatic ecosystems, and the ecosystem services they provide (Wohl et al. 2015, Beechie et al. 2010). Because of changes in land use and other changes in the watershed that have occurred over time, stream restoration can improve stream functions but cannot return a stream to a historic state (Wohl et al. 2015, Roni et al. 2008). Improvements in ecological performance of stream restoration projects is dependent on the restoration method and how outcomes are assessed (Palmer et al. 2014). The ability to restore the ecological functions of streams is dependent on the condition of the watershed draining to the stream being restored because human land uses and other activities in the watershed affect how that stream functions (Palmer et al. 2014). Ecologically successful stream restoration activities depend on addressing the factors that most strongly affect stream functions, such as water quality, water flow, and riparian area quality, rather than focusing solely on restoring the physical habitat of streams (Palmer et al. 2010, Roni et al. 2008), especially the stream channel.

To be effective, stream restoration activities need to address the causes of stream degradation, which are often within the watershed and outside of the stream channel (Palmer et al. 2014). Actions that focus on restoring processes and connectivity are more likely to be successful that channel reconfiguration efforts (Hawley 2018). Stream rehabilitation and enhancement projects, including the restoration and preservation of riparian areas, provide riverine functions (e.g., Allan and Castillo (2007) for rivers and streams, NRC (2002) for riparian areas). Ecologically effective stream restoration can be conducted by enhancing riparian areas, removing dams, reforestation, and implementing watershed best management practices that reduce storm water and agricultural runoff to streams (Palmer et al. 2014). Process-based stream restoration is intended to address the causes of stream degradation, and should be conducted at the appropriate scale for the cause of stream degradation, such as the watershed or stream reach (Beechie et al. 2010). Process-based stream restoration has substantial potential to re-

establish the physical, chemical, and biological processes that sustain riverine ecosystems, including their floodplains (Beechie et al. 2010). Process-based stream restoration can also reduce long-term restoration costs (Beechie et al. 2013, Hawley 2018).

Restoration of incised streams can be accomplished allowing beavers to construct dams in these streams, or by placing structures in the stream channel that mimic the effects that beaver dams have on these steams (DeVries et al. 2012). Examples of stream restoration and enhancement techniques include: dam removal and modification, culvert replacement or modification, fish passage structures when connectivity cannot be restored or improved by dam removal or culvert replacement, levee removal or setbacks, reconnecting floodplains and other riparian habitats, road removal, road modifications, reducing sediment and pollution inputs to streams, replacing impervious surfaces with pervious surfaces, restoring adequate in-stream or base flows, restoring riparian areas, fencing streams and their riparian areas to exclude livestock, improving in-stream habitat, recreating meanders, and replacing hard bank stabilization structures with bioengineering bank stabilization measures (Roni et al. 2013). Miller and Kochel (2010) recommend that stream restoration projects allow the stream channel to self-adjust in response to changing hydrologic and sediment regimes in the watershed, and include other restoration actions such as re-establishing riparian areas next to the stream channel and excluding livestock from the riparian area and stream channel. Large and medium sized rivers can be restored through various approaches, including levee setbacks, levee removal, or creating openings in levees, to restore or improve connectivity between the river and the floodplain, as well as other ecological and geomorphic processes (Wohl et al. 2015). Dam removal, as well as changes in dam operations that provide environmentally-beneficial flows of water and sediment, can also restore functions of rivers and larger streams (Wohl et al. 2015).

Hydrologic restoration can be more effective than in-stream habitat restoration projects (Hawley 2018) because they can help address alterations in watershed hydrology through land use and other watershed changes. Examples of hydrologic restoration approaches include reforestation, floodplain restoration, bankfull wetlands, detention basins, beaver reintroduction, and placement of large woody debris into the stream channel. Restoration actions outside of the stream channel, such as constructed wetlands, storm water management ponds, and revegetating riparian areas, can result in significant improvements in the biodiversity, community structure, and nutrient cycling processes of downstream waters (Smucker and Detenbeck 2014). Non-structural and structural techniques can be used to rehabilitate and enhance streams, and restore riparian areas (NRC 1992). Examples of non-structural stream restoration practices include removing disturbances to allow recovery of stream and riparian area structure and function, restoring natural stream flows by reducing or eliminating activities that have altered stream flows, preserving or restoring floodplains, and restoring and protecting riparian areas, including fencing to exclude livestock and people that can degrade

riparian areas (NRC 1992).

Form based restoration efforts, such as channel reconfiguration, can cause substantial adverse impacts to riverine systems through earthmoving activities (which can cause substantial increases in sediment loads) and the removal of riparian trees and other vegetation, with little demonstrable improvements in stream functions (Palmer et al. 2014). In-stream habitat enhancement activities, such as channel reconfiguration and adding in-stream structures, have resulted in limited effectiveness in improving biodiversity in streams (Palmer et al. 2010). In an evaluation of 644 stream restoration projects, Palmer et al. (2014) concluded that stream channel reconfiguration does not promote ecological recovery of degraded streams, but actions taken within the watershed and in riparian areas to restore hydrological processes and reduce pollutant inputs to streams can improve stream functions and ecological integrity. Stream restoration activities should also include consideration of social factors, especially the people that live in the floodplain or near the river or stream (Wohl et al. 2015). These social factors may also impose constraints on what restoration actions can be taken.

Seagrass beds are dynamic ecosystems that can persist for long periods of time or change from season to season (Fonseca et al. 1998). Seagrass beds can be restored, but these restoration activities generally have lower rates of ecological success than the restoration of other wetland types, such as estuarine and freshwater marshes (Lewis et al. 1995). The restoration and natural recovery of seagrasses requires consideration of addressing impediments that occur at various scales, including larger scale problems such as water quality and land use practices (Orth et al. 2006). The ecological success of seagrass restoration can be influenced by the dynamics of coastal environments and various stressors (e.g., reduced water quality/eutrophication, construction activities, dredging, other direct impact, natural disturbances) that affect seagrasses (van Katwijk et al. 2016). Realistic expectations should be established for seagrass restoration activities because of our limited understanding of seagrasses and the challenges of controlling conditions in open coastal waters (Fonseca 2011).

Site selection is critical for successful restoration of seagrasses (Fonseca 2011, Fonseca et al. 1998). Ecologically successful seagrass restoration is dependent on finding sites where seagrass beds recently existed (Fonseca et al. 1998). The ecological outcomes of seagrass restoration activities is also affected by the size of the restoration project, with larger restoration efforts more likely to be ecologically successful and sustainable because larger projects can produce positive feedbacks that facilitate the establishment and persistence of seagrasses (van Katwijk et al. 2016). At some proposed seagrass restoration sites, it may be infeasible to change the site from a stable unvegetated state to a stable vegetated state through seagrass planting efforts (Fonseca 2011). Small scale restoration activities may be overwhelmed by natural processes that prevent seagrasses from becoming reestablished (Fonseca 2011). Another impediment to ecologically successful seagrass restoration is bioturbation, which can impede natural seagrass recruitment

(Fonseca 2011) or disturb plantings. Bioturbation can be caused by animals such as shrimp, crabs, ducks, fish, and urchins, and result in stable, unvegetated benthic habitats (Fonseca 2011).

Fonseca (2011) recommends locating seagrass restoration activities in areas with water depths similar to nearby natural seagrass beds, at a sufficient size to achieve restoration goals, with characteristics that are similar to those at other ecologically successful seagrass restoration projects, and where anthropogenic disturbances can be reduced or removed. Restoration of submersed aquatic vegetation beds requires taking actions to reduce inputs of sediment, nutrients, and organic matter into estuarine waters and avoiding physical damage from boating activities and fishing gear (Waycott et al. 2009). Controlling these stressors has been more effective at restoring seagrass beds than seagrass transplantation efforts (Waycott et al. 2009). Potential restoration sites need to have sufficient light, moderate nutrient loads, suitable salinity and water temperatures, available seeds and other propagules, and an absence of mechanical disturbances that will destroy or degrade plants (Fonseca et al. 1998). Seagrass recovery is affected by numerous factors, such as the characteristics of the target seagrass species, disturbance intensity, disturbance characteristic(s), environmental conditions, disturbance history, the condition of existing seagrass beds, population structure, reproductive capacity, timing, and feedbacks between biotic and abiotic components at the site (O'Brien et al. 2018).

As discussed in section 4.0, the status of waters and wetlands in the United States as reported under the provisions of Sections 303(d) and 305(b) of the Clean Water Act exhibits considerable variation, ranging from "good" to "threatened" to "impaired." One of the criteria that district engineers consider when they evaluate proposed NWP activities is the "degree or magnitude to which the aquatic resources perform these functions" (see paragraph 2 of Section D, "District Engineer's Decision." The quality of the affected waters is considered by district engineers when making decisions on whether to require compensatory mitigation for proposed NWP activities to ensure no more than minimal adverse environmental effects (see 33 CFR 330.1(e)(3)), and amount of compensatory mitigation required (see 33 CFR 332.3(f)). The quality of the affected waters also factors into the determination of whether the required compensatory mitigation offsets the losses of aquatic functions caused by the NWP activity.

The compensatory mitigation required by district engineers in accordance with general condition 23 and through activity-specific conditions added to the NWP authorization is expected to provide aquatic resource functions and services to offset some or all of the losses of aquatic resource functions caused by the activities authorized by this NWP, and reduce the incremental contribution of those activities to the cumulative effects on the Nation's wetlands, streams, and other aquatic resources. The required compensatory mitigation must be conducted in accordance with the applicable provisions of 33 CFR part 332, which requires development and implementation of approved mitigation plans, as well as monitoring to assess

ecological success in accordance with ecological performance standards established for the compensatory mitigation project. The district engineer will evaluate monitoring reports to determine if the compensatory mitigation project has fulfilled its objectives, is ecological successful, and offsets the permitted impacts. If the monitoring efforts indicate that the compensatory mitigation project is failing to meet its objectives, the district engineer may require additional measures, such as adaptive management or alternative compensatory mitigation, to address the compensatory mitigation project's deficiencies. [33 CFR 332.7(c)]

According to Dahl (2011), during the period of 2004 to 2009 approximately 489,620 acres of former upland were converted to wetlands as a result of wetland reestablishment and establishment activities. Efforts to reestablish or establish wetlands have increased wetland acreage in the United States.

The individual and cumulative adverse effects on the aquatic environment resulting from the activities authorized by this NWP, including compliance with all applicable NWP general conditions as well as regional conditions imposed by division engineers and activity-specific conditions imposed by district engineers, are expected to be no more than minimal. The Corps expects that the convenience and time savings associated with the use of this NWP will encourage applicants to design their projects within the scope of the NWP, including its limits, rather than request individual permits for projects that could result in greater adverse impacts to the aquatic environment. Division and district engineers will restrict or prohibit this NWP on a regional or case-specific basis if they determine that these activities will result in more than minimal individual and cumulative adverse effects on the aquatic environment.

8.2.3 Section 404(b)(1) Guidelines Impact Analysis, Subparts C through F

(a) Substrate: Discharges of dredged or fill material into waters of the United States will alter the substrate of those waters, usually by altering the composition of the substrate to make it more suitable for shellfish reproduction and growth. Some commercial shellfish mariculture activities involve bed preparation by depositing gravel or shell on the bottom of the waterbody to provide substrate for larval shellfish to attach and grow (NRC 2010). The increase in habitat complexity due to the deposition of shell on the bottom of the waterbody can support a variety of plants and animals, including benthic and epibenthic organisms (Simenstad and Fresh 1995). Impacts to substrate caused by dredged harvesting of commercially grown bivalve shellfish can vary, and the severity of those impacts can depend on the duration and intensity of the dredging (NRC 2010). The discharges of dredged or fill material authorized by this NWP will not replace aquatic areas with dry land. There may be changes to the physical, chemical, and biological characteristics of the substrate. The original substrate may be removed or covered by other material, such as sand or gravel.

Shell, gravel, or other appropriate material deposited on the bottom of the

waterbody for commercial shellfish mariculture activities can provide suitable substrate for larval bivalve molluscs to attach to and grow. The bivalve molluscs that are produced through these activities are likely to contribute to the ecological functions and services performed by the waterbody. The shell, gravel, or other appropriate material, plus the bivalve shellfish grow on that substrate, may be colonized by epibiotic organisms such as macroalgae, barnacles, other bivalve mollusc species, bryozoans, sponges, and tunicates (NRC 2010) that may provide additional ecological functions and services, including food that supports the production of fish, large crustaceans, and aquatic organisms. The structured habitat provided by commercial shellfish mariculture activities can be higher in habitat value than unstructured habitat provided by mudflats (e.g., Hosack et al. 2006) and sandflats (e.g., Powers et al. 2007). Discharges of shell or gravel into estuarine water to enhance substrate for bivalve mollusc establishment and growth can also help increase sizes of local populations of other epibenthic organisms (Simenstad and Fresh 1995).

(b) Suspended particulates/turbidity: Depending on the method of operation, including harvesting techniques, sediment control measures, equipment, composition of the bottom substrate, and wind and current conditions during these shellfish mariculture activities involving discharges of dredged or fill material into waters of the United States, there may be temporary increases in water turbidity. Pre-construction notification is required for discharges of dredged or fill material into waters of the United States that directly affect more than 1/2-acre of submerged aquatic vegetation, which will allow the district engineer to review those activities and ensure that adverse effects on the aquatic environment are no more than minimal. Particulates will likely be temporarily resuspended in the water column during harvesting activities. There may also be temporary increases in turbidity during bed preparation for on-bottom bivalve shellfish mariculture activities, as shell, gravel, or other material is discharged into the waterbody to enhance the substrate for cultivation activities. The turbidity plume will normally be limited to the immediate vicinity of the disturbance and should dissipate shortly after each phase of operation. Nationwide permit activities cannot create turbidity plumes that smother important spawning areas downstream (see general condition 3).

(c) Water: Commercial shellfish mariculture activities involving discharges of dredged or fill material into waters of the United States can affect some characteristics of water, such as water clarity, chemical content, dissolved gas concentrations, pH, and temperature. Filter feeding by commercially grown bivalve molluscs removes plankton, organic matter, and inorganic particles from the water column, which enhances water clarity (NRC 2010, McKindsey et al. 2011). In some waters, suspension feeding by bivalve molluscs can also help reduce eutrophication and associated adverse effects (NRC 2010). Bivalve molluscs excrete wastes into the water column, which can alter the chemicals dissolved in the surrounding water (NRC 2010). The wastes excreted by bivalve molluscs may also help fertilize benthic habitats (NRC 2010). Changes in water quality can affect the species and quantities of organisms inhabiting the aquatic area, and the activities authorized by

this NWP will usually have beneficial effects on water quality. Water quality certification is required for activities authorized by this NWP that involve discharges of dredged or fill material into waters of the United States, which will ensure that the discharges comply with applicable water quality requirements. Permittees may be required to implement water quality management measures, including best management practices, to ensure that the authorized discharges do not result in more than minimal degradation of water quality.

(d) Current patterns and water circulation: Discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have minor adverse effects on the movement of water in the aquatic environment. On-bottom cultivation techniques may alter water flows and hydrodynamics when shell, gravel, and other material is placed on the bottom of the waterbody to create mounds for cultivating bivalve molluscs and reduce the risk of sedimentation smothering the cultivated bivalve molluscs. Certain discharges of dredged or fill material into waters of the United States authorized by this NWP require pre-construction notification to the district engineer, which will help ensure that adverse effects to current patterns and water circulation are no more than minimal. General condition 9 requires the authorized activity to be designed to withstand expected high flows and to maintain the course, condition, capacity, and location of open waters to the maximum extent practicable.

(e) Normal water level fluctuations: The discharges of dredged or fill material into waters of the United States authorized by this NWP are not likely to adversely affect normal patterns of water level fluctuations due to tides and flooding, since they likely only occupy a small proportion of the volume of the waterbody. Commercial shellfish mariculture activities occur in open waters and do not replace aquatic areas with dry land. General condition 9 requires the permittee to maintain the pre-construction course, condition, capacity, and location of open waters, to the maximum extent practicable.

(f) Salinity gradients: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have no adverse effects on salinity gradients, since commercial shellfish mariculture activities utilize existing waters and do not discharge freshwater that could change salinity.

(g) Threatened and endangered species: The NWPs do not authorize activities that will jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended. In addition, the NWPs do not authorize activities that will destroy or adversely modify critical habitat of those species. See 33 CFR 330.4(f) and paragraph (a) of general condition 18. For activities authorized by NWP, compliance with the Endangered Species Act is discussed in more detail in section 7.0 of this document.

(h) Fish, crustaceans, molluscs, and other aquatic organisms in the food web. Discharges of shell, gravel and other materials used for on-bottom commercial

shellfish mariculture activities may provide structural habitat that attracts fish, crustaceans, and other aquatic organisms by providing substrate upon which epibiotic (fouling) organisms can become established and grow (e.g., Dumbauld et al. 2015, D'Amour et al. 2008, Powers et al. 2007, Hosack et al. 2006, NRC 2010), and those epibiotic organisms may serve as a food source for aquatic organisms. For those NWP activities that require pre-construction notification, the district engineer review those activities to ensure that adverse effects to fish and other aquatic organisms in the food web are no more than minimal. Fish and other motile animals may avoid the project site while commercial shellfish mariculture activities such as site preparation, transplantation, and harvesting are conducted. Sessile or slow-moving animals in the path of discharges of dredged or fill material and mariculture equipment may be destroyed. On the other hand, the increase in habitat complexity that typically results from bivalve shellfish mariculture activities can support a greater diversity of benthic and epibenthic animals and plants (Simenstad and Fresh 1995) compared to unstructured subtidal and intertidal habitats. Some aquatic animals may be smothered by discharges of dredged or fill material into waters of the United States. Motile animals may return to those areas that are temporarily impacted by discharges of dredged or fill material into waters of the United States, when the affected area is restored to pre-construction conditions or the dredged or fill material becomes assimilated into benthic habitats. Bivalve shellfish production is likely to increase as a result of the discharges of dredged or fill material into waters of the United States authorized by this NWP, and the associated increases in the number of bivalve molluscs in the waterbody may provide a variety of ecological functions and services.

Commercial shellfish mariculture activities may cause changes in prey availability for fish, birds, marine mammals, and sea turtles (NRC 2010), and those changes may be positive, negative, or neutral. Bivalve shellfish mariculture activities in intertidal areas can affect the shoreline feeding behaviors of shorebirds, and the effects vary by species, with some species avoiding mariculture areas and other species foraging in areas between structures (Kelly et al. 1996). In other words, some bird species may benefit from the commercial shellfish mariculture activities (e.g., through increased prey availability) and other species may be adversely affected by the commercial shellfish mariculture activities (e.g., by becoming entangled in anti-predator netting or disturbed by the presence of humans conducting these activities).

Division and district engineers can place conditions on this NWP to prohibit discharges of dredged or fill material into waters of the United States during important stages of the life cycles of certain aquatic organisms. Such time of year restrictions can prevent adverse effects to these aquatic organisms during reproduction and development periods. General conditions 3 and 5 address protection of spawning areas and shellfish beds, respectively. General condition 3 states that activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. In addition, general condition 3 also prohibits activities that result in the physical destruction of important spawning areas.

General condition 5 prohibits activities in areas of concentrated shellfish populations, except for activities authorized by NWPs 4 and 48.

(i) Other wildlife: Discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to result in negligible adverse effects on other wildlife associated with aquatic ecosystems, such as resident and transient fish. Some wildlife species may be adversely affected by discharges of dredged or fill material into waters of the United States associated with commercial shellfish activities while other wildlife species may benefit from these discharges. Commercial shellfish mariculture activities may also disturb marine mammals, marine turtles, and birds and can cause declines in habitat quality and disrupt their feeding and reproductive behaviors (NRC 2010). Commercial shellfish mariculture activities may increase the spread of non-native species (NRC 2010). This NWP does not authorize discharges of dredged or fill material into waters of the United States that are likely to jeopardize the continued existence of federally-listed endangered and threatened species or result in the destruction or adverse modification of critical habitat. General condition 4 states that activities in breeding areas for migratory birds must be avoided to the maximum extent practicable.

(j) Special aquatic sites: The potential impacts to specific special aquatic sites are discussed below:

(1) Sanctuaries and refuges: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have only minimal adverse effects on waters of the United States within sanctuaries or refuges designated by federal or state laws or local ordinances. To cultivate bivalve molluscs in coastal waters in sanctuaries and refuges, the operator may need to obtain permission from the federal, state, or local government authority responsible for managing the sanctuary or refuge. District engineers will exercise discretionary authority and require individual permits for discharges of dredged or fill material into waters of the United States in sanctuaries and refuges if those discharges will result in more than minimal individual and cumulative adverse effects on the aquatic environment.

(2) Wetlands: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have only minor impacts on wetlands, since most commercial shellfish mariculture activities occur primarily in open waters, seaward of any tidal fringe wetlands that may be present in the vicinity of the operation. Some discharges of dredged or fill material into waters of the United States associated with commercial shellfish mariculture activities may directly or indirectly affect intertidal wetlands. There may be other activities associated with the commercial shellfish mariculture activity that may affect wetlands and may require separate Department of the Army authorization. This NWP does not authorize attendant features that may require discharges of dredged or fill material to construct, such as boat ramps, stockpiles, or staging areas, or the deposition of shell material back into waters of the United States as waste. District

engineers will review those NWP activities that require pre-construction notification to ensure that the adverse effects on the aquatic environment caused by NWP activities are no more than minimal. Division engineers can add regional conditions to this NWP to restrict or prohibit its use in certain high value wetlands. See paragraph (e) of section 6.1 for a more detailed discussion of impacts to wetlands.

(3) Mud flats: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have minor impacts on mud flats because most commercial shellfish mariculture activities are conducted in subtidal waters. In some areas of the country, commercial shellfish mariculture activities may occur in intertidal areas with mud flats. Some on-bottom bivalve molluscan mariculture activities may involve discharges of shell, gravel, or other materials into mud flats to enhance the suitability of the substrate for shellfish growth. These discharges may have long-term effects on the mud flat and change the physical characteristics of the mud flat. If these fills are permanent, they may permanently alter the structure and functions of the mud flat. Harvesting activities involving discharges of dredged material into mud flats, such as hydraulic dredging to remove molluscs that are benthic infauna (e.g., clams) may disturb mud flats. Many of the discharges authorized by this NWP will only have temporary impacts on mud flats, and the mud flats will likely recover from disturbance shortly after harvesting activities are completed. Mud flats occur in highly dynamic coastal environments and are affected by a variety of natural and anthropogenic disturbances. Mud flats may also be disturbed by dredging, harrowing, and levelling activities for bivalve shellfish production and harvesting.

(4) Vegetated shallows: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have minor adverse effects on vegetated shallows because impacts to submersed aquatic vegetation that may be caused by those discharges (e.g., through dredge harvesting) are generally temporary and the submersed aquatic vegetation may recover after those temporary disturbances, depending on local environmental conditions and other factors. Commercial shellfish mariculture activities can have positive and negative effects on submerged aquatic vegetation (NRC 2010). The filter feeding by bivalve shellfish can improve water clarity by removing particulates and plankton from the water column to increase light availability for submerged aquatic vegetation (NRC 2010, McKindsey et al. 2011). The improved water clarity can increase populations of submerged aquatic vegetation in the waterbody because they can establish and grow in deeper waters (NRC 2010). The biodeposits excreted by bivalve molluscs can act as fertilizer for plants in vegetated shallows (NRC 2010). Floating and on-bottom bivalve mariculture equipment, such as racks, bags, and cages can shade submerged aquatic vegetation and compete for space (NRC 2010). Dredging to harvest commercially produced bivalve shellfish can disturb submerged aquatic vegetation and remove individual shoots (NRC 2010, Tallis 2009). While bivalve molluscs may compete with seagrasses for space in coastal waters, bivalve shellfish can in some cases benefit seagrasses by providing nutrients to sediments and the water column and by making the water clearer (Dumbauld and McCoy

2015, NRC 2010). Appropriate siting of shellfish aquaculture operations can minimize interactions with submerged aquatic vegetation (Wickliffe et al. 2019).

The presence of suspension feeding bivalve shellfish in estuarine and marine waters has been shown to help improve the productivity of species of submerged aquatic vegetation in those waters (e.g., Peterson and Heck 2001). Filter feeding bivalves remove suspended particles and plankton from the water column and often release nutrients to sediments, which may help increase seagrass production (Dumbauld et al. 2009). Dumbauld and McCoy (2015) evaluated interactions between oyster mariculture and the seagrass *Zostera marina* in Willapa Bay, Washington and found that oyster mariculture impacts on seagrasses are temporary when examined at a landscape scale and that seagrasses recover fairly rapidly after mechanical disturbances by mariculture activities. There are trade-offs between oyster mariculture and eelgrass populations, and the effects of oyster mariculture on eelgrass vary depending on the oyster cultivation techniques used (Tallis et al. 2009). Those trade-offs should be examined at a landscape or seascape scale, rather than a site scale because of the variability that occurs over time (Tallis et al. 2009). In some west coast estuaries, seagrasses coexist with commercial oyster mariculture activities (Dumbauld et al. 2015).

Pre-construction notification is required for commercial shellfish mariculture activities that directly affect more than 1/2-acre of submerged aquatic vegetation. The pre-construction notification requirement provides the district engineer with an opportunity to review those activities on a case-by-case basis and assess potential impacts on submerged aquatic vegetation and ensure that the authorized activity results in no more than minimal adverse environmental effects. If the vegetated shallows are high value and the proposed activity will result in more than minimal adverse effects on the aquatic environment, the district engineer will exercise discretionary authority to require the project proponent to obtain an individual permit.

Some harvesting activities associated with commercial shellfish mariculture activities may require Clean Water Act section 404 authorization. Hydraulic dredging used to harvest cultivated bivalve molluscs may result in a regulated discharge of dredged material, depending on whether there is any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States (see 33 CFR 323.3(d)(1)). Mechanical harvesting may or may not require section 404 authorization, depending on how it is done and whether it results in a discharge of dredged material, as that term is defined at 33 CFR 323.2(d). Hand harvesting and mixed harvesting techniques can have less severe impacts on seagrasses than dredge harvesting (Dumbauld and McCoy 2015).

Bed preparation activities for commercial shellfish mariculture activities, such as harrowing, raking, and levelling, may require section 404 authorization because they may result in a discharge of dredged material (see definition at 33 CFR

323.2(d)). The impacts of these activities are likely to be temporary because the substrate in intertidal areas where these activities may occur is moved around by water flows, including tidal water flows. Other types of bed preparation activities, such as the placement of shell, gravel, or other materials suitable for bivalve shellfish to attached to or grow are likely to require Clean Water Act Section 404 authorization as a “discharge of fill material” as that term is defined in the Corps’ regulations at 33 CFR 323.2(f). Bed preparation through the placement of shell, gravel, or other materials on the bottom of the waterbody are likely to be temporary because those materials will be moved around by the ebb and flow of the tide and by currents.

Disturbances to seagrasses caused by bivalve shellfish harvesting activities and their ability to recover from such disturbances vary by seagrass species, the geographic scope of disturbance, disturbance intensity, the season in which the harvesting activities occur, and substrate characteristics (NRC 2010). While commercial shellfish mariculture activities may have direct and indirect effects on seagrasses, these adverse effects are usually observed at relatively small spatial and temporal scales, and those adverse effects may in some cases be temporary (Dumbauld and McCoy 2015). They also observed that seagrasses can co-exist and intermingle with cultivated bivalve molluscs. At a seascape or landscape scale, bivalve shellfish mariculture activities might not substantially reduce seagrasses because the mariculture activities typically occur within a small proportion of the waterbody and the ecological functions performed by bivalve molluscs can create conditions that support the growth and persistence of seagrasses (Dumbauld and McCoy 2015). Habitat patches within coastal waters usually change over time in these highly dynamic environments. Some species may compete for space and replace other species in that location, and those other species may occupy space in another area of coastal waters.

Neither the Clean Water Act nor the Clean Water Act Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material or other types of impacts to vegetated shallows. Under the 404(b)(1) Guidelines, discharges of dredged or fill material into special aquatic sites can be authorized by general permits and individual permits. The Clean Water Act recognizes the protection and propagation of fish and shellfish as one of its objectives (see 33 USC 1251(a)(2)). As discussed elsewhere in this document, seagrasses and cultivated bivalve shellfish can coexist in waterbodies, as they coexisted historically before overfishing depleted natural stocks of bivalve molluscs (e.g., Lotze et al. 2009). Commercial shellfish mariculture activities have occurred in the United States for more than 100 years (NRC 2010), often in areas inhabited by submerged aquatic vegetation. Under the 404(b)(1) Guidelines, discharges and dredged or fill material into special aquatic sites and other waters of the United States can be authorized to fulfill a specific project purpose. For NWP 48, that project purpose is the production of bivalve molluscs for human consumption, to fulfill a fundamental human need for energy and nutrients for life-supporting metabolic processes. A secondary benefit of commercial shellfish mariculture activities is the variety of ecological functions and services that the

cultivated bivalve molluscs can provide to coastal ecosystems, such as improved water quality, habitat for a variety of fish and invertebrates, shore erosion control, and nutrient cycling. While commercial shellfish mariculture activities, including harvesting activities, may directly and indirectly affect seagrasses, many of those activities have temporary impacts and seagrasses possess the ability to recover after those disturbances occur.

Activities authorized by NWPs must have no more than minimal individual and cumulative adverse environmental effects (see 33 USC 1344(e)(1)). Activities authorized by this NWP are likely to have some degree of adverse environmental effects to specific components of the aquatic environment, such as vegetated shallows, and those activities can be authorized by NWP as long as the individual and cumulative adverse environmental effects are no more than minimal. Under various provisions of 33 CFR part 330, division and district engineers have discretionary authority to modify, suspend, or revoke NWP authorizations. This discretionary authority may be used by division and district engineers only to further condition or restrict the applicability of an NWP for cases where they have concerns for the aquatic environment under the Clean Water Act Section 404(b)(1) Guidelines or for any factor of the public interest (see 33 CFR 330.1(d)).

(5) Coral reefs: The discharges of dredged or fill material into waters of the United States authorized by this NWP may have adverse effects on coral reefs, but commercial shellfish mariculture activities are typically not conducted in areas inhabited by coral reefs. Division engineers may add regional conditions to this NWP if there is potential for the discharges authorized by this NWP to have direct or indirect impacts on coral reefs, and those impacts could be more than minimal.

(6) Riffle and pool complexes: The discharges of dredged or fill material into waters of the United States authorized by this NWP are unlikely to have any adverse effects on riffle and pool complexes, since it is limited to commercial shellfish mariculture activities that are conducted in navigable marine and estuarine waters. Riffle and pool complexes are found only in certain types of streams (Montgomery and Buffington 1997), and these streams are freshwater streams and are not used for commercial shellfish mariculture activities.

(k) Municipal and private water supplies: See paragraph (n) of section 6.1 for a discussion of potential impacts to water supplies.

(l) Recreational and commercial fisheries, including essential fish habitat: The discharges of dredged or fill material into waters of the United States authorized by this NWP are likely to have minor adverse effects on waters of the United States that act as habitat for populations of economically important fish and shellfish species, since it authorizes commercial shellfish mariculture activities. The activities authorized by this NWP will increase populations of shellfish in navigable waters, which will provide ecological functions and services associated with those organisms. The bivalve shellfish and associated features in shellfish beds can

provide structural habitat for a variety of organisms that serve as food for fish species that are used in recreational and commercial fisheries. Both eelgrass and oysters provide habitat for invertebrates that are important food sources for populations of fish and decapod crustaceans (Hosack et al. 2006). When dredging is used to harvest commercially grown bivalve molluscs, the impacts of those activities on benthic communities can be greater than the impacts associated with dredge harvesting of naturally-occurring bivalve shellfish (NRC 2010). Division and district engineers can add conditions to this NWP to prohibit discharges during important life cycle stages, such as spawning or development periods, of economically valuable fish and shellfish. Compliance with general conditions 3 and 5 will ensure that the authorized discharges do not adversely affect important spawning areas or concentrated shellfish populations. As discussed in paragraph (g) of section 6.1, there are procedures to help ensure that individual and cumulative impacts to essential fish habitat are no more than minimal. For example, division and district engineers can impose regional and special conditions to ensure that activities authorized by this NWP will result in only minimal adverse effects on essential fish habitat.

(m) Water-related recreation: See paragraph (m) of section 6.1 above.

(n) Aesthetics: See paragraph (c) of section 6.1 above.

(o) Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar areas: This NWP can be used to authorize discharges of dredged or fill material into waters of the United States in parks, national and historical monuments, national seashores, wilderness areas, and research sites if there are commercial shellfish mariculture activities are authorized in those areas through leases, permits, treaties, or other legal instruments that establish enforceable property interests for growers, and those discharges result in no more than minimal adverse effects on the aquatic environment. Division engineers can regionally condition the NWP to prohibit its use in designated areas, such as national wildlife refuges or wilderness areas.

9.0 Determinations

9.1 Finding of No Significant Impact

Based on the information in this document, the Corps has determined that the structures and work in navigable waters of the United States and the discharges of dredged or fill material into waters of the United States authorized by the issuance of this NWP will not have a significant impact on the quality of the human environment. During the five-year period this NWP will be in effect, the activities authorized by this NWP will result in only minor changes to the affected environment described in section 4.0 of this environmental assessment. Therefore,

the preparation of an environmental impact statement is not required for the issuance of this NWP.

9.2 Public Interest Determination

In accordance with the requirements of 33 CFR 320.4, the Corps has determined, based on the information in this document, that the issuance of this NWP to authorize structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for commercial shellfish mariculture activities is not contrary to the public interest.

9.3 Section 404(b)(1) Guidelines Compliance

This NWP has been evaluated for compliance with the 404(b)(1) Guidelines, including Subparts C through G. Based on the information in this document, the Corps has determined that the discharges authorized by this NWP comply with the 404(b)(1) Guidelines, with the inclusion of appropriate and practicable conditions, including mitigation measures required by the NWP general conditions, that minimize adverse effects on affected aquatic ecosystems. The discharges of dredged or fill material into waters of the United States authorized by this NWP will result in only minor changes to the current environmental setting described in section 4.0 of this document, and will have no more than minimal individual and cumulative adverse effects on the aquatic environment during the 5-year period this NWP is in effect.

9.4 Section 176(c) of the Clean Air Act General Conformity Rule Review

This issuance of this NWP has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities authorized by this permit will not exceed de minimis levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR 93.153. Any later indirect emissions are generally not within the Corps

continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons, a conformity determination is not required for this NWP.

FOR THE COMMANDER

Dated: 4 January 2021

William H. Graham Jr.
Major General, U.S. Army
Deputy Commanding General for Civil and Emergency Operations

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EXHIBIT C

CENTER for BIOLOGICAL DIVERSITY Because life is good.

February 8, 2021

Sent via U.S. Certified Mail, Return Receipt Requested, and Email to:

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Re: 60-Day Notice of Intent to Sue: Violations of the Endangered Species Act Regarding the Nationwide Permit Program

Dear Sirs/Madams:

This letter serves as formal notice pursuant to 16 U.S.C. § 1540(g) by the Center for Biological Diversity, Sierra Club, Friends of the Earth, Waterkeeper Alliance, Natural Resources Defense Council, Center for Food Safety, and Recirculating Farms Coalition ("Conservation Groups") of their intent to sue the U.S. Army Corps of Engineers ("Corps") for violations of the Endangered Species Act, 16 U.S.C. §§ 1531–1544 ("ESA"), in connection with the January 13, 2021, issuance, reissuance and modification of 16 nationwide permits ("NWPs") under Section 404 of the Clean Water Act ("CWA") absent formal programmatic ESA Section 7 consultation to ensure that the NWP program will not jeopardize listed species or adversely modify critical habitat in violation of the ESA.

The Conservation Groups are aware that the Biden administration has called for a review of the NWPs published by the Trump administration on January 13, consistent with President Biden's January 20, 2021 Executive Order "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," and we are hopeful that this process will address and resolve the issues set forth herein and in the attached comment letters. However, we are filing this notice letter in an abundance of caution and to reiterate the Corps' legal duty to consult on the NWP program.

Therefore, unless the violations described in this letter are remedied, we intend to bring suit and will seek declaratory and injunctive relief as well as reasonable litigation costs and attorneys' fees for the Corps' violations of the ESA.

1. **Legal Background**

ESA Section 7 is a vital safeguard that requires each federal agency, in consultation with the U.S. Fish and Wildlife Service ("FWS") and/or the National Marine Fisheries Service ("NMFS") (together, the "Services"), to "insure"—at the "earliest possible time"—that "any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of designated critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14. Section 7 also requires agencies to "carry[] out programs for the conservation of endangered species and threatened species." 16 U.S.C. § 1536(a)(1).

The Services' implementing regulations establish a detailed consultation process that agencies must follow to prevent jeopardy to listed species. Pursuant to that process, an agency must engage in consultation with the Services for *every agency action*—including "all activities or *programs* of any kind authorized, funded, or carried out," by an agency, *id.* § 402.02 (emphasis added)—that "may affect" a federally listed species or critical habitat in any manner, 50 C.F.R. § 402.14(a), (g).

The Services' regulations recognize that certain programmatic actions, such as the Corps' issuance of the NWP program,[1] "approve[] a framework for the development of future action(s)," and thus, "any take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out." *Id.* § 402.02 (defining "framework programmatic action"). Accordingly, "an incidental take statement is not required at the programmatic level," *id.* § 402.14(i)(6), but rather is issued during subsequent project-specific consultation. Such project-specific consultation, however, "does not relieve the Federal agency of the requirements for considering the effects of the action as a whole." *Id.* § 402.14(c).

Indeed, the Services' regulations clearly contemplate that for programmatic actions such as the Corps' issuance of the NWPs, programmatic consultations and project-specific consultations work in tandem, with each playing a vital role in protecting imperiled species. *See* 84 Fed. Reg. 44,976, 44,997 (Aug. 27, 2019) (preamble to Services' 2019 ESA regulations reiterating that, "[a]s explained in the 2015" regulations, the ESA "still requires a programmatic consultation to meet the requirements of section 7(a)(2)[,]" even if "specific projects . . . developed in the future . . . are subject to site-specific stepped-down, or tiered consultations where incidental take is addressed").

[1] Importantly, when the Services issued regulations concerning programmatic consultations in 2015, they specifically used the Corps' NWP program as an example of a federal program subject to such consultation. *See* 80 Fed. Reg. at 26,835 ("Examples of Federal programs that provide such a framework include . . . the U.S. Army Corps of Engineers' Nationwide Permit Program.").

Programmatic consultation allows "a broad-scale examination of a program's potential impacts on a listed species and its designated critical habitat—an examination that is not as readily conducted when the later, action-specific consultation occurs on a subsequent action developed under the program framework." 80 Fed. Reg. 26,832, 26,836 (May 11, 2015). This enables the Services "to determine whether a program and its set of measures intended to minimize impacts or conserve listed species are adequately protective." *Id.* This is precisely the vital role that programmatic consultation has performed when *past* iterations of the NWPs underwent the mandatory consultation process. *See* Comments attached hereto (discussing NMFS' 2012 BiOp wherein it determined that the NWP program *was* jeopardizing listed species, and the subsequent 2014 BiOp requiring the Corps to adopt additional protective measures at the national level to prevent jeopardy).[2]

2. Factual Background

There can be no doubt that the NWP program—including all 16 of the NWPs that the Corps authorized on January 13, 2021[3]— "may affect," and is "likely to adversely affect," listed species. The NWP program allows for an unquantified and virtually limitless number of "discharges" of dredged or fill material to the nation's waters and wetlands in connection with various environmentally destructive activities, such as oil and gas pipeline construction, coal mining, commercial development, and aquaculture.[4]

Indeed, the Corps itself acknowledges that the program "may affect" listed species by disclosing in the 2021 Biological Assessment for the NWPs that *thousands* of project-specific ESA consultations occur each year for NWP activities.[5] This confirms that NWP-authorized activities not only "may affect," but in hundreds of cases are "likely to adversely affect" listed species.

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[2] The attachments include comment letters provided to the Corps by the Conservation Groups and are incorporated herein by reference.

[3] *See* Reissuance and Modification of Nationwide Permits, 86 Fed. Reg. 2744 (Jan. 13, 2021) (replacing 12 of the existing NWPs, specifically: NWP 12 (oil or natural gas pipeline activities; NWP 21 (surface coal mining activities); NWP 29 (residential developments); NWP 39 (commercial and institutional developments); NWP 40 (agricultural activities); NWP 42 (recreational facilities); NWP 43 (stormwater management facilities); NWP 44 (mining activities); NWP 48 (commercial shellfish mariculture activities); NWP 50 (underground coal mining activities); NWP 51 (land-based renewable energy generation facilities); and NWP 52 (water-based renewable energy generation pilot projects), and authorizing four new NWPs: NWP 55 (seaweed mariculture activities); NWP 56 (finfish mariculture activities); NWP 57 (electric utility line and telecommunications activities); and NWP 58 (utility line activities for water and other substances).

[4] The comments attached hereto provide a discussion of the impacts to listed species from the various NWP activities.

[5] The 2021 Biological assessment is itself inadequate because it never "evaluate[s] the potential effects of the action on listed species," nor does it consider the "cumulative effects" of the NWP program, as the ESA implementing regulations require. 50 C.F.R. §§ 402.12(a), (f)(4).

In its 2014 Biological Opinion on the NWP program, NMFS explained in detail how NWP activities adversely affect listed species, stating that "[i]n addition to the direct loss of wetlands, the information available demonstrates that the aggregate impacts of the activities historically authorized by Nationwide Permits have been sufficiently large to change the flow regimes and physical structure of river systems and simplify or degrade aquatic ecosystems. These changes have resulted in declines in the abundance of endangered or threatened species." 2014 NMFS BiOp at 272.

NMFS further explained that several of the NWPs "may result in permanent impervious surface cover and the aggregate impacts of those Nationwide Permits have the potential to contribute to changes that correspond to large scale hydrologic phenomena that are critical to the survival and recovery of threatened and endangered species under NMFS' jurisdiction and their critical habitat. The aggregate impacts of these types of activities are not immediately evident on a case-by-case basis. . . ." *Id.* at 302. This leaves no doubt that the NWP program may adversely affect listed species, highlighting the need for programmatic consultation.

The Corps, however, has erroneously concluded that the issuance of the NWPs will have "no effect" on species protected under the ESA, and therefore programmatic consultation is not required, because no NWP authorizes an activity that may affect a listed species or critical habitat absent project-specific ESA Section 7 consultation. The Corps has thereby authorized 16 NWPs without considering the cumulative, adverse environmental consequences of the impacts of discharges under the NWP program on protected species or their critical habitat. Indeed, the Corps reauthorized the NWPs without having even basic procedures in place that would allow the agency to know the full extent of the harm to listed species from activities permitted under the NWPs.

