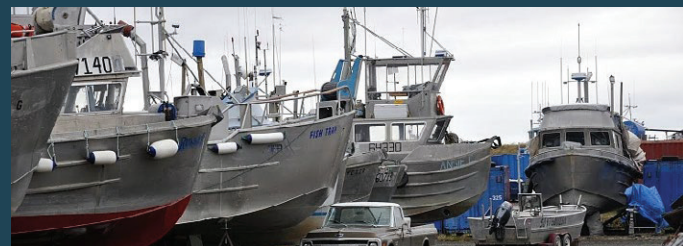


Recommended Determination of the U.S. Environmental Protection Agency Region 10 Pursuant to Section 404(c) of the Clean Water Act Pebble Deposit Area, Southwest Alaska



EXECUTIVE SUMMARY

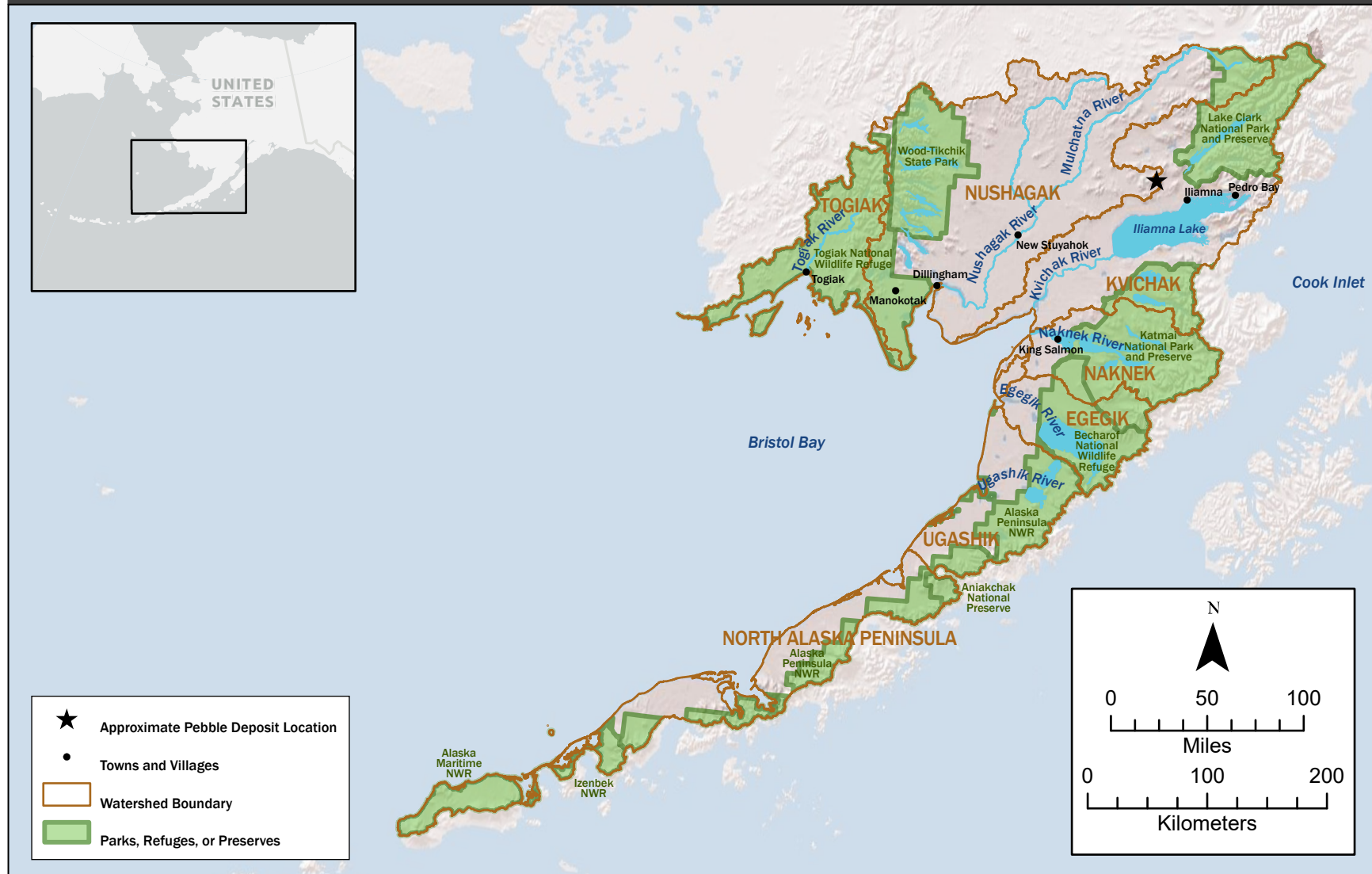
The U.S. Environmental Protection Agency (EPA) Region 10 is recommending to prohibit and restrict the use of certain waters in the Bristol Bay watershed as a disposal site for the discharge of dredged or fill material associated with mining at the Pebble deposit, a large ore body in southwest Alaska. EPA Region 10 is exercising its authority under Section 404(c) of the Clean Water Act (CWA) (Box ES-1) and its implementing regulations at 40 Code of Federal Regulations (CFR) Part 231 because of the unacceptable adverse effects on anadromous¹ fishery areas in the Bristol Bay watershed that would be likely to result from discharges of dredged or fill material associated with such mining. Development of a mine at the Pebble deposit and such a mine's potential effects on aquatic resources have been the subject of study for nearly two decades; this recommended determination is based on this extensive record of scientific and technical information. The scope of this recommended determination applies only to specified discharges of dredged or fill material associated with mining the Pebble deposit.