3. Violations

a. The Corps' failure to initiate and complete programmatic consultation on the NWPs violates the ESA

As set forth in detail in the comment letters attached hereto (which are incorporated by reference), the Corps has erroneously and unlawfully determined that the NWP program does not require programmatic ESA consultation. However, the agency's "no effect" determination for the NWP program is legally and factually flawed. Indeed, the Corps' reliance on project-specific reviews to avoid programmatic consultation is completely inconsistent with the Services' implementing regulations and has been squarely rejected by two federal courts. *See National Wildlife Federation v. Brownlee*, 402 F. Supp. 2d 1, 10 (D.D.C. 2005) (holding that "overall consultation for the NWPs is necessary to avoid piece-meal destruction of [] habitat through failure to make a cumulative analysis of the program as a whole"); *Northern Plains Resource Council et al. v. U.S. Army Corps of Engineers*, No. 4:19-cv-00044 (D. Mont.), appeal pending, No. 20-35412 (9th Cir.) (holding that the Corps once again violated the ESA by failing to programmatically consult on the issuance of NWP 12, declaring NWP 12 unlawful and remanded it back to the Corps for compliance with the ESA).

As discussed above and in the attached comments, the NWPs constitute *both* "permits"—requiring project-specific consultation when used for individual projects that "may affect" listed species—and a "program" (i.e., a nationwide scheme for CWA compliance) requiring ESA review at the *programmatic* level when issued by the Corps. *See* 84 Fed. Reg. at 44,997 (stating the ESA "still requires a programmatic consultation to meet the requirements of section 7(a)(2)[,]" even if "specific projects . . . developed in the future . . . are subject to site-specific stepped-down, or tiered consultations where incidental take is addressed").

The Corps' argument that programmatic consultation is not required where project-specific consultations will occur is therefore incompatible with the governing regulations. While NWP General Condition 18 provides that no NWP activity that may affect listed species can commence until the Corps has complied with the ESA by undertaking *project-specific* Section 7 consultation, that does not relieve the Corps from consulting on the NWP program as a whole. *See* 50 C.F.R. § 402.14(c).

Indeed, if the Court were to accept the Corps' flawed reasoning, then there would never be *any* need for programmatic consultation because *all* programmatic actions *also* require project-specific review for actions undertaken pursuant to the program. *See* 80 Fed. Reg. at 26,835 ("[A] second consultation and an action-specific incidental take statement still need to be provided when later actions are authorized under the program."). That would impermissibly render the regulation "entirely superfluous." *Nat'l Ass'n of Home Builders*, 551 U.S. 644, 668-69 (2007).

It is therefore unequivocal that project-specific consultation does not relieve the Corps of its duty to consult on the issuance of the NWPs at the programmatic level, and the Corps cannot justify a "no effect" determination for the issuance of the NWP program based on that later, site-specific consultation. Relying only on site-specific consultation fails to capture the cumulative impacts that the NWP program may have (and is having) on listed species. The only way to *ensure* that the NWP program will not jeopardize listed species is to consult at the programmatic level; otherwise the Services are not provided the opportunity to provide reasonable and prudent measures to ensure that the Corps gathers and analyzes sufficient data to prevent jeopardy to listed species, and to ensure that incidental take does not occur at unsustainable levels.

For the same reasons, the Corps' failure to undertake programmatic consultation on the NWPs also constitutes a violation of ESA Section 7(a)(1), which requires the Corps to "carry[] out [a] program[] for the conservation of endangered species and threatened species." 16 U.S.C. § 1636(a)(1).

In sum, after putting aside the Corps' faulty legal argument that the issuance of the NWPs has "no effect" because of later project-specific reviews, there is no serious dispute that the NWPs "may affect" listed species, as discussed above and in the attached comments. The Corps' "no effect" determination is therefore arbitrary, capricious, and in violation of the ESA.

b. <u>The Corps has unlawfully delegated its ESA duties to permittees</u>

As set forth in the attached comments, the Corps' reliance on permittees to notify the agency that NWP activities "might affect" listed species is insufficient to fulfill the Corps' ESA duties, and

the Corps has therefore failed to ensure that project-specific consultations will even occur for *all* NWP-authorized activities that may adversely affect listed species.

As the Corps acknowledges, it relies entirely on permittees to submit PCNs to the Corps pursuant to NWP General Condition 18 when the *permittees themselves* acknowledge that their activities "might" affect listed species—a determination that could result in project delays.[6] However, the Corps *itself* has a duty to determine whether any actions it authorizes require consultation. *See* 50 C.F.R. § 402.14(a). Therefore, General Condition 18 fails to ensure that the Corps fulfills *its* obligations under ESA Section 7(a)(2), because it impermissibly turns the ESA's initial effect determination over to non-federal permittees, even though the Corps must make that initial determination.

This delegation to permittees to determine whether a project may affect listed species violates the ESA. *See Northern Plains Res. Council v. United States Army Corps of Eng'rs*, 2020 U.S. Dist. LEXIS 66745, *22 (Dist. Mont., April 15, 2020) (citing 50 C.F.R. § 402.14(a)); *cf. Gerber v. Norton*, 294 F.3d 173, 184-6 (D.C. Cir. 2002) (FWS may not delegate species protection obligations to a private permit applicant).

c. The NWPs may not be authorized or relied on by permittees until the Corps complies with the ESA

The Corps may not reissue or authorize the NWP program until it fulfills its obligation to consult under ESA Section 7. Section 7(d) of the ESA provides that "[a]fter initiation of consultation . . . the Federal agency . . . shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection(a)(2) of this section." 16 U.S.C. § 1536(d); 50 C.F.R. § 402.09. Section 7(d) thereby clarifies that the status quo must be maintained pending the completion of the required consultation process in order to fulfill the agency's mandate pursuant to ESA Section 7(a)(2).

Since discharge and fill activities under the NWP program "may affect" and are "likely to adversely affect" listed species, authorization of the NWPs may not be finalized absent the completion of formal programmatic ESA Section 7 consultation. Therefore, until the Corps completes consultation on the NWP program, no NWPs may be issued, and permittees may not rely on the NWPs to fulfill the legal requirements of CWA Section 404.

4. <u>Conclusion</u>

For the foregoing reasons, the Corps has failed to ensure that the NWP program is not likely to jeopardize the continued existence of listed species, and/or destroy or adversely modify

[6] The Corps' claim that this "might" affect threshold is somehow stricter than the ESA's "may affect" threshold is meritless, as the words are synonymous. *See* Merriam-Webster Online Dictionary (stating that "may" is "sometimes used where *might* would be expected"). But even if there were some meaningful distinction between "might" and "may," the fact remains that the Corps delegates the critical threshold finding to a self-interested, non-federal entity.

designated critical habitat, in violation of the ESA. 16 U.S.C. § 1536(a)(2). The Corps must consider the cumulative impacts that the issuance of the NWPs will have on listed species and ensure through national-scale programmatic ESA consultation with both FWS and NMFS that the NWP program complies with the ESA, and incorporates sufficient data keeping, monitoring, and corrective actions to mitigate impacts and prevent jeopardy.

Please do not hesitate to contact the undersigned if we can provide additional information or otherwise assist in this matter, rather than having to resort to the judicial remedies provided by the ESA. We look forward to your prompt response.

Sincerely,

/s/ Jared Margolis
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CENTER for BIOLOGICAL DIVERSITY Because life is good.

November 16, 2020

Submitted Via Regulations.gov and First-Class Mail (w/ attachments)

U.S. Army Corps of Engineers
Attn: CECW-CO-R
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Washington, DC 20314-1000
nationwidepermits2020@usace.army.mil

Re: Comments on Proposal to Reissue and Modify Nationwide Permits; Docket Number COE-2020-0002 / RIN 0710-AA84

Thank you for the opportunity to comment on the U.S. Army Corps of Engineers' ("Corps") proposed reissuance and modification of the nationwide permits ("NWPs") under Section 404 of the Clean Water Act ("CWA").[1] These comments are submitted on behalf of the Center for Biological Diversity, Sierra Club, Friends of the Earth, Waterkeeper Alliance and Center for Food Safety ("Commenters"), and focus on: the Corps' continued failure to comply with Section 7 of the Endangered Species Act ("ESA") through programmatic formal consultation with the Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS") (together, the "Services") on the NWP program; the failure of the Corps to ensure that the NWPs will have only minimal cumulative adverse effects on the environment as required under the CWA; and the need for compliance with the National Environmental Policy Act ("NEPA") through the preparation of an Environmental Impact Statement ("EIS") for the NWP program.[2]

Reauthorization of the NWPs will allow hundreds of thousands of "discharges" of dredged or fill material to the Nation's waters and wetlands over the course of five years in connection with a wide range of activities, including oil and gas development, pipeline construction, coal mining, residential and commercial development, commercial aquaculture, and other activities affecting waterways and wetlands. Yet, the Corps plans to authorize these NWPs without completing formal programmatic ESA consultation to ensure that the NWP program is not likely to jeopardize the continued existence of listed species or adversely impact designated critical habitat, and without meeting even basic procedural requirements to consider, analyze, and disclose the cumulative, adverse environmental consequences of NWP-authorized activities on the Nation's waters and wildlife.

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[1] Proposal to Reissue and Modify Nationwide Permits, 85 Fed. Reg. 57,298 (Sep. 15, 2020) ("Proposed Rule").

[2] These comments are being submitted via Regulations.gov; however, because of the large number of exhibits/attachments, we are sending a thumb drive to the Corps at the address above with all the documents, and request that these be included in the record.

Indeed, the Corps seeks to authorize the NWP program for five more years without having even basic recordkeeping procedures in place that would allow the agency to know the full extent of the discharges that will occur pursuant to the NWPs. The Corps has, therefore, failed to ensure that listed species and critical habitats will not be jeopardized by NWP activities in violation of the ESA,[3] or that the NWPs will not cause more than "minimal" adverse environmental effects, individually or cumulatively, to the Nation's aquatic environments, as the CWA requires.[4]

In sum, while the NWPs are intended to provide a streamlined means for compliance with Section 404 of the CWA for activities with no more than minimal adverse environmental impacts, thousands of projects each year rely on the NWPs to conduct activities in jurisdictional waters that cause sedimentation and contamination of waterways people and wildlife rely on. The cumulative effects of the activities allowed pursuant to the NWPs have resulted in significant environmental harm, and several of the proposed changes to the NWPs will exacerbate and increase such adverse impacts. The Corps' continued prioritization of the interests of regulated entities over its mandate to protect endangered species and the environment violates the ESA and the CWA.

I. LEGAL AND FACTUAL BACKGROUND

a. CWA Section 404 Permits

The CWA seeks to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" and prohibits the discharge of pollutants—including dredged and fill materials— into "waters of the United States" (including wetlands) unless expressly authorized by permit.[5] The Corps is charged with issuing permits to dredge and fill waters and wetlands pursuant to 33 U.S.C. § 1344 and 33 C.F.R. § 323.6(a), and issues two main types of permits for such activities: individual permits and general permits.[6] Before issuing a permit, the Corps must ensure that the activity will not adversely affect the integrity of the nation's waters and their ecosystems.[7]

The Corps may issue—after publishing a notice and providing an opportunity for a public hearing—general permits for CWA compliance.[8] NWPs are general permits that offer a streamlined alternative to the Corps' individual permitting process.[9] When the Corps determines that a category of activities "will cause only minimal adverse environmental effects when

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[3] 16 U.S.C. § 1536(a)(2).

[4] 33 U.S.C. § 1344(e)(1).

[5] 33 U.S.C. §§1251(a); *id*. § 1311(a); *id*. § 1344; 33 C.F.R. § 323.3(a), (b) and (d).

[6] *See* 33 C.F.R. § 323.2(g), (h).

[7] *See* 40 C.F.R. § 230.1(a), (c); *see also, e.g.*, *id.* § 230.10 (imposing practicable alternatives requirement).

[8] 33 C.F.R. § 325.5(c)(2) and 330.1.

[9] *See* 33 C.F.R. § 330.1(b).

performed separately, and will have only minimal cumulative adverse effect on the environment," it may issue a NWP authorizing activities nationwide for that category.[10] As with the individual permitting process, the Corps must comply with NEPA and the ESA when it issues a NWP.[11]

NWPs are issued "on a State, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material" only if "the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment."[12] The Corps must "set forth in writing an evaluation of the potential individual and cumulative impacts of the category of activities to be regulated," and document the "potential short-term or long-term effects" of a proposed permit, and must predict its cumulative effects by estimating "the number of individual discharge activities likely to be regulated."[13]

The decision to allow certain activities to proceed under a NWP has far-reaching consequences. While individual permits are issued on a case-by-case basis, and require public notice and comment, if a NWP applies then "the applicant needs merely to comply with its terms, and no further action by [the Corps] is necessary."[14] In contrast, for an individual permit the Corps must, among other things, examine all "practicable alternatives" to the proposed discharge; "[i]dentify and evaluate any special or critical characteristics of the candidate disposal site, and surrounding areas which might be affected by use of such site, related to their living communities or human uses;" make, document, and review "Factual Determinations" to determine whether the information in the project file is sufficient to provide the documentation required; and "[i]dentify appropriate and practicable changes to the project plan to minimize the environmental impact of the discharge …."[15]

NWPs require no public notice and are "designed to regulate with little, if any, delay or paperwork. . . ."[16] In most cases, projects meeting the specific terms and conditions of a NWP may be constructed without *any* notification to, or further review by, the Corps.[17] However, in certain cases the project proponent must submit a preconstruction notification ("PCN") to the Corps' district engineers and hold off on construction until the district engineers verify that the project meets the NWP's terms and conditions – though the Corps has now proposed removing that requirement for several NWPs and allowing projects to move forward after 45 days if the

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[10] 33 U.S.C. § 1344(e)(1); 33 C.F.R. § 330.2(b).

[11] *See* 42 U.S.C. § 4332(2)(C); 16 U.S.C. § 1536(a)(2); *see also* 33 C.F.R. § 330.4(b)(2), (f).

[12] 33 U.S.C. § 1344(e)(1); 33 C.F.R. § 323.2(g).

[13] 40 C.F.R. §§ 230.7(b), 230.11.

[14] 33 U.S.C. § 1344(a), 40 C.F.R. § 230.5(b).

[15] 40 C.F.R. § 240.5.

[16] 33 C.F.R. § 330.1(b).

[17] *See* 33 C.F.R. § 330(c), (e)(1).

Corps has failed to respond to the PCN.[18] If a project does not qualify for a NWP, however, the district engineers must deny verification and instead review the project under section 404's individual permitting process.[19]

b. <u>The Endangered Species Act</u>

Congress enacted the ESA in 1973 to provide for the conservation of endangered and threatened fish, wildlife, plants and their natural habitats.[20] The ESA imposes substantive and procedural obligations on all federal agencies with regard to listed and proposed species and their critical habitats.[21]

Under section 7 of the ESA, federal agencies must "insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined ... to be critical."[22] Pursuant to this process, each federal agency must review its "actions" "at the earliest possible time" to determine whether an action may affect listed species or critical habitat.[23]

The definition of agency "action" is broad and includes "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies," including programmatic actions, such as the Corps' issuance of the NWPs at issue here.[24] Likewise, the "action area" includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."[25] If an agency action "may affect" and is "likely to adversely affect" listed species or critical habitat, then "formal consultation" is required.[26]

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[18] *See id.* §§ 330.1(e)(1), 330.6(a)(1).

[19] *See id.* § 330.6(a)(2).

[20] *Id*. §§ 1531, 1532.

[21] *See id*. §§ 1536(a)(1), (a)(2) and (a)(4) and § 1538(a); 50 C.F.R. § 402.

[22] 16 U.S.C. § 1536(a)(2).

[23] 50 C.F.R. § 402.14.

[24] The ESA's implementing regulations broadly define an "action" to include "actions directly or indirectly causing modifications to the land, water, or air." 50 C.F.R. § 402.02.

[25] *Id.*

[26] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a). Formal consultation is a process between the federal agency proposing to take an action (the "action agency") and the Service(s), depending on whether the action may affect listed marine species, terrestrial species, or both. Formal consultation commences with the action agency's written request for consultation and concludes with the Service's issuance of a "biological opinion" (also, "BiOp"), which considers the "effects of the action" – *i.e.*, the action's direct and indirect effects, together with the "environmental baseline," the effects of "interrelated or interdependent" activities, and the action's "cumulative effects." 50 C.F.R. § 402. The BiOp explains "how the proposed action will affect the species or

The duties in ESA Section 7 are only fulfilled by an agency's satisfaction of the consultation requirements that are set forth in the implementing regulations for Section 7 of the ESA, and only after the agency lawfully complies with these requirements may an action that "may affect" protected species go forward.[27]

For broad federal programs that may affect listed species, action agencies and the Services must engage in "programmatic consultation" to consider the cumulative impacts of the program and to guide implementation by establishing criteria to avoid, minimize, or offset adverse effects on listed species and critical habitat.[28] Such analysis "allows for a broad-scale examination of a program's potential impacts on a listed species and its designated critical habitat—an examination that is not as readily conducted when the later, action-specific consultation occurs on a subsequent action developed under the program framework."[29] For such federal programs, the ESA regulations contemplate programmatic consultation that does not provide for incidental take, but allows the Services to review the programmatic-level impacts of the agency action and implement program-level mitigation or other requirements (e.g. data collection and reporting). Project-specific consultation must then be undertaken for specific actions under the program, which is when incidental take is authorized.[30]

a. ***History of ESA Consultation on the NWP Program***

As set forth in detail below, the Corps' issuance of the NWPs is a programmatic agency action that "may affect" listed species, and therefore the Corps is required to undertake programmatic consultation on the NWP program in order to comply with its duties under Section 7 of the ESA. Indeed, in 2005 the D.C. District Court held that the Corps violated the ESA by not conducting Section 7 consultation on its reissuance of several NWPs in 2002.[31] The *Brownlee* court rejected the Corps' reliance on project-specific consultation to meet its ESA duties, and found that "overall consultation for the NWPs is necessary to avoid piece-meal destruction of . . . habitat

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its habitat" and "states the opinion" of the Service(s) as to whether the action is "likely to jeopardize the continued existence of listed species" or "result in the destruction or adverse modification of critical habitat." 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12(c). In developing a BiOp, the Service must rely on the best scientific and commercial data available. *Id*. § 1536(a)(2).

[27] *Pac. Rivers Council v. Thomas*, 30 F.3d 1050, 1055-57 (9th Cir. 1994).

[28] *See* 50 C.F.R. §§ 402.02, 402.14(i)(6); The two agencies charged with implementing the ESA, the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration, cited the Corps' NWP Program as a framework programmatic action requiring section 7 consultation. Fish and Wildlife Service & National Oceanic and Atmospheric Administration, Interagency Cooperation—Endangered Species Act of 1973, as Amended; Incidental Take Statements, 80 Fed. Reg. 26,832, 26,835 (May 11, 2015); *see also id.* at 26,832, 26,832, 26,837.

[29] *Id.* at 26,836.

[30] *Id.*

[31] *Nat'l Wildlife Fed'n v. Brownlee*, 402 F. Supp. 2d 1, 7-8 (D.D.C. 2005) (finding the Corps' 2002 reissuance of the NWPs to be final agency action that required ESA consultation).

through failure to make a cumulative analysis of the program as a whole."[32] The court reasoned that the ESA regulations are clear that "[a]ny request for formal consultation may encompass . . . a number of similar individual actions within a given geographical area or a segment of a comprehensive plan. This does not relieve the Federal agency of the requirements for considering the effects of the action as a whole."[33]

Following that decision, the Corps initiated formal programmatic consultation with NMFS on the reissuance of the NWP program in 2007 and 2012; though the Corps failed to initiate consultation with FWS.[34] The Corps specifically acknowledged the *Brownlee* decision in initiating consultation with NMFS in 2007 and 2012.[35] On February 15, 2012, NMFS released a Biological Opinion ("2012 BiOp") (attached hereto), which found that the Corps' implementation of the NWP program *was jeopardizing* the continued existence of endangered and threatened species under NMFS's jurisdiction.[36]

The Corps reinitiated consultation to address NMFS's concerns, and NMFS issued a new Biological Opinion in 2014 ("2014 BiOp") (attached hereto). Although the 2014 BiOp did not result in a jeopardy determination, it reiterated many of NMFS' concerns about the NWP program and required the Corps to undertake national-level measures to track and mitigate harm, including data collection, monitoring, and corrective actions, with semi-annual reporting requirements. It was only based on these measures that NMFS was able to conclude that the 2012 issuance of the NWPs would not jeopardize listed species within its jurisdiction. It is not clear whether the Corps has ever complied with these measures, as no semi-annual reports have been made publicly available.

Beginning with the 2017 iteration of the NWPs, the Corps decided to take a different approach. Rather than comply with its clear duty to undertake formal programmatic consultation on the reissuance of the NWPs, it instead made a "no effect" determination, thereby attempting to avoid the programmatic ESA consultation that the court in *Brownlee* specifically required. It is clear from statements made by the Corps' own Regulatory Program Manager that the Corps was well aware of the need to consult, but was attempting to avoid programmatic consultation with a dubious "no effect" determination that had no basis in science or reality. The Regulatory

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[32] *Id.* at 7-8.

[33] *Id.* (quoting 50 C.F.R. § 402.14(c)).

[34] The 2007 NWPs state that "the Corps will request programmatic Endangered Species Act Section 7(a)(2) consultation with the USFWS and NMFS;" however, it does not appear that the Corps ever followed through on initiating consultation with FWS. 72 Fed. Reg. 11,096.

[35] *See* 76 Fed. Reg. 9174, 9176 (Feb. 16, 2011) (noting, in the context of issuing the 2012 Nationwide Permits, that the court in *Brownlee* "determined that the Corps is obligated to consult" with FWS and NMFS and that, "[i]n response to that decision," the Corps was initiating programmatic consultation with both agencies); 71 Fed. Reg. 56,258, 56,261 (Sep. 26, 2006) (same as to 2007 Nationwide Permits). This undermines the Corps' argument that these consultations were somehow "voluntary."

[36] 2012 NMFS BiOp at 223.

Program Manager in fact acknowledged that "for the 2017 NWPs, *we would have to do a new consultation*."[37] However, he went on to state that the Corps could make a "no effect" determination to avoid programmatic consultation and "[w]e could continue to make the national 'no effect' determination for each NWP reissuance until it is challenged in federal court and a judge rules against the Corps. If we lose in federal court, then we would start doing the national programmatic consultations again."[38]

This is indeed what came to pass. The Corps' failure to initiate and complete formal programmatic consultation on the reissuance of NWP 12 in 2017 was challenged by several environmental groups in *Northern Plains Resource Council et al. v. U.S. Army Corps of Engineers*, No. 4:19-cv-00044 (D. Mont.), appeal pending, No. 20-35412 (9th Cir.). There, the Montana District Court held that the Corps once again violated the ESA by failing to programmatically consult on the issuance of NWP 12, declared NWP 12 unlawful and remanded it back to the Corps for compliance with the ESA. The Court also vacated NWP 12 and enjoined the Corps from verifying any projects under that NWP until the Corps completes a valid programmatic consultation; however, the nationwide reach of the vacatur and injunction was later limited to the Keystone XL project by the Supreme Court on motions for stay pending appeal.

Notably, the Montana court found "resounding evidence" that the Corps' reissuance of NWP 12 "may effect" listed species—the ESA's low threshold for triggering the consultation requirement.[39] It also found that the Corps was well-aware of the need to consult on the programmatic level, and yet erroneously relied on project-specific consultations to meet its ESA duties. The court held that project-specific reviews cannot meaningfully address the *cumulative* impacts to listed species from all Nationwide Permit 12-authorized activities. Such cumulative impacts—which may jeopardize the continued existence of species, as NMFS found in its 2012 Biological Opinion—can be analyzed *only* through programmatic review. The court further noted that the Corps knew of the need to consult based on the prior consultations with NMFS as well as the fact that the Services specifically listed the Corps' Nationwide Permit program as an example of a federal program subject to programmatic consultation in 2015 regulations regarding such consultations.[40]

That case is currently under appeal in the Ninth Circuit; however, both the Ninth Circuit and the Supreme Court rejected, at least in part, motions for a stay pending appeal. The Ninth Circuit found that the Corps did not have a likelihood of success on the merits of the appeal, and while the Supreme Court narrowed the remedy to Keystone XL, it ostensibly upheld the merits of the ruling by denying a stay as to that project.

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[37] Email from David Olson (Jan. 17, 2014) (attached hereto).

[38] *Id.*

[39] *See W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 496 (9th Cir. 2011) ("The minimum threshold for an agency action to trigger consultation" is "low" (quoting 51 Fed. Reg. 19,926, 19,949 (June 3, 1986)).

[40] 80 Fed. Reg. at 26,835.

However, even though the ESA and implementing regulations clearly require consultation on the reissuance of the NWPs, the Corps—in direct contravention of a federal court order—has now doubled down and continued to make a "no effect" determination for the 2020 NWPs. As set forth below in more detail, this is arbitrary, capricious and in direct violation of the ESA.

b. The NWP program "may affect" and is "likely to adversely affect" listed species

There is no doubt that the Corps' issuance of the NWP program "may affect" listed species. Indeed, NMFS made that more than clear when it issued a *jeopardy* determination for the NWP program in 2012.[41] And, in fact, the Corps itself acknowledges that the program "may affect" listed species by disclosing that *thousands* of project-specific ESA consultations occur each year for NWP activities (including 3,048 informal and 640 formal consultations in 2018 alone).[42] This confirms that NWP-authorized activities not only "may affect," but in hundreds of cases are "likely to adversely affect" listed species.

In the most recent programmatic BiOp on the NWP program in 2014, NMFS explained in detail how NWP activities affect listed species, stating that "[i]n addition to the direct loss of wetlands, the information available demonstrates that the aggregate impacts of the activities historically authorized by Nationwide Permits have been sufficiently large to change the flow regimes and physical structure of river systems and simplify or degrade aquatic ecosystems. These changes have resulted in declines in the abundance of endangered or threatened species."[43]

NMFS further explained that several of the NWPs "may result in permanent impervious surface cover and the aggregate impacts of those Nationwide Permits have the potential to contribute to changes that correspond to large scale hydrologic phenomena that are critical to the survival and recovery of threatened and endangered species under NMFS' jurisdiction and their critical habitat. The aggregate impacts of these types of activities are not immediately evident on a case-by-case basis. . . ."[44] This leaves no doubt that the NWP program may adversely affect listed

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[41] According to the 2012 NMFS BiOp, activities under the NWPs likely to have the greatest influence on listed resources under NMFS' jurisdiction (and this does not include activities that may affect species under FWS jurisdiction) result in over 43,000 activities every year, or about 217,000 activities over five years, resulting in a loss of nearly 26,000 acres of jurisdictional wetlands and other waters of the United States. That area, when combined with the nearly 140,000 acres already impacted by NWPs since 1982, "is sufficiently large to make cumulative impacts certain." As set forth below, this is why programmatic Section 7 consultation is not only warranted, but indeed vital to ensuring that the NWP program does not jeopardize the continued existence of listed species and destroy critical habitat in violation of the ESA.

[42] 85 Fed. Reg. at 57,359 (noting that "each year, Corps districts initiate thousands of formal and informal ESA section 7 consultations for specific NWP activities").

[43] 2014 NMFS BiOp at 272.

[44] *Id.* at 302.

species, undermining the Corps' "no effect" determination, and highlighting the need for programmatic consultation.[45]
Indeed, several NWPs pose significant risks to imperiled species and critical habitat. For example, NWP 36 (Boat Ramps) allows for increased water vessel traffic, which causes harm to marine mammals such as manatee through collisions. Similarly, NWP 51 (Land-Based Renewable Energy Generation Facilities) allows for the development of wind farms, which can kill birds, including protected species such as migratory birds, bald and golden eagles, as well as endangered Indiana bats and whooping cranes.[46] And NWP 12 (discussed in greater detail below) provides for the construction of fossil fuel pipelines that are known to spill and leak oil that can contaminate waterways and kill wildlife, such as endangered pallid sturgeon.

Several NWPs, including NWPs 3 (Maintenance), 12 (Oil and Gas Pipelines), 13 (Bank Stabilization), 14 (Linear Transportation Projects), NWP 17 (Hydropower Projects), 18 (Minor Discharges), 19 (Minor Dredging), 21 (Surface Coal Mining Activities), 29 (Residential Developments), 33 (Temporary Construction, Access, and Dewatering), 39 (Commercial Development), 40 (Agricultural Activities), 41 (Reshaping Existing Drainage Ditches), 44 (Mining Activities), 48 (Commercial Shellfish Aquaculture Activities), 49 (Coal Remining Activities), 50 (Underground Coal Mining Activities), 51 (Land-Based Renewable Energy Generation Facilities), and 52 (Water-Based Renewable Energy Generation Pilot Projects) have the potential to significantly increase the sediment loads in our Nation's waters, which can harm species such as endangered freshwater mussels and fish.[47] These projects also often involve

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[45] For a discussion of the potential for harm to ESA listed species under NMFS jurisdiction from NWP activities, *see* 2014 NMFS BiOp at 304-317.

[46] Commenters note that the Corps cited Solicitor's Opinion M-37050 which states that the Migratory Bird Treaty Act does not prohibit the incidental take of migratory birds. 85 Fed. Reg. at 57,351. This Solicitor's Opinion, however, was found to have violated the plain language of the Migratory Bird Treaty Act in *NRDC v. United States DOI*, No. 18-CV-4596 (VEC), 2020 U.S. Dist. LEXIS 143920 (S.D.N.Y. Aug. 11, 2020), as would any attempt to authorize the incidental take of migratory birds.

[47] Burkhead, N. M., & Jelks, H. L. (2001). Effects of suspended sediment on the reproductive success of the tricolor shiner, a crevice-spawning minnow. Transactions of the American Fisheries Society, 130(5), 959-968; Sutherland, A. B., & Meyer, J. L. (2007). Effects of increased suspended sediment on growth rate and gill condition of two southern Appalachian minnows. Environmental Biology of Fishes, 80(4), 389-403; Jones, E. B., Helfman, G. S., Harper, J. O., & Bolstad, P. V. (1999). Effects of riparian forest removal on fish assemblages in southern Appalachian streams. Conservation biology, 13(6), 1454-1465; Sutherland, A. B., Maki, J., & Vaughan, V. (2008). Effects of suspended sediment on whole-body cortisol stress response of two southern Appalachian minnows, Erimonax monachus and Cyprinella galactura. Copeia, 2008(1), 234-244; Zamor, R. M., & Grossman, G. D. (2007). Turbidity affects foraging success of drift-feeding rosyside dace. Transactions of the American Fisheries Society, 136(1), 167-176; Newcombe, C. P., & Jensen, J. O. (1996). Channel suspended sediment and fisheries: a synthesis for quantitative assessment of risk and impact. North American Journal of Fisheries Management, 16(4), 693-727; Newcombe, C. P., & MacDonald, D. D. (1991). Effects of suspended sediments on aquatic ecosystems. North American Journal of Fisheries Management, 11(1), 72-82.

construction of powerlines, which pose a significant risk to migratory birds, such as whooping cranes.

NWP-authorized construction activities in waterways can harm species by increasing downstream sedimentation, which fills in the spaces between rocks that many species need to fulfill their life history requirements, including freshwater mussels, snails, darters and other benthic fishes, crayfishes, and aquatic salamanders. The impacts to aquatic dependent species from increased siltation and sedimentation are numerous, including both direct harm to species via gill clogging and injury, smothering, reduced visibility, and adverse changes to feeding, breeding, and sheltering substrates.[48]

Another example is NWP 44 (Mining Activities), which authorizes mining activities that the Corps has previously admitted "often involve impacts to open waters, such as the mining of sand and gravel from large rivers."[49] This can devastate the substrates that species rely on for feeding and breeding, and can increase sediment loads and introduce contaminants into the water column, harming sensitive aquatic species.

Additionally, about 43% of the nation's endangered and threatened species rely directly or indirectly on wetlands for survival and many rely on streams; yet, NWPs 12, 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 allow up to a 1/2-acre of wetlands to be filled—and the Corps has proposed removing the 300 linear feet of stream loss limitation from several of these NWPs, as discussed further below. While this 1/2-acre constraint (and the 300 linear foot loss limit that should be maintained) may *seem* like a reasonable limitation at the project-specific level, when considered in the context of the tens of thousands of NWP activities that take place each year the cumulative amount of sedimentation and habitat loss becomes significant, and certainly "may affect" listed species. Further, for wetlands that are traditionally small (i.e. vernal pools, potholes), this amount of loss allows developers to eradicate sensitive habitat that imperiled species rely on, such as highly endangered vernal pool fairy shrimp.

As the Corps itself acknowledges, the ½ acre limit allows a headwater stream that has a mean width of 20 feet, to be filled for 1,089 linear feet.[50] This amount of fill, especially in sensitive

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[48] *See* Sutherland, A. B., Maki, J., & Vaughan, V. (2008). Effects of suspended sediment on whole-body cortisol stress response of two southern Appalachian minnows, Erimonax monachus and Cyprinella galactura. Copeia, 2008(1), 234-244; U.S. Fish and Wildlife Service (FWS). Determination of endangered status for the Rayed Bean and Snuffbox mussels throughout their ranges, Final Rule. 77 Fed. Reg. 08632 (2012).; U.S. Fish and Wildlife Service (FWS). Cumberland Arrow Darter Candidate Species Assessment Form (2013). 31 pp.; U.S. Fish and Wildlife Service (FWS). Endangered Species Status for the Big Sandy Crayfish and the Guyandotte River Crayfish, Proposed Rule. 80 Fed. Reg. 18710 (2015); Wheeler, B.A., E. Prosen, A. Mathis, and R.F. Wilkinson. 2003. Population declines of a long-lived salamander: A 20+ year study of hellbenders, *Cryptobranchus alleganiensis* Biological Conservation 109:151-156.

[49] 81 Fed. Reg. at 35,201.

[50] 81 Fed. Reg. at 35,213.

headwater streams, cannot be considered a minor impact, and the cumulative loss of these waterways has far-reaching effects on many listed species that rely on them. In fact, NMFS staff has stated that:

> 1/2 acre of fill in one place has very different effects than the same amount of fill elsewhere. For example, in the current NWPs there is a proposed permit for tidal energy projects. NMFS NER is very concerned that if these projects are authorized in anadromous streams, some of them may have very damaging effects.[51]

Other NWPs pose risks of direct impacts to listed species. For example, seismic surveys conducted pursuant to NWP 6 (Survey Activities) have the potential to scare wildlife and may lead to habitat damage and loss. A seismic survey is conducted by creating a shock or "seismic" waves using explosives. For at least one NWP 6 project that Commenters are aware of – the TOCALA 3D Seismic Survey on approximately 161 square miles (103,000 acres) of lands just north of Big Cypress National Preserve in southwest Florida – a permittee surveyed a grid of shot holes installed every 250 feet with the use of "drill buggies" and "water buggies," including the placement of 2,600 shot holes within wetlands. Despite clear impacts to several species, including avoidance behavior and temporary habitat modification, the Corps concluded that this project was "not likely to adversely affect" listed species, and failed to consider the cumulative impacts of thousands of explosions on imperiled species in the area, including eastern indigo snake, red-cockaded woodpecker, wood stork, Florida panther, Florida bonneted bat, Audubon's crested caracara, and snail kite.

Other examples of impacts to listed species were detailed by NMFS in the 2012 and 2014 programmatic biological opinions on the NWP program. Indeed, the 2014 BiOp specifically stated that "numerous studies have identified cumulative impacts resulting from activities historically authorized by Nationwide Permits,"[52] adding that "many of the species that have been listed as endangered or threatened were listed, in part, due to impacts from Corps-issued permits within waters of the United States where those species or the critical habitat occur."[53]

For example, the 2012 BiOp noted that the placement of harvesting devices that were authorized by NWP 4 are known to capture and kill endangered and threatened species.[54] In particular, sea turtles such as green, Kemp's ridley, leatherback, and loggerhead sea turtles have been killed in pound net fisheries authorized by NWP 4.[55] Additionally, NMFS cited studies that estimated over 64,200 acres of seagrasses, "which provide important forage for the endangered West Indian manatee and which contain populations of the threatened Johnsons' seagrass, were

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[51] Email from Susan-Marie Stedman, NOAA Fisheries Office of Habitat Conservation (Dec. 8, 2010) (attached hereto).

[52] 2014 NMFS BiOp at 261.

[53] 2014 NMFS BiOp at 304. *See also* 2014 NMFS BiOp, Table 5.6 at 299.

[54] 2012 NMFS BiOp at 169.

[55] *Id.*

moderately or severely damaged by boat propellers in Florida partially as an indirect effect of boat ramps authorized by NWP 36."[56] NMFS also noted that between 1986 and 1992, watercraft collisions accounted for 37.3% of manatee deaths, where the cause of death could be traced back to the increased access to watercrafts.[57]

NMFS' 2012 BiOp documented several NWPs that authorize activities in areas overlapping with specific threatened or endangered species' habitat. NMFS in fact cited a 1998 study, which determined that "about 40% of area affected by Nationwide Permits resulted in adverse to substantially adverse effects to the habitat of endangered or threatened species."[58] However, the extent of the impacts remains unknown: NMFS found that reviews of CWA section 404 determined that "the Corps either did not take sufficient action to address cumulative impacts [], or it did not collect sufficient information to consider the cumulative impacts of the activities it authorized, particularly Nationwide Permits."[59]

Some further examples of impacts to imperiled species from NWP activities include the following, which confirm that the NWPs have more than minimal adverse environmental impacts and highlight the need for programmatic consultation:

- In listing the Sacramento River winter-run Chinook salmon, NMFS stated that bank stabilization and dredging permitted under NWPs has destroyed or degraded aquatic habitats on which the species depends for survival. 57 Fed. Reg. 36,626 (Aug. 14, 1992). NMFS also listed the Sacramento River winter-run Chinook salmon population in part due to USACE's failure to assess the cumulative impacts of activities authorized under CWA section 404, including the "additive effects of the continued development of waterfront, riverine, coastal, and wetland properties." 63 Fed. Reg. 11,482, 11,500 (Mar. 9, 1998).
- In proposing to list the Suisun thistle and soft bird's-beak, two endangered plants that occur in the tidal marsh habitats of the San Francisco Bay, FWS noted that USACE's NWP program is "inadequate" to protect these plants from development in the San Francisco Bay. 60 Fed. Reg. 31,000, 31,003 (June 12, 1995).
- In designating critical habitat for the southern DPS of the Pacific eulachon, NMFS stated that "actions of concern include dredge and fill, mining, diking, and bank stabilization activities authorized or conducted by the USACE." 76 Fed. Reg. 65,324, 65,346 (Oct. 20, 2011).
- In designating critical habitat for the southern population of green sturgeon, NMFS stated that "actions of concern include dredge and fill, mining, diking, and bank stabilization activities authorized or conducted by [USACE]." 74 Fed. Reg. 52,300, 52,341 (Oct. 9, 2009).

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[56] *Id*. at 176.

[57] *Id.*

[58] 2014 NMFS BiOp at 263.

[59] *Id.* at 262.

- In proposing to designate critical habitat for the Lower Columbia River population of coho salmon and the Puget Sound population of steelhead, NMFS stated that "actions of concern include dredging and filling, mining, diking, and bank stabilization activities authorized or conducted by the USACE." 78 Fed. Reg. 2726, 2747 (Jan. 14, 2013).
- Several of NMFS' designations of critical habitat acknowledge the potential impacts of Corps' permitted activities to the identified features important to the conservation of the subject species. *See e.g.* 63 Fed. Reg. 46693 (September 2, 1998); 70 Fed. Reg. 52630 (September 2, 2005); 78 Fed. Reg. 2725 (January 14, 2013); 64 Fed. Reg. 24049 (May 5, 1999); and 73 Fed. Reg. 7816 (February 11, 2008).

It is therefore unambiguous that the Corps' issuance of the NWP program "may affect," and is "likely to adversely affect" listed species and critical habitat, requiring consultation pursuant to ESA Section 7 as set forth further below.

c. National Environmental Policy Act

Congress enacted the National Environmental Policy Act ("NEPA") in 1969, directing all federal agencies to assess the environmental impact of proposed actions. The Council on Environmental Quality (CEQ) has promulgated uniform regulations to implement NEPA, which are binding on all federal agencies.[60]

The CEQ NEPA regulations were promulgated in 1971, became regulations in 1978, and have been governing federal agency compliance with NEPA in the decades since. However, CEQ recently implemented revisions to their NEPA regulations. *See* Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304 (July 16, 2020). These regulations are unlawful and already subject to four suits. *See* Compl. for Declaratory and Injunctive Relief, *California v. Council on Env't Quality*, No. 3:20-cv-06057 (N.D. Cal. Aug. 28, 2020); *Compl., Env't Just. Health All. v. Council on Env't Quality*, No 1:20-cv-06143 (S.D.N.Y. Aug. 6, 2020); *Compl., Wild Va. v. Council on Env't Quality*, No. 3:20-cv-00045-NKM (W.D. Va. July 29, 2020); Compl. for Declaratory and Injunctive Relief, *Compl., Env't Just. Health All. v. Council on Env't Quality*, No. 3:20-cv-05199 (N.D. Cal. July 29, 2020). As such, the Corps should continue to apply the CEQ's longstanding NEPA regulations and make effort to take a hard look at the impacts of the NWP reissuance through the preparation of an environmental impact statement.

The CEQ regulations implementing NEPA provide that "NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."[61] The purpose of this requirement is to "help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance

[60] 42 U.S.C. § 4342; 40 C.F.R. §§ 1500-1508.

[61] 40 C.F.R. § 1500.1(b).

the environment," as well as ensure that the public has information that allows it to question, understand, and, if necessary, challenge the decision made by the agency.[62]

To achieve these objectives, NEPA requires all federal agencies to prepare a "detailed statement" for any "major Federal actions significantly affecting the quality of the human environment."[63] This statement—the Environmental Impact Statement ("EIS")—must describe the environmental impacts of the proposed action.[64] The EIS is an "action-forcing device" that ensures NEPA's goals "are infused into the ongoing programs and actions" of the federal government.[65]

When it is not clear whether or not an action will significantly affect the environment (and thus require the preparation of an EIS), the regulations direct agencies to prepare a document known as an Environmental Assessment ("EA") in order to determine whether an EIS is required.[66] An EA is "a concise public document" that "[b]riefly provide[s] sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."[67] An EA "shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted."[68]

The determination as to whether an action is "significant" under NEPA turns on an analysis of several factors, based on the context and intensity of the impacts. Despite recent regulatory changes that have attempted to withdraw the CEQ regulations regarding "significance" (which are now being challenged in court), traditionally an agency looks to the NEPA "significance factors" found in 40 C.F.R. § 1508.27(b), which includes an analysis of the short- and long-term effects, and an evaluation of the impacts to public health and safety, the unique characteristics of the affected area (i.e. proximity to wetlands or other ecologically critical areas), the degree to which the effects are highly controversial or involve unknown risks, whether it is reasonable to anticipate a cumulatively significant impact on the environment, and the degree to which the action may affect threatened or endangered species.

If the agency concludes in an EA that a project may have significant environmental impacts, then it must prepare an EIS.[69] If an EA concludes that there are no potentially significant impacts to the environment, the federal agency must describe why the project's impacts are insignificant and issue a FONSI.[70] If the agency issues an EA/FONSI, it must make a convincing case for a

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[62] 40 C.F.R. § 1500.1

[63] 42 U.S.C. § 4332(2)(C).

[64] *Id.* § 4332(2)(C)(i), (ii).

[65] 40 C.F.R. § 1502.1.

[66] 40 C.F.R. §§ 1501.4(b), 1508.9.

[67] 40 C.F.R. § 1508.9(a).

[68] 40 C.F.R. § 1508.9(b).

[69] *Id.* § 1501.4.

[70] *Id.* § 1508.13.

finding of no significant impact on the environment, since the FONSI is crucial to a court's evaluation of whether the agency took the requisite hard look at the potential impacts of a project.

An EIS or EA must also take a "hard look" at the environmental effects of the proposed action by including a "full and fair discussion" of the "direct," "indirect," and "cumulative" effects, as well as a discussion of "[m]eans to mitigate adverse environmental impacts."[71] Direct impacts are "caused by the action and occur at the same time and place."[72] Indirect impacts are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[73] Cumulative impacts are the "incremental impact[s] of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[74] "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[75]

The EIS or EA must also inform federal agency decision-makers and the public of the "reasonable alternatives" that would "avoid or minimize adverse impacts or enhance the quality of the human environment."[76] This analysis of alternatives is the "heart" of the document—i.e., where the agency should "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options."[77] The EIS or EA must "[r]igorously explore and objectively evaluate all reasonable alternatives," including the alternative of "no action."[78]

II. COMMENTS ON THE REISSUANCE OF THE NWPS

A. The Corps' Failure to Consult with FWS and NMFS on the Reissuance of the NWPs Violates ESA Section 7

1. The Corps Must Complete Formal Programmatic ESA Section 7 Consultation on the Issuance of the NWPs

The Corps' issuance of the NWP program is an agency "action" within the meaning of the ESA because the NWPs constitutes *both* "permits" when used for individual projects—requiring project-specific consultation when NWPs are used for individual projects that "may affect" listed

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[71] *Id*. §§ 1502.1, 1502.16(a), (b) & (h), 1508.8, 1508.25(c). *See also Barnes v. U.S. Dep't of Transp.*, 655 F.3d 1124, 1331 (9th Cir. 2011).

[72] *Id.* § 1508.8(a).

[73] *Id*. § 1508.8(b).

[74] *Id.* § 1508.7.

[75] *Id.*

[76] *Id.* § 1502.1.

[77] *Id.* § 1502.14.

[78] *Id.* § 1502.14(a), (d).

species—and a "program" (i.e., a nationwide scheme for CWA compliance) requiring ESA review at the *programmatic* level when issued by the Corps.[79] Indeed, the ESA's implementing regulations specifically mandate consultation on "regulations" and "programs" irrespective of whether project-specific consultations might also occur:

> Any request for formal consultation may encompass, subject to the approval of the Director, a number of similar individual actions within a given geographical area, a programmatic consultation, or a segment of a comprehensive plan. The provision in this paragraph (c)(4) does not relieve the Federal agency of the requirements for considering the effects of the action or actions as a whole.[80]

In fact, when the Services issued regulations in 2015 defining framework programmatic consultations, they specifically used the Corps' NWP program as an example of a federal program requiring programmatic consultation, leaving no doubt that such consultation is mandatory.[81] The Service did so again when it amended the Section 7 consultation regulations in

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[79] "Action means all activities or *programs* of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:

> (a) actions intended to conserve listed species or their habitat;
>
> (b) the promulgation of regulations;
>
> (c) the granting of licenses, contracts, leases, easements, rights-of-way, *permits*, or grants-in-aid; or
>
> (d) actions directly or indirectly causing modifications to the land, water, or air.

50 C.F.R. § 402.02 (emphasis added).

[80] 50 C.F.R. § 402.14(c)(4)

[81] 80 Fed. Reg. at 26,835 ("Examples of Federal programs that provide such a framework include ... the U.S. Army Corps of Engineers' Nationwide Permit Program."). The Corps erroneously asserts that the Services identified the NWP program "as an example of a framework action at a national scale that can address ESA section 7 consultation requirements at a later time as appropriate…." 85 Fed. Reg. at 57,357–358. But this misstates and misinterprets the Services' statements—conflating the later issuances of site-specific incidental take statements with the need to carry out programmatic consultation over the framework established by the NWP program. *See* 80 Fed. Reg. at 26,836. As the Services noted:

> For purposes of a biological opinion on a framework programmatic action, the Services typically evaluate the potential implementation of the program as ''effects of the action.'' The Services can legitimately draw a distinction between ''effects'' of the program and the purpose of a biological opinion on that program and ''take'' and the purpose of an incidental take statement in the subsequent consultation on later actions carried out under the program.

2019, stating that programmatic consultation was appropriate for regional or national programs such as "a program that authorizes bank stabilization"[82]—activities covered by NWP 13. In such instances, the ESA "still requires a programmatic consultation to meet the requirements of section 7(a)(2)[,]" even if "[a]s specific projects are developed in the future, they are subject to site-specific stepped-down, or tiered consultations where incidental take is addressed."[83]

This clear requirement to conduct programmatic consultation—which the Corps unlawfully ignores—ensures that the Services analyze both the site-specific and cumulative impacts of programs and allows them to issue programmatic biological opinions establishing appropriate program-wide criteria for avoiding, minimizing, and mitigating adverse impacts.[84] This is precisely the vital role that programmatic consultation has performed when *past* iterations of the NWPs underwent the mandatory consultation process, as discussed above.

However, despite having lost twice on this issue in federal court, the Corps continues to insist that the NWPs need not undergo programmatic consultation because any projects potentially affecting listed species will be subject to project-specific review pursuant to General Condition 18. That argument wrongly ignores the purpose and function of programmatic consultation. The NWPs are used thousands of times per year, including for projects such as oil and gas pipelines that cross hundreds of waterways, often in close proximity to each other. Project-specific reviews cannot meaningfully address the *cumulative* impacts to listed species from all Nationwide Permit authorized activities. Absent review at the programmatic level, the Corps will not take into account the cumulative loss or contamination of habitat outside a project area, and so will not consider the cumulative effects of NWP-authorized activities across the full extent of the program. Such cumulative impacts—which may jeopardize the continued existence of species, as NMFS found in its 2012 Biological Opinion—can be analyzed *only* through programmatic review.[85]

Id. The Corps also notes that the Services' amended the definition of "effects of the action" in 2019 by eliminating the different categories of effects: direct, indirect, interrelated, and interdependent. Regulations for Interagency Cooperation, 84 Fed. Reg. 44,976 (Aug. 27, 2019). However, in doing so, the Services were clear that "effects of the action include all consequences of a proposed action, including consequences of any activities caused by the proposed action[,]" and that the Services "do not intend for these regulatory changes to alter how we analyze the effects of a proposed action." *Id.* at 44,97

[82] 84 Fed. Reg. at 44,992–93.

[83] *Id.* at 44,997. The Services also explicitly considered exempting all programmatic plans, such as the NWP program, from the duty to reinitiate consultation following the listing of a species or the designation of critical habitat, but declined to do so. *Id.* at 45,010.

[84] *See* 50 C.F.R. §§ 402.02, 402.14(g); *see also* 80 Fed. Reg. 26,832, 26,835-36 (May 11, 2015) (Services' regulations concerning programmatic consultations, which used the Corps' Nationwide Permit program as an example of a federal program subject to such consultation).

[85] *See Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1082 (9th Cir. 2015) ("[P]roject-specific consultations do not include a unit-wide analysis comparable in scope and scale to consultation at the programmatic level."); *Nat'l Wildlife Fed'n v. Brownlee*, 402 F. Supp.

And there is no doubt that the issuance of the NWPs "may affect" listed species. Indeed, as discussed above, the Corps itself acknowledges that thousands of ESA consultations are required for NWP-activities, and statements in the previous NMFS BiOps definitively established that the program affects listed species, clearly meeting the low threshold triggering the agency's Section 7 duties.

The Corps, however, has erroneously concluded that the issuance of the NWPs will have "no effect" on species protected under the ESA, averring that:

> Thus, because no NWP can or does authorize an activity that may affect a listed species or critical habitat absent an activity-specific ESA section 7 consultation or applicable regional programmatic ESA section 7 consultation, and because any activity that may affect a listed species or critical habitat must undergo an activity-specific consultation or be in compliance with a regional programmatic ESA section 7 consultation before the district engineer can verify that the activity is authorized by NWP, the issuance or reissuance of NWPs has ''no effect'' on listed species or critical habitat. Accordingly, the action being ''authorized'' by the Corps (*i.e.,* the issuance or re-issuance of the NWPs themselves) has no effect on listed species or critical habitat.[86]

This argument, however, mistakes the trees for the forest and patently violates the ESA and its implementing regulations. The ESA requires the Corps to "insure that *any action* authorized, funded, or carried out by such agency … is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat."[87] "Action" includes the authorization of *programs*,[88] and the Corps must therefore engage in formal consultation because the NWP program "may affect listed species or critical habitat."[89] The ESA and its implementing regulations clearly require the Corps to ensure that the NWP program, writ large, does not jeopardize listed species or adversely modify their critical habitat. Indeed, such consultation "allows for a broad- scale examination of a program's potential impacts on a listed species and its designated critical habitat—an examination that is not as readily conducted when the later, action-specific consultation occurs on a subsequent action developed under the program framework."[90]

The fact that project-specific consultations *may* occur for NWP-authorized activities does not mean that the issuance of the NWP program itself does not meet the ESA's low "may affect" threshold requiring programmatic consultation. Indeed, the ESA regulations specifically

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2d 1, 3, 9-11 (D.D.C. 2005) (requiring consultation on 2002 issuance of Nationwide Permit 12 to avoid piecemeal destruction of species and habitat).

[86] 85 Fed. Reg. at 57,359.

[87] 16 U.S.C. § 1536(a)(2).

[88] 50 C.F.R. § 402.02.

[89] 50 CFR 402.14(a).

[90] 80 Fed. Reg. at 26,836.

contemplate that programs that "may affect" listed species must be subject to programmatic consultations even though individual actions taken under such programs may necessitate project-specific consultation. The regulations specify that programmatic consultations must not provide for incidental take, but rather should assess how the program will track impacts – particularly cumulative impacts – to prevent jeopardy.[91] Incidental take is then approved at the project-specific level through consultation on individual actions. If the Corps' position were correct, there would *never* be any programmatic consultations despite the clear requirement in the regulations, since all programmatic consultations also require project-specific review for actions undertaken pursuant to the program. Therefore, it is readily apparent that project-specific consultation cannot provide a basis for avoiding programmatic review. The Corps' "no effect" determination in reliance on project-specific review is entirely arbitrary and capricious, particularly here where it is clear from the prior consultations with NMFS that the NWP program not only may affect listed species, but can jeopardize their continued existence absent specific measures implemented at the programmatic level.

Importantly, the Corps' erroneous "no effect" argument was squarely foreclosed by the D.C. District Court in *National Wildlife Federation v. Brownlee*, 402 F. Supp. 2d 1 (D.C. 2005), where the court specifically held that "overall consultation for the NWPs is necessary to avoid piece-meal destruction of [] habitat through failure to make a cumulative analysis of the program as a whole." More recently, this same argument was also rejected by the Montana District Court regarding NWP 12, as set forth above.

The Corps' reliance on regional consultations is also misplaced. Not only is there no guarantee that these will occur for all regions (and not all regions have done such consultation in the past), but regional consultations are still inadequate because they cannot address the cumulative impacts of the program as a whole, as the ESA requires.[92] Indeed, such regional consultations cannot even properly consider cumulative impacts to the many listed species, such as migratory birds, that move between regions.

It is therefore unequivocal that project-specific consultation does not relieve the Corps of its duty to consult on the issuance of the NWPs at the programmatic level.[93] While project-specific consultation is clearly required for any project using a NWP that may affect listed species, the Corps cannot justify a "no effect" determination for the issuance of the NWP program based on that later, site-specific consultation. Relying only on site-specific consultation fails to capture

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[91] *See* 80 Fed. Reg. 26,832.

[92] 50 C.F.R. § 402.14(c).

[93] While formal programmatic consultation is required, it would be improper and unlawful for any incidental take statement to be issued as part of the Services' biological opinion. Programmatic biological opinions are not intended to provide for incidental take. *See Gifford Pinchot Task Force v.USFWS,* 378 F.3d 1059, 1067–68 (9th Cir. 2004) *am. by* 387 F.3d 968 (9th Cir. 2004); *Forest Serv. Employees for Envtl. Ethics*, 726 F. Supp. 2d at 1224–1225; *W. Watersheds Project v. BLM*, 552 F. Supp. 2d 1113, 1139 (D. Nev. 2008); *Swan View Coal., Inc. v. Turner,* 824 F. Supp. 923, 934–35 (D. Mont. 1992). Incidental take may only be authorized, if at all, via a Section 10 permit or Section 7 project-specific consultation.

the cumulative impacts that the NWP program may have (and is having) on listed species. The only way to ensure that the issuance of the NWPs will not jeopardize listed species is to consult nationally – otherwise the Services are not provided the opportunity to identify which NWPs may be problematic for listed species, and to provide reasonable and prudent measures to minimize harm, such as measures to ensure that the Corps gathers and analyzes sufficient data to prevent jeopardy to listed species.

Indeed, the 2012 determination by NMFS that the NWP program *was* jeopardizing species, and its requirement that the Corps abide by additional measures at the national level in the 2014 BiOp to prevent such jeopardy, forecloses any argument that programmatic consultation is unnecessary to safeguard imperiled species. NMFS was only able make a no-jeopardy determination in 2014 *after* the Corps agreed to adopt those additional protective measures at the national level.[94] This reinforces the critical importance of Section 7 compliance for the 2020 iteration of the NWPs. Since the Corps refused to consult on the 2017 NWP program, there has been no effort to assess the efficacy of the measures set forth in the 2014 BiOp. And the Corps has proposed changes that could dramatically increase impacts to listed species, such as removing the 300-linear foot loss limit for several NWPs (discussed further below). Without consultation on the 2020 iteration of the NWPs, there is no legal or factual basis for finding that proposed program is sufficient to satisfy the Corps' duty to prevent jeopardy under Section 7. This is especially so given that annual NWP usage has increased drastically since 2012. For example, the use of NWP 12 has increased by more than 77 percent since 2012 and the Corps only started using the permit to approve massive oil pipelines relatively recently. Consequently, any prior analysis on an earlier permit is now outdated and cannot substitute for Section 7 consultation on the version of the NWPs that is now proposed to be in effect for the next 5 years—particularly given the ESA's "best available" science mandate for Section 7.[95] Consultation on the proposed NWPs is vital to ensure that species are not being jeopardized and that critical habitats are not being destroyed in piecemeal fashion.

NWPs are used to conduct thousands of activities each year in areas where listed species may be impacted. According to the Corps, during the period of March 19, 2012, to September 30, 2016, Corps districts conducted 1,402 formal consultations and 9,302 informal consultations for NWP activities under ESA section 7, and each year NWP activities are covered by an average of more than 4,300 formal, informal, and programmatic ESA section 7 consultations with the FWS and/or NMFS.[96] This highlights the fact that project-specific consultation is not able to capture the

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[94] As the Corps itself has acknowledged, programmatic consultation provides "tools that districts can use to better address potential impacts to the endangered and threatened species." 72 Fed. Reg. 11,092, 11,096 (March 12, 2007); *see also* Coal. Br. 34 (discussing tools and measures—such as data-collection or time-of-year restrictions—for mitigating impacts to listed species at the programmatic level).

[95] 16 U.S.C. § 1536(a)(2).

[96] See also 81 Fed. Reg. at 35,194 ("During the period of March 19, 2012, to December 14, 2015, Corps districts conducted 1,188 formal consultations and 7,327 informal consultations for NWP activities under ESA section 7. During that time period, the Corps also used regional programmatic consultations for 7,679 NWP verifications to comply with ESA section 7.

cumulative impacts to listed species from the thousands of NWP-authorized activities that affect listed species each year.[97]

In sum, programmatic review of the NWP program provides the only way to avoid piecemeal destruction of species and habitat, and the Corps cannot circumvent its ESA Section 7 obligations by relying on project-level review and regional conditions to justify a "no effect" determination for the NWP program.

2. NWP General Condition 18 Unlawfully Delegates the Corps' ESA Duties to Permittees

The Corps' reliance on NWP General Condition 18, which requires permittees to submit a PCN to the Corps if NWP activities will take place in habitat for listed species, is insufficient to ensure that project-specific consultations will occur where listed species may be affected by NWP-authorized activities, because it unlawfully delegates the initial effect determination to the permittee.

NWP General Condition 18 requires project proponents to submit PCNs if listed species "might be" affected—which the Corps claims to be more inclusive than a "may affect" trigger, but seems to make little difference.[98] This, however, unlawfully delegates the initial effects determination to the permittee, which can easily result in NWP activities taking place that "may affect" listed species absent the required ESA consultation. Indeed, the Montana District Court specifically held that the Corps failed to ensure that project-specific consultations will occur because it improperly delegated the legal duty to make an "initial effect determination" to non-

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Therefore, each year NWP activities are covered by an average of more than 4,300 formal, informal, and programmatic ESA section 7 consultations with the FWS and/or NMFS.").

[97] According to NMFS, "within any given year, 29 to 34 thousand actions could be authorized resulting in about 34 to 43 thousand impacts requiring 37 to 62 hundred mitigation efforts." 2014 NMFS BiOp at 286.

[98] Any claim that the Corps can avoid programmatic nationwide consultations because of its "might affect" threshold in its regulations at 33 C.F.R. § 330.4(f)(2) is entirely without merit. The preamble to the Corps' regulations at the time they were first promulgated with that language provide absolutely no discussion of the use of the word "might" having a meaning different than "may," and strongly suggest that the use of "might" in 1991 was nothing more than a fluke or accidental choice in verb tense. *See*, *Proposal To Amend Nationwide Permit Program Regulations and Issue, Reissue, and Modify Nationwide Permits*, 56 Fed. Reg. 14,598 (Apr. 10, 1991). The Corps' claim in the 2020 proposed rule is nothing more than an arbitrary, *post hoc* justification to avoid the legal requirements of the Act. Commenters note that this provision may also lead to confusion, since "might affect" is not defined within the ESA or its implementing regulations. Therefore, the Corps should consider whether using this new term is going to cause unnecessary confusion.

federal permittees, whereas ESA Section 7(a)(2) requires federal agencies to make that determination.[99] The Corps inexplicably ignores that decision.

The Corps' reliance on permittees means that if those parties fail to notify the Corps—whether because they do not have the required knowledge, experience, or expertise and failed to do their due diligence, or they purposefully avoid the reporting requirement to circumvent the costs and delays associated with the ESA consultation process—the Corps would then have no knowledge that impacts to listed species were occurring and thus no basis for consulting. And even though such activity would be unlawful, if the Corps remains unaware because no notice was provided, then no consultation would occur, in violation of the ESA. And even if the Corps somehow learns of this illicit activity after the fact, it may be too late to prevent harm—or even jeopardy—to listed species, and damages are likely to be insufficient to remedy such impacts.[100] Therefore, the scheme for ESA compliance that the Corps has created through General Condition 18 is insufficient, and an unlawful abdication of the clear *duty* that all federal agencies have to *prioritize* the protection of listed species through the *mandatory* Section 7 consultation process for all agency actions that may affect listed species.[101]

In fact, in the 2014 BiOp NMFS was highly skeptical of the effectiveness of the Corps' PCN requirement, stating that:

> The limited review schedules for NWPs almost certainly preclude project managers from critically reviewing PCNs and verifying whether the basic information on project location, timing, and impacts contained in the notifications is correct or whether the conclusions about [listed] species and … critical habitat contained in the notifications were well-reasoned and had been based on the best scientific and commercial data available, as required by section 7(a)(2) of the ESA.[102]

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[99] *Northern Plains Res. Council v. United States Army Corps of Eng'rs*, 2020 U.S. Dist. LEXIS 66745, *22 (Dist. Mont., April 15, 2020) ("The Corps must determine "at the earliest possible time" whether its actions "may affect listed species or critical habitat.") (citing 50 C.F.R. § 402.14(a)); 16 U.S.C. § 1536(a)(2); *cf. Selkirk Conservation All. v. Forsgren*, 336 F.3d 944, 955 (9th Cir. 2003) ("Federal agencies cannot delegate the protection of the environment to public-private accords."); *cf. Gerber v. Norton*, 294 F.3d 173, 184-6 (D.C. Cir. 2002) (FWS may not delegate species protection obligations to a private permit applicant).

[100] Even when a PCN is submitted, that does not ensure that the Corps actually undertakes project-specific consultation where necessary, since NMFS found in its most recent review of the NWP program that "evidence suggests that the Corps has historically not reviewed significant percentages of PCNs to insure they are complete and the information is correct." 2014 NMFS BiOp at 269. NMFS further states that "[t]he Corps historically has not routinely conducted field inspections of PCNs to verify that the information contained in those notifications captures the activity and impacts that actually occurred." *Id.*

[101] *See Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 173 (1978) ("One would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the [ESA].").

[102] 2014 BiOp at 198.

And since several of the NWPs do not automatically require the filing of a PCN and may proceed without any notice to the Corps whatsoever, there is the very real potential for impacts to listed species—including cumulative impacts—to be overlooked by the Corps.[103] General Condition 18 is therefore patently insufficient to meet the Corps' ESA duties. As discussed further below, Commenters urge the Corps to require PCNs for all NWPs, and to create a protocol to ensure that the Corps is in fact consulting with the Services whenever listed species may be affected.

3. The NWPs may not be reissued until the Corps complies with the ESA

The Corps may not reissue or authorize the NWPs until it fulfills its obligation to consult under ESA Section 7. Section 7(d) of the ESA provides:

> After initiation of consultation required under subsection (a)(2) of this section, the Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection(a)(2) of this section.[104]

Congress enacted Section 7(d) to prevent Federal agencies from 'steamrolling' activity in order to secure completion of projects regardless of their impact on endangered species. Section 7(d) clarifies the requirements of Section 7(a)(2) in order to ensure that the status quo will be maintained during the consultation process.

Since discharge and fill activities under the NWP program "may affect" and are "likely to adversely affect" listed species, authorization of the NWPs may not be finalized absent the completion of formal programmatic ESA Section 7 consultation. Therefore, until the Corps completes formal consultation on the NWP program, no NWPs may be issued. Any argument that this would cause an undue burden on the agency or permittees is unreasonable, given that the Corps was put on notice in 2005 when the court in *National Wildlife Federation v. Brownlee*, 402 F. Supp. 2d 1 (D.C. 2005), specifically held that "overall consultation for the NWPs is necessary to avoid piece-meal destruction of [] habitat through failure to make a cumulative analysis of the program as a whole," which was confirmed more recently in *Northern Plains Resource Council et al. v. U.S. Army Corps of Engineers*, No. 4:19-cv-00044 (D. Mont.), appeal pending, No. 20-35412 (9th Cir.), where the court found that the Corps was "well-aware" of the need to consult on the programmatic level, and yet erroneously relied on project-specific consultations to meet its ESA duties, as it continues to do here, in direct violation of the ESA.

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[103] *Id*. at 262 ("The National Research Council's review of wetland compensatory mitigation (NRC 2001) stated that Nationwide Permits that do not require pre-construction notification 'make it difficult for the Corps to determine overall program impacts.'").

[104] 16 U.S.C. § 1536(d); 50 C.F.R. § 402.09.

B. The Proposed NWPs Will Have More Than Minimal Cumulative Adverse Effects on the Environment in Violation of the CWA

Even though CWA Section 404 states that general permits may only be issued for activities that "will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment," the Corps has failed to keep adequate records to ensure that this threshold is being met for the NWPs. Absent such records, or an adequate analysis of the cumulative and total impacts of the NWPs, the Corps cannot determine that their issuance will have only minimal cumulative adverse effect on the environment. Nor could they as the NWP program permits activities that have significant (i.e. much more than minimal) direct and cumulative environmental impacts, from activities such as such as oil and gas pipelines permitted pursuant to NWP 12, surface mining activities under NWP 21, and aquaculture under NWP 48 among many others. These and other such NWPs should not be allowed to continue, but rather such projects must be subject to the individual 404 permit requirements, as discussed further below.

The Corps has simply failed to ensure that the NWPs do not cause more than minimal direct and cumulative adverse impacts, and in fact the agency has gone out of its way to allow activities that clearly have significant impacts to still proceed under a NWP. For example, under NWP 12 the Corps treats numerous water crossings along a proposed linear utility project—which often number in the hundreds or even thousands, with several in close proximity—as many "single and complete projects" that each qualify separately under the NWP. There is no limit to the total number of times a single pipeline can use NWP 12, nor is there a maximum number of acres a pipeline can impact while still qualifying for NWP 12. The result is that NWP 12 can permit projects with an unlimited level of impacts, rather than limiting its applicability to activities with only "minimal" impacts, in clear violation of the CWA.

Furthermore, the Corps has failed to show that it even has a process in place to keep track of the actual number of activities authorized and the amount of acreage impacted by NWP activities – therefore, the full extent of cumulative harm from NWPs has never been fully considered. An FWS regional office has in fact stated that "this lack of data limits our ability to conduct a detailed analysis of the cumulative impacts associated with each NWP, much less the program as a whole."[105]

The NWPs authorize activities with a wide range of impacts to the Nation's waters and wetlands. Indeed, a significant percentage of the construction activities that take place each year in wetlands are authorized by NWPs, and it is well-documented that wetland habitat has significantly declined and become increasingly impaired, calling into question whether impacts associated with NWPs truly are minimal.

NMFS in fact previously found that NWPs represent up to 80% of all USACE authorized activities.[106] Since 1982, NWPs have authorized an average of 36,613 discharges of dredged or

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[105] FWS Regional Offices, *Incoming Regional comments on 2/16/11 NWP proposal – ESA issues* (Mar. 25, 2011) (attached hereto).

[106] 2012 NMFS BiOp at 155.

fill material per year, and the 2020 proposed NWPs states that the Corps expects 32,386 non-PCN activities per year and 32,523 NWP activities per year that require a PCN, which totals 64,909 NWP activities per year, or 324,545 over the 5-year period. In 2012, NMFS estimated that NWPs had authorized at least 910,740 discharges of dredged or fill material. That, however, was a minimum estimate, and the actual number is likely substantially higher because it did not account for the number of authorizations that did not require permittees to notify the Corps with a pre-construction notice (PCN), and does not include NWP discharges since 2012.[107]

The Corps attempts to show that it meets the requirements of Section 404(e) through preparation of "decision documents" and/or "supplemental decision documents" (collectively "Decision Documents") for the NWPs. Accordingly, the data and other information in the Decision Documents *should* provide support for the Corps' conclusion that the NWPs are "similar in nature" and "result in minimal individual and cumulative adverse environmental effects." However, the information provided by the Corps is inadequate, and it remains unclear how the Corps could possibly claim that the NWP program has not resulted in significant environmental harm.

Indeed, the NWP Decision Documents fail to provide specific data to support the Corps' contention that the effects of the authorized activities are actually minimal, and fail to "set forth in writing an *evaluation* of the potential individual and cumulative impacts of the category of activities to be regulated," in violation of the CWA.[108] The Corps' has also failed to document "potential short-term or long-term effects" of the NWPs in violation of the CWA.[109] Further, the Corps has failed to consider the cumulative effects of the NWPs by properly estimating "the number of individual discharge activities likely to be regulated" by the NWP program.[110]

In fact, the on-the-ground reality is that this program does cause significant degradation, through increased sedimentation and contamination of waterways and habitats relied on by species, including federally protected species. Since 1982, over 150,000 acres of wetlands have been impacted by NWP activities, and as NMFS has noted when reviewing the NWP program, several investigations have concluded that "the Corps appears to have evaluated CWA section 404 permits on an individual basis without adequate consideration of cumulative impacts at watershed or regional spatial scales, and that there have been 'large losses in available habitat

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[107] *Id*. The Corps estimated that NWPs would authorize at least 165,544 discharges of dredged or fill material over the current five-year (2012-2017) duration of the NWPs. *See also* 2014 NMFS BiOp at 255 ("Because many Nationwide Permits have historically authorized discharges of dredged or fill material into waters of the United States and other activities without requiring permittees to provide any information to the Corps, we assume that the Nationwide Permits have authorized a substantial, but unknown number of activities. As a result, our estimates of the number of activities authorized by the Nationwide Permits and the number of acres impacted by those activities may underestimate the actual number of activities that have occurred in the past.").

[108] Clean Water Act section 404(e) and 404(b)(1)

[109] *Id.*

[110] *Id.*

functionality due to a concentration of many projects' which may seriously affect species inhabiting the area."[111]

The Congressional Research Service, in a 2012 report to Congress, detailed many of the concerns that environmentalists, as well as EPA and the Services, have raised regarding the significant impacts of the NWP program. The report (attached hereto) explains that concerns exist because the Corps "lacks an effective tracking and monitoring system for evaluating impacts."[112] Moreover, the report found that the Corps' assumptions regarding the cumulative impacts of the NWP program are flawed, due to the lack of specific information on the number of NWPs used and the amount of wetland acreage affected:

> Even more troubling is the notion that the Corps uses these flawed permit numbers to arrive at the acres of wetlands and waters impacted, and for the presumed use and impact of the proposed NWPs. Again, we can only assume that the Corps has averaged the impacts associated with some subset of known nationwide permit applications. This type of statistical mean does not provide us with the actual impact to waters of the United States, nor can it be used as a basis for predicting the future cumulative impacts of the proposed NWPs.[113]

Concerns raised by scientists, as well as FWS, NMFS and EPA agency staff, regarding the cumulative impacts of the NWP program show that the Corps has failed to ensure that the NWP program complies with CWA Section 404(e):

- FWS staff have stated that the term "minimal" is problematic, since the Corps "does not acknowledge the additive effects of these actions at the program level," and that the additive effects of NWPs at program level are severely degrading baseline and listed species' status over time.[114] FWS staff have further stated concerns over the Corps' data collection on the NWP program, maintaining that the Corps' "databases are mostly empty and are nearly useless for quantifying additive impacts."[115]
- The EPA has expressed concerns regarding the "the extent to which many of the proposed NWPs allow for waivers of environmental protections." According to EPA, "such discretion without any limits could lead to impacts that may not be minimal individually, and/or cumulatively."[116]

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[111] 2014 NMFS BiOp at 262.

[112] Congressional Research Service, The Army Corps of Engineers' Nationwide Permits: Issues and Regulatory Development at 1 (Jan. 30, 2012).

[113] *Id.* at 13.

[114] Email from Carolyn R. Scafidi, ESA Section 7 Policy Coordinator Washington Fish and Wildlife Office (Dec. 9, 2010) (attached hereto).

[115] Email from David Wright (Feb. 8, 2000) (attached hereto).

[116] Letter from Jeffrey Lapp, EPA to William Walker, Army Corps (Apr. 4, 2011) (attached hereto).

- NMFS staff have raised concerns about the Corps' cumulative impacts analysis, stating that "There is no process for a systematic evaluation of the cumulative effects - just the Corps assertion that their District Engineers 'know' when cumulative effects are a problem and take appropriate action."[117]

Not only must the Corps ensure that the NWP program will have only minimal direct and cumulative adverse effect on the environment, but the CWA 404(b)(1) Guidelines at Section 230.10(c) provide that "no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States." As set forth herein, the Corps has permitted (and will continue to permit) not only significant direct and cumulative adverse impacts to the Nation's waters, but indeed undue degradation of such waters by permitting destructive NWP activities and failing to track the harm to ensure that waterways are protected. The NWP program is therefore in clear violation of CWA Section 404.

C. The Corps Must Prepare an EIS

The Corps is proposing to reauthorize a national program for streamlined compliance with the CWA for dredge and fill activities in waterways and wetlands—activities that have proven to result in significant harm to the environment, including to endangered species—without producing an EIS to fully consider the environmental impacts of the program. As set forth above, even though the NWP program is intended to have only minimal impacts on the environment, the Corps has failed to ensure that this is the case, and the evidence suggests that the program is causing significant environmental harm. Therefore, the Corps' failure to produce an EIS is arbitrary, capricious, and in clear violation of NEPA.

NWP-authorized activities involve significant unique or unknown risks and there is a history of degradation and harm from NWP-authorized activities, which the Corps has failed to adequately track. Under these circumstances, an EA cannot suffice. Indeed, an EA aims simply to identify (and assess the "significance" of) potential impacts on the environment to see whether an EIS is needed, but it is not intended to provide the full analysis – the "hard look" – that NEPA requires for major federal actions with significant environmental effects.[118] Where, as here, there clearly are significant effects, officials must make their decision "in light of an EIS."[119]

Courts have specifically held that under NEPA and its implementing regulations, courts "cannot accept [an EA] as a *substitute* for an EIS -- despite the time, effort, and analysis that went into their production -- because an EA and an EIS serve very different purposes."[120] "To treat an EA as if it were an EIS would confuse these different roles, to the point where neither the agency nor those outside it could be certain that the government fully recognized and took proper

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[117] Email from Susan-Marie Stedman, Office of Habitat Conservation NOAA Fisheries and National Fish Habitat Board staff (Dec. 8, 2010) (attached hereto).

[118] *Id.*

[119] *Id.* (noting that "the purpose of an EA is simply to help the agencies decide if an EIS is needed").

[120] *Sierra Club v. Marsh*, 769 F.2d 868, 875 (1st Cir. 1985).

account of environmental effects in making a decision with a likely significant impact on the environment."[121]

The difference between an EA and an EIS is important here, because as discussed above the Corps does not track the actual impacts of the NWP program. Moreover, since the Corps has repeatedly relied on EAs to reauthorize the NWP program, it has never fully considered the impacts of the program on the environment in any meaningful way, as required by the CWA and NEPA. Completing an EIS is therefore vital to ensuring that the Corps complies with bedrock environmental legal obligations that protect our Nation's waters and the people and wildlife that depend on them.

Since 1979 the CEQ NEPA regulations have required that the "significance" of an agency action be evaluated through a consideration of the context and intensity of the proposed action. Despite recent regulatory changes that have attempted to withdraw the CEQ regulations regarding "significance" (which are now being challenged in court), the impacts of a project on the environment must still be deemed relevant to whether the project is "significant" for purposes of NEPA. Where, as here, the impacts to sensitive habitats such as streams and wetlands, which are relied on by listed species, are at the very heart of the agency action, a full EIS is required.

Indeed, the NEPA regulations have always required agencies to consider ten "significance factors" in determining whether a federal action may have a significant impact, thus requiring an EIS.[122] Among other factors, agencies consider the beneficial and adverse impacts of the action, the effect on public health and safety, unique characteristics of the geographic area impacted (such as park lands, wetlands, or ecologically critical areas), the degree to which possible effects are highly controversial, uncertain, or involve unique or unknown risks, cumulatively significant effects, whether the proposed action will violate any laws or standards of environmental protection, and whether it may adversely affect an endangered or threatened species.[123] If the agency's action may be environmentally significant according to any of the criteria, the agency must prepare an EIS.

The issuance of the NWPs not only has the potential for significant adverse environmental impacts, but those impacts occur in rivers, streams and wetlands, which are essential habitat areas with unique characteristics that are easy to destroy, and very difficult to replace. NMFS even found that several investigations have concluded that "the Corps appears to have evaluated CWA section 404 permits on an individual basis without adequate consideration of cumulative impacts at watershed or regional spatial scales, and that there have been 'large losses in available habitat functionality due to a concentration of many projects' which may seriously affect species inhabiting the area," suggesting that there remain unknown and uncertain risks.[124] Furthermore, issuance of the NWPs would certainly have cumulative impacts, which even the Corps has admitted—and according to NMFS those impacts may adversely affect listed species, as set forth

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[121] *Id.*; *See also Massachusetts v. Watt*, 716 F.2d 946, 951 (1st Cir. 1983).

[122] 40 C.F.R. § 1508.27.

[123] *Id.*

[124] 2014 NMFS BiOp at 262.

above. It remains entirely unclear why the Corps believes that a "national-scale cumulative impact assessment in accordance with the National Environmental Policy Act definition of 'cumulative impact' at 40 CFR part 1508.7" is warranted, yet apparently believes that it does not need to conduct a full EIS, even though an EIS is required when an action would have cumulatively significant effects pursuant to 40 C.F.R. § 1508.27. That is simply an illogical, and unlawful, position.

The Corps makes a half-hearted attempt to appear in compliance with NEPA, claiming that "Each national NWP decision document includes a national-scale NEPA cumulative effects analysis;"[125] However, the Corps does not actually provide an analysis of cumulative impacts in the Decision Document EAs, nor could it, since that is not the purpose of an EA. And a close look at the discussion of cumulative impacts provided in the Decision Documents shows that it is vapid boilerplate that is repeated nearly verbatim for each NWP, and which provides no actual analysis of cumulative impacts but merely provides general information about the status of jurisdictional waters (i.e. how many acres and miles of wetlands and stream are in the U.S.); a superficial discussion of the quality of those waters; a general discussion of aquatic resources and functions; a broad (and frankly useless) description of activities that affect aquatic ecosystems; and a discussion of the effects of the NWP that is not NWP-specific and provides no insight into the actual environmental impacts that are expected over the 5-year period. Importantly, there is no attempt to use any information on the past use of each NWP to determine the potential cumulative impacts of this iteration of the NWPs.

There is simply no material analysis of the actual cumulative impacts, but rather a series of generalized statements that provide nothing to suggest that such impacts will be "minimal" as the CWA requires, other than unsupported statement along with repetitive arguments regarding the "considerable challenges" in characterizing the potential environmental consequences of the issuance of the NWPs at a national scale. This is not enough to satisfy NEPA. *See Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 864-66 (9th Cir. 2005) (holding the agency failed to take a "hard look" where its assessment included only conclusory assertions and did not discuss contrary evidence); *Alaska Wilderness League v. Kempthorne*, 548 F.3d 815, 831 (9th Cir. 2008) ("This is the type of 'conclusory assertion' that is disfavored by this court because the agency has not provided any scientific data that justifies this position."); *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1213 (9th Cir. 1998) ("[G]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.").

Notably, the Decision Documents aver that "the NWPs provide mechanisms for more robust analyses at the site-specific scale;" however, this is a hollow statement, since the Corps does not undertake a NEPA analysis at the project-specific level, and such review cannot consider the cumulative impacts of the NWPs since such review is limited to the project itself.

Furthermore, it does not appear that the Corps' attempt at a "cumulative impact assessment" even considers the full cumulative impacts of the NWPs. Pursuant to 40 C.F.R. § 1508.7, cumulative effects include "the impact on the environment which results from the incremental

[125] 85 Fed. Reg. at 57,355.

impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions." The Corps, however, has stated that its analysis of the "cumulative adverse effect on the environment" refers to the "collective direct and indirect adverse environmental effects caused by the all the activities authorized by a particular NWP during the time period that NWP is in effect (a period of no more than 5 years) in a specific geographic region."[126] It therefore appears that the Corps does not intend to consider past and reasonably foreseeable future actions (i.e. impacts outside of the 5-year NWP period) as required by NEPA.[127] This violates not only NEPA by unlawfully segmenting the impacts of the NWP program into five-year increments,[128] it sets a dangerous precedent that allows the Corps to disregard the actual, long-term cumulative impacts that the NWPs have on the environment.

Regardless, the significant environmental impacts from the issuance of the NWPs must be fully analyzed in an EIS, rather than some agency-derived alternative review process that the Corps provides in the Decision Documents.[129] The Corps' promise to conduct a "cumulative impact assessment" in accordance with the NEPA definition of "cumulative impact" is perhaps well-intentioned, but entirely misplaced. As set forth above, NEPA requires a specific process, and thereby allows for public participation and assurances that the environmental impacts of agency actions are fully considered. That the Corps' review in an EA would be "in accordance" with the definition of "cumulative impact" is insufficient to meet the goals and requirements of NEPA.

The Corps' failure to comply with NEPA when it issues the NWPs is particularly problematic because the Corps does not analyze cumulative impacts of NWP-authorized activities at the project-specific level. In fact, the Corps does not prepare any NEPA analysis at all at the project-specific level, as it purports to fully discharge its NEPA obligations upon issuance of the NWPs. The Corps therefore cannot defer any portions of its cumulative effects analysis to a later stage of review. The Corps states that since the "required NEPA cumulative effects and 404(b)(1) Guidelines cumulative effects analyses are conducted by Corps Headquarters in its decision documents for the issuance of the NWPs, district engineers do not need to do comprehensive cumulative effects analyses for NWP verifications." 85 Fed. Reg. 57,301. But

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[126] 85 Fed. Reg. 57,300 (emphasis added).

[127] The CEQ regulations require that agencies "[s]tudy, develop, and describe alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources," even where an EIS is not required. 40 C.F.R. § 1507.2(d).

[128] *See One Thousand Friends of Iowa v. Mineta,* 364 F.3d 890, 894 (8th Cir. 2004) (finding that segmentation of NEPA analysis unlawful); *Kern v. U.S. Bureau of Land Mgmt*., 284 F.3d 1062, 1075 (9th Cir. 2002) ("A cumulative impact analysis 'must be more than perfunctory; it must provide 'a useful analysis of the cumulative impacts of past, present, and future projects.'").

[129] *Defenders of Wildlife v. Ballard*, 73 F. Supp. 2d 1094, 1106-15 (D. Ariz. 1999) (enjoining the Corps from authorizing activity under NWPs 13, 14, and 26 until they conducted a regionally based, programmatic impact analysis, holding that "as a matter of law, authorizations under the challenged NWPs violate NEPA mandates until Defendants conduct a regionally based, programmatic impact analysis").

since the Corps never provides an adequate analysis of cumulative impacts in the Decision Documents, the Corps never truly evaluates the adverse environmental impacts of the NWPs, in violation of both NEPA and the CWA.