Alaska's Bristol Bay watershed (Figure ES-1) is an area of unparalleled ecological value, boasting salmon diversity and productivity unrivaled anywhere in North America. The Bristol Bay watershed provides intact, connected habitats—from headwaters to ocean—that support abundant, genetically diverse wild Pacific salmon populations. These salmon populations, in turn, help to maintain the productivity of the entire ecosystem, including numerous other fish and wildlife species. The region's salmon resources have supported Alaska Native cultures for thousands of years and continue to support one of the last intact salmon-based cultures in the world. Together, the Bristol Bay watershed's undisturbed aquatic habitats and productive salmon populations create this globally significant ecological and cultural resource.

The streams, wetlands, and other aquatic resources of the Bristol Bay watershed also provide the foundation for world-class, economically important commercial and sport fisheries for salmon and other fishes. The Bristol Bay watershed supports the world's largest runs of Sockeye Salmon, producing approximately half of the world's Sockeye Salmon. These Sockeye Salmon represent the most abundant and diverse populations of this species remaining in the United States. Bristol Bay's Chinook Salmon runs are also frequently at or near the world's largest, and the region also supports significant Coho, Chum, and Pink salmon populations. Because no hatchery fishes are raised or released in the watershed, Bristol Bay's salmon populations are entirely wild and self-sustaining. Bristol Bay is remarkable as one of the last places on Earth with such bountiful and sustainable harvests of wild salmon. One of the main factors leading to the success of this fishery is the fact that its diverse aquatic habitats are largely untouched and pristine, unlike the waters that support many other salmon fisheries worldwide.

¹ Anadromous fishes hatch in freshwater habitats, migrate to sea for a period of relatively rapid growth, and then return to freshwater habitats to spawn. For the purposes of this recommended determination, "anadromous fishes" refers only to Coho or Silver salmon (*Oncorhynchus kisutch*), Chinook or King salmon (*O. tshawytscha*), Sockeye or Red salmon (*O. nerka*), Chum or Dog salmon (*O. keta*), and Pink or Humpback almon (*O. gorbuscha*).

Figure ES-1. The Bristol Bay watershed, composed of the Togiak, Nushagak, Kvichak, Naknek, Egegik, and Ugashik River watersheds and the North Alaska Peninsula. Only selected towns and villages are shown on this map.



Roughly 50 to 70 percent of Bristol Bay’s Sockeye and large numbers of its Coho, Chinook, Pink, and Chum salmon are sustainably harvested in subsistence, commercial, and recreational fisheries before they can return to their natal lakes and streams to spawn. Thus, these salmon resources have significant nutritional, cultural, economic, and recreational value within and beyond the Bristol Bay region. The total economic value of the Bristol Bay watershed’s salmon resources, including subsistence uses, was estimated at more than \$2.2 billion in 2019 (McKinley Research Group 2021). The Bristol Bay commercial salmon fishery generates the most significant component of this economic activity, resulting in 15,000 jobs and an economic benefit of \$2.0 billion in 2019, \$990 million of which was in Alaska (McKinley Research Group 2021). Beyond their economic and environmental value, the diverse fishery and other aquatic and terrestrial resources of the Bristol Bay watershed, which depend upon the complex of healthy streams, wetlands, and other waters, are irreplaceable because they are inseparable from the cultures of the native people they support. Section 3 of this recommended determination provides an overview of the streams, wetlands, and other aquatic resources of the Bristol Bay watershed and discusses their role in supporting important subsistence, commercial, and recreational fisheries.