1. The Corps Must Consider the Impacts of Climate Change

The Corps must also take into consideration the impacts of climate change when analyzing the cumulative impacts of the NWPs in an EIS. Climate change is exacerbating, and will continue to exacerbate, the threats to waters, wetlands and the species that rely on them.[130] Climate change cannot simply be addressed on a project-by-project basis when making land management decisions. Rather, the cumulative impacts of stream and wetland loss from NWP activities must be considered in the context of such loss from the current global climate catastrophe.

Climate change has the potential to completely alter the structure and function of the Nation's waters, particularly estuaries and coastal wetlands. Sea level rise threatens to inundate many coastal wetlands, with little room for species to move inland because of coastal development. Already sharply reduced in acreage, coastal freshwater wetlands are especially vulnerable to rising sea levels.

The geographic ranges of many aquatic and wetland species are determined by temperature. Average global surface temperatures are projected to increase by 1.5 to 5.8 degrees Celsius by 2100, but increases may be higher in the United States. Projected increases in mean temperature in the United States are expected to greatly disrupt present patterns of plant and animal distributions in freshwater ecosystems and coastal wetlands. For example, cold-water fish like trout and salmon are projected to disappear from large portions of their current geographic range in the continental United States, when warming causes water temperature to exceed their thermal tolerance limits. Species that are isolated in habitats near thermal tolerance limits (like fish in Great Plains streams) or that occupy rare and vulnerable habitats (like alpine wetlands) are likely to become extinct in the United States in the near future.[131]

The productivity of inland freshwater and coastal wetland ecosystems also will be significantly altered by increases in water temperatures. Warmer waters are naturally more productive, but for species that rely on these areas this may be undesirable or even harmful. For example, the blooms of "nuisance" algae that occur in many lakes during warm, nutrient-rich periods can be

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[130] *See i.e.* NMFS 2014 BiOp at Section 3.3 (noting, for example, that "When combined with changes in coastal habitats and ocean currents, the future climates that are forecast place sea turtles at substantially greater risk of extinction than they already face," and stating that "Climate change is projected to have substantial direct and indirect effects on individuals, populations, species, and the structure and function of marine, coastal, and terrestrial ecosystems in the foreseeable future").

[131] Poff, N.L. et. al., Aquatic Ecosystems and Global Climate Change: Potential Impacts on Inland Freshwater and Coastal Wetland Ecosystems in the United States, Pew Center on Global Climate Change (Jan. 2002), *available at* http://www.c2es.org/publications/aquatic-ecosystems-and-climate-change

expected to increase in frequency in the future, which can result in drastic reductions in dissolved oxygen in the water.

In addition to its independent effects, temperature changes will act synergistically with changes in the seasonal timing of runoff to freshwater and coastal systems. In broad terms, water quality will likely decline greatly, owing to expected summertime reductions in runoff and elevated temperatures. These effects will carry over to aquatic species because the life cycles of many are tied closely to the availability and seasonal timing of water from precipitation and runoff. In addition, the loss of winter snowpack will greatly reduce a major source of groundwater recharge and summer runoff, resulting in a potentially significant lowering of water levels in streams, rivers, lakes, and wetlands during the growing season.

Increases in water temperatures as a result of climate change will alter fundamental ecological processes and the geographic distribution of aquatic species. Climate change is likely to stress sensitive freshwater and coastal wetlands, which are already adversely affected by a variety of other human impacts, such as altered flow regimes and deterioration of water quality from land use changes (including from activities authorized by NWPs). Wetlands are a critical habitat for many species that are poorly adapted for other environmental conditions and serve as important components of coastal and marine fisheries.

These aquatic ecosystems have a limited ability to adapt to climate change. Reducing the likelihood of significant impacts to these systems will be critically dependent on human activities that reduce other sources of ecosystem stress and enhance adaptive capacity. These include maintaining and protecting aquatic habitats, reducing nutrient loading, restoring damaged ecosystems, minimizing groundwater withdrawal, and strategically placing any new reservoirs to minimize adverse effects. The NWPs, however, allow for activities that destroy sensitive waterways and wetlands, leading to increased sedimentation and loss of thousands of acres of wetland habitat.

The Corps has completely ignored climate change in its Decision Documents for the NWPs, asserting that it "does not have the authority to control the burning of fossil fuels or the adverse environmental effects that are caused by burning those fossil fuels to produce energy." This fails to provide the "hard look" that NEPA requires. The Corps is obligated to consider environmental impacts caused by greenhouse gases under the CWA public interest factors set forth at 33 C.F.R. § 320.4(a)(1). *See Sierra Club*, 867 F.3d 1357, 1371-73 (D.C. Cir. 2017) (interpreting *Public Citizen*).

The Corps must: (1) comprehensively analyze the total stream and wetland losses which result from past, present, and potential future activities, (2) consider the cumulative impacts of the NWP program in the context of global climate change on these habitats, and (3) formulate measures that avoid or limit the effects of the NWP program to ensure that there will be only minimal cumulative adverse effects on the environment in light of climate change impacts, as required under the CWA. By continuing to allow NWP activities in the absence of any overall plan addressing climate change, the Corps is effectively burying its head in the sand. Limiting this analysis to only the 5-year period that each NWP iteration is in effect unlawfully segments the analysis, in violation of NEPA.

In sum, proceeding with issuing the NWPs in the absence of a comprehensive plan that addresses climate change risks irreversible damage. The Corps must analyze these issues in an EIS (as well as through programmatic ESA consultation) to weigh the full costs of cumulative stream and wetland loss and consider necessary limits on NWP activities.

D. PCNs Should Always be Required for NWP Activities

According to the Corps, thousands of NWP activities occur each year that do not require a PCN (estimated to be 32,386 per year for the 2020 NWPs).[132] Because no PCN is required for these NWP activities, the Corps does not track them or otherwise ensure that the cumulative impacts of these activities (combined with tens of thousands that do require a PCN) do not result in more than minimal environmental harm. Furthermore, because it is common for NWP activities to proceed without any notice to the Corps, there is the very real potential for such activities to take place in habitat for listed species without the Corps undertaking the required ESA consultation if a PCN is not filed pursuant to General Condition 18, either inadvertently or purposefully, as discussed above.

To resolve these concerns, the Corps should require a PCN for all NWP activities. Requiring a PCN should not be overly burdensome, since PCNs are relatively simple filings that merely notify the Corps of planned NWP activities and their exact location. However, this would provide the Corps with basic, essential information from which it could make its own determination regarding potential impacts to listed species, as well as a database that could be used to track the actual NWP projects that take place each year in order to assess the cumulative effects of the program on the environment.

As discussed above, the Montana District Court has already held that the Corps violated the ESA by unlawfully delegating the initial effects determination to permittees, thereby failing to ensure that it undertakes project-specific ESA Section 7 consultation for all NWP projects that "may affect" listed species. Permittees have a perverse incentive to avoid filing a PCN to sidestep the ESA review process, and/or may not have the requisite experience or expertise to even know when a PCN is required pursuant to General Condition 18. This would not be an issue if the Corps were to require a PCN for all NWP activities.

Indeed, the language of General Condition 18 is confusing and does not ensure that permittees will know when a PCN is required. Previously—for the 2017 NWPs—the Corps admitted that "the term 'in the vicinity' cannot be explicitly defined for the purposes of general condition 18, because the 'vicinity' is dependent on a variety of factors, such as species distribution, ecology, life history, mobility, and migratory patterns (if applicable), as well as habitat characteristics and species sensitivity to various environmental components and potential stressors."[133] The proposed 2020 NWPs provide no further explanation of the term. The fact that the Corps itself is not clear on what "in the vicinity" may mean suggests that permittees may likewise be confused.

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[132] 85 Fed. Reg. at 57,365. Table shows that the Corps expects 32,386 non-PCN activities per year and 32,523 NWP activities per year that require a PCN, which totals 64,909 NWP activities per year, or 324,545 over the 5-year period.

[133] *Id*. at 35,208.

It is therefore likely that PCNs may not be submitted even if listed species would be adversely affected by an NWP activity. Again, Commenters suggest that this could be easily rectified if PCNs are always required, even if they merely provide the location of the intended NWP activities so that the Corps can quickly evaluate the potential for ESA impacts.

Furthermore, the focus of the PCN trigger must be not only on the immediate area (i.e. the "vicinity"), but on the entire area impacted by NWP activities. This is especially important for impacts to sensitive river/stream systems and the species that rely on them, such as freshwater mussel, many of which are critically imperiled. Studies and analyses indicate that threatened and endangered species that rely on waterways impacted by NWP-activities, such as surface coal mining under NWP 21, are most susceptible when they are within ten river miles of such projects.[134] Since the sediments and pollutants that harm these species are most prevalent within

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[134] See attachments: Anderson, R. M., Layzer, J. B., & Gordon, M. E. (1991). Recent catastrophic decline of mussels (Bivalvia, Unionidae) in the Little South Fork Cumberland River, Kentucky. Brimleyana, (17), 1-8.; Layzer, J. B., & Anderson, R. M. (1992). Impacts of the coal industry on rare and endangered aquatic organisms of the upper Cumberland River Basin. Kentucky Department of Fish and Wildlife Resources; Warren Jr, M. L., & Haag, W. R. (2005). Spatio-temporal patterns of the decline of freshwater mussels in the Little South Fork Cumberland River, USA. Biodiversity & Conservation, 14(6), 1383-1400; Houp, R. E. (1993). Observations of long-term effects of sedimentation on freshwater mussels (Mollusca: Unionidae) in the North Fork of Red River, Kentucky. Transactions of the Kentucky Academy of Science, 54(3-4), 93-97; U.S. Environmental Protection Agency. (2002). Clinch and Powell Valley Watershed Ecological Risk Assessment. EPA/600/R-01/050; Newton, T. J., & Bartsch, M. R. (2007). Lethal and sublethal effects of ammonia to juvenile Lampsilis mussels (unionidae) in sediment and water-only exposures. Environmental Toxicology and Chemistry, 26(10), 2057-2065; Vannote, R. L., & Minshall, G. W. (1982). Fluvial processes and local lithology controlling abundance, structure, and composition of mussel beds. Proceedings of the National Academy of Sciences, 79(13), 4103-4107; Pond, G. J., Passmore, M. E., Borsuk, F. A., Reynolds, L., & Rose, C. J. (2008). Downstream effects of mountaintop coal mining: comparing biological conditions using family-and genus-level macroinvertebrate bioassessment tools. Journal of the North American Benthological Society, 27(3), 717-737; Jenkinson, J. J. (2005). Specific gravity and freshwater mussels. Ellipsaria, 7, 12-13; McCann, M.T. & Neves, R.J. (1992). Toxicity of coal-related contaminants to early life stages of freshwater mussels in the Powell River, Virginia. Virginia Cooperative Fish and Wildlife Research Unit, Dept. of Fisheries and Wildlife Sciences. Research Work Order No. 23 for U.S. Fish and Wildlife Service, Asheville Field Office. August 1992; Kitchel, H. E., Widlak, J. C., & Neves, R. J. (1981). The impact of coal-mining waste on endangered mussel populations in the Powell River, Lee County, Virginia. Report to the Virginia State Water Control Board, Richmond; Ahlstedt, S. A., & Tuberville, J. D. (1997). Quantitative reassessment of the freshwater mussel fauna in the Clinch and Powell Rivers, Tennessee and Virginia. Conservation and management of freshwater mussels II. Upper Mississippi River Conservation Committee, Rock Island, Illinois, 72-97; Burkhead, N. M., & Jelks, H. L. (2001). Effects of suspended sediment on the reproductive success of the tricolor shiner, a crevice-spawning minnow. Transactions of the American Fisheries Society, 130(5), 959-968; Sutherland, A. B., & Meyer, J. L. (2007). Effects of increased suspended sediment on growth rate and gill condition of two southern Appalachian

this ten mile area, we urge the Corps to fulfill its ESA obligations by ensuring, at a minimum, that NWP activities taking place within ten river miles of listed species are subject to ESA Section 7 consultation. We also emphasize that only considering pollution impacts ten river miles downstream may not adequately address comprehensive downstream water quality impacts, such as cumulative sedimentation or biomagnification of contaminants. For this reason, the Corps must consult with the Services on this issue through programmatic consultation as discussed herein, to determine the best way to *ensure* that project-specific consultation takes place for all NWP activities that "may affect" listed species.

In sum, the Corps' reliance on the General Condition 18 PCN requirement does not guarantee that the Corps will always be notified when NWP activities take place in habitat for listed species, and thus does not fulfill the Corps' duty under the ESA to ensure against jeopardy. Furthermore, because a PCN is not required for many NWP activities, the Corps does not have the ability to track all NWP-authorized activities to ensure that the cumulative impacts of the NWP program are no more than minimal.

Rather than address these deficiencies in a reasonable manner, the Corps appears to be moving away from the PCN requirements and removing important triggers. For example, the Corps is proposing to remove several of the PCN triggers for NWP 12, such as when the activity involves mechanized land clearing in a forested wetland, and for permanent access roads in waters built with impervious materials. The Corps' stated intent of these changes is simply to "reduce burdens on the regulated public." 85 Fed. Reg. 57,324. However, it appears that the Corps is unlawfully prioritizing the needs of industry over the agency's mandate to protect the environment, since reducing the PCN requirements will lead to even less tracking of cumulative impacts. As set forth below, there are significant adverse effects associated with the clearing/conversion of forested wetlands for pipeline rights-of-way. Commenters strongly oppose the reduction of PCN triggers for NWP 12, which would result in a clear violation of § 404(e)'s mandate to ensure only minimal effects.

For several other NWPs—particularly NWPs regarding coal mining, such as NWP 21 (Surface Coal Mining), NWP 49 (Coal Remining Activities) and NWP 50 (Underground Coal Mining)—the Corps has proposed removing the provision that the permittee receive a written authorization from the Corps before commencing with the activity. Rather, the permittee would be able to

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minnows. Environmental Biology of Fishes, 80(4), 389-403; Jones, E. B., Helfman, G. S., Harper, J. O., & Bolstad, P. V. (1999). Effects of riparian forest removal on fish assemblages in southern Appalachian streams. Conservation biology, 13(6), 1454-1465; Sutherland, A. B., Maki, J., & Vaughan, V. (2008). Effects of suspended sediment on whole-body cortisol stress response of two southern Appalachian minnows, Erimonax monachus and Cyprinella galactura. Copeia, 2008(1), 234-244; Zamor, R. M., & Grossman, G. D. (2007). Turbidity affects foraging success of drift-feeding rosyside dace. Transactions of the American Fisheries Society, 136(1), 167-176; Newcombe, C. P., & Jensen, J. O. (1996). Channel suspended sediment and fisheries: a synthesis for quantitative assessment of risk and impact. North American Journal of Fisheries Management, 16(4), 693-727; Newcombe, C. P., & MacDonald, D. D. (1991). Effects of suspended sediments on aquatic ecosystems. North American Journal of Fisheries Management, 11(1), 72-82.

move forward if the Corps does not respond within 45 days of receipt of the PCN. This change is unnecessarily reckless. These are activities that have the potential to result in devastating environmental impacts and should not even be allowed to proceed under a NWP, and yet the Corps is proposing to remove an important component of the PCN process to ensure against more than minimal adverse impacts.

The Corps has previously explained that it is important for permittees to wait for authorization to ensure that the environment is protected. In the 2007 NWPs, the Corps specifically stated that changes to NWP 21 in 2002, "which requires not only notification to the Corps for all projects that may be authorized by this permit *but also explicit authorization from the Corps before the activity can proceed*, has strengthened the environmental protection for projects authorized by this permit."[135] The Corps went on to say that "One commenter requested that this requirement be removed from this NWP. However, we continue to believe that this 2002 change helps ensure that no activity authorized by this permit will result in greater than minimal adverse impacts, either individually or cumulatively, on the aquatic environment, because it requires a case-by-case review of each project."[136] That is because "Site-specific review of each pre-construction notification will ensure that NWP 21 authorizes activities with no more than minimal adverse effects on the aquatic environment, individually and cumulatively."

The Corp explains in the 2020 NWP proposal that when a Corps district receives a PCN, the district engineer reviews it and determines whether the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects, and may add conditions to the NWP authorization to ensure that it complies with the CWA. Indeed, it states that "[t]he case-by-case review of PCNs often results in district engineers adding activity-specific conditions to NWP authorizations to ensure that the adverse environmental effects are no more than minimal," and that such review may result in a determination that an individual permit is actually required.

However, the proposed change would reverse course with no justification, and undermine those important protection. If, for example, there is an agency backlog, it may take longer than 45 days to fully review all PCNs. If the Corps changes the requirement to wait until NWP 21, 49 and 50 activities are authorized, then such activities may proceed under the NWP after 45 days even if they would have more than minimal individual and cumulative adverse impacts (or otherwise require an individual permit), simply because the Corps did not have time for a thorough review. That is a total abdication of the Corps' duty pursuant to CWA 404(e).

Indeed, NMFS found that "evidence suggests that the Corps has historically not reviewed significant percentages of PCNs to insure they are complete and the information is correct" and that "[t]he Corps historically has not routinely conducted field inspections of PCNs to verify that the information contained in those notifications captures the activity and impacts that actually occurred."[137] Removing this protection for coal mining activities—just so that there is

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[135] 72 Fed. Reg. at 11,114.

[136] *Id.*

[137] 2014 NMFS BiOp at 269.

consistency across NWPs—is therefore completely contradictory to the Corps' prior statements, and the proposed change will result in a lack of oversight and a failure to ensure compliance with the CWA. These changes must therefore be rejected.

The Corps has also continued to allow several NWP activities to take place with no PCN requirement, including several activities that may have significant, adverse environmental impacts. This includes NWP 3 – Maintenance activities; NWP 4 – Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities; NWP 6 – Survey Activities; certain NWP 12 – Utility Line Activities; NWP 19 – Minor Dredging; NWP 25 – Structural Discharges; some NWP 33 – Temporary Construction, Access, and Dewatering activities; and some NWP 36 – Boat Ramps. There is simply no reason for such activities to be allowed without any notice to the Corps. The failure to require PCNs for so many activities undermines the Corps' baseless assertion that it *knows* the NWP program is not having more than minimal adverse environmental impacts as the CWA requires.

In sum, PCNs are essential to gather the data and other information necessary to show that the cumulative effects of the authorized activities are minimal and in order to analyze the potential short-term or long-term effects of the NWPs as required by the CWA.[138] PCN requirements further provide an important means for the Corps to ensure that impacts to listed species are not overlooked. In order to fulfill the Corps CWA and ESA duties, PCNs should always be required, and the proposed removal and/or relaxation of PCN requirements is unwarranted.

1. The Corps should not exempt federal agencies from the PCN requirement

The Corps has also proposed allowing Federal agencies to move forward on NWP projects without submitting PCNs to the Corps, including activities under NWP 8, Oil and Gas Structures on the Outer Continental Shelf; NWP 13, Bank Stabilization; NWP 38, Cleanup of Hazardous and Toxic Waste; NWP 45, Repair of Uplands Damaged by Discrete Events; and NWP 46, Discharges in Ditches. But removing the PCN requirement for federal agencies is simply a terrible idea that will further reduce the Corps ability to ensure that the NWP program is truly having only minimal individual and cumulative environmental impacts, and therefore must be rejected.

The Corps' reasoning for this proposed change is nonsensical. It states that "Federal agencies **may** employ staff who are environmental experts and who already review these projects before submitting PCNs to the Corps to determine whether they meet the criteria for the applicable NWP." However, *the Corps itself* has a clear duty to ensure that the activities it permits under the NWPs do not result in more than minimal impacts. Even though other agencies may review the activities, they may not share the Corps' understanding of what would constitute an undue adverse impact in the context of aquatic resources and habitats.[139] Moreover, those other

[138] 33 U.S.C. §§ 1344(b) and (e).

[139] As the Corps itself explains:

> The PCN process is a critical tool, because it provides flexibility for district engineers to take into account the activity-specific impacts of the proposed activity and the effects those activities will have on the specific waters and wetlands affected by the NWP

agencies would not have any way to measure or assess the contribution of such activities to the cumulative impacts of the NWP program. Again, this is a total abdication of the Corps' duty to ensure that the cumulative impacts of the NWP program are no more than minimal, as the CWA requires.

Indeed, the Corps appears to rely almost entirely on review by the Division and District Engineers to ensure that the NWP program complies with the CWA.[140] Therefore, allowing NWP activities to take place absent such review—regardless of the potential expertise of other agencies—would undermine one of the most important aspects of the program that the Corps has identified for ensuring compliance with the CWA.

It is not even clear what the benefit would be. The Corps has not provided any indication that submitting a PCN is onerous. Indeed, if these other agencies must comply with NEPA and/or the ESA, they will have the PCN information readily available. And it is not clear how this would affect the compensatory mitigation requirements, since the Corps would apparently not be involved and therefore have no opportunity to ensure sufficient mitigation is being implemented. Keeping the PCN requirement is necessary for the Corps to be able to track the cumulative impacts of the NWP program. The proposal to allow federal agencies to undertake NWP activities without any notice to the Corps is inconsistent with the Corps' CWA duties, and should not be implemented.

E. The Corps Must Not Remove The 300-Linear Foot Stream Loss Limit

Since at least 2002, the Corps has employed specific thresholds for certain NWP activities in order to regulate the amount of stream and wetland loss that can occur, and thereby limit the adverse environmental impacts of those NWPs. Those limits have been expressed two ways – as an acreage threshold (usually limited to ½ acre of loss), and as a linear loss of streambed (i.e. limited to loss of 300-linear feet). For the 2020 iteration, the Corps is proposing to remove the 300-linear foot streambed loss limit and rely only on an acreage threshold for several NWP activities, including for NWPs 21 (Surface Coal Mining Activities), 29 (Residential

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> activity. It also allows the district engineer to take into account to what degree the waters and wetlands perform functions, such as hydrologic, biogeochemical cycling, and habitat functions, and to what degree those functions will be lost as a result of the regulated activity.

85 Fed. Reg. 57,314.

[140] For example, the Decision Documents for the NWPs state that:

> The individual and cumulative adverse effects on the aquatic environment resulting from the activities authorized by this NWP, including compliance with all applicable NWP general conditions as well as regional conditions imposed by division engineers and activity-specific conditions imposed by district engineers, are expected to be no more than minimal. Division and district engineers will restrict or prohibit this NWP on a regional or case-specific basis if they determine that these activities will result in more than minimal individual and cumulative adverse effects on the aquatic environment.

Developments), 39 (Commercial and Institutional Developments), 40 (Agricultural Activities), 42 (Recreational Facilities), 43 (Stormwater Management Facilities), 44 (Mining Activities), and 50 (Underground Coal Mining Activities). This is a dangerous proposition that would lead to the loss of headwater streams and eradication of important stream habitat. Moreover, it will almost certainly result in more than minimal adverse environmental impacts in violation of the CWA. It is also directly contrary to statements made by the Corps regarding the importance of the 300-linear foot loss limit, and therefore adopting the proposed change would be arbitrary, capricious and unlawful.

Removing the 300-foot limit for streambed loss will lead to the eradication of vulnerable headwater streams and drastically increase the direct and cumulative adverse environmental impacts of the NWP program, putting waterways and wildlife at risk. This appears to be nothing more than a handout to industrial interests – primarily the mining industry – and is yet another example of the Corps unlawfully prioritizing the interests of regulated entities over protection of the environment. Removing this important limit on streambed loss would result in a clear violation of the Corps' duty to ensure that the effects of the NWP program are only minimal, and the Corps must not proceed with this attempt to undermine one of the few real protections in the NWP program. However, if the Corps decides to move forward with this proposal, Commenters note that the impacts of that decision must first be subject to programmatic ESA Section 7 consultation, as described above, since this change certainly "may affect" listed species.

Indeed, using an acreage limit makes little sense when dealing with linear features like streams, where a linear-foot limit makes more sense.[141] The proposed rule even states that: "The numeric limits of NWPs may be quantified as acres, linear feet, or cubic yards. The appropriate unit of measure for a quantitative limit for an NWP *is dependent on the type of activity being authorized by the NWP* and the potential types of direct impacts authorized activities may have on jurisdictional waters and wetlands." For activities like coal mining that can have significant adverse impacts on streams (linear features), it remains unclear how the Corps could possibly find that allowing ½ acre of fill – potentially over a thousand linear feet of streambed loss – will not result in more than minimal impacts including the loss of stream functions, particularly given that the regulations at 33 CFR 332.2 define "functions" as "the physical, chemical, and biological processes that occur in ecosystems." As set forth herein, coal mining has had devastating impact on the physical, chemical and biological processes in waterways, and the Corps is exacerbating the issue with this proposed change.

The Corps itself has previously noted the importance of the 300-linear foot limit for protecting streams. In the 2007 NWPs, the Corps stated that the 300 linear foot limit helps "ensure that the applicable NWPs will authorize activities with minimal individual and cumulative adverse effects on the aquatic environment."[142] The Corps repeated this statement several times

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[141] The Corps relied on the totally unsupported proposition that "When only a portion of the stream bed is filled or excavated, the portion of the stream bed that is not filled or excavated can continue performing its physical, chemical, and biological processes." But that may not be true, given impacts to the whole stream from dredge/fill activities (i.e. sediment dispersal) and the Corps fails to provide any scientific support for this.

[142] 72 Fed. Reg. 11,097.

throughout the 2007 NWPs, and then again in the 2012 NWPs, confirming multiple times that "We believe the 300 linear foot limit is *appropriate to ensure that losses of stream beds result in minimal adverse effects on the aquatic environment*."[143]

In fact, the Corps was rather explicit in the 2012 NWPs regarding the importance of the 300-linear foot streambed loss limit, particularly with regard to ensuring that coal mining pursuant to NWP 21 does not result in undue adverse environmental impacts. The Corps stated that "The 1⁄2-acre and 300 linear foot limits will substantially reduce the amount of stream bed and other waters lost as a result of activities authorized by [] NWP [21], and limit this NWP to minor fills associated with surface coal mining activities, such as the construction of sediment ponds."[144] The Corps further stated that the limits on NWP 21 were intended to prevent its use for valley fills, stating that absent such limitations NWP 21 "could be used to authorize discharges of dredged or fill material into waters of the United States to construct valley fills," and therefore the limitations are necessary to "ensure that the adverse effects of discharges authorized by NWP 21 are minimal, both individually and cumulatively." This suggests that removing the 300-foot limit might open up use of NWP 21 for more than "minor fills," and may even allow for valley fills leading to significant environmental degradation, in clear violation of CWA Section 404(e).

The Corps even stated in the 2012 NWPs that "we believe it will generally not be the case that losses of more than 300 linear feet of a perennial stream would constitute a minimal adverse effect."[145] In other words, the Corps previously *determined* that losses of streambed greater than 300 feet likely *would* have more than minimal adverse effects, and therefore *could not be permitted* under the CWA unless a District Engineer provided a waiver based on a site-specific analysis.

The importance of the streambed loss limit was confirmed by the Corps in 2017, when it stated in the proposed NWP rulemaking that "measuring losses of stream bed in linear feet provides a useful approach for ensuring no more than minimal adverse environmental effects by limiting the length of stream bed that can be filled or excavated, below the acreage limit for that NWP."[146] As the Corps explained in 2017, without the 300 foot limit, only the 1/2-acre limit would apply, which would allow for a stream bed that has a mean width of 20 feet to be filled or excavated for **1,089 linear feet**.[147] The 1/2 -acre limit thus provided a cap on streambed loss allowed through waivers, but was not deemed sufficient on its own to prevent more than minimal environmental impacts. And now the Corps is proposing to do away with the need for a waiver, and automatically allow significant streambed loss without the extra review that was previously required.

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[143] 77 Fed. Reg. at 10,190 (emphasis added).

[144] *Id.* at 10,205.

[145] *Id.*

[146] 81 Fed. Reg. at 35,213.

[147] *Id.* (emphasis added).

But the waiver provision is important, because it requires a district engineer to coordinate with other agencies (under paragraph (d) of general condition 32),[148] and then review the site-specific impacts and make a written determination whether the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects, after considering the factors in paragraph 2 of Section D, District Engineer's Decision, including the direct, indirect and cumulative effects of the activity; the environmental setting in the vicinity of the NWP activity; the type of resource that will be affected; the functions provided by the aquatic resources that will be affected; the degree or magnitude to which the aquatic resources perform those functions; the extent that aquatic resource functions will be lost; the duration of the adverse effects; and the importance of the aquatic resource functions to the region.[149] That process also allows the district engineer to determine whether mitigation is required to ensure no more than minimal adverse environmental effects. The proposal to allow extensive streambed loss to occur without this important analysis will lead to significant adverse impacts, particularly to headwater streams. These headwater streams are essential to protecting water quality and biodiversity.[150] Simply put, the Corps' proposal cannot be squared with explicit statements made by the Corps that "[t]he 300 linear foot limit for losses of stream bed is *generally necessary* to ensure that NWP 21 authorizes only those activities that result in minimal adverse effects on the aquatic environment."[151] The same applies to several other NWPs where the Corps previously stated that the 300-linear foot loss limit was *necessary* to ensure that activities resulted in only minimal individual and cumulative adverse impacts, and yet now proposes to remove that limit, such as for NWPs 39, 40, 44, and 50.

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[148] The Corps' proposal to remove the agency coordination process for seeking input from federal and state agencies on whether the district engineer should grant a waiver of the 300 linear foot limit is particularly concerning. This process is essential to ensuring that NWP activities do not result in more than minimal impacts through coordination with FWS, EPA and State natural resource agencies. The Corps' attempt to undermine this key process, which it previously states was necessary to comply with the CWA, is clearly arbitrary and capricious.

[149] It is notable that the Corps argues that the ½ acre limit is sufficient because the District Engineer will review PCNs and do an analysis of loss of functions to determine compliance with 404(e); however, the Corps has also proposed limiting the time for review of PCNs to 45 days, making it more than likely that the Corps will not have sufficient time to review these projects and ensure that the impacts will be no more than minimal.

[150] *See* attached studies: Meyer, Judy L., David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, and Norman E. Leonard, 2007. The Contribution of Headwater Streams to Biodiversity in River Networks. Journal of the American Water Resources Association (JAWRA) 43(1):86-103; Colvin SAR, Sullivan SMP, Shirey PD, Colvin RW, Winemiller KO, Hughes RM, Fausch KD, Infante DM, Olden JD, Bestgen KR, Danehy RJ, Eby L. Headwater streams and wetlands are critical for sustaining fish, fisheries, and ecosystem services. Fisheries. 2019;44(2):73–91; Richardson JS. Biological diversity in headwater streams. Water. 2019; 11(366):1–19; Jackson K. The importance of headwater streams. Land-Grant Press by Clemson Extension. 2019; Alexander, Richard B., Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, and Richard B. Moore, 2007. The Role of Headwater Streams in Downstream Water Quality. Journal of the American Water Resources Association (JAWRA) 43(1):41-59.

[151] *Id.* at 10,211

The Corps has failed to provide any reasonable explanation for its about-face. The reasoning set forth in the proposed rulemaking is unfounded, and indeed highlights the fact that there is no scientific basis for the decision. The Corps avers that the 300-linear foot limit is more restrictive for smaller streams—as well as being a more stringent quantitative limit than non-tidal wetlands, ponds, or lakes—but that is exactly the point. The 300-foot limit accounts for the linear nature of streams (as opposed to ponds and lakes) and the size of the stream to help determine what is an acceptable level of impacts. Smaller streams are more susceptible to catastrophic harm from NWP activities (i.e. total loss of functions), and the Corps has failed to show how the ½ acre limit could possibly be sufficient to protect small headwater streams. Indeed, while the Corps claims that there is no justification for treating these streams differently, it then goes on to acknowledge that "In headwater streams, hydrologic, biological, and geomorphic processes are strongly influenced by interactions between surrounding lands and the stream channels (Gomi et al. 2002). In rivers and larger streams, flooding usually occurs more gradually and for longer durations compared with the more abrupt flooding of headwater streams (NRC 2002)." These are important differences that warrant stricter controls for smaller, sensitive streams.

The proposal further states that this change is meant to comply with E.O. 13783, which requires agencies to find ways to reduce regulatory burdens on entities that develop or use domestically produced energy sources. But the President cannot, by executive order, provide a basis for the Corps to violate the CWA. The Corps avers that the ½ acre limit will suffice to ensure that the NWPs result in no more than minimal adverse environmental effect;[152] however, that is completely at odds with the Corps' prior statements that the 300 foot limit was *also* necessary to limit adverse effects and ensure compliance.[153] There is simply no basis for the Corps to now find —just because the current administration wants to provide a hand-out to industrial mining interests—that the 300-foot limit is somehow unnecessary.[154] E.O. 13783 cannot and does not override the clear requirement of CWA 404(e). This is clearly a political/economic, not a scientific, decision. The result, however, is that the affected NWPs will result in greater than minimal adverse environmental impacts, in direct violation of the CWA.

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[152] The Corps claims it "will review PCNs and do an analysis of loss of functions to determine compliance with 404(e)," but as discussed above the Corps is proposing to limit itself to a 45-day review period, and it remains unclear how/whether the Corps could provide a sufficient analysis within 45 days for the thousands of PCNs that are submitted each year.

[153] The Proposed Rule even states that "[t]he appropriate unit of measure for a quantitative limit for an NWP is dependent on the type of activity being authorized by the NWP and the potential types of direct impacts authorized activities may have on jurisdictional waters and wetlands." Based on that statement, it would appear logical to set a linear-foot quantitative limit for activities that have linear impacts, such as mining activities that fill narrow headwater streams. Using an acreage limit would be appropriate for activities that fill open waters or wetlands, but an acreage limit does not make sense for linear impacts, such as stream bed loss.

[154] The Corps discusses at length the use of "functional or condition assessments" to ensure that impacts to streams will be only minimal, but it never explains how relying on these assessments could possibly support allowing stream bed losses of greater than 1,000 linear feet with no additional waiver review.

Therefore, the Corps must not follow through with the proposal to remove the 300-foot streambed loss limit from any NWPs. Commenters urge the Corps to reject this proposed change, and to maintain the current waiver process for losses of streambed greater than 300 linear feet. At the very least, the Corps should keep that process in place for headwater streams (1st and 2nd Order).

Commenters would potentially support a hybrid approach, where losses of stream bed would continue to be quantified in linear feet as long as the activities authorized by these NWPs would result only in the loss of stream bed, and the linear foot limits for losses of stream bed would be different by stream order. However, the Corps' proposal is absurd. Allowing 2,500-3,500 linear feet of streambed loss for sensitive headwater 1st and 2nd order streams is unconscionable and would certainly cause more than minimal impacts – indeed, it would eradicate these small streams akin to allowing mountain top removal mining, without even requiring a waiver. The amounts of loss provided in the proposed hybrid simply do not account for the sensitive nature of smaller streams, and really just track the ½ acre limit approach, making this proposal meaningless. Rather, a hybrid approach that accounts for the sensitivity of the impacted waterways would be a potential viable alternative. Commenters suggest that the Corps should maintain the waiver for smaller streams and provide limits for 3rd-6th order streams that are sufficiently protective, based on the best available science.

F. Comments on Specific NWPs and General Conditions

1. NWP 12 comments

On August 1, 2016, a group of environmental and public interest organizations submitted the comments on the proposed reissuance of NWP 12 ("2016 Comments") (attached hereto). The 2016 Comments set forth a number of reasons why the proposed reissuance of NWP 12 violated the NEPA, the ESA, and the CWA. *Id*. The Corps almost entirely ignored these critiques and reissued NWP 12 as proposed on January 6, 2017. 82 Fed. Reg. 1860. A number of the commenting groups subsequently challenged the Corps' 2017 reissuance of NWP 12 in federal court, which resulted in a decision finding the Corps' violated the ESA by failing to engage in programmatic consultation pursuant to Section 7 of the ESA. *Northern Plains Resource Council et al. v. U.S. Army Corps of Engineers*, No. 4:19-cv-00044 (D. Mont.), appeal pending, No. 20-35412 (9th Cir.). The district court has not yet ruled on plaintiffs' NEPA and CWA claims, suggesting it is likely the Corps would remedy any deficiencies in those analyses upon remand.

Nonetheless, the Corps now proposes to again reissue NWP 12 without addressing any of the issues raised in the 2016 comments or in the subsequent litigation. Indeed, the Corps' 2020 proposal for NWP 12 is substantially the same as the 2017 version, with only a few changes which are addressed herein. Because the issued raised in the 2016 Comments apply equally to the current proposed reissuance of NWP 12, commenters hereby incorporate the 2016 Comments and the arguments made therein, and request that the 2016 Comments and all exhibits be made part of the administrative record for the Corps current proposed reissuance of NWP 12.[155] Several of the comments above have highlighted harm from NWP 12-authorized activities, which pose a significant risk of adverse environmental impacts – including to protected species –

[155] The 2016 Comments and attachments are being provided on a thumb drive that has been sent to the Corps to be included in the record here.

from the construction and operation of fossil fuel pipelines, and which should not be authorized by a NWP, but instead require an individual permit. These impacts include not only direct harm from habitat loss, noise and other disturbances during construction, but also harm to waterways and the species that rely on them from spills and leaks. Furthermore, the development of oil and gas pipelines results in increased greenhouse gas emissions and water quality/quantity impacts from hydraulic fracking and the burning of fossil fuels, which are foreseeable future actions that must be included in the cumulative impacts assessment. As set forth herein, these issues must be fully analyzed in an EIS and through programmatic ESA consultation.

a. Proposed changes

While Commenters do not take issue with the Corps' proposal to separate out NWP 12 into three separate NWPs, we are concerned about several aspects of these permits. This includes reducing the number of PCN thresholds from 7 to 2. As discussed above, the Corps' attempt to reduce the number of PCNs only undermines its ability to ensure that the NWPs are not having more than minimal individual and cumulative adverse impacts, and does not comply with the Corps' mandate under the ESA to ensure consultation occurs when necessary. And the reasoning provided by the Corps for reducing the PCN thresholds—relying almost entirely on the temporary nature of impacts from trenching across streams while discounting the significance of short-term impacts, and arguing that affected wetlands will continue to provide habitat functions even if there is a drastic change in plant community structure—are unconvincing, and fail to show how it could possibly ensure that CWA Section 4040(e) is met without a process in place to track all NWP activities.

Perhaps the most alarming proposed change is the Corps' proposed removal of the PCN requirement for mechanized clearing of forested wetlands. Again, the Corps admits that the primary goal for removing this PCN is to accommodate industry, but it further attempts to justify the removal of this PCN by claiming "mechanized landclearing of forested wetlands in the utility line right of way usually results in temporary impacts to the wetlands and other waters…" 85 Fed. Reg. 57325. The Corps appears to base this on the theory that although trees are permanently removed in order to maintain the right of way, some vegetation would be allowed to grow back, and a schrub-shrub wetland would remain. *Id*.

The notion that the conversion of forested wetland results in only temporary impacts is false. The Corps appears to believe that all wetlands are equal, so as long as some form of a wetland is allowed to persist, there are no permanent impacts. But as set forth below, the conversion of forested wetlands results in significant adverse effects and loss of wetlands functions.

In fact, the Decision Document even acknowledges this, as have previous iterations:

> The construction of oil or natural gas pipeline rights-of-way through forested wetlands may result in the conversion of forested wetlands to scrub-shrub or emergent wetlands. Those conversions may be permanent to maintain the oil or natural gas pipeline in good, operational order. The conversion of wetlands to other types of wetlands may result in the loss of certain wetland functions, or the reduction in the level of wetland functions being performed by the converted wetland.

Decision Document, at 51; *see also* 72 Fed. Reg. 10,195 (Feb. 21, 2012) ("District engineers may require compensatory mitigation to offset permanent losses of wetland functions when such mechanized landclearing occurs in forested wetlands.)

Because the Corps does not consider forested wetlands conversion a "loss" of waters of the U.S. that counts toward the ½ acre threshold (which commenters urge the Corps to do, see 2016 Comments at 20-22), there is no limit to the amount of forested wetlands conversion that can occur, even at individual water crossing. For example, the TransCanada Gulf Coast Pipeline resulted in over 10 acres of forested wetlands conversion *even at numerous individual wetlands crossings*; in Texas' Pine Island Bayou alone, the pipeline resulted in the permanent conversion of over 72 acres of forested wetlands. Yet, the project was verified under NWP 12. At the very least, the Corps should retain the PCN requirement for forested wetlands clearing so that it has the opportunity to ensure only minimal effects. Without even that minimal level of protection, NWP 12 activities will surely result in more than minimal effects in violation of §404(e).

Finally, the Corps has proposed requiring a PCN for NWP 12 pipelines that exceed 250 miles. As set forth above, commenters believe the Corps should require PCN for all uses of NWPs to ensure minimal effects. However, in the alternative, the Corps should reduce this proposed threshold and require a PCN for any NWP 12 pipeline that exceeds 50 miles. The Corps should further require a PCN for any NWP 12 pipeline that would cross the same waterway more than once, cross multiple waterways within the same watershed, or cross more than a total of 10 waterways along the project length.

b. "Separate and distant" crossings

Commenters also remain concerned about the Corps' use of NWP 12 for each "separate and distant" water crossing for linear projects. NWP 12 does not define the phrase "separate and distant" or impose any actual spacing requirements, nor does it require district engineers to make any "separate and distant" finding. Thus, there is nothing to prevent a pipeline with numerous water crossings in close proximity to each other and/or on the same waterbody from relying on NWP 12 and causing more than minimal cumulative adverse effects. Since NWP 12 can be used numerous times along a pipeline or utility route—even if there are high concentrations of water crossings in specific areas—with no mechanism to ensure impacts would be minimal, the Corps has failed to ensure that projects authorized by NWP 12 comply with Section 404(e).

The 2016 Comments raised this issue and urged the Corps to define "separate and distant," and/or develop some standard by which district engineers would ensure crossings are truly "separate and distant" so as to reduce cumulative effects. *See* 2016 Comments at 13-15. The Corps ignored the comments. The Corps' 2017 verification of the Keystone XL Pipeline demonstrates yet again that this provision has no teeth. There, the pipeline was proposed to cross the same waterway numerous times, sometimes over 10 times within the span of a mile. Many water crossings were less than 1/10 of a mile apart. Yet, the district engineers issued verification decisions without ever evaluating whether the crossings were actually "separate and distant" or applying any standard. The Corps must fix this.

c. Oil spills

Commenters are further concerned that the Decision Document for NWP 12 does not adequately address the disastrous environmental impacts of oil spills. While the Decision Document briefly acknowledges the possibility of spills, it largely defers to other agencies that have some degree of regulatory authority over pipelines. The Corps does not use any data to assess potential cumulative impacts, even though data exists regarding the likelihood of such spills occurring. The 2016 Comments provide extensive information on the risks and impacts of oil and gas pipeline spills and ruptures, which the Corps should evaluate here. See 2016 Comments at 61-79. The failure to address these impacts is a glaring omission considering the potential for significant environmental impacts associated with NWP 12 projects, and the Corps has failed to take the "hard look" that NEPA requires.

In *Northern Plains Res. Council v. United States Army Corps of Eng'rs*, the Corps' failure to evaluate the oil spill impacts of NWP 12 activities was at issue; yet the court declined to rule on the question because it had already remanded to the Corps based on the violation of the ESA and anticipated the Corps would prepare additional environmental analyses. 2020 U.S. Dist. LEXIS 66745, *24 (Dist. Mont., April 15, 2020). The Corps should therefore conduct that analysis now.

d. Cumulative effects

Commenters are also concerned about the lack of any real analysis of the cumulative impacts of NWP 12 activities. The Decision Document for NWP 12 acknowledges that:

> Activities authorized by this NWP may alter the habitat characteristics of streams, wetlands, and other waters of the United States, which may decrease the quantity and quality of fish and wildlife habitat. The construction of oil or natural gas pipeline right-of-ways may fragment existing habitat and increase the amount of edge habitat in the area, causing changes in local species composition. The construction or replacement of oil or natural gas pipelines and the establishment and maintenance of their rights-of-way may fragment terrestrial and aquatic ecosystems and may affect local fish and wildlife values.

Clearly, then, there is the potential for significant impacts, yet the Corps never considers the cumulative impacts of these activities. Indeed, the Corps estimates that approximately 47,750 activities could be authorized over a five-year period until this NWP expires, resulting in impacts to approximately 3,160 acres of waters of the United States, including jurisdictional wetlands. But the Corps fails to discuss not only the potential for significant cumulative impacts, it fails to establish how such impacts would even be tracked to ensure that they remain only minimal. Commenters submit that such impacts have proven to be more than minimal, and therefore this NWP is not meeting the requirements of CWA 404(e).

The 2016 Comments provide extensive information on the cumulative effects of pipelines, including the impacts of forested wetlands conversion, which the Corps should evaluate here. *See* 2016 Comments at 79-96.

As set forth above, the Corps has acknowledged that the conversion of high-quality forested wetlands to lesser quality wetlands results in permanent adverse effects and loss of certain wetlands functions. Forested wetlands are unique in their functions and provide numerous benefits that other wetlands do not. The attached Forest Service report discusses the hydrology and functions of palustrine forested wetlands as compared to lesser quality scrub-shrub wetlands.[156]

The attached report details some of the environmental impacts of converting forested wetlands in Pennsylvania to herbaceous wetlands for the construction and permanent maintenance of pipeline rights-of-way.[157] Some of the functional losses that would result from wetland conversion include: decreased structural and species diversity; decreased soil and streambank stabilization; decreased erosion and sedimentation control; loss of forest interior habitat and species; decreased nutrient storage; and loss of visual and aural screening.[158]

The Corps must evaluate the adverse impacts, including cumulative impacts, of permanently clearing large swaths of forested wetlands during the construction and permanent maintenance of pipeline rights-of-way. An evaluation of these impacts will unequivocally show that the impacts exceed 404(e)'s minimal effects threshold, especially where there is no limited to the amount of forested wetlands conversion that can occur, or even any PCN requirement that would allow the Corps to review the level of impacts at the project level.

e. Frac-outs

The Draft Decision Document also fails to evaluate the risks, impacts, and mitigation measures associated with "frac-outs," or inadvertent returns of drilling fluid. The Corps explains:

> During construction of oil or natural gas pipelines, where horizontal directional drilling is used to install or replace a portion of the pipeline, there is a possibility of inadvertent returns of drilling fluids that could adversely affect wetlands, streams, and other aquatic resources.

Dec. Doc. at 49. However, the Corps refuses to evaluate the impacts of this reasonably foreseeable consequence of NWP 12 activities by concluding: "Those inadvertent returns of drilling fluids are not considered discharges of dredged or fill material that require Clean Water Act section 404 authorization." *Id*.

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[156] U.S.D.A., Forested Wetlands: Functions, Benefits, and the Use of Best Management Practices, attached hereto and available at https://www.fs.usda.gov/naspf/sites/default/files/forested_wetlands_hi_res.pdf.

[157] *Schmid & Company, Inc*., The Effects of Converting Forest or Scrub Wetlands into Herbaceous Wetlands in Pennsylvania: A Report to the Delaware Riverkeeper Network 2014, attached hereto and available at http://www.schmidco.com/Conversion_Final_Report.pdf.

[158] *Id*.

Regardless of whether the releases of drilling fluid are themselves fill material, the Corps' issuance of a Section 404 permit for Keystone XL is the "legally relevant cause" of these releases, which occur during pipeline construction under jurisdictional waterways. *FERC*, 867 F.3d at 1373. Thus, NEPA requires the Corps to take a hard look at the frac-outs that may occur with Keystone XL at specific water crossings, regardless of whether the Corps has regulatory authority over the underlying activity or pollutants at issue—in this case, drilling fluid. *See, e.g.*, *Ocean Advocates*, 402 F.3d at 867; *Coal. to Protect Puget Sound Habitat*, 2019 WL 5103309, at *6.

That analysis should include an evaluation of the potential impacts, frequency, size, and potential mitigation measures from frac-outs; and the likelihood of frac-outs occurring at each water crossing along the Keystone XL route, depending on site-specific conditions (i.e., which crossing method—HDD or one of the various trenching methods—would minimize impacts at each location.

During the Corps' 2017 reissuance of NWP 12, the Corps relied on a document that raises many troubling questions about the safety and environmental impacts of HDD in light of frac outs. The document was a PowerPoint presentation attached to an internal email from Jennifer Moyer, Chief of the Corps' Regulatory Program, during an exchange about CEQ's concerns about frac-outs.[159] The presentation states that many frac-out incidents have been reported and that releases range "from a few gallons to 10,000+ gallons" and "from a few square feet to several acres of wetlands, and up to a mile of stream," *id.* at 13; and that, in addition to water and bentonite, drilling mud can contain lignosulfates, which are "highly toxic to aquatic organisms," barium sulfate, which has "significant ecotoxicity to aquatic organisms," and other substances like calcium carbonate and hematite for which the ecotoxicity is unavailable, *id.* at 15. It also describes some known impacts of drilling mud on surface waters, *e.g.*, that it "[s]mothers and displaces macroinvertebrates," "[r]educes food availability to upper trophic levels," "[r]educes quality of fish spawning and rearing areas," and "[r]educes fish refuge sites," and that "[s]uspended solids interfere with fish gill development and function," *id.* at 17-18. The presentation goes as far as concluding that the environmental risks of inadvertent returns could outweigh the impacts of a non-HDD crossing method, *id.* at 22 (referring to "a well-managed open cut in high quality waters").

In 2020, the Corps' Southwest Galveston (SWG) District issued a study discussing "installation issues" with HDD that primarily focuses on frac-outs.[160] The Corps notes: "Drilling fluid release (or mud loss) has become a critical issue which engineers and contractors face during HDD because Frac-Out causes project delays and poses grave risks in environmental sensitive and

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[159] Moyer Powerpoint (attached hereto).

[160] Sunday Akinbowale, P.E., Robert Thomas, P.E., SWG'S History/Case Studies of Frac-Out and Other Horizontal Directional Drilling (HDD) Installation Issues (2020), Attached hereto and available at https://www.swg.usace.army.mil/Portals/26/THOMAS-SWG%20HDD%20-%20Winter%20Stakeholder%20Partnership%20Forum%202020.pdf.

urban areas."[161] The study includes case studies of 11 incidents of frac-outs in the SWG district alone, and determines one of the main causes for frac-outs is that the equation to determine maximum allowable pressure may not be suitable depending on site conditions. Id. at 26-29.

Another source produced by a drilling service states that "[i]t is relatively common for a frac-out to occur on a HDD project" and while they are usually minor, "[t]he seriousness of a frac-out depends on where it occurs. If the frac- out occurs in an environmentally or culturally sensitive area (which you are generally trying to avoid by using HDD), there is reason for concern."[162] It further explains:

> The drilling fluid itself may not be toxic, but the fine particles can smother plants and animals, particularly in an aquatic environment. If a saltwater polymer fluid is used, the salt can also impact on freshwater systems and terrestrial vegetation… Frac -outs may also damage infrastructure or nearby services. There are reports of sections of roads rising, nearby water pipelines failing as the frac- out washed away the bedding sand, power boxes filling with fluid and vegetation disappearing into a sinkhole caused by a frac -out.

The frequency of frac-outs in the installation of pipelines using HDD is outlined in a 2019 study of four gas pipelines in the Appalachian region.[163] On the Mariner East II Pipeline (ME2) alone, there were a shocking number of Inadvertent Releases (IRs), or frac-outs, and many of them adversely impacted wetlands and waterways:

> A total of 97 [Notices of Violations ("NOVs")] had been issued in Pennsylvania for the ME2 Pipeline through the summer of 2019 (PADEP, 2019a). Of these, 87 involved at least one IR, and many cited several IRs on the same NOV. An IR occurs when drilling fluid used in HDD is accidentally released to the ground or any surface water at the drill site or adjacent to the drill site. This includes releases to wetlands, streams, and upland areas, among others (PADEP, 2018a). …
>
> As of June 19, 2019, 125 IRs were recognized by PADEP, resulting in NOVs, with 40 percent of these IRs impacting wetlands, 52 percent impacting streams, 12 percent impacting uplands and 14 percent impacting another area or unnamed area. Many IRs impacted more than one location—for example, drilling fluids from the same IR were released into a stream and a wetland on or near the site (PADEP, 2019a).

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[161] *Id* at 8.

[162] Charles Stockton, Stockton Drilling Services, Technical Guide: information and advice for the successful planning and execution of horizontal directional drilling works, attached hereto and available at http://stocktondrillingservices.com/wp-content/uploads/2017/08/Stockton-HDD-ebook-4-1.pdf

[163] Meghan Betcher, Alyssa Hanna, Evan Hansen, David Hirschman, Pipeline Impacts to Water Quality: Documented impacts and recommendations for improvements (August 21, 2019), attached hereto and available at https://www.tu.org/wp-content/uploads/2019/10/Pipeline-Water-Quality-Impacts-FINAL-8-21-2019.pdf

> Tens to hundreds of thousands of gallons of drilling fluid had been released into surrounding areas. According to NOVs in which the amount of fluid released was quantified, an estimated 83,000 to 110,900 gallons of drilling fluid were released into the surrounding areas (PADEP, 2019a). This is a conservative number, because the NOVs also document 41 occasions when an unknown amount of drilling fluid was released during IRs.
>
> PADEP maintained databases detailing IRs to waters (PADEP, 2019b) and upland areas (PADEP, 2019c). According to these databases, almost 275,000 gallons of drilling fluid were released via IRs to Pennsylvania waters during construction of ME2, with 30 instances that did not result in a NOV or Consent Order Agreement. Almost 58,000 gallons were released in upland areas, with 114 instances that did not appear to have resulted in a NOV or Consent Order Agreement (PADEP, 2019b; PADEP, 2019c). PADEP requires all IRs to be contained and the fluids removed from the site where possible, such as in a wetland (Blosser, 2019). However, containment and removal from streams can be more difficult.[164]

The same report discusses an April 2017 incident where, while using HDD to construct the Rover Pipeline under the under the Tuscarawas River in Ohio,

> [A]n estimated two million gallons of drilling fluid contaminated with diesel fuel were spilled into a pristine, protected wetland and covered it in up to 13 inches of drilling mud (State of Ohio v. Rover Pipeline, 2017; Rudell, 2017a; Rudell, 2017b). These were not isolated incidents. In January 2018, almost 150,000 gallons of drilling fluid were spilled at the same Tuscarawas River drill site (Chow, 2018). Additionally, 50,000 gallons of drilling fluid were spilled one day after the 2017 Stark County incident in Richland County, Ohio, and the following month 10,000 gallons of drilling fluid were spilled into a Harrison County pond and stream (Associated Press, 2017; Hendrix and Renault, 2017). Eleven incidents of drilling fluid being discharged into state waters were listed in legal proceedings (State of Ohio v. Rover Pipeline, 2017).[165]

Similarly, a Minnesota case study discusses several frac-outs into wetlands in Minnesota, and discusses the causes, effects, site-specific conditions that allowed frac-outs to occur, and lessons learned.[166] The report specifically cites the need for additional analysis to determine long-term impacts to wetlands:

> There has been a great deal of speculation as to the ecological effects of releasing drilling fluid into sensitive environmental receptors, such as wetland systems. Many of the influences on recovery of the wetland systems will be determined by site-specific

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[164] *Id*. at 19.

[165] *Id*. at 26.

[166] Dana A. Slade**,** Case study: Environmental considerations of Horizontal directional drills (2000), attached hereto.

> variables. The long-term effects of depositing drilling fluid in wetlands are yet unknown. However, there is evidence that the short-term effects of releasing drilling fluid into wetlands include temporary displacement of resident fauna, smothering of benthic organisms and plant root systems, increased turbidity of water quality, and effects on water chemistry and wetland hydrology.[167]

While HDD may be the least damaging construction method at many water crossings, the risk of frac-outs may make it unsuitable at many other locations, which makes the need for a crossing-by-crossing analysis. The attached paper discusses the levels of toxicity of various HDD drilling fluids, the impacts of frac-outs on plant communities, invertebrates, and fish and fish habitat, and concludes that HDD may not be suitable at particularly sensitive locations.[168]

In short, the Corps must evaluate the risks and impacts of frac-outs associated with NWP 12 activities into wetlands and waterways, as well as standards by which to determine the safety of HDD at particular locations and mitigation measures.

f. District Engineer's Decision

We are pleased that the Corps is proposing to retain the language in the section entitled "D. District Engineer's Decision," which specifies that for linear projects, the cumulative effects determination must include "an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by NWP." 85 Fed Reg. 57392. Likewise, the proposed rule requires PCNs to include all waterways crossed by the project "including those single and complete crossings authorized by NWP but do not require PCNs" in order for the district engineer to evaluate the cumulative adverse environmental effects. *Id*. at 57391.

However, not all Corps district offices have appeared to follow that guidance, and/or have applied it inconsistently. For example, the proposed Keystone XL pipeline would cross over 700 waterways in three states. In 2017, the applicant, TC Energy, submitted three PCNs to proceed under NWP 12 in the states of Nebraska, South Dakota, and Montana, due to the pipeline's crossing of a few Section 10 waters in each state as well as potential impacts to listed species. Although a small number of waterways had triggered the need for PCNs, the three PCNs listed the hundreds of "non-PCN" waterways.

The Corps subsequently issued NWP 12 verifications that were limited to the individual Section 10 waterways, with no evaluation of cumulative effects of the overall project, including the hundreds of listed "non-PCN" waterways. In fact, the verifications made clear the scope of the cumulative effects analysis extended just outside those individual waterways. After those verifications were challenged in court, the Corps suspended them. However, it continued to maintain in court filings that TC Energy was free to proceed with construction through the

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[167] *Id*.

[168] Scott Reid, Paul Anderson, HDD may not be the answer for all sensitive water crossings, Pipe Line and Gas Industry, July 1998, Attached hereto.

hundreds of non-PCN waterways because those were "already authorized" under NWP 12 without the need for any Corps verification or other-project level approval; i.e., because they meet the terms and conditions of NWP 12 and do not require a PCN.

Clearly, the requirement that District Engineers evaluate the cumulative effects of all pipeline water crossings (including the "non-PCN" waterways) can only be effective in ensuring cumulative effects if the pipeline has not already been built through the majority of the waterways. As such, the Corps must clarify that when an applicant submits a PCN for a linear project crossing multiple waterways, (a) the PCN must include a description of all water crossings, even those that do not trigger the need for PCNs (i.e., all non-PCN waters); (b) the district engineer must evaluate the cumulative effects of all water crossings; (c) the district engineer must issue a verification that applies to all water crossings, including the non-PCN waters; and (d) the applicant cannot consider the non-PCN waters approved, and cannot begin construction through the non-PCN waters, until the Corps issues the verification.

2. Comments on NWP 48 for Shellfish Mariculture Activities and NWP A and B for Seaweed and Finfish Mariculture Activities

Due to the breadth of socio-economic, public health, and environmental problems associated with mariculture, the Corps should eliminate NWP 48 and not approve NWP A or B. The effects of this practice in many areas are still largely unknown, especially when long-term cumulative impacts are considered. Mariculture activities can harm sensitive waters and habitats, as well as economic, aesthetic, and recreational resources. If the Corps allows the continued use of NWP 48 and NWP A or B, it should improve its review of PCNs and require documentation of compliance with specific design and operational standards.

a. Mariculture Activities Can Harm Sensitive Waters and Habitats.

Mariculture activities can impact Designated Critical Resource Waters (DCRWs). DCRWs are environmentally sensitive, highly valuable, and especially vulnerable to the effects that finfish mariculture activities are known to produce. Mariculture activities can also negatively impact corals, seagrass beds, mangroves, critical habitat, and migration pathways. These ecosystems are particularly sensitive to the known adverse environmental effects of finfish mariculture, including its contributions of nutrients and sediments (Price and Morris 2013). Because these areas are nutrient sensitive, the "siting of fish farms near these habitats may have long-term consequences" (Price and Morris 2013). Experts recommend siting mariculture activities at least 200 meters away from all corals, seagrass beds, mangroves, critical habitat, and migration pathways (Price and Morris 2013). These sensitive areas are ecologically significant—playing crucial roles in providing specialized species habitat, promoting biodiversity, controlling erosion (especially during tropical storms), maintaining water clarity, and performing other vital functions.

Florida, where an experimental finfish farm is currently proposed, is home to the third-largest barrier reef in the world and is the only state in the continental U.S. to have extensive coral reef formations near its coasts (Florida Department of Environmental Protection 2020). Not only do aquatic species and local residents enjoy these reefs, millions of tourists visit Florida every year to enjoy them as well. NOAA predicts that coral reef activities in south Florida make $3.4 billion every year in sales and income for residents, as well as 36,000 jobs. Unfortunately, Florida's

corals have been at a heightened risk since 2014 because of extensive mortality due to Stony Coral Tissue Loss Disease. Thus, these corals require enhanced protection against other known stressors, including the eutrophication and sedimentation that will occur if finfish mariculture is permitted to take place nearby (Price and Morris 2013).

Florida's seagrasses are a significant part of the ecosystem as they provide food and habitat to countless species, including the manatees and sea turtles that are beloved by Florida residents and tourists alike. Seagrass also acts as a home for up to 90% of Florida's recreationally and commercially important fish and shellfish at some point in their lives (FWC 2019). In 2014 alone, Florida's commercial fishing industry made $140 million and recreational fishing spending brought in $6 billion (University of Florida 2020). Seagrass beds have suffered significant declines in the last 50 years, largely due to phytoplankton blooms caused by nutrient pollution (FWC 2019). Seagrass needs light to survive, so reduced water quality due to sedimentation and nutrient enrichment from finfish mariculture will likely damage or kill Florida's already threatened seagrass beds (Price and Morris 2013).

Like seagrasses and coral, mangroves provide habitat to a wide array of Florida's recreationally and commercially important species, as well as attract tourists. In addition, mangroves provide critical protection to Florida's coasts. They not only cycle and filter nutrients and chemicals, but also provide physical protection against erosion and absorb storm surge impacts. During Hurricane Irma in 2017, mangroves reduced 25% of damage—preventing $1.5 billion in direct flood damage and protecting over 500,000 people (Narayan et al. 2019). Florida mangroves have experienced massive acreage losses in recent years, largely due to human activities and the effects of climate change (Narayan et al. 2019). The nutrient enrichment and other reductions in water quality due to finfish mariculture will further threaten this valuable and vulnerable ecosystem (Price and Morris 2013).

Mariculture activities are well-known to release a variety of harmful substances into the surrounding waters, including fish waste, excess fish feed, antibiotics, antifoulants, disinfectants, and other toxic chemicals. These substances increase water turbidity and nutrient levels, decrease dissolved oxygen levels, and have toxic effects on the water column and sediments in areas surrounding mariculture sites (Price and Morris 2013). Fish feed and antifoulants often contain heavy metals, which is toxic to marine organisms and binds to sediments for long periods of time, thus accumulating in benthic habitats below the mariculture site. The chemicals released into surrounding waters during finfish activities can persist in these waters and have long-term adverse effects on nearby marine organisms (Price and Morris 2013).

It is widely agreed by experts that the most effective way to avoid these devastating environmental impacts is to site mariculture activities in deep, well-flushed areas (Gentry et al. 2017). Siting in deep, open waters results in a dispersal of the released matter and chemicals into far broader areas (Price and Morris 2013). Mariculture activities increase nitrogen and phosphorous levels in nearby waters, resulting in increased phytoplankton and algae. These heightened nutrient levels can contribute to HABs and eutrophication of coastal waters (Price and Morris 2013). Florida, and many other areas where mariculture activities are or could be sited already suffer widespread and long-lasting HABs that devastate the coastal environment, cause massive die-offs of species, and release airborne toxins that put public health at risk.

b. Mariculture Activities Harm Economic, Aesthetic, and Recreational Resources.

Finfish and shellfish mariculture can have adverse effects on recreational activities by closing off areas of navigable waters that would otherwise be used for boating, fishing, and other activities. Mariculture activities can interfere with commercial and recreational fishing activities by excluding fishers from the waters where the mariculture activities occur. Additionally, if escaped finfish outcompete wild finfish, these mariculture activities also reduce recreational and commercial opportunities for fishers who seek to catch wild finfish and crustaceans. Commercial and recreational fishing is a multibillion-dollar industry in Florida and draws enormous numbers of tourists each year, who then pump money into many other facets of Florida's economy. Engaging in water-related recreational activities is of the utmost value to many Floridians, as well as to tourists. Tourism is a major industry in Florida and reducing access to certain waters will harm that industry. According to the Florida Chamber of Commerce, tourism brought over $6 billion in state taxes in 2017 alone and is "key" to Florida's economic competitiveness (Wilson 2018).

Mariculture activities in coastal waters are also likely to adversely affect the "visual, acoustic, and olfactory characteristics" of coastal areas (NWP B Decision Document). Mariculture operators often dump trash and unwanted equipment into the water, which washes up on shorelines and decreases the value of the area for both residents and tourists (Hawkins et al. 2020). Waterfront property owners will suffer aesthetic impacts and reduced property values.

c. The Corps Should Improve Its Review of PCNs and Require Documentation of Compliance with Specific Design and Operational Standards.

Should the Corps approve the use of NWP B, it must improve its review of PCNs to be more rigorous. The PCN process is a critical tool, allowing district engineers to take into account the activity-specific impacts of the proposed activity as well as the effects those activities will have on the specific waters that will be affected by the NWP activity. 85 FR 57314. Because of the scope and magnitude of impacts that NWP B activities are expected to have on the environment, the controlling influence that proper siting and mariculture procedures have these environmental impacts, and the relative novelty of this practice (Montgomery 2019)—PCNs for this NWP should require a higher degree of detail. Additionally, expedited authorization for this NWP should not be available.

When evaluating the potential impacts of this proposed NWP, the Corps states that finfish mariculture may have "positive, neutral, or negative effects on aquatic resource functions and services," depending upon "*how* those activities are operated" (NWP B Decision Document) (emphasis added). The Corps should require districts to add a regional condition requiring applicants to ensure their projects will comply with specific standards for the design of structures and equipment, as well as operational procedures that will be set in place in order to best avoid and mitigate the inevitable harms of finfish mariculture on surrounding waters and species. Detailed documentation of these standards should be required as part of an applicant's PCN for all NWP B activities.

After submitting a PCN, prospective permittees typically may begin work either: upon written notification of approval by the district engineer *or* 45 days after the district engineer receives the PCN, even if the permittee has not received written notification from the district engineer. This preemptive permission is problematic, particularly in the scope of proposed NWP B and its associated risks. When providing written notification in response to PCNs, district engineers are not only authorizing the activity to proceed, but also imposing any special conditions necessary for the activity to comply with the "no more than minimal individual and cumulative adverse environmental effects" requirement. 85 F.R. 57315. It is highly likely that NWP B activities will require special conditions due to the multitude of potential adverse effects.

NWP B activities should not be permitted until written verification is provided by a district engineer, similarly to General Condition 18's requirements for activities that may affect ESA-listed species. Although the Corps is proposing to change this requirement this year (with no valid explanation as to why, other than conformity with the other NWPs), NWPs 21 and 49 historically required permittees to wait for written verification prior to beginning work. This required applicants to clearly demonstrate that their project's impacts to the environment would be minimal and allowed district engineers to make careful, case-specific minimal impact determinations. In challenges to the lawfulness of NWP 21 issuances, courts have found the Corps written-verification requirement for this NWP to assist in ensuring environmental protections for projects authorized by the NWP, thereby rendering the NWP's issuance lawful and not arbitrary and capricious. *Ohio Valley Envtl. Coalition v. Hurst*, 604 F. Supp. 2d 860 (S.D.W. Va. 2009). This requirement ensures the Corps has adequate time to review the extensive information that should be included in PCNs for higher-risk NWPs, as well as time to coordinate with other agencies as necessary and accurately determine whether the Corps must exercise discretionary authority to ensure no more than minimal effects.

Relevant scientific studies, as well as the Corps itself, emphasize site selection as a crucial means to reduce and mitigate the adverse effects of activities authorized by this NWP on sensitive and valuable watersheds (Corps NWP B Decision Document 2020). Because the Jacksonville District is home to waters and habitats that are both high-value and vulnerable, it is important to restrict this NWP beyond its general national limitations. The Jacksonville District should add a regional condition specifying that NWP B activities may only take place in open waters of a certain depth that are an adequate distance away from DCRWs, corals, seagrass beds, mangroves, critical habitat, and migration pathways.

d. NWP B Permittees Should Be Required to Conform to Standards to Reduce the Potential for Fish Escapes.

One of the greatest threats that NWP B activities pose to marine ecosystems is the potential for finfish escapes. When an escape occurs, the cultivated finfish compete with wild fish stocks for food and space, often wild finfish habitats. Finfish escapes have been shown to have adverse effects on mortality and growth of wild individuals of finfish. These escapes occur routinely during finfish mariculture operations, with some more severe than others. In August 2017, an aquaculture facility in Washington State spilled at least 240,000 cultivated non-native fish into Puget Sound (Lee 2018). The farmed fish took over the nearby waters and continued to be documented even months later and hundreds of miles from the initial escape site (Mapes 2017).

Escaped cultivated fish often interbreed with wild fish stock, producing hybrids that homogenize the genetic compositions of local populations and resulting in long-term declines in fitness and productivity of wild finfish populations (Atalah and Sanchez-Jerez 2020). Wild fish stock experience a reduced ability to adapt, reproduce, and survive in changing environmental conditions. This risk is exacerbated because cultivated finfish often have low genetic diversity due to long-term artificial selection.

When mariculture fish are not native to the area in which they are being cultivated and held, escapes are especially problematic (Atalah and Sanchez-Jerez 2020). These escapes allow the cultivated fish to spread pathogens and parasites to wild species, causing outbreaks of disease and further movement of the pathogens and parasites. According to the Corps' NWP B Decision Document, cultivating finfish species in ocean waters outside their native ecoregions is a "high risk activity that could have substantial adverse ecological and socio-economic outcomes" (NWP B Decision Document 2020).

Finfish escapes result from operational or technical failures, structural failures, or mishaps during transfers of fish. The most common cause of an escape is structural failures—which occur more often as a result of strong currents and winds during heavy storms. Storms damage mariculture structures and strain the mooring structures that hold the cages and pens in place (Jensen et al. 2010), which increases a heightened potential for fish escapes. Even a single adverse weather event could have devastating effects on the surrounding ecosystem by allowing the release of cultivated fish. Because the Jacksonville District is particularly susceptible to hurricanes, a regional condition should be added to require a higher degree of structural integrity when designing mariculture structures that can better withstand heavy storms. The risk of escapes can be reduced by using materials that are more effective at withstanding damage.

A universal technical standard should be promulgated to specify requirements for the design of feed barges, floaters, net cages, and mooring systems necessary to cope with environmental forces (Jensen et al. 2010). Norway is an example of a government that uses a highly detailed technical standard for mariculture equipment and structures, and this standard has been described as incredibly useful to prevent escapes at an industry-wide scale. Norwegian government officials state this standard was enacted through legislation because "voluntary standards are unlikely to be effective" (Jensen et al. 2010).

Regional conditions should require permittees to implement a standard containment management system, including but not limited to: specific processes to prevent escape, a mandatory escape reporting procedure, and a plan for recapturing escaped finfish. Applicants should be required to include a manual describing their plans for these systems in all PCNs for this NWP.

Processes to prevent escape can include training and educating employees how best to avoid operational errors and mitigate any equipment failures. Operators should also enact strict maintenance and upkeep routines and checks. Investigators predict the massive fish spill in Washington discussed above was caused by the facility's failure to adequately clean the nets containing the fish, leading to the net pen's collapse (Lee 2018).

Operators should also be required to set specific emergency procedures to be used in the event of spills, fish escapes, and structural failures. Escape-reporting procedures are beneficial because

efforts to recapture escapees can be made, and the causes of escapes can be tracked and evaluated. Many regions that presently have finfish mariculture industries require escape events to be reported promptly, with non-reporters subjected to a fine (Naylor et al. 2015). Some regions require mariculture operators to mark fish so they can be identified in the event of an escape. One region requires that within 30 days of a reportable fish escape, the facility's containment management system will be inspected for compliance with the relevant standards.

The Corps should require escape events to be reported and should maintain a database so these escapes can be monitored and better prevented in the future. The adverse effects of fish escapes are exacerbated when repeated fish escapes have occurred in an area, so it is important to ensure the Corps is aware of repeat offenders.

e. NWP B Permittees Should Be Required to Conform to Standards to Reduce Additional Harms to the Ecosystem.

Structural and design requirements are also necessary in order to mitigate harm to the ecosystem, including marine mammals and other wildlife. Oftentimes the structural habitats and excess feeds associated with mariculture activities will attract marine mammals, sea turtles, and wild fish, including sharks, as refuge areas and supplemental food sources.

When wild species are able to bite through net pens and eat the cultivated fish, it alters the food webs of marine and estuarine waters from their natural state. The predation of mariculture fish through the net pens can also cause injuries and stress to the cultivated fish, which makes them more susceptible to disease. Additionally, when predators identify a mariculture site as a food source and bite the net open, the cultivated fish are free to escape, leading to the array of fish-escape issues listed above. A regional condition should be added to require the use of stronger nets that can withstand bites from predatory species.

Further, marine mammals, sea turtles, and birds often become fatally entangled in mariculture equipment, including flexible mooring, fish pens, and connection lines. This risk can be reduced by requiring that mariculture activities only take place outside of marine mammal migratory routes, keeping lines taut, using predator exclusion nets, and using rigid net materials.

According to the Corps' NWP B decision document, operators utilizing this NWP may use acoustic deterrent and harassment devices. The use of these devices contributes to noise pollution in oceans and harms marine organisms. The use of these devices should be limited, and should have to be disclosed in PCNs so effects can be considered.

The enormous amount of fish feed that will be required in finfish mariculture facilities has the potential to cause a multitude of adverse effects on the ecosystem. Many mariculture facilities rely on genetically engineered ingredients like corn, soy, and algae which do not exist naturally in a fish's diet. Additionally, toxic heavy metals like cadmium and zinc are often present in finfish feeds. Feed formulation and feeding efficiency should be appropriately standardized and managed in order to lessen the adverse impacts environmental impacts caused by finfish mariculture activities. By decreasing the nutrient loading at mariculture facilities, impacts on water quality, benthic habitats, and other facets of the environment can be lessened. Carefully developed feed formulations are necessary (Lee 2018).

Antibiotics, herbicides, pesticides, and other veterinary drugs are used frequently and in mass amounts in finfish mariculture facilities in order to prevent and treat the inescapable disease outbreaks that occur. However, these drugs have no way of staying confined to the facility—drug residues are discharged and absorbed into the surrounding marine ecosystem. These drugs contaminate nearby water and wildlife and cause substantial, wide-spread harm. A finfish mariculture facility's release of wastewater including pharmaceuticals, heavy metals, and excess nutrients from feed and fish waste is an unavoidable part of this practice. The mass amounts of confined fish in finfish mariculture facilities may also become breeding grounds for parasites and disease, which spread to surrounding organisms. Because of this, regional standards should be set in place to limit these toxins.

3. Comments on other NWPs that result in more than minimal individual and cumulative adverse impacts

- NWP 3 (Maintenance) - This NWP allows for stream channel modification, temporary structures, fills, and work, including the use of temporary mats necessary to conduct maintenance activities, all without needing a PCN, which as discussed above is problematic and may result in the Corps failing to undertake project-specific consultation where necessary, or for the cumulative adverse impacts of the NWP to be more than minimal without the Corps tracking such impacts. This NWP poses a risk of significant direct and cumulative environmental harm, and such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 8 (Oil and Gas Structures on the Outer Continental Shelf) - The Corps must consult with NMFS over impacts to marine mammals, especially from noise impacts associated with construction activities. Anthropogenic noise pollution can mask marine mammal communications at almost all frequencies these mammals use.[169] "Masking" is a "reduction in an animal's ability to detect relevant sounds in the presence of other sounds."[170] These impacts must be analyzed in an EIS and through ESA consultation.

- NWP 13 (Bank Stabilization) - This NWP poses a huge risk of sediment-related impacts. Commenters are concerned that NWP 13 has the potential to be misused, leading to sediment loading well in excess of the intended amounts, and which would have more than minimal impacts to the environment. It remains completely unclear how the Corps is ensuring that the quantity of dredged or fill material discharged into waters of the United States does not exceed one cubic yard per running foot below the plane of the ordinary high water mark or the high tide line," or how violations would be enforced. This limit suggests that the Corps is aware that sediment from activities undertaken

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[169] *See, e.g.*, Hildebrand, J.A., *Impacts of Anthropogenic Sound, in* MARINE MAMMAL RESEARCH: CONSERVATION BEYOND CRISIS (Reynolds, J.E. III et al., eds. 2006); Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 CANADIAN J. ZOOLOGY 1091-1116 (2007).

[170] OCEAN NOISE AND MARINE MAMMALS, NAT'L RES. COUNCIL at 96 (2003), *available at* http://www.nap.edu/openbook.php?record_id=10564&page=R1.

pursuant to NWP 13 pose a risk of environmental harm, yet it does not appear that any specific process is in place to ensure that excessive sediment does not continue to cause adverse environmental impacts to our Nation's waters in violation of 404(e). The Corps must develop a means for measuring, monitoring and enforcing sediment limits in order to ensure that this NWP complies with the CWA.

Furthermore, NWP 13 poses a risk of such sedimentation going unrecorded and overlooked when considering the cumulative impacts of the NWP program. This is due to the fact that PCNs are not required for many actions undertaken pursuant to NWP 13. This is no small issue. For example, between 1990 and 2002, USACE authorized almost 82,000 linear feet of new bank stabilization structures on the Yellowstone River. The cumulative impacts of activities such as these must be considered in an EIS and through ESA consultation to ensure that NWP 13 activities are not having more than minimal cumulative environmental impacts and will not jeopardize listed species.

- NWP 14 (Linear Transportation Projects) - Linear transportation projects (i.e. roads) can have devastating impacts on habitats and the species that rely on them. Roads affect wildlife populations in numerous ways, from habitat loss and fragmentation, to barriers to animal movement, wildlife mortality and runoff from impervious surfaces. Indeed, the impacts of roads on wildlife populations is a significant and growing problem worldwide, which has been the focus of many studies and caused increasing concern for transportation and natural resource management agencies.

  Habitat fragmentation affects numerous ecological process across multiple spatial and temporal scales, including changes in biotic regimes, shifts in habitat use, altered population dynamics, and changes in species compositions. Patch size has been identified as a major feature influencing plant and small mammal communities, and some wildlife populations are vulnerable to collapse in fragmented habitats. Reduced landscape connectivity and limited movements due to roads may result in higher wildlife mortality, lower reproduction rates, and ultimately smaller populations and overall lower population viability.

  Roads and other impervious surfaces also result in "changes in runoff and flow [that] have been shown to adversely affect aquatic habitat and species, including endangered and threatened species."[171] These harmful effects have underscored the need to maintain and restore essential movements of wildlife across roads to maintain population movements and genetic interchange.

  These impacts must be assessed in an EIS and through programmatic ESA consultation on the NWP program to ensure that NWP 14 activities are not having more than minimal cumulative environmental impacts and will not jeopardize listed species. Further, this NWP poses a risk of significant direct and cumulative environmental harm, and such activities (particularly roads or other linear projects longer than a few hundred feet) should not be authorized by a NWP, but instead require an individual permit.

[171] 2014 NMFS BiOp at 301.

- NWPs 18 (Minor Discharges) and 19 (Minor Dredging) - Commenters are concerned that these NWPs provide an opportunity for permittees to potentially "game the system" by claiming that dredging activities or discharges will be minor, even if they turn out not to be. While these NWPs have specific limitations (i.e. NWP 18 - 25 cubic yard limit for discharged material, loss of more than 1/10-acre) it remains unclear how the Corps can ensure these are being followed, especially since PCNs are not always required for these NWPs. This concern would be exacerbated should the Corps increase the cubic yard limit for NWP 19 from 25 to 50 cubic yards as proposed.

  Since these NWPs pose a risk of significant direct and cumulative environmental harm from sediment and other pollutants if the activities end up being more than "minor," such activities should not be authorized by a NWP, but instead require an individual permit. At the very least, a PCN should be required so that the Corps can confirm that the activity does not have a likelihood of causing discharges above the specific limits provided in the rule.

- NWP 21 (Surface Coal Mining Activities) – NWP 21 activities have the potential for significant direct and cumulative environmental impacts, including impacts to listed species, and should not be authorized through a NWP. Surface coal mining has had, and will continue to have, significant impacts on the environment.[172] Coal mining results in detrimental changes in the pH and conductivity of waterways, can lead to elevated selenium and its derivatives which have negative effects on freshwater dependent species,[173] and to increased downstream sedimentation that fills in the spaces between rocks that many species need to fulfill their life history requirements, including freshwater mussels, snails, darters and other benthic fishes, crayfishes, and aquatic salamanders. The impacts to aquatic dependent species from increased siltation and sedimentation are numerous, including both direct harm to species via gill clogging and

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[172] Some estimates suggest that NWP 21 activities have eliminated more than 1,200 miles of streams in the past. *See* Congressional Research Service, Report on the ACOE NWP Program (Jan. 30, 2012) (attached hereto).

[173] Debruyn, A. M., & Chapman, P. M. (2007). Selenium toxicity to invertebrates: will proposed thresholds for toxicity to fish and birds also protect their prey?. Environmental science & technology, 41(5), 1766-1770; Adam-Guillermin, C., Fournier, E., Floriani, M., Camilleri, V., Massabuau, J. C., & Garnier-Laplace, J. (2009). Biodynamics, subcellular partitioning, and ultrastructural effects of organic selenium in a freshwater bivalve. Environmental science & technology, 43(6), 2112-2117; Orr, P. L., Guiguer, K. R., & Russel, C. K. (2006). Food chain transfer of selenium in lentic and lotic habitats of a western Canadian watershed. Ecotoxicology and environmental safety, 63(2), 175-188; Conley, J. M., Funk, D. H., Cariello, N. J., & Buchwalter, D. B. (2011). Food rationing affects dietary selenium bioaccumulation and life cycle performance in the mayfly Centroptilum triangulifer. Ecotoxicology, 20(8), 1840-1851; Lemly, D. A. (2009). Aquatic hazard of selenium pollution from mountaintop removal coal mining. Informally published manuscript, Biology, Wake Forest University, Winston-Salem, North Carolina; Young, T. F., Finley, K., Adams, W. J., Besser, J., Hopkins, W. D., Jolley, D., ... & Unrine, J. (2010). 3 What You Need to Know about Selenium. Ecological assessment of selenium in the aquatic environment, 7.

injury, smothering, reduced visibility, and adverse changes to feeding, breeding, and sheltering substrates.[174]

The net results of the impacts of coal mining have been significant water pollution, loss of natural areas, and disproportionate reductions in biological diversity in mined places. In fact, water quality degradation from surface coal mining has contributed to the need to list several species, such as the diamond darter in West Virginia,[175] the addition of the Kentucky arrow darter to the candidate list,[176] and the listing of the Big Sandy and Guyandotte River crayfishes.[177]

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[174] Sutherland, A. B., Maki, J., & Vaughan, V. (2008). Effects of suspended sediment on whole-body cortisol stress response of two southern Appalachian minnows, Erimonax monachus and Cyprinella galactura. Copeia, 2008(1), 234-244; U.S. Fish and Wildlife Service (FWS). Determination of endangered status for the Rayed Bean and Snuffbox mussels throughout their ranges, Final Rule. 77 Fed. Reg. 08,632 (2012).; U.S. Fish and Wildlife Service (FWS). Cumberland Arrow Darter Candidate Species Assessment Form (2013). 31 pp.; U.S. Fish and Wildlife Service (FWS). Endangered Species Status for the Big Sandy Crayfish and the Guyandotte River Crayfish, Proposed Rule. 80 Fed. Reg. 18,710 (2015); Wheeler, B.A., E. Prosen, A. Mathis, and R.F. Wilkinson. 2003. Population declines of a long-lived salamander: A 20+ year study of hellbenders, *Cryptobranchus alleganiensis* Biological Conservation 109:151-156.

[175] U.S. Fish and Wildlife Service (FWS). (2013). Endangered species status for diamond darter, final rule. 78 Fed. Reg. 45,079 ("While the overall percentage of the entire Elk River watershed subjected to mining activities may be small, watersheds of some Elk River tributaries, such as Leatherwood Creek, are highly dominated by mining activity and include mining permits encompassing 81 to 100 percent of the subwatersheds (WVDEP 2011b, p. 37). Mining is likely a significant factor affecting the water quality of streams, such as Leatherwood Creek, that are principle tributaries to the Elk River. The effects of these mining activities conducted both within the Elk River mainstem and in Elk River tributaries, coupled with the effects from other activities described in Factor A, are continuing threats to the diamond darter.").