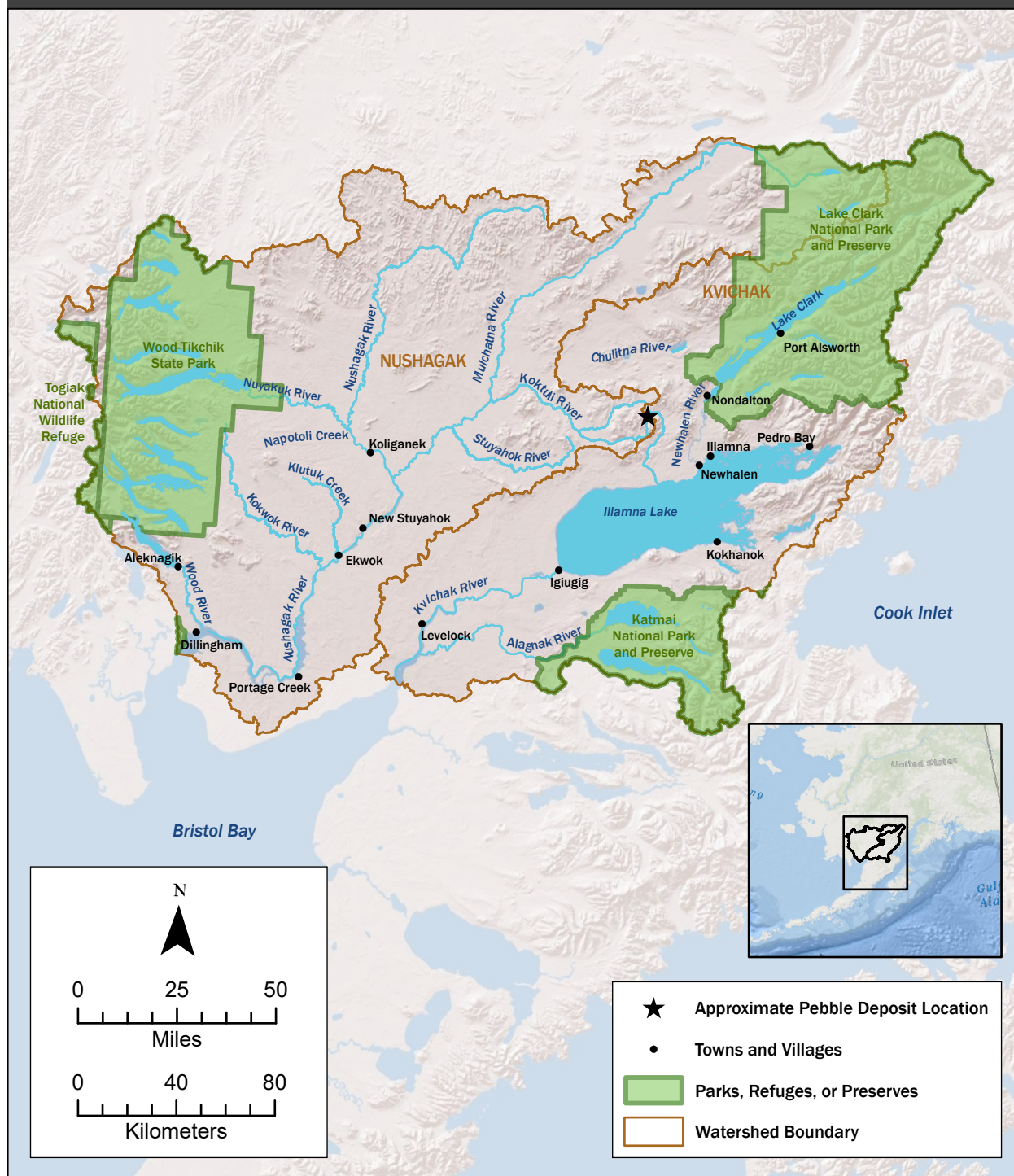
BOX ES-1. SECTION 404 OF THE CLEAN WATER ACT

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. Section 404(c) of the CWA authorizes the U.S. Environmental Protection Agency (EPA) to (1) prohibit or withdraw the specification of any defined area in waters of the United States as a disposal site, and (2) restrict, deny, or withdraw the use of any defined area in waters of the United States for specification as a disposal site whenever it determines, after notice and opportunity for public hearing, that the discharge of dredged or fill material into the area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. EPA has used its Section 404(c) authority judiciously, having completed only 13 Section 404(c) actions in the 50-year history of the CWA.