[176] U.S. Fish and Wildlife Service FWS. (2010). Candidate Notice of Review. 75 Fed. Reg. 69,224 ("The subspecies' habitat and range have been severely degraded and limited by water pollution from surface coal mining and gas-exploration activities; removal of riparian vegetation; stream channelization; increased siltation associated with poor mining, logging, and agricultural practices; and deforestation of watersheds. The threats are high in magnitude because they are widespread across the subspecies' range. In addition, the magnitude (severity or intensity) of these threats, especially impacts from mining and gas- exploration activities, is high because these activities have the potential to alter stream water quality permanently throughout the range by contributing sediment, dissolved metals, and other solids to streams supporting Kentucky arrow darters, resulting in direct mortality or reduced reproductive capacity. The threats are imminent because the effects are manifested immediately and will continue for the foreseeable future.").

[177] *See* U.S. Fish and Wildlife Service (2016) Threatened species status for the Big Sandy crayfish and Endangered species status for the Guyandotte River Crayfishes, final rule. 81 Fed. Reg. 20,450 ("The common physical changes to local waterways associated with coal mining include increased erosion and sedimentation, changes in flow, and in many cases the complete

Importantly, NWP 21 allows for the total loss of headwater streams, which serve an important ecological function, as they "trap floodwaters, recharge groundwater, remove pollution, provide fish and wildlife habitat, and sustain the health of downstream rivers, lakes, and bays."[178]

Furthermore, the existing regulatory framework has proven insufficient to prevent environmental harm from NWP 21 activities, and the limitation in NWP 21 regarding authorization under Title V of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) is insufficient to ensure that projects using NWP 21 will meet the requirements of CWA Section 404(e). Since most surface coal mining activities do not undergo ESA Section 7 consultation—due to an unlawful 1996 Formal Section 7 Biological Opinion and Conference Report on Surface Coal Mining and Reclamation Operations Under the Surface Mining Control and Reclamation Act of 1977—the Corps cannot rely on the SMCRA process to fulfill its ESA or CWA duties.

As discussed above, the Corps has exacerbated the potential for adverse impacts from NWP 21 by proposing to remove the 300-foot loss limit for stream beds. Commenters are adamantly opposed to this change. The 300 foot limit has proven to be inadequate to prevent excessive harm to waterways and wildlife from surface coal mining activities, and the appropriate response would be to further limit the use of NWP 21, not to broaden its use and remove threshold limits that are necessary to moderate harm. Allowing more than 300 feet of stream bed loss from NWP activities poses significant harm to listed species. This proposal must be subject to ESA Section 7 consultation, and due to the significant environmental harm that would ensue, this proposed change should be rejected.

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burial of headwater streams"); *see also* U.S. Fish and Wildlife Service. (2015). Endangered species status for the Big Sandy and Guyandotte River Crayfishes, proposed rule. 80 Fed. Reg. 18,726 ("Coal mining—The past and ongoing effects of coal mining in the Appalachian Basin are well documented, and both underground and surface mines are reported to degrade water quality and stream habitats. Notable water quality changes associated with coal mining in this region include increased concentrations of sulfate, calcium, and other ions (measured collectively by a water's electrical conductivity); increased concentrations of iron, magnesium, manganese, and other metals; and increased alkalinity and pH, depending on the local geology. The common physical changes to local waterways associated with coal mining include increased erosion and sedimentation, changes in flow, and in many cases the complete burial of headwater streams. These mining-related effects are commonly noted in the streams and rivers within the ranges of the Big Sandy and the Guyandotte River crayfishes. The response of aquatic species to coal mining-induced degradation are also well documented, commonly observed as a shift in a stream's macroinvertebrate (e.g., insect larva or nymphs, aquatic worms, snails, clams, crayfish) or fish community structure and resultant loss of sensitive taxa and an increase in tolerant taxa. As mentioned above, coal mining can cause a variety of changes to water chemistry and physical habitat; therefore, it is often difficult to attribute the observed effects to a single factor. It is likely that the observed shifts in community structure (including the extirpation of some species) are, in many cases, a result of a combination of factors." (internal references omitted)).

[178] 80 Fed. Reg. at 44,439.

Commenters are also adamantly opposed to removing the need for PCN verification and allowing NWP 21 activities to proceed after 45 days if the Corps has not responded. As set forth above, the Corps cannot ensure that impacts will be only minimal if it has only 45 days to review all PCNs, and this proposal would therefore allow activities to proceed even if they will violate CWA 404(e). Once again, this proposal unlawfully puts the interests of the regulated public (i.e. predictability) above the Corps' statutory mandate to protect the environment. The Corps has requested an explanation as to why discharges associated with surface coal mining activities should be treated differently than other NWPs. As discussed above, coal mining often affects sensitive headwater streams and implicates unique sources of harm, such as changes in pH and conductivity of waterways, as well as elevated selenium and its derivatives which have negative effects on freshwater dependent species. It also leads to increased downstream sedimentation that fills in the spaces between rocks that many species need to fulfill their life history requirements, including freshwater mussels, snails, darters and other benthic fishes, crayfishes, and aquatic salamanders. Coal mining is therefore clearly different from many other NWP-authorized activities and must have stricter controls.

In sum, the environmental impacts of NWP 21 must be assessed in an EIS and through programmatic ESA consultation to ensure that NWP 21 activities will not have more than minimal cumulative environmental impacts and will not jeopardize listed species. Since these NWP poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities) - The Corps must assess the potential for activities undertaken pursuant to NWP 27 to affect listed species. NWP 27 authorizes "any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities)," and while Commenters would likely be in favor of returning such areas to natural conditions, the impacts that such activities may have on downstream communities must be analyzed through programmatic ESA Section 7 consultation.

- NWP 29 (Residential Developments) - NWP 29 covers residential development, which includes golf courses. These activities can have devastating impacts on the environment through habitat loss and fragmentation, nutrient loading that causes algal blooms, and the use of pesticides/herbicides. These impacts must be assessed in an EIS and through programmatic ESA consultation to ensure that NWP 29 activities will not have more than minimal cumulative environmental impacts and will not jeopardize listed species. Since NWP 29 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 39 (Commercial and Institutional Developments) - Commercial developments have the potential to cause significant environmental harm through habitat loss and fragmentation, as well as surface and groundwater contamination. These impacts must be assessed in an EIS and through programmatic ESA consultation to ensure that NWP 39

activities will not have more than minimal cumulative environmental impacts and will not jeopardize listed species.

The Corps has proposed removing the 300-linear foot streambed loss limit for this NWP, which as discussed above will lead to violations of CWA 404(e), and should be rejected. As with several of the NWPs, the Corps will now rely exclusively on the 1/2-acre limit of wetland/waterway loss for NWP 39 activities; however, the Corps must consider the cumulative impacts from the many NWP 39 activities that take place each year. Since NWP 39 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 40 (Agricultural Activities) - As with several other NWPs, NWP 40 only allows 1/2 acre of wetland/waterway loss; however, the Corps must consider the cumulative impacts from the hundreds of NWP 40 activities that take place each year. These include activities that introduce not only sediment, but fertilizers and pesticides into our Nation's waters. Since NWP 40 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 44 (Mining Activities) - As the Corps previously noted, mining activities authorized by this NWP often involve impacts to open waters, such as the mining of sand and gravel from large rivers. As with other NWPs, NWP 44 provides a 1/2-acre limit for losses of waters of the United States. The Corps has argued (for the 2017 revision) that a total (vegetated non-tidal wetlands and open waters) 1/2-acre limit "will provide further assurance that this NWP will only authorize activities with no more than minimal individual and cumulative adverse environmental effects." No further information or support has been provided for the new proposal. Again, the Corps must consider the cumulative impacts from the dozens of NWP 44 activities that take place each year, as well as other NWP activities in those same waters. Since NWP 44 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 48 (Commercial Shellfish Aquaculture [Mariculture] Activities) – As set forth above, this NWP allows activities that pose a significant risk of cumulative impacts to listed species. Moreover, the Corps has not conducted a sufficient analysis of the cumulative impacts of NWP 48 activities, and the analysis that has taken place is indicative of the Corps failure to properly ensure that NWP activities will have only minimal cumulative adverse effect on the environment as required under the CWA.[179]

  The Corps has failed to provide adequate documentary support or substantive evidence for its conclusions that permit terms and conditions would be sufficient to ensure that environmental effects would be minimal and not significant. Nor has the Corps imposed monitoring requirements that would ensure that NWP terms and conditions, including

[179] 33 U.S.C. § 1344(e)(1); 33 C.F.R. § 323.2(g).

those resulting from subsequent exercises of discretionary authority, would be adequately policed.

The Corps has therefore failed to properly evaluate the actual cumulative impacts of NWP 48 activities, due to the unreasonably low and inaccurate assessment of the amount of usage.[180] NWP 48 Authorized activities are resulting in more than minimal and significant adverse environmental effects and contributing to significant degradation of waters of the United States by effects on water quality, effects arising from the introduction of plastics, and effects on eelgrass, salmon, birds, herring, and flat fish. The cumulative magnitude of these effects is increased by the greatly increased number of authorized activities.

The Corps' failure to properly consider these impacts violates the CWA and the ESA. These impacts must be considered in an EIS and through formal programmatic ESA consultation. Since NWP 48 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 49 – Coal Remining Activities. The Corps has proposed removing the provision requiring the permittee to receive a written authorization from the Corps before commencing with NWP 49 activities, to be consistent with the other NWPs requiring PCNs and allowing default authorizations to occur if the Corps district does not respond to the PCN within 45 days of receipt of a complete PCN. As set forth above, this is a terrible idea that is inconsistent with the CWA Section 404 requirements.

- 50 (Underground Coal Mining Activities) – As with surface coal mining, underground mining of coal has had, and will continue to have, significant impacts on the environment. The Corps has proposed removing the 300-foot streambed loss limit and the requirement for written verification for this NWP. For the reasons set forth above, these proposals must be rejected. Since NWP 50 poses a risk of significant direct and cumulative environmental harm, such activities should not be authorized by a NWP, but instead require an individual permit.

- NWP 54 (Living Shorelines) – NWP 54 provides for the use of "living shorelines" for bank stabilization. While this method certainly could be an improvement over hard stabilization, it does pose certain risks to existing shoreline habitats. It also has the potential to encourage Port Authorities, Applicants and the Corps itself to do more environmentally destructive dredging than necessary; to dispose of waste materials in nearshore waters; and to allow for real estate development sites in disaster-prone in-water locations, by allowing dredge spoil and other waste materials and fill to be used to construct "living shorelines" without requiring these proposals to undergo the scrutiny of individual permit review. This NWP thus opens the door to extensive alteration and destruction of irreplaceable nearshore habitats whose preservation is essential for sustaining fisheries, endangered species, marine mammals and other living marine resources, as well as prevent

[180] The Corps must predict cumulative effects by estimating "the number of individual discharge activities likely to be regulated." 40 C.F.R. §§ 230.7(b), 230.11.

public scrutiny of, and public comment on, "living shoreline" proposals for altering and potentially destroying nearshore habitats.

CWA Sec. 404(e) allows the issuance of general permits **only** for activities that are "similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment." NWP 54 violates Sec. 404(e) by giving a blanket authorization to a broad array of activities that on their face are not similar in nature, in many different types of waters.

- Proposed NWP C (Electric Utility Line and Telecommunications Activities) - Commenters are very concerned about the impacts from electric utility lines on migratory avian populations from collisions with power lines. Such collisions are not only common, they jeopardize listed species, such as whooping cranes. Indeed, power line collisions are the greatest source of mortality for the iconic and critically endangered whooping crane. It is therefore shocking that the Corps has failed entirely to analyze the potential harm to bird populations from its permitting of utility lines pursuant to this proposed NWP.

  The Corps has invited comments on "national best management practices that could be added as terms to any of these NWPs to help ensure that a particular type of utility line results in no more than minimal individual and cumulative adverse environmental effects." Commenters submit that this is precisely the point of the programmatic ESA consultation process the Corps refuses to initiate, which is intended to allow the Services to work with the Corps to establish national best management practices to ensure against jeopardy. Programmatic consultation is required on this proposed NWP to ensure that authorized activities will not jeopardize species, and so that the Corps and the Services can develop methods to track and respond to such collisions to prevent jeopardy.[181]

  Regardless, Commenters provide the following best management practices that the Corps should require for utility lines/telecommunications projects:

    - Avian Powerline Interaction Committee documents (available at https://www.aplic.org/mission) including:
      - Avian Protection Plan (APP) Guidelines
      - Suggested Practices for Avian Protection on Power Lines
      - Reducing Avian Collisions with Power Lines: State of the Art in 2012
    - Region 6 Guidance for Minimizing Effects from Power Line Projects Within the Whooping Crane Migration Corridor (available at https://puc.sd.gov/commission/dockets/electric/2019/el19-003/memo.pdf)

- General Condition 2 (Aquatic Life Movements) - While this GC states that "No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water," Commenters are

[181] The Corps appears to even acknowledge the

concerned that this is not being tracked, and therefore not enforced, with the result that the NWPs are having more than minimum impacts on the environment in violation of the CWA. The Corps should provide a more specific protocol for ensuring that NWP-activities do not have more than minimal environmental impacts, and its blind reliance on the language of the General Conditions without some means of enforcing these limitations is insufficient to meet the requirements of CWA section 404.

- General Condition 18 (Endangered Species) - Commenters have raised several concerns herein about listed species, and the ability of the Corps to ensure that such species will not be jeopardized by NWP activities, particularly given the lack of programmatic ESA consultation and inadequate PCN requirements that fail to ensure that all NWP-authorized activities that "may affect" listed species undergo project-specific consultation. The NMFS BiOps discussed above detail these concerns and show that the Corps has failed to meet its ESA duties for the NWP. As set forth above, GC 18 is inadequate to ensure that even project-specific consultations will take place where required and provides no basis for the Corps' "no effect" determination and failure to undertake programmatic consultation on the NWP program.

  Commenters further note that PCNs from Non-federal permittees must only be submitted if "any listed species or designated critical habitat might be affected or is in the vicinity of the activity." This, however, fails to include species proposed for listing. The Corps has a duty to "conference" with the Services pursuant to ESA Section 7(a)(4) for any activity that may affect a proposed species; however, that duty is likely to go unfulfilled if PCNs are not required for proposed species.

  Moreover, the Proposed Rule suggests that the district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat based on the PCN. Commenters suggest that it would be inappropriate for the Corps to rely only on information provided by permittees and the Corps itself must independently verify the potential for listed species to be affected. In at least one instance that Commenters are aware of, the Corps relied on a third-party report rather than drafting its own Biological Assessment. This is insufficient to meet the requirements of the ESA. Further, the Corps must seek concurrence from the Services for any "no effect" determination, and otherwise must initiate formal consultation whenever listed species may be adversely affected.

- General Condition 23 (Mitigation) - Commenters are concerned that the Corps may be relying on the unrealized promise of mitigation requirements to allow significant environmental harm to occur under the NWP program.[182] Previous reports from the National Research Council and the GAO have shown that mitigation under the NWP program has not proven successful and does not compensate for wetlands lost to

[182] *See Kentucky Riverkeeper v. Rowlette,* 714 F.3d 402 (6th Cir. 2013) (rejecting the Corps' unsupported assertion that compensatory mitigation would hold environmental impacts to minimal levels, and ruling that the Corps must provide at least "some documented information" supporting that conclusion).

permitted fills.[183] Furthermore, the Council on Environmental Quality has said that relying on mitigation to assume impacts are reduced below the threshold of significance violates the National Environmental Policy Act.[184] NMFS has stated that "Historically, mitigation has not necessarily offset baseline impacts. Compliance with Corps required compensatory mitigation has been highly variable. Compliance has been very low when monitoring is limited or does not occur or when permits are not specific about mitigation requirements."[185]

While the Corps states that it is proposing to require that compensatory mitigation for stream losses be provided through rehabilitation, enhancement, or preservation, this may sound good in theory, but in many instances mitigation simply does not work or is not followed through on, and such efforts are not effectively replacing the lost functions and values where species are affected.[186]

NMFS staff have, in fact, raised serious concerns about the effectiveness of NWP mitigation. In a 2006 email from Craig Johnson, the National Section 7 Coordinator in the NMFS office of Protected Resources (attached hereto), he stated that:

> Published evidence strongly suggests that human attempts to 'create' or 'restore' habitat has only a small probability of 'creating' or 'restoring' anything that even closely approximates the natural community that was destroyed in the first place (for example, see reviews by Race M. S., and M. S. Fonseca. 1996. Fixing compensatory mitigation: What will it take? Ecological Applications 6:94 suggest failure rates as high as 97%) and, when the 'creation' or 'restoration' occurs in a different location (the most common case) or produces a different biotic community (also the most common case; 'replacing' mid-to-late successional forested wetland with a palustrine emergent system), the individuals and populations that experienced the stress are different than the individuals or populations that receive the subsidy (in 'out of kind' mitigation, the entire biotic community is different).[187]

The question then becomes, how is the Corps ensuring that actual, sufficient mitigation is being completed to replace lost functions and values from NWP activities, and what

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[183] *See* U.S. Government Accountability Office, "Wetlands Protection: Corps of Engineers Does Not Have an Effective Oversight Approach to Ensure that Compensatory Mitigation is Occurring," GAO-05-898 (Sep. 2005).

[184] Council on Environmental Quality, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations." *Available at*, https://ceq.doe.gov/nepa/regs/40/40p3.htm

[185] 2014 NMFS BiOp at 274-278.

[186] *See* 2014 NMFS BiOp at 280 ("Most historic reviews of wetlands that are actually created, restored, or enhanced to compensate for the loss of wetland ecosystems that are destroyed or degraded by activities authorized by permits issued by the Corps or a State agency generally have not replaced the ecological and hydrological functions of the original wetlands.").

[187] Email from Craig Johnson to Daniel Buford (Dec. 5, 2006) (attached hereto).

happens if it turns out that NWP activities result in significant environmental harm in the long run?

Commenters suggest that if mitigation is required to offset environmental harm, then that project cannot qualify for a NWP, since it has the potential for significant (i.e. not minimal) harm if mitigation is not enacted or turns out to be ineffective. In those instances, permittees should have to seek an individual permit for their project.

Mitigation bank credits and in-lieu fee program credits do not replace lost functions and values at the affected location. If such payments are necessary, the project should not qualify for a NWP, but should be required to obtain an individual permit so that the Corps may examine all "practicable alternatives" to the proposed discharge; "[i]dentify and evaluate any special or critical characteristics of the candidate disposal site, and surrounding areas which might be affected by use of such site, related to their living communities or human uses;" make, document, and review "Factual Determinations" to determine whether the information in the project file is sufficient to provide the documentation required; and "[i]dentify appropriate and practicable changes to the project plan to minimize the environmental impact of the discharge …."[188]

Commenters are further concerned that the compensatory mitigation requirement allows for a waiver if the district engineer determines "that other forms of mitigation, such as best management practices and other minimization measures, are more environmentally preferable forms of mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects." Whether the adverse effects are no more than minimal should be the test for whether the NWP is available to the permittee. Permittees should not be able to purchase compensation to buy their way out of the need for an individual permit. Any activity that does not meet this standard should not be allowed to proceed under the NWP; however, all wetland loss should be compensated at least at a 1:1 ratio (i.e. No Net Loss).[189]

- District Engineer's Decision - Section D at part 2 provides that:

> When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the

[188] *Id*. § 240.5(c), (f), (g), (j), (k), (l).

[189] White House Office on Envtl. Policy, *Protecting America's wetlands: A Fair, Flexible, and Effective Approach* (Aug. 24, 1993), *available at* http://www.wetlands.com/fed/aug93wet.htm.

> aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer.

Commenters are concerned that this provision does not include "cumulative effects" as one of the factors that the district engineer is to consider when making a minimal effects determination, but rather limits the analysis to only direct and indirect effects. This suggests that the results of the cumulative effects analysis that the Corps plans to undertake would not even be considered by a district engineer in rendering a decision on minimal effects. Absent a consideration of the cumulative impacts of a proposed project (i.e. the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions), the Corps cannot ensure that the NWPs are having no more than minimal cumulative adverse effects on the environment as required under the CWA.

The proposed rule also suggests that the District Engineers not only have some innate ability to track cumulative impacts of the NWPs (regardless of the fact that they don't get notice of all NWP activities), but that they have the capacity to ensure that the ongoing use of each NWP-authorized activity continues to meet the requirements of the CWA, stating:

> After the NWPs are issued or reissued and go into effect, district engineers will monitor the use of these NWPs on a regional basis (e.g., within a watershed, county, state, Corps district or other appropriate geographic area), to ensure that the use of a particular NWP is not resulting in more than minimal cumulative adverse environmental effects.

The Corps fails entirely to explain how it could possibly do this for hundreds of thousands of NWP-authorized activities, particularly when not all such activities require a PCN. The Corps absurd reliance on the District Engineers to ensure compliance with the CWA is arbitrary and capricious.

G. The Corps Should Prohibit NWP Activities in NFIP 100-Year Floodplains Instead of Relying on General Condition 10 FEMA-Approved Requirements

Floodplain regions that participate in FEMA's National Flood Insurance Program (NFIP) are extremely vulnerable to flood hazards. The risks to the communities and wildlife in these areas are increasing due to the climate change crisis and sea level rise; resulting in flooding that is even more devastating and expensive than ever before (Lopez 2020). Over the last 30 years, freshwater flooding alone has caused an average of $8.2 billion in damages annually, with numbers trending upward (Wing et al. 2018). Despite these hazards, FEMA's current policies fail to adequately evaluate or address flood risks. Thus, the current General Condition 10 (GC 10) merely requiring that NWP fills must comply with FEMA-approved state or local floodplain management requirements is insufficient to ensure that NWPs in 100-year floodplains will actually have "no more than minimal" adverse effects. 85 F.R. 57298. The Corps should update this general condition to state that NWP activities are not permitted in 100-year floodplains, and an individual permit is required instead. By relying on the heavily flawed and highly criticized FEMA policies, the Corps is failing to independently ensure compliance with the Clean Water

Act (CWA), Endangered Species Act (ESA), and other required laws and regulations to keep the citizens, species, and environment of the United States protected from undue harm.

Although the NFIP set out to restrict development in flood-prone areas like 100-year floodplains, its provision of lower-cost flood insurance and financial assistance to acquire or improve land has effectively subsidized and thus encouraged such development. The resulting expansion in development has actually led to an increase both the magnitude and frequency of flooding (Konrad 2016). The severely insolvent NFIP is currently on the U.S. Government Accountability Office's "High Risk List," which identifies agencies and programs that are "high risk due to their vulnerabilities to fraud, waste, abuse, and mismanagement," or are generally "at most in need of transformation" (Esenyan 2019).

FEMA updated the NFIP in 2018 with the intention of implementing the legislative requirements of the Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowner Flood Insurance affordability act of 2014, as well as bringing the program into compliance with the ESA. 83 F.R. 24329. Instead, this "reform" turned a blind eye to the effects of climate change and sea level rise on 100-year floodplains and saddled local communities with FEMA's ESA responsibilities (Lopez 2020).

By requiring individuals and local governments to "obtain and maintain documentation" of ESA compliance as a condition to receiving floodplain development permits, FEMA impermissibly shifts its own burden onto parties who do not have a legal obligation to comply with the ESA (Esenyan 2019). For a number of years, FEMA has been the subject of multiple lawsuits due to its implementation of the NFIP and resulting non-compliance with the ESA and jeopardization of endangered species (Esenyan 2019). According to the Corps, NWP activities could not only have adverse effects on the flood-holding capacity in floodplains, but also other "floodplain values," including modifying or eliminating fish and wildlife habitats, reducing water quality functions, and adversely affecting other hydrological functions like groundwater recharge (NWP 29 Decision Document 2020). Because ESA compliance in 100-year floodplains is already dubious under FEMA policies, these additional adverse effects on habitats are likely compounded.

When mapping NFIP flood areas, FEMA does not incorporate climate change and sea level rise data, despite Congressional mandates and an overwhelming scientific consensus to the contrary (Lopez 2020). FEMA also ignores the impact that NFIP has had on climate change and sea level rise. Studies consistently show that FEMA flood maps significantly underestimate flood exposure risks. One study found that the total US population exposed to serious flooding is approximately three times higher than what is calculated using FEMA flood maps (Wing et al. 2018). Thus, actual flood hazard risks, including impacts on human populations as well as imperiled wildlife and their habitats, are not being sufficiently evaluated nor mitigated in NFIP floodplains. Because the "FEMA-approved regulations" relied upon by GC 10 are based on the inaccurate maps, these regulations fail to account for the actual risks that 100-year floodplains face. 85 F.R. 57386. As the climate change crisis continues; hurricanes, storm surge flooding, sea level rise, tidal flooding, and heavy precipitation will only worsen the already severe flood risks in the 100-year floodplains.

The Corps acknowledges in its 2020 Decision Documents that NWP activities will have further adverse effects on the already vulnerable 100-year floodplains but relies on GC 10 to mitigate

the flood hazards caused by the NWPs. However, this reliance is misplaced due to the inadequacy of the current FEMA management requirements. For example, in its 2020 NWP 29 Decision Document, the Corps states that NWP 29 activities may affect the flood-holding capacity of 100-year floodplains, causing impacts to "human health, safety, and welfare" (NWP 29 Decision Document 2020). NWP 29 requires a PCN for all activities, but there are many NWPs that may affect flood-holding capacities of 100-year floodplains according to the Corps but do not typically require a PCN. This means that the effects of NWP activities in these critically vulnerable areas are not even being reviewed by the Corps before they can take place.

The lowered insurance rates offered by NFIP in 100-year floodplains have been found to encourage "unsustainable development in high-risk and ecologically sensitive areas," which exacerbates the already-present risks of building in flood zones and destroys natural defenses to flooding (Lopez 2020). By issuing NWPs in 100-year floodplains, the Corps is essentially providing a way to develop on some of the most fragile land in the country with "little, if any, delay or paperwork." 85 F.R. 57299. The environmentally fragile and poorly managed NFIP Floodplains require added protection. Development in NFIP floodplains should require individual permits, in order to rigorously ensure risk and impacts are being sufficiently evaluated by the Corps, and to ensure compliance with the CWA, ESA, NEPA, and other laws. FEMA's maps and analyses consistently fail to take into account the actual risks in these areas. The current requirement that fills within 100-year floodplains must comply with FEMA-approved floodplain management requirements is inadequate because FEMA refuses to use the best available science, which results in dangerous poorly informed development decisions.

CONCLUSION

Reauthorizing the NWP program will allow hundreds of thousands of "discharges" of dredged or fill material to the Nation's waters and wetlands over the course of the next five years in connection with a wide range of activities that significantly affect the environment, including many activities that are not being tracked by the Corps. The cumulative environmental impacts of the NWP program must be fully analyzed in an EIS, and several of the NWPs should be reconsidered in light of the significant environmental harm they pose. Moreover, the Corps must consider the impacts that the issuance of these NWPs will have on listed species through formal programmatic ESA consultation with both FWS and NMFS. Please contact me if you have any questions regarding these comments.

Sincerely,

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CENTER FOR FOOD SAFETY

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Re: Comments on Proposal To Reissue and Modify Nationwide Permits, COE–2020–0002

Thank you for the opportunity to comment on the proposal to reissue Nationwide Permit (NWP) 48 and to issue two new aquaculture[1] permits, NWP A and B. As currently proposed, these NWPs and the general conditions would not prevent more than minimal individual or cumulative adverse impacts to the environment from aquaculture. The U.S. Army Corps of Engineers (Corps) should **not adopt** NWP 48 for commercial shellfish aquaculture activities as written, for the same reasons NWP 48 was found unlawful by the federal district court in *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps. Of Engineers*, 417 F.Supp.3d 1354 (W.D. Wash. 2019). If some regions want to adopt general permits for shellfish aquaculture, they are free to do so, but such regional general permits still must only cover similar activities with minimal individual or cumulative impacts. The Corps must require individual permits for the remaining shellfish aquaculture operations. Nor should the Corps adopt the new NWP B for offshore finfish aquaculture in federal waters, because these operations have potentially significant effects and do not met the criteria for minimal individual or cumulative impacts. As to NWP A, if it is to be issued, it must include additional protections to ensure only minimal cumulative impacts.

Further, the Corps should not re-issue the suite of NWPs prematurely, given that the current cycle is not expired and because a new Administration will take office in January, 2021, and may very likely reverse the Executive Orders on which this action is based.[2] Two of the new NWPs proposed specifically come from an Executive Order 13921, which may be rescinded by the Biden Administration.

These comments are submitted on behalf of Center for Food Safety (CFS), Friends of the Earth, Center for Biological Diversity, the Coalition to Protect Puget Sound Habitat, Healthy

[1] These comments use the generally-used term "aquaculture" interchangeably with the Corps' new term "mariculture."
[2] Biden Plans Immediate Flurry of Executive Orders to Reverse Trump Policies (Nov. 7, 2020), https://www.washingtonpost.com/politics/biden-first-executive-orders-measures/2020/11/07/9fb9c1d0-210b-11eb-b532-05c751cd5dc2_story.html.

Gulf, North Oyster Bay Baymen's Association, Beyond Pesticides, Northwest Atlantic Marine Alliance (NAMA), Recirculating Farms Coalition,[3] Environmental Action Committee of West Marin, Slow Food USA, Wild Salmon Nation, and the millions of members and supporters they represent. CFS is a nationwide nonprofit organization that empowers people, supports farmers, and protects our environment from industrial agriculture, including aquaculture. Our membership includes nearly 1 million people across the county, including nearly 20,000 members in Washington, who support truly sustainable food and care about the impact of our food production system on our environment and public health. Many of these members are local residents whose cultural, recreational, aesthetic, economic, and personal interests are directly impacted by commercial shellfish aquaculture and its impacts.

I. AQUACULTURE IMPACTS

A. Shellfish Aquaculture Impacts

As acknowledged briefly—but largely ignored—in the Corps' Decision Document for NWP 48, commercial shellfish aquaculture as currently practiced has numerous adverse environmental impacts. The Corps, at least internally, has recognized that these impacts are not on the balance beneficial or neutral, and rather can be significant.[4] While the focus of this section is on impacts in Washington State, the same is true for industrial shellfish aquaculture in the rest of the country.

1. NWP 48 in Washington

The vast majority of authorizations under NWP 48 are in Washington State. The Corps Seattle District issued 92% of all NWP 48 authorizations under the 2012 NWP 48. A similar percentage is likely in the 2017-2020 timeframe, when the Seattle District stated that it authorized nearly 900 operations, encompassing 35,800 acres of Washington tidelands. The overuse of NWP 48 to cover new and expanding operations in Washington has allowed for expansion of intense shellfish aquaculture operations into previously undisturbed areas in Puget Sound.[5] And because of the expansion under NWP 48, shellfish aquaculture covers nearly a quarter of Washington tidelands.[6]

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[3] Recirculating Farms Coalition joins these comments as to NWP A and B only.

[4] Seattle District, *Draft Cumulative Impacts Analysis for 2017 Nationwide Permit 48* ("Draft CIA"), provided along with this comment.

[5] *See e.g.* Coastal Geologic Services, Map of Known Existing and Proposed Shellfish Farm Locations in South Puget Sound, from 2012-2014, provided along with this comment.

[6] NMFS *Endangered Species Act Section 7 Formal Biological Programmatic Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Shellfish Aquaculture Activities in Washington State*, 8 (2016) (2016 BIOP), https://www.nws.usace.army.mil/Portals/27/docs/regulatory/160907/NMFS_2016_09-02_WA%20Shellfish%20Aquaculture_WCR-2014-1502.pdf.

Washington State is unique when it comes to shellfish aquaculture, but not all shellfish aquaculture is the same. First, Washington is the biggest producer of shellfish in the United States, and has been harvesting and/or growing shellfish commercially for over 150 years. Because of this, shellfish farming in Washington looks very different than it does elsewhere, and is being increasingly industrialized, relying heavily on plastic gear and pesticides and monoculture plantations, while expanding to cover every inch of natural tidelands. Historically, most of the shellfish aquaculture took place in Willapa Bay/Grays Harbor, but recently shellfish farming has expanded significantly in Puget Sound. However, Willapa Bay/Grays Harbor are not the same as Puget Sound, both in ecology and in shellfish farming practices. For example, while oyster and clam is predominant in Willapa Bay, geoduck farming is predominant in Puget Sound, each using different types of equipment. While growers in Willapa Bay/Grays Harbor have an NPDES permit to spray herbicide (imazamox) onto tidebeds to kill Japanese eelgrass, no such pesticide spraying is allowed in Puget Sound.

Thus, while Washington is unique from the rest of the country, its own regions are unique from one another. Not only is the nationwide permit inappropriate to cover Washington, even regional general permits should concentrate on the specific bodies of water in Washington and particular types of shellfish aquaculture, to reflect their unique qualities and impacts. NWP 48 is inappropriate for Washington State.

2. Conversion of Natural Intertidal Ecosystems

The intertidal areas where shellfish are grown are essential habitats for many species, including invertebrates (such as commercially important Dungeness crab), finfish (including herring and salmon), and birds (migratory and shorebirds). This includes species listed as threatened and endangered and protected under the Endangered Species Act. In particular, Willapa Bay serves as critical habitat for green sturgeon (feeding) and many listed salmon populations rear and feed in Washington's coastal waters (Puget Sound and Willapa Bay). These areas are habitat for many varieties of wildlife, serve as nurseries, and have important rules in cycling nutrients.[7]

Much of the intertidal areas in Washington still support eelgrass, which is declining in the rest of the world. Eelgrass or seagrass is a highly valued and protected native habitat for many species of fish, invertebrates, and birds, including migratory and shorebirds.[8] Eelgrass is known as

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[7] Bendell-Young, L.I., *Contrasting the community structure and select geographical characteristics of three intertidal regions in relation to shellfish farming*, Environmental Conservation (2006), provided along with this comment.

[8] 40 C.F.R. § 230.43 (eelgrass is considered a special aquatic site under CWA § 404(b)(1) guidelines); The Nature Conservancy, *Eelgrass Habitats on the West Coast: State of Knowledge of Eelgrass Ecosystem Services and Eelgrass Extent*, http://www.pacificfishhabitat.org/wp-content/uploads/2017/09/EelGrass_Report_Final_ForPrint_web.pdf; Deborah Shafer, Pacific Northwest Eelgrass: A White Paper Prepared for Seattle District Army Corps of Engineers (2015), (eelgrass ecosystem services and importance); Puget Sound Partnership had goal of increasing

an "ecosystem engineer" because it can partially create its own habitat by slowing down water flow, while its roots and rhizomes bind and stabilize sediments. Although it was introduced, Japanese eelgrass (*z. japonica*) provides many of the same food, shelter, and habitat functions as native *marina* eelgrass in Washington (and now grows along the entire Pacific coast from Humboldt, California to British Columbia).[9]

As the production of shellfish in Washington intensifies, more of the natural tidelands are being converted to shellfish production. The result is continuous competition with wildlife for habitat and destructive impacts to aquatic vegetation, forage fish, and other prey species. These activities have adverse impacts to wildlife habitat, recreation and aesthetics (important aspects of these iconic areas and their local communities, which also rely on tourism), and water quality. Bed preparation and harvest activities can temporarily increase turbidity and total suspended solids.[10] Shellfish growing activities can thus cause benthic disturbance.[11] One of the significant potential environmental impacts from dense shellfish aquaculture is a reduction in shoreline biodiversity. Monocultures of shellfish can fundamentally alter ecosystems by consuming phytoplankton previously relied on by native species, depositing waste on the seabed, and changing the physical dynamics of an environment.[12] And while *wild* bivalves are known to clean water, the water quality impacts of intensive shellfish aquaculture may not always be beneficial; to the contrary, many aquaculture activities negatively affect water quality by the removal of eelgrass, the increase of wastes from concentrated production, and the disruption of sediments. The Corps describes no studies in its Decision Document for NWP 48 to verify its claim that commercially-raised shellfish clean the water in Washington State.

Puget Sound eelgrass by 20% by 2020, https://www.psp.wa.gov/downloads/AA2011/062011EcosystemRecoveryTargetList.pdf.

[9] Mach, M.E., S.W. Wyllie-Echeverria, and J. R. Ward. 2010. *Distribution and potential effects of a non-native seagrass in Washington State. Zostera japonica* Workshop, Friday Harbor Laboratories, San Juan Island, WA. Report prepared for Washington State Department of Natural Resources and Washington Sea Grant, *available at* http://file.dnr.wa.gov/publications/aqr_zostera_study.pdf.

[10] Draft CIA at 47-48; NMFS 2016 BIOP at 66.

[11] Draft CIA at 49-50; NMFS 2016 BIOP at 75-78.

[12] *See id*; Bouwman, L., A. Beusen P. M Glibert, C Overbeek, M Pawlowski, J. Herrera S. Mulsow, R. Yu, and M. Zhou, *Mariculture: significant and expanding cause of coastal nutrient enrichment*, Environ. Res. Lett. 8 (2013); DeFur, P. and D.N. Rader, *Aquaculture in estuaries: Feast or famine?* Estuaries Vol. 18, No. 1A (1995); Hastings, R.W. and D.R. Heinle, *The effects of aquaculture in estuarine environments: Introduction to the dedicated issue*, Estuaries Vol. 18, No. 1A (1995); Dethier, M., *Native shellfish in nearshore ecosystems of Puget Sound*, Puget Sound Nearshore Partnership Report No. 2006-04, Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington (2006); Diana, J.S., H. S. Egna, T. Chopin, M.S. Peterson, L. Cao, R. Pomeroy, M. Verdegem, W.T. Slack, M.G. Bondad-Reantaso, and F. Cabello, *Responsible Aquaculture in 2050: Valuing Local Conditions and Human Innovations Will Be Key to Success*, Bioscience, Vol. 63(4) (2013); Bendell, L.I. and P.C.Y. Wan, *Application of aerial photography in combination with GIS for coastal management at small spatial scales; a case study of shellfish aquaculture* (2013).

Commercial shellfish aquaculture harms eelgrass. *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps. of Engineers*, 417 F.Supp.3d 1354, 1359, 1362-63 (W.D. Wash. 2019). Various CWA Section 404 dredge and fill activities associated with shellfish aquaculture, such as tilling, harrowing, dredge harvest and geoduck harvest, may have *significant* impacts individually and cumulatively to eelgrass. Draft CIA at 71-103 (detailing state of eelgrass and cumulative impact of aquaculture on eelgrass). Damage to eelgrass harms the species that rely on it for shelter, food, and spawning habitat. Forage fish are particularly harmed, and are a crucial part of the food chain for bigger fish like salmon, which in turn are the primary prey for Southern Resident Killer Whales.[13] Draft CIA at 50.

Commercial shellfish also affects forage fish through work in spawning areas and the aquaculture equipment used, which can remove spawning habitat, smother eggs by trampling, and kill fish entangled in cover nets. Draft CIA at 108. Fish and birds are also harmed or killed by aquaculture beyond eelgrass reduction, through decreases in their prey species, food sources, and refugia, in-water activity, noise, increases in suspended sediment, and net entanglement. Draft CIA at 50-51.[14]

Mechanical shellfish dredging techniques can have serious and significant impacts to the benthos and wildlife that relies on this habitat. Hydraulic dredges use high-power water jets to loosen sediment and dislodge clams and other benthic organisms. Thus, the actual "digging" for shellfish is "accomplished by the action of the water jets, which are directed downwards and backwards."[15] Water jets have been observed to disturb the substrate up to 18 inches below the surface.[16] The dredge then scrapes through this loosened sediment, capturing dislodged organisms. Suction dredges draw a large flow of water upwards to the surface, where workers separate shellfish from by-catch and other material. According to the National Oceanic and Atmospheric Administration (NOAA), suction dredges act "as . . . large vacuum cleaner[s]," sucking oysters and other species from the seafloor, along with large quantities of water, mud, and sand.[17] In a study mimicking commercial dredging practices, researchers found dramatic decreases in population in target and non-target species immediately after dredging.[18] Even two years later, most benthic

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[13] Marine Mammal Commission, Southern Resident Killer Whales, https://www.mmc.gov/priority-topics/species-of-concern/southern-resident-killer-whale/.

[14] *See also* Coalition to Protect Puget Sound Habitat, Petition to Suspend NWP 48, 10-16 (May, 2015), provided along with this comment.

[15] J. S. MacPhail, *A Hydraulic Escalator Shellfish Harvester*, Fisheries Res. Bd. of Can. 12 (1961).

[16] *See* Mark F. Godcharles, *A Study of the Effects of a Commercial Hydraulic Clam Dredge on Benthic Communities in Estuarine Areas*, Fla. Dep't Nat. Res. (1971).

[17] NOAA, *Review of the Ecological Effects of Dredging in the Cultivation and Harvest of Molluscan Shellfish* 5 (2011), http://shellfish.ifas.ufl.edu/wp-content/uploads/Review-Ecological-Effects-of-Dredging-to-Harvest-Molluscs.pdf.

[18] *See* Kent D. Gilkinson et al., *Immediate Impacts and Recovery Trajectories Of Macrofaunal Communities Following Hydraulic Clam Dredging on Banquereau, Eastern Canada*, 62 ICES J. Marine Sci. 925 (2005).

communities were still in the colonizing or rebuilding phase, and 67 percent of target shellfish showed no signs of recovery.[19] Another study, which observed the lasting effects of mechanical dredging on hard-shell clams for five years after dredging, concluded that it can take decades for adult clam populations to recover after mechanical dredging.[20]

According to the New York State Department of Environmental Conservation, mechanical dredging adversely affects benthic fish habitats, as well as the non-target benthic community, and "result[s] in high mortality rates among non-target species."[21] Dredging "lower[s] the average density of benthic fauna by 59 percent and decrease[s] the number of species present," killing invertebrates in the dredge track.[22] NOAA similarly found that when dredges scrape the seafloor, species "can be removed, crushed, buried, or exposed," and dredges "can erase structural features from the seafloor."[23] Mechanical dredging "restructure[s] benthic environments" by homogenizing sediments.[24] Homogenization results in lowered variability in sediment types and nutrients, impairing benthic ecosystems.[25] Mechanical dredging can also leave long-lasting grooves in the seafloor.[26] Indeed, the physical effects of the dredges "are comparable to forest clear-cutting."[27]

Mechanical dredging significantly increases turbidity, which can damage or kill fish eggs and larvae and threaten the survival of juvenile and adult fish.[28] Suspended sediment can travel several hundred feet from the area originally disturbed,[29] and researchers have observed that fine sediment, in particular, can travel kilometers from a dredging site.[30] A study by Danish researchers examining turbidity associated with mechanical dredging found that a single 100-meter tow of the

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[19] *Id.*

[20] *See* Stefán Áki Ragnarsson et al., *Short and Long-term Effects of Hydraulic Dredging on Benthic Communities and Ocean Quahog (Artic islandica) Populations*, 109 Marine Envtl. Res. 113 (2015).

[21] Letter from Alice Webber, N.Y. Dep't of Envtl. Conserv., to Ed Bausman 1–2 (May 7, 2007).

[22] *Id.* at 2.

[23] NOAA, *Review of the Ecological Effects of Dredging in the Cultivation and Harvest of Molluscan Shellfish* 13, 15, 17 (2011), http://shellfish.ifas.ufl.edu/wp-content/uploads/Review-Ecological-Effects-of-Dredging-to-Harvest-Molluscs.pdf.

[24] Simon F. Thrush & Paul K. Dayton, *Disturbance to Marine Benthic Habitats by Trawling and Dredging: Implications for Marine Biodiversity*, *Annual Review of Ecology and Systematics*, 33 Ann. Rev. of Ecology & Systematics 449 (2002).

[25] *Id.*

[26] *Id.*; *see also* G. Carleton Ray & Jerry McCormick-Ray, *Coastal-Marine Conservation* 20 (2004).

[27] G. Carleton Ray & Jerry McCormick-Ray, *Coastal-Marine Conservation* 19–20 (2004).

[28] *See* Z. F. Yang et al., *Impact Assessment of Dredging on Fish Eggs and Larvae: A Case Study in Caotan, South China*, 351 IOP Conf. Series: Earth Envtl. Sci. (2019).

[29] *See* Nathan Hawley et al., *Sediment Resuspension in Lake Ontario During the Unstratified Period, 1992-1993*, 22 J. Great Lakes Res. 707 (1996).

[30] *See* Paula Canal-Vergés et al., *Reviewing the Potential Eelgrass Impacts Caused by Mussel Dredging*, Danish Shellfish Ctr. (2014); *see also* P.P. Maier et al., *Effects of Subtidal Mechanical Clam Harvesting on Tidal Creeks*, S.C. Dep't of Nat. Res., Marine Resources Res. Inst. (1998).

dredge was enough to cause a measurable increase in turbidity for up to two hours at a distance of 100 meters.[31] Such heightened turbidity lowers egg-hatching rates and can damage fish gills.[32]

Industrial shellfish aquaculture does not only harm Washington State. For example, in Oyster Bay, on the North Shore of Long Island, New York, mechanical shellfish dredging was previously authorized under NWP 48. A recent survey commissioned by the Town of Oyster Bay made clear that clam density and population have decreased substantially in publicly owned areas of Oyster Bay adjacent to mechanical dredging operations over time, likely due to the impaired water quality and heightened turbidity associated with mechanical dredging.[33] Mechanical dredging in Oyster Bay also threatens the survival of the winter flounder, a species that faces declining abundance and distribution in New York State.[34] Mechanical dredging in Oyster Bay occurs wholly within the Essential Fish Habitat of the winter flounder, critical for all its life stages. The District Engineer in New York has not acted to regionally condition or deny NWP 48 authorizations to prevent these types of significant individual and cumulative adverse impacts.

Although largely dismissed as temporary in the Corps' decision document, impacts to eelgrass and the other various impacts associated with shellfish aquaculture occur continuously or perennially, with impacts of the different stages of shellfish culture continuing year after year and restarted after harvest. These include bed preparation (or "cleaning," which entails removal of native species, like sand dollars), seeding, grow out, harvest, and then re-seeding to restart the process. Shellfish aquaculture is a *continuous* disturbance and some disturbances, like to eelgrass, may never allow full recovery. Draft CIA at 56-58, 95.[35]

3. Plastics

The use of plastics is another problematic and unassessed aspect of commercial shellfish. This includes PVC geoduck tubes (using over 43k tubes/acre), plastic anti-predator netting (high-density polyethylene), and plastic ropes for oyster long-lines (polyolefin), among other types. Plastics gear adds plastic pollution to the ocean and beaches through plastic debris (which can even

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[31] *Id.*

[32] *See* Z. F. Yang et al., *Impact Assessment of Dredging on Fish Eggs and Larvae: A Case Study in Caotan, South China*, 351 IOP Conf. Series: Earth Envtl. Sci. (2019).

[33] *See* Cashin Associates, P.C., Draft 2018 Clam Density Survey Findings Overview for the Oyster Bay/Cold Spring Harbor Complex 10 (2018). As confirmed by a phone call to the Town of Oyster Bay Department of Environmental Resources on June 24, 2020, the data in this Draft Survey are the same as the data in the Final Survey dated January 2019, which is not available online.

[34] *See List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State*, N.Y. Dep't of Envtl. Conserv., https://www.dec.ny.gov/animals/7494.html; *see also* N.Y. Dep't of Envtl. Conserv., *Species Status Assessment: Winter Flounder* (2014), https://www.dec.ny.gov/docs/wildlife_pdf/sgcnwinterflounder.pdf.

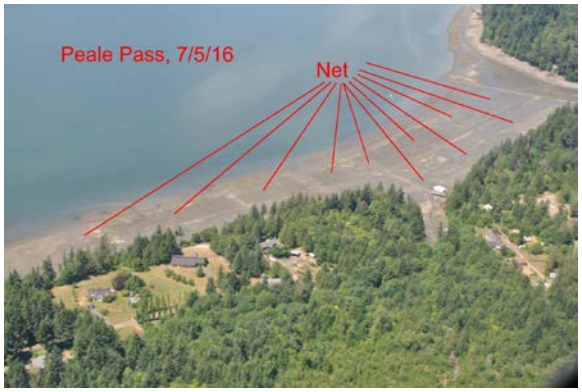
[35] *See also* Seattle District, Supplemental Dec. Doc. for NWP 48, at 103-4 (2017), https://www.nws.usace.army.mil/Portals/27/docs/regulatory2/170420-NWPs/170420-NWS2017NWP-0048.pdf?ver=2017-04-20-184742-913.

be found as far away as Hawaii) and by breaking down into microplastics, with grave impacts to wildlife, aesthetics, and food safety.

Figure 1 Left: Geoduck PVC tubes stuck into tidebed in Totten Inlet, WA. Right: Aerial shot of PVC tubes and oyster bags in WA.

Anti-predator netting traps wildlife, excludes wildlife from its habitat, and may become dislodged and transported. This netting actually provides little benefit to the industry despite its cost in terms of nearshore impacts and plastics pollution.[36]

Aerial photos taken by the Coalition to Protect Puget Sound show the extent of coverage by this plastic netting:



[36] Bendell, L.I., *Favored use of anti-predator netting (APN) applied for the farming of clams leads to little benefits to industry while increasing nearshore impacts and plastics pollution*, Marine Pollution Bulletin (2015), provided along with this comment.

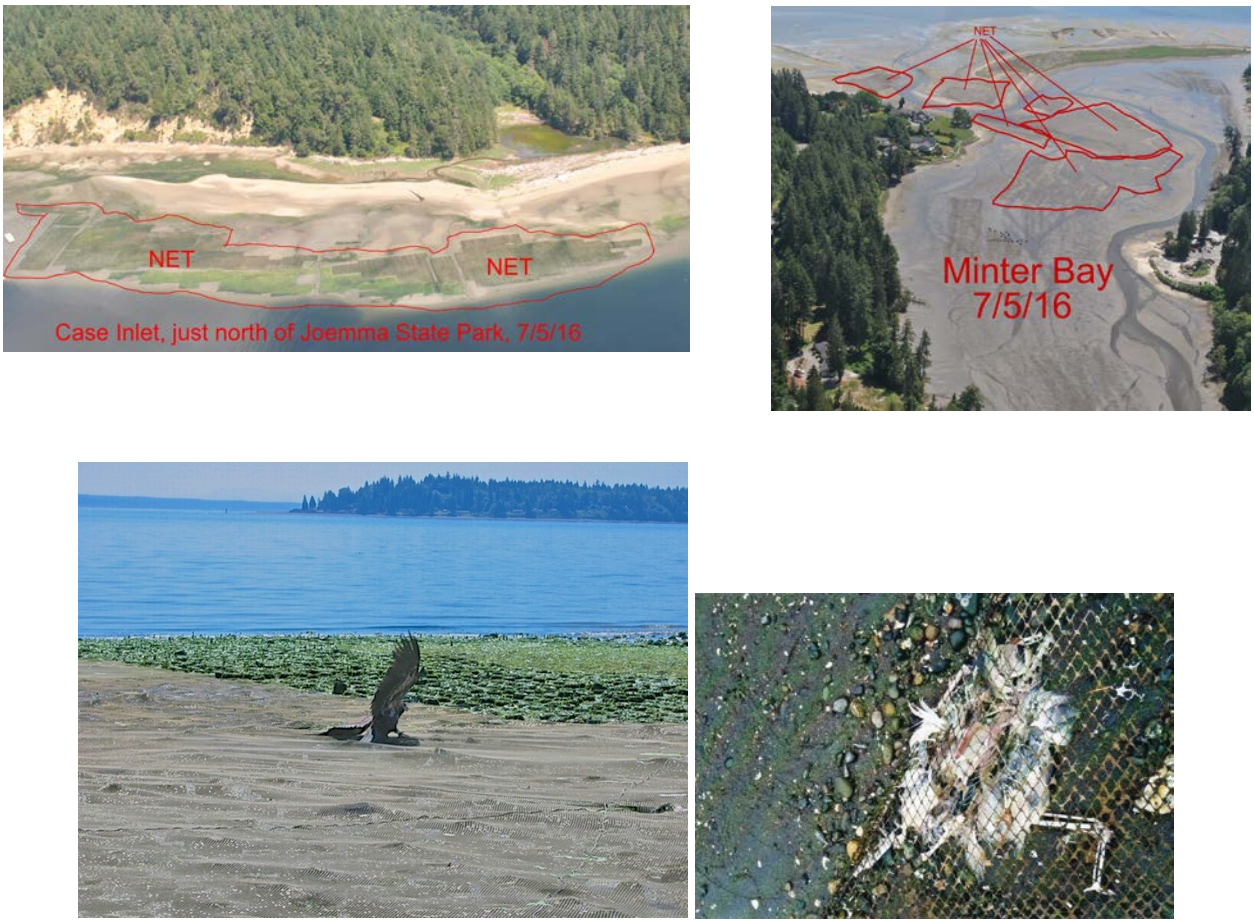


Figure 2: Left: A juvenile bald eagle is caught in an aquaculture net on Harstine Island, WA. Right: Remains of bird caught beneath anti-predator net

This plastic gear also breaks down into microplastics, and act as an additional source of plastic contamination in the ocean.[37] Microplastics absorb toxic pollutants already present in the water, and are being ingested by the very bivalves being cultivated.[38] These microplastics act like a poison pill to aquatic life that consume them, and have been shown to reduce oyster's

[37] *Id.*

[38] *Id.*; Kieran Mulvey, *Oysters Are Munching Our Microplastics*, Discovery News, http://goo.gl/hJn5Ov.

reproductive ability.[39] The research on microplastics and their impacts to human health is ongoing and revealing some disturbing effects.[40]

Figure 3 Left: Yellow rope used in long-line culture growing through oyster shell. Right: PVC tube degrading

4. Pesticides

Washington State allows pesticide use with shellfish aquaculture. Pesticides are meant to harm or kill living organisms, so their use has a high potential for adverse effects to non-target wildlife, particularly in an aquatic environment where pesticides will move off the application site.

Shellfish growers in Willapa Bay, WA are currently allowed to spray the herbicide imazamox to kill non-native eelgrass, pursuant to a NDPES permit re-issued April 2020.[41] While non-native eelgrass tends to grow at higher elevations than native eelgrass, Willapa Bay is so flat that there are many mixed beds, and the herbicide will kill native eelgrass just as easily as non-native.[42] The permit allows thousands of acres to be sprayed with the herbicide annually, and if the

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[39] Chelsea Harvey, *All the plastic that we're throwing in the oceans could be hurting baby oysters*, Washington Post (Feb. 2, 2016); Rossana Sussarellu, *et al., Oyster reproduction is affected by exposure to polystyrene microplastics*, PNAS 2016 113 (9) 2430-2435 (February 1, 2016); Oona M. Lönnstedt* and Peter Eklöv, *Environmentally relevant concentrations of microplastic particles influence larval fish ecology*, Science (June 3, 2016); Lisbeth Van Cauwenberghe, Colin R. Janssen, *Microplastics in bivalves cultured for human consumption*, Environmental Pollution (2014), all provided along with this comment.

[40] *See e.g.,* Southern California Coastal Water Research Project, *Microplastics Health Effects Webinar Series,* Recordings of Webinars and Powerpoints available at: https://www.sccwrp.org/about/research-areas/additional-research-areas/trash-pollution/microplastics-health-effects-webinar-series/.

[41] Wash. Dept. of Ecology, *Zostera japonica* Management on Commercial Clam Beds in Willapa Bay General Permit, https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Aquatic-pesticide-permits/Zostera-japonica-eelgrass-management (last visited Nov. 7, 2020).

[42] Olympic Environmental Council, Comments to Wash. Dept. of Ecology on NPDES permit for control of non-native eelgrass, https://scs-public.s3-us-gov-west-1.amazonaws.com/env_production/oid100/did1001/pid_10600/assets/merged/w4197i0m_docu

growers leave a 10m buffer to the next property line, they are released from monitoring requirements. This herbicide will not only kill eelgrass it is applied to (including native eelgrass in mixed beds), it will not stay where it is put, and will be instead transported to other parts of Willapa Bay.

B. Finfish Aquaculture Impacts

The new NWPs proposed would open coastal and federal waters in all regions of the U.S. to finfish aquaculture (or mariculture). Industrial ocean fish farming—also known as offshore or marine finfish aquaculture—is the mass cultivation of finned fish in the ocean, in net pens, pods, and cages. These are essentially floating feedlots in open water, which can have devastating environmental and socio-economic impacts. Industrial aquaculture is associated with many environmental and public health concerns, including: the escape of farmed fish into the wild; outcompeting wild fish for habitat; food and mates or intermixing with wild fish and altering their genetics and behaviors; the spread of diseases and parasites from farmed fish to wild fish and other marine life; and pollution from excess feed, wastes and any antibiotics or other chemicals used flowing through the open pens into natural waters. Industrial aquaculture also significantly affects public health, as antibiotics, pesticides and other chemicals that are heavily used to prevent disease and parasites in industrial aquaculture can accumulate in fish tissues. These impacts could be felt in any region where NWP B is used.

Because of extensive environmental, socio-economic and public health problems from marine finfish aquaculture, several countries, like Canada, Argentina and Denmark, are already moving away from offshore aquaculture due to these serious impacts.[43]

Escapes Are Inevitable and Disastrous: Marine finfish aquaculture routinely results in farmed fish escapes that adversely affect wild fish stocks. In August 2017, a Cooke Aquaculture facility in Washington State spilled more than 263,000 farmed Atlantic salmon into Puget Sound. Long after the escape, many of these non-native, farmed fish continued to thrive and swim free, even documented as far north as Vancouver Island, west of the Strait of Juan de Fuca, and south of Tacoma, traveling at least 100 miles from the farm.[44] Escaped farmed fish compete with wild fish for food, habitat, spawning areas, and mates. Even for facilities that rely on the sterility of farmed fish to prevent interbreeding, sterility is *never* 100% guaranteed. Therefore, the "long-term

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ment.pdf?v=KE3BGZMNV; U.S. FWS, Comments to Wash. Dept. of Ecology on NPDES permit for control of non-native eelgrass, (Feb. 14, 2014), provided along with this comment.

[43] Hallie Templeton (Feb. 10, 2020). *International examples offer US a blueprint for aquaculture regulation in 2020.* Friends of the Earth. https://foe.org/international-examples-offer-us-blueprint-aquaculture-regulation-2020/.

[44] Lynda V. Mapes, Seattle Times, Despite agency assurances, tribes catch more escaped Atlantic salmon in Skagit River (Dec. 1, 2017), *available at* https://www.seattletimes.com/seattle-news/environment/despite-agency-assurances-tribes-catch-more-escaped-atlantic-salmon-in-skagit-river/.

consequences of continued farmed [fish] escapes and subsequent interbreeding . . . include a loss of genetic diversity."[45]

Finally, escaped farmed fish might spread a multitude of parasites and diseases to wild stocks, which could prove fatal when transmitted.[46]

Pesticides and Other Chemicals: Because finfish aquaculture confines large numbers of fish together, much like Concentrated Animal Feeding Operations (CAFOs) on land, they rely heavily on drugs and pesticides to address disease spread. Marine finfish aquaculture uses pharmaceuticals and other chemicals pervasively for prevention and treatment of disease outbreaks in facilities. The use of these chemicals creates environmental and public health concerns. Just like in CAFOs, concentrated populations of animals are more susceptible to pests and diseases due to confined spaces and increased stress. In response, the agriculture and aquaculture sectors administer a pharmacopeia of chemicals. But in the open ocean residues of these drugs are discharged and absorbed into the marine ecosystem. For example, the marine finfish aquaculture industry treats sea lice with Emamectin benzoate (marketed as SLICE®), which has caused "widespread damage to wildlife," including "substantial, wide-scale reductions" in crabs, lobsters and other crustaceans.[47] In Nova Scotia, an 11-year-long study found that lobster catches plummeted as harvesters got closer to marine finfish aquaculture facilities.[48] Another study by researchers at Norway's Institute of Marine Research found that alternative chemicals for sea lice

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[45] Fisheries and Oceans Canada, Newfoundland and Labrador Region, Stock Assessment of Newfoundland and Labrador Atlantic Salmon (2016), *available at* http://waves-vagues.dfo-mpo.gc.ca/Library/40619655.pdf ("Genetic analysis of juvenile Atlantic Salmon from southern Newfoundland revealed that hybridization between wild and farmed salmon was extensive throughout Fortune Bay and Bay d'Espoir (17 of 18 locations), with one-third of all juvenile salmon sampled being of hybrid ancestry."); *see also* Mark Quinn, CBC News, *DFO study confirms 'widespread' mating of farmed, wild salmon in N.L.* (Sept. 21, 2016) https://www.cbc.ca/news/canada/newfoundland-labrador/farmed-salmon-mating-with-wild-in-nl-dfo-study-1.3770864.

[46] Jillian Fry, PhD MPH, David Love, PhD MSPH, & Gabriel Innes, VMD, Johns Hopkins University, Center for a Livable Future, "Ecosystem and Public Health Risks from Nearshore and Offshore Finfish Aquaculture" at 6-7 (2017), https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/offshor-finfish-final.pdf.

[47] Rob Edwards, The Sunday Herald, *Scottish government accused of colluding with drug giant over pesticides scandal*, (June 2, 2017) http://www.heraldscotland.com/news/15326945.Scottish_government_accused_of_colluding_with_drug_giant_over_pesticides_scandal/.

[48] Milewski, *et al.*, (2018) *Sea Cage aquaculture impacts market and berried lobster catches*, Mar. Ecol. Prog. Ser. 598: 85-97, *available at* https://www.int-res.com/articles/meps2018/598/m598p085.pdf.

treatment, Azamethiphos and deltamethrin, are acutely toxic to lobster larvae, creating a significant risk for the species when located near finfish aquaculture facilities.[49]

Disturbingly, these industrial operations are also bidding to use Imidacloprid—a bee-killing neonicotinoid and neurotoxin that is highly toxic to aquatic invertebrates—to help control sea lice.[50] In addition, the industry has embraced the use of Formaldehyde—a toxic carcinogen posing risk to both public health and the marine ecosystem—as a form of disinfectant.[51]

Finally, marine finfish aquaculture facilities' use of antibiotics is contributing to the public health crisis of antibiotic resistance. Residual antibiotics and other chemicals may still be in farmed fish when they reach consumers, and they can also leach into the ocean, contaminating nearby water and marine life. In fact, up to 75% of antibiotics used by the industrial ocean fish farming industry are directly absorbed into the surrounding environment.[52]

Discharge of Pollutants: Another serious concern is the direct discharge of untreated pollutants, including excess food, waste, antibiotics, and antifoulants associated with industrial ocean fish farms. Releasing such excess nutrients can negatively impact water quality surrounding the farm and threaten surrounding plants and animals.

Harm to Wild Marine Life: These underwater factory farms can also physically impact the seafloor, create dead zones, and change marine ecology by attracting and harming predators and other species that congregate around fish cages. These predators – such as birds, seals, and sharks – can easily become entangled in net pens, stressed by acoustic deterrents, and hunted. In fact, an industrial ocean fish farm caused the death of an endangered monk seal in Hawaii, which was found entangled in the net.[53] In August 2018, Cooke Aquaculture entangled an endangered Humpback whale in large gillnets that it cast to recapture escaped farmed fish from a Canada facility.[54] These examples are merely two of many unfortunate incidents.

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[49] Parsons, *et al.*, *The impact of anti-sea lice pesticides, azamethiphos and deltamethrin, on European lobster (Homarus gammarus) larvae in the Norwegian marine environment*, Envt'l Pollution 264 (2020).
[50] Rob Edwards, The Ferret Scotland, Fish farm companies 'bidding to use bee-harming pesticide (March 17 2020).
[51] Rob Edwards, The Ferret Scotland, Toxic fish farm pesticide polluted ten lochs across Scotland (May 24, 2020).
[52] United Nations, "Frontiers 2017: Emerging Issues of Environmental Concern" at 15 (2017) https://www.unenvironment.org/resources/frontiers.
[53] Caleb Jones, USA Today, *Rare Monk Seal Dies in Fish Farm off Hawaii* (Mar. 17 2017), *available at* https://www.usatoday.com/story/news/nation/2017/03/17/rare-monk-seal-dies-fish-farm-off-hawaii/99295396/.
[54] Terri Coles, CBC News, *Humpback whale freed from net meant for escaped farm salmon in Hermitage Bay* (Aug. 14, 2018), https://www.cbc.ca/news/canada/newfoundland-labrador/whale-caught-gill-net-cooke-aquaculture-1.4784732.

Harm to Forage Fish & Environment for Feed: Large populations of farmed fish also require an incredible amount of fish feed, which carries its own environmental, public health, and human rights risks.[55] Most industrially farmed finfish, like salmon, are carnivorous and require protein in their feed. This often consists of lower-trophic level "forage fish," many of which are already at risk of collapse. Lately, aquaculture facilities are relying more on ingredients such as corn, soy, and algae as substitute protein sources, many of them genetically engineered, and which do not naturally exist in a fish's diet. Use of these ingredients can lead to heightened, widespread environmental degradation,[56] a heightened demand on natural resources, and a less nutritious fish for consumers. Moreover, the fish feed industry is a global contributor to human trafficking and slavery.[57] There are very few requirements for the industry to include traceability of ingredients or sourcing methods in fish feed, allowing these serious problems to pervade.

Socio-Economic Impacts to Communities: Finally, permitting commercial, marine finfish aquaculture in the United States could bring formidable economic harm to our coastal communities, food producers (on land and at sea), and other marine-reliant industries. Members of the wild-capture fishing industry have collectively voiced their trepidations over attempting to coexist with the marine finfish aquaculture industry, stating that "this emerging industrial practice is incompatible with the sustainable commercial fishing practices embraced by our nation for generations and contravenes our vision for environmentally sound management of our oceans."[58] These massive facilities could also close off and essentially privatize large swaths of the ocean that are currently available for numerous other commercial purposes, including fishing, tourism, shipping, and navigation. Given what we know about economies of scale and the business models of modern agriculture and terrestrial food production, we can only expect a similar trend at sea: that is, the marine finfish aquaculture industry could easily push out responsible, small-scale seafood producers and crop growers. This dynamic equates to an alarming imbalance of power, and allows corporations to dominate business structures, production methods, and management policies within the industry. Giving corporations disproportionate influence over food production also severely limits consumer choices.[59] Most importantly, our existing seafood producers are

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[55] *See generally*, Changing Markets Foundation, *Until the Seas Run Dry* (2019), *available at* http://changingmarkets.org/wp-content/uploads/2019/04/REPORT-WEB-UNTILL-THE-SEAS-DRY.pdf (concluding that using wild fish to feed farmed fish "raises concerns of overfishing, poor animal welfare and disruption of aquatic food webs; it also undermines food security in developing countries, as less fish is available for direct human consumption").

[56] Center for Food Safety, GE Food & The Environment, https://www.centerforfoodsafety.org/issues/311/ge-foods/ge-food-and-the-environment.

[57] David Tickler, *et al.* (2018) *Modern slavery and the race to fish*, Nature Communications 9: 4643, *available at* https://www.nature.com/articles/s41467-018-07118-9.

[58] Open letter to Members of the U.S. House of Representatives and Senate, Dec. 4, 2018, re: Opposition to marine finfish aquaculture in U.S. waters, *available at* http://foe.org/DecFishFarmingSignOnLetter/.

[59] *See generally*, Undercurrent News, "World's 100 Largest Seafood Companies" (Oct. 7, 2016) https://www.undercurrentnews.com/report/undercurrent-news-worlds-100-largest-seafood-companies-2016/; Tom Seaman, Undercurrent News, "World's top 20 salmon farmers:

acutely struggling from the sweeping impacts of the COVID-19 pandemic. The Administration should set aside its flawed mission to advance an industry with myriad documented harms, and instead prioritize protecting and assisting our preexisting – and deeply struggling – seafood production sectors.

II. LEGAL REQUIREMENTS

A. Clean Water Act

The Clean Water Act (CWA)'s goal is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The Corps has authority under CWA Section 404 to regulate dredge and fill activities, including the various activities used in commercial shellfish aquaculture. *Id.* § 1344. Under the CWA, the Corps may only issues nationwide permits if "the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment." 33 U.S.C. § 1344(e)(1). *See also* 33 C.F.R. § 323.2(h) (general permit may be granted on nationwide or regional basis only if "activities it covers are substantially similar in nature and cause only minimal individual and cumulative environmental impacts").

In issuing a general permit, either regional or nationwide, the Army Corps *must* properly consider the separate and cumulative impacts from the permit on the environment, and make a finding that the permit will not have more than minimal adverse impacts before granting any general permits under CWA § 1344(e)(1). The Corps may not legally adopt a NWP if the activities covered will cumulatively cause more than minimal adverse impacts to the environment. This determination for general permits must be supported, in accordance with the § 404(b) Guidelines, which require the Corps to provide documentation to support each factual determination, including cumulative impacts and secondary effects. 40 C.F.R. §§ 230.7(b); 230.11. If the Corps relies on mitigation measures to meet the CWA standard of no more than minimal adverse cumulative impacts, it must adequately document those mitigation measures and support their efficacy. *Id. See e.g. Wyoming Outdoor Council Powder River Basin Resources Council v. U.S. Army Corps of Engineers,* 351 F. Supp. 2d 1232 (D. Wyo. 2005) (finding Corps' was arbitrary and capricious when it issued a general permit for discharge of dredge and fill materials associated with coalbed methane gas in Wyoming, because it failed to consider cumulative impacts, relied on mitigation measures that were wholly unsupported and unmonitored, and failing to make a finding under the CWA that the cumulative impacts to the aquatic environment would be minimal, remanding to Corps); *Maryland Native Plant Socy. v. U.S. Army Corps of Engineers*, 332 F. Supp. 2d 845, 862 (D. Md. 2004) (finding Army Corps' decision to allow construction of housing developments involving dredging and/or filling of wetlands, to proceed under general statewide permit as having

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Mitsubishi moves into second place behind Marine Harvest" (June 29, 2016) https://www.undercurrentnews.com/2016/06/29/worlds-top-20-salmon-farmers-mitsubishi-movesinto-second-place-behind-marine-harvest/; Aslak Berge, Undercurrent News, "These are the world's 20 largest salmon producers" (July 30, 2017) http://salmonbusiness.com/these-are-the-worlds-20-largest-salmon-producers/.

minimal adverse environmental impact was arbitrary, capricious, and an abuse of discretion under the Administrative Procedures Act, where Corps failed to provide sufficient reasoning for its conclusion that project would have minimal adverse environmental impact).

B. National Environmental Policy Act

The B. National Environmental Policy Act (NEPA) "is our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). It requires a detailed environmental impact statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). NEPA "ensures that the agency . . . will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger [public] audience." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

If the federal action may significantly affect the environment, the Corps must prepare an EIS. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1219-20 (9th Cir. 2008). If the agency finds instead that the action will not have a significant impact (FONSI), the agency must supply a "convincing statement of reasons" to explain how the action's impacts are insignificant. *Id.* at 1220 (quoting *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) ("The statement of reasons is crucial to determining whether the agency took a 'hard look' at the potential environmental impact…")).

Whether an action is significant requires consideration of the "context" and "intensity" factors, and an action may be "significant," requiring an EIS, if even one of the factors is present. 40 C.F.R. § 1508.27; *Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 864-65 (9th Cir. 2005). A FONSI and a decision to forgo an EIS may be justified by adoption of mitigation measures; however measures "must be developed to a reasonable degree," and a "perfunctory description, or mere listing of mitigation measures, without supporting analytical data, is insufficient to support a finding of no significant impact." *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 733-34 (9th Cir. 2001) (citations omitted).

NEPA regulations require the agency analyze (take a hard look at) all direct, indirect, and cumulative impacts. See 40 C.F.R. §§ 1508.8; 1508.9; 1508.13; 1508.18; 1508.27. Cumulative impacts include the incremental impact of the proposed action when added to all past, present, and reasonably foreseeable actions, taken not just by the agency, but by any entity. *Id.* § 1508.7. A thorough consideration of cumulative impacts is required in an EA. *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1075-77 (9th Cir. 2002).[60]

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[60] Although the NEPA regulations were amended in July 2020, those rollbacks are arbitrary and capricious, and the subject of several court challenges. *See e.g. Alaska Community Action on Toxics et al. v. Council on Environmental Quality*, No. 3:20-cv-5199-RS (N.D. Cal.). Given these pending cases, and the pending transition in Administration, the Corps should comply with the NEPA regulations requiring cumulative impacts analysis, especially because the Corps must assess cumulative impacts anyway to lawfully adopt NWPs.

Alternatives to the proposed action are the "heart" of NEPA. 40 C.F.R. § 1502.14. EAs must assess a "no action" alternative, *i.e.* the status quo without the action, and a reasonable range of alternatives to the proposed action. *Earth Island Inst. v. U.S. Forest Serv.*, 697 F.3d 1010, 1022 (9th Cir. 2012); *W. Watersheds Project v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013); 42 U.S.C. § 4332(2)(E); 40 C.F.R. § 1508.9(b).

Finally because public disclosure is one of the pillars of NEPA, agencies are required to provide enough information to allow the public to weigh in and inform the decision-making process. *Bering Strait Citizens for Responsible Res. Dev. v. U.S. Army Corps of Eng'rs*, 524 F.3d 938, 952 (9th Cir. 2008).

C. Endangered Species Act

As recognized by the U.S. Supreme Court, the Endangered Species Act (ESA) is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation" and "reveals a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies." *Tenn. Valley Authority v. Hill*, 437 U.S. 153, 180, 185 (1978).

Section 7(a)(2) of the ESA requires every federal agency to consult the appropriate federal fish and wildlife agency (the Services, NMFS or FWS) to "insure" that the agency's actions are not likely "to jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification" of critical habitat. 16 U.S.C. § 1536(a)(2); *see also* 50 C.F.R. § 402.01(b). Section 7(a)(2) requires the Corps, as the "action agency," to determine if a proposed action like the challenged permit approval here "may affect" any listed species or designated critical habitat. If so, then the Corps then must enter consultation with the expert wildlife agencies, FWS (for terrestrial and freshwater species) and NMFS (for marine species) 50 C.F.R. § 402.14(a); *id.* § 17.11; *id.* § 223.102; *id.* § 224.101. Importantly, the "may affect" standard is extremely low: "[A]ctions that have any chance of affecting listed species or critical habitat—even if it is later determined that the actions are 'not likely' to do so—require at least some consultation under the ESA." *Karuk Tribe of California v. U.S. Forest Serv.*, 681 F.3d 1006, 1027 (9th Cir. 2012) (en banc); *see also W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 496 (9th Cir. 2011).

Formal consultation results in the expert consulting agency's BiOp determining whether the action is likely to jeopardize listed species. 50 C.F.R. § 402.14(h)(3). If the consulting agency determines that jeopardy is not likely, it issues an Incidental Take Statement (ITS) with the BiOp authorizing a defined amount of take that may result from the action. 16 U.S.C. § 1536(b)(4), (o)(2); 50 C.F.R. § 402.14(i)(5). The ITS includes other important components, including requirements to minimize impacts to species and to monitor and report take of protected species to ensure that the amount authorized is not exceeded. 16 U.S.C. § 1536(b)(4)(C)(ii); 50 C.F.R § 402.14(i)(1)(ii), (i)(3); *Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 531-32 (9th Cir. 2010).[61] In all

[61] If an action "may affect" endangered species and/or its critical habitat, there is one exception to formal consultation: informal consultation. Agencies must still consult with the expert agency, but

of ESA analyses and decisions, agencies must "give the benefit of the doubt to the species," *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988), and use the best scientific and commercial data available, 16 U.S.C. § 1536(a)(2).

The ESA requires this analysis be done "at the earliest possible time," 50 C.F.R. § 402.14(a). Later, individual-permit decisions will not be equivalent in scope, and will create impermissible piecemeal decision-making, a danger of death by a thousand cuts. "[T]he scope of the agency action is crucial because the ESA requires the [BiOp] to analyze the effect of the entire agency action." *Conner v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1988) (emphasis in original). *See e.g. N. Plains Res. Council v. U.S. Army Corps of Eng'rs*, 454 F. Supp. 3d 985, 994 (D. Mont. 2020) ("General Condition 18 fails to ensure that the Corps fulfills its obligations under ESA Section 7(a)(2) because it delegates the Corps' initial effect determination to non-federal permittees" and programmatic consultation is the only way to avoid "piecemeal destruction of species and habitat").

Agencies remain under a continuing duty under Section 7 of the ESA after consultation to insure that the action will not jeopardize species. Wild Fish Conservancy, 628 F.3d at 525. Accordingly, agencies must reinitiate formal consultation if new information reveals unassessed effects, the action is changed in a manner that causes unassessed effects, incidential take is exceeded, or a new species is listed or critical habitat designated. 50 C.F.R. § 402.16(a)-(d). *See also Pacificans for a Scenic Coast v. California Dep't of Transp.*, 204 F. Supp. 3d 1075, 1093 (N.D. Cal. 2016) (Reinitiating consultation is required if any one of the four triggering conditions are satisfied) (*citing Cottonwood*, 789 F.3d at 1088).

D. Magnuson-Stevens Act

The Magnuson-Stevens Act (MSA) established procedures to identify, conserve, and enhance Essential Fish Habitat (EFH) for species regulated under a federal Fisheries Management Plan. 16 U.S.C. §§ 1801 *et seq.* The MSA requires consultation with NMFS on all actions, including proposed actions, which may adversely affect EFH. 16 U.S.C. § 1855(b)(2). To "adversely affect" means any impact that reduces the quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. 50 C.F.R. § 600.810. When NMFS is consulted on impacts to EFH under this act, it must "recommend to such agency measures that can be taken by such agency to conserve such habitat," and should the action agency fail to adopt those measures it must explain its reasons for not following those measures. 16 U.S.C. § 1855(4).

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may avoid formal if during informal consultation the expert agency concurs in writing that, while the agency action in question "may affect" a species or habitat, that action is nonetheless "not likely to adversely affect" them. 50 C.F.R. §§ 402.13(a), 402.14(b)(1); *Pac. Rivers Council v. Thomas*, 30 F.3d 1050, 1054 n.8 (9th Cir. 1994).

III. COMMENTS SPECIFIC TO NWP 48 FOR COMMERCIAL SHELLFISH AQUACULTURE

The Corps has not cured the deficiencies in this permit or supporting Decision Document and should not issue NWP 48 as written. Because the continued lack of support for the Corps' conclusion that NWP 48 will have only minimal individual or cumulative adverse impacts, and its continued failure to comply with NEPA, adoption of NWP 48 as proposed is unlawful under *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps. Of Engineers*, 417 F.Supp.3d 1354 (W.D. Wash. 2019); 2020 WL 3100829 (W.D.Wash. 2020) (vacating permit and remanding to Corps to issue lawful permits after compliance with CWA and NEPA). Further, based on impacts from NWP 48-authorized operations in other parts of the country, NWP 48 should not be issued at all.

A. 2020 NWP 48 Will Have More Impact Than 2017 NWP 48 And More Than Minimal Individual and Cumulative Impact.

The Corps is proposing to remove the designation of "new" operations, including its 100-year lookback rule for defining a "new" operation. The 100-year lookback was an inadequate definition for a "new" operation, given that it would mean almost no operations are "new" in Washington even if the area was recovered to a more natural state. However, removing *any* distinction for new operations, with the ½ acre limit of impacts to submerged aquatic vegetation, will result in *more* impacts. The Corps does little to justify this, given that it required this limit merely 3 years ago to ensure that impacts from NWP 48 would be no more than minimal. Allowing unlimited impacts to seagrasses will result in more than minimal cumulative impacts. Given that the Corps failed to support its minimal effects determination for 2017 NWP 48, *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d 1354, and the Corps now proposes to *further lift* restrictions, it is unclear how the Corps can justify this permit.

The Corps' new Decision Document does not support its minimal effect determination under the CWA. The Corps fails to fully assess direct and cumulative impacts from commercial shellfish aquaculture in the following ways:

- Throughout the Environmental Consequences, Public Interest, and 404(b)(1) Guidelines Analysis, the Corps acknowledges some negative impacts, but then fails to assess them and instead focuses only on positive impacts. For example, despite the impacts from mechanical and hydraulic harvesting, these activities are barely mentioned, Dec. Doc. at 50, 62, let alone their harmful impacts assessed to the same degree as the supposed benefits from shellfish aquaculture. None of these sections are compliant with CWA and its regulations.
- Failure to meaningfully assess cumulative impact of tens of thousands of acres of commercial shellfish aquaculture on aquatic environment, despite acknowledging impacts to seagrass and wildlife and including *no limits* to these impacts (indeed removing the only quantitative limit of impacts to ½ acre of submerged aquatic vegetation). Dec. Doc. at 53 (asserting DEs will analyze cumulative impacts). Indeed, even the number of impacted acres is unclear. First the Corps says 13,360 acres will be

impacted total, *id.* at 81, and then asserts that a total of 40,080 acres may be impacted. This is a large disparity and goes to show how rushed this analysis is, and highlights the need for the Corps to take its time and conduct an *actual* cumulative impacts analysis before issuing another NWP 48. For the rest of the cumulative impacts section, the Corps starts with a conclusion that no compensatory mitigation will be needed to avoid cumulative effects, *id.* at 81, but then discusses stream restoration at length (despite this being *marine* shellfish aquaculture), and finishes with the assurance that compensatory mitigation required by DEs is expected to restore aquatic functions and reduce incremental contribution to cumulative effects. *Id.* at 87. It is unclear how mitigation can both be unnecessary *and* something the Corps is relying on to avoid cumulative impacts. The Corps should start with the "NEPA-level" draft cumulative impacts assessment conducted by Seattle District staff (Draft CIA) and go from there.

- Repeatedly defers to District Engineers to condition NWP 48 to ensure only minimal impacts, but must start with a "national decision document that actually evaluates the impacts of the proposed activity in light of any regional conditions imposed." *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1366. Corps cannot continue to support its minimal effects determination by punting to DEs.
- Fails to assess impacts of pesticides and plastics, Dec. Doc. at 49, 59, despite their use by some commercial shellfish aquaculture and not being prohibited under NWP 48. "The Corps' decision to ignore the foreseeable uses and impacts of pesticides in the activities it permitted on a nationwide basis does not comport with the mandate of NEPA or with its obligations under the CWA. Having eschewed any attempt to describe the uses of pesticides in commercial shellfish aquaculture or to analyze their likely environmental impacts, the decision to permit such activities through NWP 48 cannot stand." *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1364. "The CWA requires the Corps to make minimal adverse effect findings before issuing a general permit. If, as appears to be the case with regards to the discharge of plastics from the permitted operations, the Corps is unable to make such a finding, a general permit cannot issue. The Corps has essentially acknowledged that it needs to individually evaluate the impacts of a particular operation, including the species grown, the cultivation techniques/gear used, and the specific location, before it can determine the extent of the impacts the operation will have." *Id.* at 1366 n.10.
- Fails to assess impacts against real baseline, sweeping aside as only a small portion of human activities, so having only "minor incremental change to current environmental setting." Dec. Doc. at 46. *But see Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1364 (The Corps must analyze the individual and cumulative impacts of the proposed activity against the environmental baseline, not as a percentage of the decades or centuries of degrading activities that came before.").
- Claims to have no duty to use any quantitative data, Dec. Doc. at 42, but the Corps has issued NWP 48 since 2007 and in Washington has required PCNs for operations to be authorized, and should be able after all these years to provide *some* quantitative data about loss of seagrasses, natural habitats, etc.

- Claims "standards and best management practices" can reduce impacts, but fails to explain what these are and how they will mitigate impacts. Dec. Doc. at 48, 57. Similarly, cites "operational standards" that can reduce negative effects (like "stocking densities, rotational practice, biosecurity measures") but fails to explain them or support their efficacy, or require them. *Id.* at 61.

- Appears to include only one significant new study to support determination, NRC 2010, but fails to grapple with information supplied by commenters in 2017 (and before) showing the harmful impacts of shellfish aquaculture. This publication was apparently available for the last two iterations of NWP 48 and was not relied on until now, and the Corps fails to include any more up-to-date information about the specific places NWP 48 will be used, which is overwhelmingly Washington. Moreover, the Corps does not actually conduct analysis urged by NRC 2010, which for instance includes a chapter on carrying capacity. The Corps appears to have done no modeling for the carrying capacity of Washington's bays and inlets for intensive shellfish aquaculture to actually determine whether 30,000-50,000 acres is too much.

- Ignores that impacts to submerged aquatic vegetation will be ongoing, not allowing recovery, when activities are ongoing. As noted above, recovery may not be possible for eelgrass, and as seen in Puget Sound over the last decade, aquaculture has reduced eelgrass. Claims that shellfish aquaculture can "coexist" with seagrass at "low densities" but fails to explain what low or high density shellfish aquaculture *means*, or how it is possible that 42,000 geoduck tubes per acre is "low density" shellfish aquaculture. Dec. Doc. at 51-52.

- Continues to look only at the "landscape level" (despite not conducting real cumulative impacts analysis), Dec. Doc. at 60, but Corps cannot ignore local impacts at the site level. 40 C.F.R. § 230.11(e) ("Consideration shall be given to the effect at the proposed disposal site of potential changes in substrate characteristics and elevation, water or substrate chemistry, nutrients, currents, circulation, fluctuation, and salinity, on the recolonization and existence of indigenous aquatic organisms or communities."); *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1359-60 ("Ignoring or diluting site-specific, individual impacts by focusing solely on a cumulative, landscape-scale analysis is not consistent with the governing regulations.").

- Still relies on Dumbauld (2015) to claim that impacts to eelgrass are minor/temporary, but that study looked only at one type of shellfish aquaculture (oyster) in one water body (Willapa Bay), and cannot be extrapolated for all types of shellfish aquaculture in all places across the country, much less for all parts of Washington. *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1361 ("the 2015 Dumbauld and McCoy paper cannot reasonably be interpreted as evidence that seagrass is only minimally impacted by commercial shellfish aquaculture."). Corps fails to grapple with losses/lack of recovery of seagrasses in Puget Sound, despite statewide "no net loss" policy.

- Reliance on general conditions (e.g. Dec. Doc at 66-67, concluding that General Conditions 2, 3, 4, 5 will protect indigenous species movement, spawning areas, and

migratory birds) fails to explain how they apply to shellfish aquaculture, how they will be used and be effective to mitigate harms. Moreover, the Seattle District staff have stated that "[i]n practice it is uncertain whether any of the general conditions would minimize effects of the action. Historically, these conditions have not been invoked to restrict activities under NWP 48." Draft CIA at 6.

- Discounts impacts to recreational or aesthetic values on basis that commercial private activities have more "right" to these areas. Fails to account for impacts to recreational or wildlife values, including tourism values to community. Dec. Doc. at 68.
- Claims commercially-reared bivalves improve water quality but cite no support for this claim being true in any waterbody in Washington. Dec. Doc. at 69-70. Fails to assess water quality impacts by deferring to DEs and CWA 401 certifications, but impacts to water quality must be assessed before granting NWPs.
- Continues to rely on reasoning that shellfish aquaculture is a minor subset of human activities, Dec. Doc. at 46, contrary to CWA (and NEPA) requirements. *See Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1364 ("To the extent the Corps' minimal impacts determination is based on some sort of comparison between the environmental impacts of shellfish aquaculture and the environmental impacts of the rest of human activity… the analysis is inadequate."). As the district court said in its order finding NWP 48 unlawful, "[t]he Corps must analyze the individual and cumulative impacts of the proposed activity against the environmental baseline, not as a percentage of the decades or centuries of degrading activities that came before." *Id.*

The Corp fails to support its minimal impact determination for NWP 48 and cannot adopt it as proposed without further support.

B. The Corps' Environmental Assessment/FONSI Is Not Supported; Environmental Impact Statement Required.

The Corps drafted the Decision Document including its purported EA. However, this document falls far short of the Corps' NEPA duties, and given substantial questions as to significant impact, an EIS is required. The EA is deficient as follows:

- **No purpose and need statement**. EAs must include a discussion of the need for the proposal. 40 C.F.R. § 1508.9(b). Without this discussion, the public cannot know the scope of potentially reasonable alternatives.

- **Inadequate alternatives.** The alternatives are the "heart" of the NEPA analysis, and they are required in an EA, including a "no action" alternative and other reasonable alternatives. *Id.*, § 1508.25(b). The only meaningfully considered alternative is the Corps' proposed NWP 48. While the Corps lists the "no action" alternative, it barely analyses it, strangely concluding that it would somehow have *more substantial* adverse enviro consequences, despite there being no limits—quantitative or otherwise—on NWP

48 operations. Dec. Doc. at 54-55. The "national modification" alternative is not an alternative, but rather the proposed 2020 NWP 48. The "regional modification" alternative is also not a real alternative as it includes no conditions or changes from the proposed NWP 48, leaving it entirely open to potential conditions from regions or DEs. Thus, the Corps did not consider any other alternatives, and this is not a reasonable range. *See Muckleshoot Indian Tribe v. U.S. Forest Serv.,* 177 F.3d 800, 812 (9th Cir. 1999); *'Ilio'ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1101 (9th Cir. 2006).

- **Mitigation of Impacts**. Any mitigation measures used to show that an activity will not be "significant" (and thus require an EIS) must be adequately explained in detail and be enforceable. The Corps relies heavily on mitigation at the District level, but it fails to actually describe the possible effects (direct, indirect and cumulative) from shellfish aquaculture activities or how these unknown mitigation measures will actually avoid more than minimal adverse impacts. These shellfish activities have been permitted through NWPs since 2007, but the Corps makes no effort to provide information to the public of the impacts from these past permitted activities, possibly because the Corps did not have any system in place to actually monitor and evaluate these impacts (despite this requirement from previous nationwide programmatic ESA consultation in 2012-2014). While the Corps relies on to-be-determined regional conditions to mitigate any impacts and therefore make the NWP impacts minimal, it does not explain what kind of conditions might mitigate the potential adverse impacts. Nor does it provide any baseline that is relevant to commercial shellfish aquaculture as opposed to the general loss of wetland habitat nationwide (while shellfish will be grown in marine intertidal areas). The Corps also relies on the general conditions attached to the NWP to minimize impacts, however many of these general conditions are so vague as to be basically useless (i.e. general condition 23 requiring permittees to minimize and avoid impacts). How will the Corps ensure that permittees using NWP 48 for shellfish aquaculture activities will follow this condition? The Corps provides no guidance or concrete guidelines for how permittees can actually achieve the general conditions on which it relies to mitigate any more-than-minimal adverse impacts. Further, any individual mitigation measures will only be attached if a permittee is required to submit a PCN, and given the proposed conditions, that will likely be few and far between. The Corps is proposing to remove both PCN thresholds for this NWP, as well as the paragraph that identifies the additional information that permittees must submit with NWP 48 PCNs. This effectively removes almost all PCN requirements and so it is very unlikely that District Engineers will be able to effectively attach any individual mitigation measures under the proposed NWP 48.

- **Direct, Indirect, and Cumulative Impacts**. For all the same reasons the Corps fails to support its CWA minimal effects determination, it has also failed to assess direct, indirect, and cumulative impacts under NEPA.

- **Significance Determination**. The Corps fails to discuss the context and intensity factors that might indicate that this proposed NWP will have a "significant impact to

the human environment" and thus require an EIS. But several of the intensity factors are implicated here: shellfish aquaculture is controversial in Washington (and elsewhere), and as acknowledged by the Corps, there are possible effects on the human environment that are highly uncertain or involve unique or unknown risks. Dec. Doc. at 43. Because this permit would affect tens of thousands of acres of shoreline and estuarine aquatic environments, it has the potential to be cumulatively significant, particular when added to the other impacts and stressors to these regions. Any one of these intensity factors alone triggers the need to perform an EIS.

C. Activities Not Similar in Nature or Impact.

The Corps has not supported a determination that the activities authorized under NWP 48 are "similar in nature" as required by 33 U.S.C. § 1344(e)(1), and similar in "impact upon water quality and the aquatic environment" by 40 C.F.R. § 230.7(a)(1). *See, e.g., Nw. Envtl. Def. Ctr. v. U.S. Army Corps of Eng'rs*, 2013 WL 1294647, at *4 (D. Or. Mar. 27, 2013) (Corps violated CWA by failing to explain why general permit for gravel mining on river was appropriate, including how activities and impacts were similar in nature). As noted above, there is great variety to the types of bivalve aquaculture practiced, and the impacts to various parts of Washington (not to mention the rest of the county). *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1362 ("These variations gave rise to a wide array of effects on the aquatic habitat."); *id.* at 1366 ("Faced with incredible diversity in both the environment and the activities permitted under NWP 48, the Corps effectively threw up its hands and turned the impact analyses over to the district engineers.").

The Corps' analysis supporting its minimal effects determination does not address the myriad shellfish aquaculture activities or their various impacts. In particular, the Decision Document barely mentions geoduck aquaculture, despite it having different practices and impacts than oyster culture, which also varies widely between on-bottom culture, net/bag/rack culture, and long-lines. Some shellfish operations in Willapa Bay/Grays Harbor spray herbicides to kill eelgrass as part of their operations. These various types of operations and equipment have different impacts depending on the water body.

As the Court stated in *Coalition to Protect Puget Sound Habitat,* "[i]n issuing NWP 48, the Corps has opted to interpret the "similar in nature" requirement of 33 U.S.C. § 1344(e)(1) broadly so that all commercial shellfish aquaculture activities in the United States could be addressed in a single nationwide permit. That choice has made assessing the impacts of disparate operations difficult: the Corps essentially acknowledges that the permitted activity is performed in such different ways and in such varying ecosystems that evaluating impacts on a nationwide level is nearly impossible." Before making the same mistake, the Corps should consider whether certain types of shellfish aquaculture may actually be similar enough in nature and impact to warrant a NWP. As written, this permit does not comply with either requirement. 33 U.S.C. § 1344(e)(1); 40 C.F.R. § 230.7(a)(1).

D. CWA Section 404 Jurisdictional Activities.

Shellfish aquaculture involves many activities that meet the definition of discharge of dredge or fill. 33 C.F.R. § 323.2. Aquaculture is not exempt from CWA permitting under CWA § 404(f).[62] These activities include, but are not limited to, graveling/frosting, re-leveling the substrate (including harrowing and raking), weighing down bags with gravel, burying bags or canopy net edges with dredged or fill material, and mechanical or hydraulic harvesting. Seeding can involve activities such as the application of gravel or crushed shells to harden the ground involves discharge of fill material. 33 C.F.R. § 323.2; *see Coeur Alaska, Inc. v. Se. Alaska Conservation Council*, 557 U.S. 261, 275 (2009) (slurry fell "well within the central understanding of the term 'fill,'" because it was listed in the regulation's examples). For bag culture, gravel and/or shell fragments may be added to the bags, which are held in place with metal stakes. Bags may also be placed in shallow trenches during low tide and allowed to become buried in the substrate. Digging of ditches constitutes dredging. *Avoyelles Sportsmen's League, Inc. v. Marsh*, 715 F.2d 897, 925 (5th Cir. 1983). Adding gravel or shell to bags also implicates § 404 even if the bags themselves do not qualify as fill material. *See United States v. Sweeney*, No. 217CV00112KJMKJN, 2020 WL 5203474, at *26 (E.D. Cal. Sept. 1, 2020) (citing Corps enforcement letter classifying concrete inside a sunken barge as fill material even where the barge was not). To the extent geoduck tubes constitute fill material, are installed with machinery, or are structures that change the bottom elevation of the water, they are also subject to CWA § 404. 33 C.F.R. § 323.2. Maintenance activities may include mud or sand removal, and when mud or sand are removed, they are dredged material. 33 C.F.R. 323.2(c). If the dredged material is discharged back into the water, it requires a permit unless the fallback is incidental. *Id.* at 323.2(d)(1). Harrowing or re-leveling the surface to, for example, bring shellfish to the surface, is a § 404 activity. Harvesting shellfish usually involves dredging and discharge of dredged material under 33 C.F.R. § 323.2. Dredge bags, for example, have a leading edge (blade) consisting of a steel frame with teeth and a steel mesh collection bag attached to the frame which loosens the shellfish and guides them into the bags. Finally, wet storage is a temporary

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[62] The Seattle District Corps website notes that there is no 404(f) exemption for commercial shellfish aquaculture. U.S. Army Corps of Engineers, *Shellfish Aquaculture Frequently Asked Questions*, Seattle District Website, at Permitting FAQ A.1, https://www.nws.usace.army.mil/Missions/Civil-Works/Regulatory/Shellfish-Aquaculture. This is because "EPA has the final authority to interpret Clean Water Act Section 404(f) exemptions" and has not yet done so for shellfish aquaculture. *Id.*; *see* EPA, *Memorandum of Agreement: Exemptions Under Section 404(f) of the Clean Water Act*, at I, https://www.epa.gov/cwa-404/memorandum-agreement-exemptions-under-section-404f-clean-water-act (stating Attorney General opinion gives EPA "the ultimate authority under the CWA to determine . . . the application of section 404(f) exemptions"). Aquaculture is not properly considered normal or established "farming," as aquaculture is not like terrestrial farming. Moreover, Section 404(f) provides only "a narrow exemption for agricultural and silvicultural activities that have little or no adverse effect on the nation's waters." *Avoyelles Sportsmen's League, Inc. v. Marsh*, 715 F.2d 897, 926 (5th Cir. 1983) (citing legislative history). As stated above, shellfish aquaculture can have more than minimal adverse effects on the nation's waters.

storage tank that maintains live shellfish after they have been harvested; the intake or outfall structures (pipes) associated with wet-storage tanks implicate § 404.

Even for activities that do not directly result in discharge of dredge or fill material, the Corps must document secondary effects, and has the authority to impose conditions reasonably related to the purpose of CWA permits. First, the Corps' regulations require it to make a "determination of *secondary effects* on the aquatic ecosystem." 40 C.F.R. § 230.11 ("Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities."). The §404(b) guidelines require secondary effects to be considered prior to issuing a general permit. *Wyoming Outdoor Council Powder River Basin Resources Council v. U.S. Army Corps of Engineers*, 351 F.Supp.2d 1232, 1255 (D. Wyo. 2005) (finding the Corps' cumulative effects determination for a general permit was unlawful, in part, because it failed to evaluate the secondary effects to non-wetland aquatic environments). *See also Fox Bay Partners v. U.S. Corps of Eng'rs*, 831 F. Supp. 605, 609-10 (N.D. Ill. 1993) (upholding the Corps' denial of a private marina project based on its evaluation of the cumulative and *secondary* impacts, including increasing boat traffic in an already heavily trafficked area).

Second, the Corps has authority to impose conditions that are "reasonably related" to the purpose of the permit (here, commercial shellfish aquaculture). *United States v. Mango*, 199 F.3d 85, 93 (2d Cir. 1999) (citing the Corps' own regulations that interpret the CWA authority to issue permits as including conditions directly *or indirectly* related to the discharge). The court in *Mango* found that the Corps' regulations giving it authority to include indirectly related conditions to a Section 404 permit were reasonable based on the CWA's mandate to consider the effect of discharges "on human health or welfare," "ecosystem diversity," and "esthetic, recreation, and economic values." *Id.*; *see also Nat'l Ass'n of Home Builders v. U.S. Army Corps of Eng'rs,* 453 F. Supp. 2d 116, 134 (D. D.C. 2006) (holding that "the requirement to establish and maintain vegetated buffers when practicable is reasonably related to the discharges of dredged or fill material."); *Save Our Sonoran, Inc. v. Flowers,* No. CV-02-0761-PHX-SRB, 2006 WL 1160191, at *16-17 (D. Ariz. May 2, 2006) (Corps modified permit imposing specific mitigation requirements for removal of upland vegetation were "reasonably relate[d] to the permitted discharge and are within the Corps' jurisdiction to impose); *WaterWatch of Oregon v. U.S. Army Corps of Eng'rs,* CIV. NO. 99-861-BR, 2000 WL 1100059, at *9 (D. Or. June 7, 2000) (conditions on the construction of water pumping stations regarding the operation of these stations were reasonably related to the purpose of the permits). Thus, even if the Corps determines that some shellfish aquaculture activities do not constitute discharge of dredge or fill, it must still document them and consider whether to condition them as reasonably related to the discharge activities. All shellfish aquaculture activities are reasonably related to the jurisdictional ones, as they would have no purpose without each other and are completely interrelated/intertwined.

E. The Corps Must Comply With ESA Section 7 and MSA Prior to Issuing NWP 48.

The Corps must consult if its proposed issuance of NWP 48 may affect listed species or their critical habitat. Rather than comply with ESA Section 7 (as it has in past years for nationwide permits), the Corps reiterates its 2017 position that it does not have to consult on the NWPs before issuing them because it is requiring individual consultation under General Condition 18. This position is not based on any science or legally justified (as explained above Section 7 clearly requires consultation *before* the action and the trigger for consultation is very low). Rather, the Corps Regulatory Program Manager acknowledged that "for the 2017 NWPs, *we would have to do a new consultation*," but instead stated that the Corps could make a "no effect" determination to avoid programmatic consultation and "[w]e could continue to make the national 'no effect' determination for each NWP reissuance until it is challenged in federal court and a judge rules against the Corps. If we lose in federal court, then we would start doing the national programmatic consultations again." [63] That is exactly what happened. *N. Plains Res. Council v. U.S. Army Corps of Eng'rs,* 454 F. Supp. 3d 985, 994 (D. Mont. 2020) (holding that the Corps violated the ESA by failing to programmatically consult on the issuance of NWP 12).

NWP 48 more than meets the low threshold for consultation as it "may affect" listed species: commercial shellfish aquaculture impacts water quality, sediments/benthos, and habitat/food (like eelgrass) for ESA-listed species. *See supra* (shellfish aquaculture impacts). It overlaps directly with habitat (including designed critical habitat) for numerous species. In Washington where the bulk of NWP 48 authorizations are, this is abundantly clear and the Seattle District has previously conducted programmatic consultation (resulting NMFS biological opinion found likely adverse impacts to five fish species).[64] However, that consultation does not cover *all* of NWP 48, either as adopted in 2017 or as proposed now: it was limited to Washington, and only included a certain number of acres of existing commercial aquaculture in a "footprint," limited new acres, and only operations that were limited to several dozen Conservation Measures, and those that did not use pesticides. As proposed, NWP 48 goes far beyond these limitations, covering unlimited new operations without any conditions to protect seagrass and other sensitive habitats and species, including no acreage limits or any prohibition on pesticide use. If the Seattle District seeks to adopt NWP 48 again—which it cannot do legally under CWA—it will at minimum need to reinitiate consultation based on the mismatch between NWP 48 and the prior programmatic consultation. 50 C.F.R. § 402.16(a)-(d). But before getting to the district level, the Corps must consult on NWP 48 prior to issuance.

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[63] Email from David Olson (Jan. 17, 2014).

[64] NMFS *Endangered Species Act Section 7 Formal Biological Programmatic Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Shellfish Aquaculture Activities in Washington State* (2016) (2016 BIOP), https://www.nws.usace.army.mil/Portals/27/docs/regulatory/160907/NMFS_2016_09-02_WA%20Shellfish%20Aquaculture_WCR-2014-1502.pdf.

The Corps must also consult on a nationwide programmatic basis with NMFS under the MSA, 16 U.S.C. § 1855(b)(2), because Essential Fish Habitat is adversely affected by shellfish aquaculture.[65] Because the proposed NWP 48 differs substantially from the action previously consulted on, even the Seattle District cannot rely on past EFH consultation.

IV. COMMENTS SPECIFIC TO NWP B FOR OFFSHORE FINFISH AQUACULTURE

A. NWP B Will Have Cumulatively Significant Impacts

NWP B authorizes "the installation of cages, net pens, anchors, floats, buoys, and other similar structures" including structures anchored to the seabed in waters overlying the outer continental shelf, for finfish aquaculture. Beyond the most basic of PCNs, this general permit contains no conditions, quantitative or otherwise, to ensure minimal individual or cumulative impacts. But offshore or open ocean aquaculture is a novel type of activity, and while it has not been practiced on a commercial scale in US federal waters, the impacts on state waters and other nations' experience with this industry indicate that this permit *cannot* ensure minimal impacts. Indeed, the Corps can point to no reason to use a NWP rather than individual permits other than Executive Order 13921. But Executive Orders cannot change the substantive requirements on the Corps, including the requirement that any NWP only allow "activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts." 33 C.F.R. § 322.2. Because finfish aquaculture has many harmful impacts, the Corps cannot reasonably determine that such operations will only have minimal impacts, either individually or cumulatively. Further, the opening of federal waters to floating fish factory farms is of great public interest, the Corps must require individual permits for any such operations, and give the public ample ability to comment on specific operations.

The Corps' decision as to whether to issue NWP B must "be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest." 33 C.F.R. § 320.4. This includes a balancing of any benefits with reasonably foreseeable detriments. *Id.* The Corps must consider all factors relevant to a proposal, including in part conservation, economics, aesthetics, general environmental concerns, historic properties, fish and wildlife values, navigation, recreation, water supply and conservation, water quality, and the needs and welfare of the people. *Id.* This includes the cumulative effects of these various impacts. The Corps must also consider "[w]here there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work." *Id.* § 320.4(2).

The Corps' minimal effects determination for NWP B is deficient in the following ways:

- Affected Environment appears to discuss only jurisdictional waters within the coterminous United States and *completely ignores* the federal marine waters (coastal and Exclusive Economic Zone between 3 and 200 miles offshore) that would be impacted by this permit.

[65] NMFS, 2016 BIOP at 105-111.

- Repeatedly defers to District Engineers to condition NWP B authorizations to ensure only minimal impacts, but must start with a "national decision document that actually evaluates the impacts of the proposed activity in light of any regional conditions imposed." *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1366. Corps cannot support its minimal effects determination by punting to DEs.
- Minimal effect determination is based on non-existent "acreage limits or any other quantitative limits in the text of the NWP," general conditions (without explanation), and as-yet-determined regional or activity-specific conditions. A minimal effect determination cannot rest on such conclusory evidence.
- Impacts section describes none of the foreseeable impacts from finfish aquaculture, nor the unknown impacts from this relatively new concept in the U.S. and internationally.
- The Corps estimates that 25 operations may use this permit to install finfish aquaculture operations, but provides no other estimates of how big these operations might be or their impacts from fish escapes, marine wildlife entanglements, pollutants, etc. While exact numbers may not be known, the Corps must at least use the information widely available as to the known impacts of net pen finfish aquaculture, *see supra.*
- No limits imposed; despite briefly describing some potential limits (site selection of well-flushed waters, avoiding seagrass beds, corals, etc) the permit includes none of these requirements.
- Economics section of public interest analysis ignores harm to traditional fishing communities from finfish aquaculture as well as disruptions to other marine-reliant industries, activities, and coastal communities. *See supra*.
- Relies on General Condition 23 to minimize adverse environmental effects, but how can DEs even condition these permits if Corps lacks authority to do so?
- Does not acknowledge potential conflicts between traditional fishing (commercial, recreational) and these facilities.

Further, the Corps has not described in any detail the various types of finfish aquaculture operations in terms of equipment or species, but does not dispute the variety of possible operations and impacts. The Corps has not supported a determination that the activities authorized under NWP B are "similar in nature" as required by 33 C.F.R. § 322.2.

Most disturbingly, the Corps acknowledges harms from escaped fish (genetic, disease transfer), pollutants and nutrients from these facilities, Dec. Doc. at 46-48, 59-61, and admits that they are likely to have adverse effects on the general environment, *id.* at 49-50, but includes no mitigating measures to avoid this known harm. Instead the Corps claims it lacks authority to impose any of the conditions it identifies that may mitigate these serious impacts. *Id.* at 47. But the Corps cannot issue a NWP if it will have more than minimal adverse impacts, so the Corps' alleged lack of authority to condition this permit does not excuse issuing a permit that does not comply with its own regulations. Because the Corps cannot ensure that NWP B will have minimal adverse individual or cumulative impacts, it must not issue the permit.

B. Corps Must Comply With NEPA and EIS Required

The Corps seems to have concluded without any analysis that an EIS is not required. But this document (including the Corps' environmental assessment) falls far short of the Corps' NEPA duties, including the requirement to take a "hard look" at potential impacts. Given substantial questions as to significant impact and existence of several triggering "intensity" factors, an EIS is required. The EA is deficient as follows:

- **No purpose and need statement**. EAs must include a discussion of the need for the proposal. 40 C.F.R. § 1508.9(b). Without this discussion, the public cannot know the scope of potentially reasonable alternatives.

- **Inadequate alternatives.** The alternatives are the "heart" of the NEPA analysis, and they are required in an EA, including a "no action" alternative and other reasonable alternatives. *Id.*, § 1508.25(b). The only meaningfully considered alternative is the Corps' proposed NWP B. While the Corps lists the "no action" alternative, it is barely analyzed. The "national modification" alternative is not an alternative, but rather the proposed NWP. The "regional modification" alternative is also not a real alternative as it includes no conditions or changes from the proposed NWP 48, leaving it entirely open to potential conditions from regions or DEs. The Corps also includes a "case-specific on-site" alternative, that is whatever individual conditions a DE might attach to an individual operation. Like the "regional modification" this not a real alternative. The Corps cannot assess and *compare* the impacts of alternatives that do not exist yet. Thus, the Corps did not consider any other alternatives, and this is not a reasonable range. *See Muckleshoot Indian Tribe v. U.S. Forest Serv.,* 177 F.3d 800, 812 (9th Cir. 1999); *'Ilio'ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1101 (9th Cir. 2006). Moreover, this individual conditioning "alternative" merely highlights the need for individual review of offshore finfish aquaculture operations, and the only purpose of a NWP in that case seems to be cutting out the public, as they are unable to review or challenge individual authorizations under NWPs.

- **Significance Determination**. The Corps fails to discuss the context and intensity factors that might indicate that this proposed NWP will have a "significant impact to the human environment" and thus require an EIS. But several of the intensity factors are implicated here: the size and effect of finfish aquaculture operations authorized under this NWP are controversial; there are possible effects on the human environment that are highly uncertain or involve unique or unknown risks; NWP B has the potential to be cumulatively significant, particular when added to the other impacts and stressors to the ocean; and NWP B may harm threatened or endangered species. Any one of these intensity factors alone triggers the need to perform an EIS. The Corps admits the myriad harms from finfish aquaculture in its public interest review, but fails to describe how those potentially significant harms will be mitigated below the level of significance. An EIS is required.

- **Mitigation**. None required but still mitigation by DEs is relied upon to support insignificant impact finding. NEPA requires agencies to explain mitigation and why it will be effective to reduce impacts below significance.

- **Direct, Indirect, and Cumulative Effects.** The Corps says it considered the reasonably foreseeable direct, indirect, and cumulative effects of NWP B, Dec. Doc. at 35. But while its assessment lists generally the harmful impacts from finfish aquaculture, it fails to assess these types of impacts to the regions most likely to be affected by operations authorized under the permits. In particular, NOAA has recently announced its designation of southern California and the Gulf of Mexico as "aquaculture opportunity areas" pursuant to the same Executive Order that bred these NWPs.[66] While this permit is nationwide, the Corps can certainly predict which areas of the federal waters are most likely to see project applications and has a duty to assess the impacts to those regions at the outset, before issuing the permits. While regional Corps offices must conduct further regional analysis, the Corps cannot entirely defer this duty to later piecemeal analysis. *Coalition to Protect Puget Sound Habitat*, 417 F.Supp.3d at 1365-67. Further, analysis of "alternatives" other than proposed permit is completely inadequate and conclusion that "no action" would have more significant impacts is illogical and unsupported.

C. Corps Must Comply With ESA and MSA

NWP B would authorize activities that "may affect" marine mammals, birds, and turtles that are listed as endangered or threatened under the ESA, and may adversely affect Essential Fish Habitat under the MSA. ESA Section 7 requires consultation with the Services prior to issuing this permit, and the MSA requires consultation with NMFS. The Corps must do this at the outset, before issuing the permit. For the same reasons as stated above for NWP 48, the Corps cannot defer consultation on these impacts to the individual project level. As one court has already determined, General Condition 18 does not comply with the ESA.

V. COMMENTS SPECIFIC TO NWP A FOR OFFSHORE SEAWEED AND SHELLFISH MARICULTURE

The supporting documentation for this permit suffers from the same deficiencies as described above.

The following changes for NWP A are required to ensure that our marine ecosystems and coastal communities are adequately protected: (1) no facilities should be permitted in or near marine protected areas or sensitive areas, such as essential habitat for seagrass, wild fish, and coral

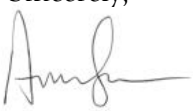
[66] On August 20, 2020, NOAA announced the designation of federal waters in the Gulf of Mexico and Southern California regions as Aquaculture Opportunity Areas (AOAs). NOAA, Press Release, NOAA Announces Regions for First Two Aquaculture Opportunity Areas under Executive Order on Seafood (Aug. 20, 2020).

reef; (2) no facilities should be permitted that utilize plastic equipment or inputs such as pesticides, herbicides, or pharmaceuticals; (3) the permits should require extensive documentation of compliance with all design and operation standards, with routine reporting mandates; and (4) the permits should incorporate more rigorous operation, emergency response, and pollution standards, with swift and severe repercussions for noncompliance, including revocation of permits. If the Corps cannot require these measures, it cannot issue the permit.

CONCLUSION

The Corps should not adopt NWP 48, for the same reasons NWP 48 was found unlawful in *Coalition to Protect Puget Sound Habitat v. U.S. Army Corps. Of Engineers*, 417 F.Supp.3d 1354 (W.D. Wash. 2019). Absent lawful regional general permits, the Corps must require individual permits for the remaining shellfish aquaculture operations. The Corps should not adopt the new NWP B for finfish aquaculture in federal waters, because these operations have significant effects and do not met the criteria for minimal individual or cumulative impacts. As to NWP A, if it is to be issued, it must include additional protections to ensure only minimal cumulative impacts. The Corps should defer issuance of any permits until after the transition of administrations, particularly those based solely on Executive Orders.

Sincerely,



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CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. *(SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)*

I. (a) PLAINTIFFS

COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY

(b) County of Residence of First Listed Plaintiff **Pierce County, WA**
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys *(Firm Name, Address, and Telephone Number)*

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DEFENDANTS

U.S. ARMY CORPS OF ENGINEERS; LIEUTENANT GENERAL SCOTT A. SPELLMON (Chief of Engineers); COLONEL GEOFF VAN EPPS (Commander of the Northwestern Division); and COLONEL ALEXANDER L. BULLOCK (Commander of the Seattle District)

County of Residence of First Listed Defendant
(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys *(If Known)*

II. BASIS OF JURISDICTION *(Place an "X" in One Box Only)*

- ☐ 1 U.S. Government Plaintiff
- ☐ 3 Federal Question *(U.S. Government Not a Party)*
- ☒ 2 U.S. Government Defendant
- ☐ 4 Diversity *(Indicate Citizenship of Parties in Item III)*

III. CITIZENSHIP OF PRINCIPAL PARTIES *(Place an "X" in One Box for Plaintiff and One Box for Defendant)*
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT *(Place an "X" in One Box Only)*

Click here for: Nature of Suit Code Descriptions.

CONTRACT
- ☐ 110 Insurance
- ☐ 120 Marine
- ☐ 130 Miller Act
- ☐ 140 Negotiable Instrument
- ☐ 150 Recovery of Overpayment & Enforcement of Judgment
- ☐ 151 Medicare Act
- ☐ 152 Recovery of Defaulted Student Loans (Excludes Veterans)
- ☐ 153 Recovery of Overpayment of Veteran's Benefits
- ☐ 160 Stockholders' Suits
- ☐ 190 Other Contract
- ☐ 195 Contract Product Liability
- ☐ 196 Franchise

REAL PROPERTY
- ☐ 210 Land Condemnation
- ☐ 220 Foreclosure
- ☐ 230 Rent Lease & Ejectment
- ☐ 240 Torts to Land
- ☐ 245 Tort Product Liability
- ☐ 290 All Other Real Property

TORTS

PERSONAL INJURY
- ☐ 310 Airplane
- ☐ 315 Airplane Product Liability
- ☐ 320 Assault, Libel & Slander
- ☐ 330 Federal Employers' Liability
- ☐ 340 Marine
- ☐ 345 Marine Product Liability
- ☐ 350 Motor Vehicle
- ☐ 355 Motor Vehicle Product Liability
- ☐ 360 Other Personal Injury
- ☐ 362 Personal Injury - Medical Malpractice

PERSONAL INJURY
- ☐ 365 Personal Injury - Product Liability
- ☐ 367 Health Care/ Pharmaceutical Personal Injury Product Liability
- ☐ 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- ☐ 370 Other Fraud
- ☐ 371 Truth in Lending
- ☐ 380 Other Personal Property Damage
- ☐ 385 Property Damage Product Liability

CIVIL RIGHTS
- ☐ 440 Other Civil Rights
- ☐ 441 Voting
- ☐ 442 Employment
- ☐ 443 Housing/ Accommodations
- ☐ 445 Amer. w/Disabilities - Employment
- ☐ 446 Amer. w/Disabilities - Other
- ☐ 448 Education

PRISONER PETITIONS

Habeas Corpus:
- ☐ 463 Alien Detainee
- ☐ 510 Motions to Vacate Sentence
- ☐ 530 General
- ☐ 535 Death Penalty

Other:
- ☐ 540 Mandamus & Other
- ☐ 550 Civil Rights
- ☐ 555 Prison Condition
- ☐ 560 Civil Detainee - Conditions of Confinement

FORFEITURE/PENALTY
- ☐ 625 Drug Related Seizure of Property 21 USC 881
- ☐ 690 Other

LABOR
- ☐ 710 Fair Labor Standards Act
- ☐ 720 Labor/Management Relations
- ☐ 740 Railway Labor Act
- ☐ 751 Family and Medical Leave Act
- ☐ 790 Other Labor Litigation
- ☐ 791 Employee Retirement Income Security Act

IMMIGRATION
- ☐ 462 Naturalization Application
- ☐ 465 Other Immigration Actions

BANKRUPTCY
- ☐ 422 Appeal 28 USC 158
- ☐ 423 Withdrawal 28 USC 157

INTELLECTUAL PROPERTY RIGHTS
- ☐ 820 Copyrights
- ☐ 830 Patent
- ☐ 835 Patent - Abbreviated New Drug Application
- ☐ 840 Trademark
- ☐ 880 Defend Trade Secrets Act of 2016

SOCIAL SECURITY
- ☐ 861 HIA (1395ff)
- ☐ 862 Black Lung (923)
- ☐ 863 DIWC/DIWW (405(g))
- ☐ 864 SSID Title XVI
- ☐ 865 RSI (405(g))

FEDERAL TAX SUITS
- ☐ 870 Taxes (U.S. Plaintiff or Defendant)
- ☐ 871 IRS—Third Party 26 USC 7609

OTHER STATUTES
- ☐ 375 False Claims Act
- ☐ 376 Qui Tam (31 USC 3729(a))
- ☐ 400 State Reapportionment
- ☐ 410 Antitrust
- ☐ 430 Banks and Banking
- ☐ 450 Commerce
- ☐ 460 Deportation
- ☐ 470 Racketeer Influenced and Corrupt Organizations
- ☐ 480 Consumer Credit (15 USC 1681 or 1692)
- ☐ 485 Telephone Consumer Protection Act
- ☐ 490 Cable/Sat TV
- ☐ 850 Securities/Commodities/ Exchange
- ☐ 890 Other Statutory Actions
- ☐ 891 Agricultural Acts
- ☒ 893 Environmental Matters
- ☐ 895 Freedom of Information Act
- ☐ 896 Arbitration
- ☐ 899 Administrative Procedure Act/Review or Appeal of Agency Decision
- ☐ 950 Constitutionality of State Statutes

V. ORIGIN *(Place an "X" in One Box Only)*

- ☒ 1 Original Proceeding
- ☐ 2 Removed from State Court
- ☐ 3 Remanded from Appellate Court
- ☐ 4 Reinstated or Reopened
- ☐ 5 Transferred from Another District *(specify)*
- ☐ 6 Multidistrict Litigation - Transfer
- ☐ 8 Multidistrict Litigation - Direct File

VI. CAUSE OF ACTION

Cite the U.S. Civil Statute under which you are filing ***(Do not cite jurisdictional statutes unless diversity)***:
5 U.S.C. § 706, 33 U.S.C. § 403; 33 U.S.C. § 1244; 42 U.S.C. §§ 4321–70m; 16 U.S.C. §§ 1531–44

Brief description of cause:
CHALLENGE TO IMPROPER AUTHORIZATION OF COMMERCIAL SHELLFISH ACTIVITIES IN WASHINGTON UNDER 2021 NWP 48

VII. REQUESTED IN COMPLAINT:

☐ CHECK IF THIS IS A **CLASS ACTION** UNDER RULE 23, F.R.Cv.P.

DEMAND $

CHECK YES only if demanded in complaint:
JURY DEMAND: ☐ Yes ☒ No

VIII. RELATED CASE(S) IF ANY

(See instructions): JUDGE **Robert S. Lasnik** DOCKET NUMBER **2:17-cv-01209-RSL; 2:16-cv-0950-RSL**

DATE **December 20, 2021**

SIGNATURE OF ATTORNEY OF RECORD **/s/ George Kimbrell**

FOR OFFICE USE ONLY

RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I.(a) **Plaintiffs-Defendants.** Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b) **County of Residence.** For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) **Attorneys.** Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. **Jurisdiction.** The basis of jurisdiction is set forth under Rule 8(a), F.R.Cv.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.
United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.
United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.
Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.
Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below**; NOTE: federal question actions take precedence over diversity cases.**)

III. **Residence (citizenship) of Principal Parties.** This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. **Nature of Suit.** Place an "X" in the appropriate box. If there are multiple nature of suit codes associated with the case, pick the nature of suit code that is most applicable. Click here for: Nature of Suit Code Descriptions.

V. **Origin.** Place an "X" in one of the seven boxes.
Original Proceedings. (1) Cases which originate in the United States district courts.
Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441.
Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.
Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.
Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.
Multidistrict Litigation – Transfer. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407.
Multidistrict Litigation – Direct File. (8) Check this box when a multidistrict case is filed in the same district as the Master MDL docket.
PLEASE NOTE THAT THERE IS NOT AN ORIGIN CODE 7. Origin Code 7 was used for historical records and is no longer relevant due to changes in statute.

VI. **Cause of Action.** Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity.** Example: U.S. Civil Statute: 47 USC 553 Brief Description: Unauthorized reception of cable service.

VII. **Requested in Complaint.** Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.
Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction.
Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

VIII. **Related Cases.** This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

Western District of Washington

THE COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiff(s)* v. U.S. ARMY CORPS OF ENGINEERS, et al., *Defendant(s)*	)	Civil Action No. 21-cv-1685

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* LIEUTENANT GENERAL SCOTT A. SPELLMON, Chief of Engineers
the U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20001

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: George A. Kimbrell (WSB No. 36050)
Center for Food Safety
2009 NE Alberta Street, Suite 207
Portland, OR 97211

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: _____

_____
Signature of Clerk or Deputy Clerk

Civil Action No. 21-cv-1685

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____ was received by me on *(date)* _____ .

❒ I personally served the summons on the individual at *(place)* _____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____ , a person of suitable age and discretion who resides there, on *(date)* _____ , and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____ , who is designated by law to accept service of process on behalf of *(name of organization)* _____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify):*

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____
Server's signature

_____
Printed name and title

_____
Server's address

Additional information regarding attempted service, etc:

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

Western District of Washington

THE COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiff(s)* v. U.S. ARMY CORPS OF ENGINEERS, et al., *Defendant(s)*	)	Civil Action No. 21-cv-1685

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* COLONEL GEOFF VAN EPPS
Commander of the Northwestern Division, US ACOE
1201 NE Lloyd Blvd Ste 400
Portland, OR 97232-1257

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: George A. Kimbrell (WSB No. 36050)
Center for Food Safety
2009 NE Alberta Street, Suite 207
Portland, OR 97211

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: _____

_____
Signature of Clerk or Deputy Clerk

Civil Action No. 21-cv-1685

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____ was received by me on *(date)* _____ .

❒ I personally served the summons on the individual at *(place)* _____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____ , a person of suitable age and discretion who resides there, on *(date)* _____ , and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____ , who is designated by law to accept service of process on behalf of *(name of organization)* _____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify):*

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____
Server's signature

_____
Printed name and title

_____
Server's address

Additional information regarding attempted service, etc:

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

Western District of Washington

THE COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiff(s)* v. U.S. ARMY CORPS OF ENGINEERS, et al., *Defendant(s)*	)	Civil Action No. 21-cv-1685

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* COLONEL ALEXANDER L. BULLOCK,
Commander of the Seattle District, US ACOE
4735 E Marginal Way S
Seattle, WA 98134-2385

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: George A. Kimbrell (WSB No. 36050)
Center for Food Safety
2009 NE Alberta Street, Suite 207
Portland, OR 97211

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: _____

_____
Signature of Clerk or Deputy Clerk

Civil Action No. 21-cv-1685

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____ was received by me on *(date)* _____ .

❒ I personally served the summons on the individual at *(place)* _____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____ , a person of suitable age and discretion who resides there, on *(date)* _____ , and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____ , who is designated by law to accept service of process on behalf of *(name of organization)* _____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify):*

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____
Server's signature

_____
Printed name and title

_____
Server's address

Additional information regarding attempted service, etc:

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

Western District of Washington

THE COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiff(s)* v. U.S. ARMY CORPS OF ENGINEERS, et al., *Defendant(s)*	)	Civil Action No. 21-cv-1685

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* Civil Process Clerk
The U.S. Attorney's Office for Western Dist. of WA
700 Stewart Street, Suite 5220
Seattle, WA 98101-1271

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: George A. Kimbrell (WSB No. 36050)
Center for Food Safety
2009 NE Alberta Street, Suite 207
Portland, OR 97211

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: _____

_____
Signature of Clerk or Deputy Clerk

Civil Action No. 21-cv-1685

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____ was received by me on *(date)* _____ .

❒ I personally served the summons on the individual at *(place)* _____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____ , a person of suitable age and discretion who resides there, on *(date)* _____ , and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____ , who is designated by law to accept service of process on behalf of *(name of organization)* _____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify):*

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____
Server's signature

_____
Printed name and title

_____
Server's address

Additional information regarding attempted service, etc:

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

Western District of Washington

THE COALITION TO PROTECT PUGET SOUND HABITAT, and CENTER FOR FOOD SAFETY, *Plaintiff(s)* v. U.S. ARMY CORPS OF ENGINEERS, et al., *Defendant(s)*	)	Civil Action No. 21-cv-1685

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* Merrick Garland, Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: George A. Kimbrell (WSB No. 36050)
Center for Food Safety
2009 NE Alberta Street, Suite 207
Portland, OR 97211

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: _____

_____
Signature of Clerk or Deputy Clerk

Civil Action No. 21-cv-1685

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____ was received by me on *(date)* _____ .

❒ I personally served the summons on the individual at *(place)* _____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____ , a person of suitable age and discretion who resides there, on *(date)* _____ , and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____ , who is designated by law to accept service of process on behalf of *(name of organization)* _____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify):*

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____
Server's signature

_____
Printed name and title

_____
Server's address

Additional information regarding attempted service, etc:

General Information

Case Name	Coalition to Protect Puget Sound Habitat et al v. US Army Corps of Engineers et al
Court	U.S. District Court for the Western District of Washington
Date Filed	Mon Dec 20 00:00:00 EST 2021
Judge(s)	JOHN C. COUGHENOUR
Federal Nature of Suit	Statutes: Environmental Matters [893]
Docket Number	2:21-cv-01685
Parties	US Army Corps of Engineers; Coalition to Protect Puget Sound Habitat; Scott A Spellmon; Taylor Shellfish Company, Inc; Alexander L Bullock; Center for Food Safety; Geoff Van Epps