Proposed Mine at the Pebble Deposit

The Pebble deposit, a large, low-grade deposit containing copper-, gold-, and molybdenum-bearing minerals, is located at the headwaters of the pristine Bristol Bay watershed. The Pebble deposit underlies portions of the South Fork Koktuli River (SFK), North Fork Koktuli River (NFK), and Upper Talarik Creek (UTC) watersheds. The SFK, NFK, and UTC drain to two of the largest rivers in the Bristol Bay watershed, the Nushagak and Kvichak Rivers (Figure ES-2).

Figure ES-2. Major water bodies within the Nushagak and Kvichak River watersheds.



Since 2001, Northern Dynasty Minerals Ltd. (NDM) and subsequently the Pebble Limited Partnership (PLP)² have been conducting data collection and analysis as part of efforts to pursue the development of a large-scale mine at the Pebble deposit. Construction and operation of a mine at the Pebble deposit would necessitate the discharge of dredged or fill material into wetlands, streams, and other waters of the United States and would, therefore, require a CWA Section 404 permit from the U.S. Army Corps of Engineers (USACE). In December 2017, PLP submitted a CWA Section 404 permit application to USACE to develop a mine at the Pebble deposit, which triggered the development of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). In response to the Section 404 permit review/NEPA review process, PLP submitted a revised permit application in June 2020 (the 2020 Mine Plan) (PLP 2020).

In the 2020 Mine Plan, PLP proposes to develop the Pebble deposit as a surface mine at which 1.3 billion tons of ore would be mined over 20 years. The project consists of four primary elements: (1) the mine site situated in the SFK, NFK, and UTC watersheds (Figure ES-3); (2) the Diamond Point port; (3) the transportation corridor, including concentrate and water return pipelines; and (4) the natural gas pipeline and fiber optic cable. The first element, a fully developed mine site, would include an open pit, bulk tailings storage facility (TSF), pyritic TSF, a 270-megawatt power plant, water management ponds (WMPs), water treatment plants (WTPs), milling and processing facilities, and supporting infrastructure (Figure ES-4). Under the 2020 Mine Plan, PLP would progress through four distinct mine phases: construction, operations (also referred to as production), closure, and post-closure. The construction period would last approximately four years, followed by 20 years of operation. Closure, including physical reclamation of the mine site, is projected to take approximately 20 years. Post-closure activities, including long-term water management and monitoring, would last for centuries (USACE 2020a). The potential direct and indirect impacts from construction and operation of the 2020 Mine Plan on streams, wetlands, and other waters across the mine site (Figure ES-5) have been evaluated in detail.

On July 24, 2020, USACE published a Notice of Availability for the Final EIS (FEIS) in the *Federal Register* (USACE 2020a), and on November 20, 2020, USACE issued its Record of Decision (ROD) denying PLP's CWA Section 404 permit application on the basis that the 2020 Mine Plan would not comply with the CWA Section 404(b)(1) Guidelines and would be contrary to the public interest (USACE 2020b). By letter dated November 25, 2020, USACE notified PLP that the proposed project failed to comply with the CWA Section 404(b)(1) Guidelines because, even after consideration of proposed mitigation measures, "the proposed project would cause unavoidable adverse impacts to aquatic resources which would result in Significant Degradation to aquatic resources."

On January 19, 2021, PLP filed a request for an appeal of the USACE permit denial with USACE. USACE accepted the appeal on February 25, 2021, and review of the appeal is ongoing.

² PLP was created in 2007 by co-owners NDM and Anglo American PLC to design, permit, construct, and operate a long-life mine at the Pebble deposit (Ghaffari et al. 2011). In 2013, NDM acquired Anglo American's interest in PLP, and NDM now holds a 100 percent interest in PLP (Kalanchey et al. 2021).

Figure ES-3. Mine site hydrography. Figure 2-1 from PLP's June 8, 2020, Clean Water Act Section 404 permit application (PLP 2020).

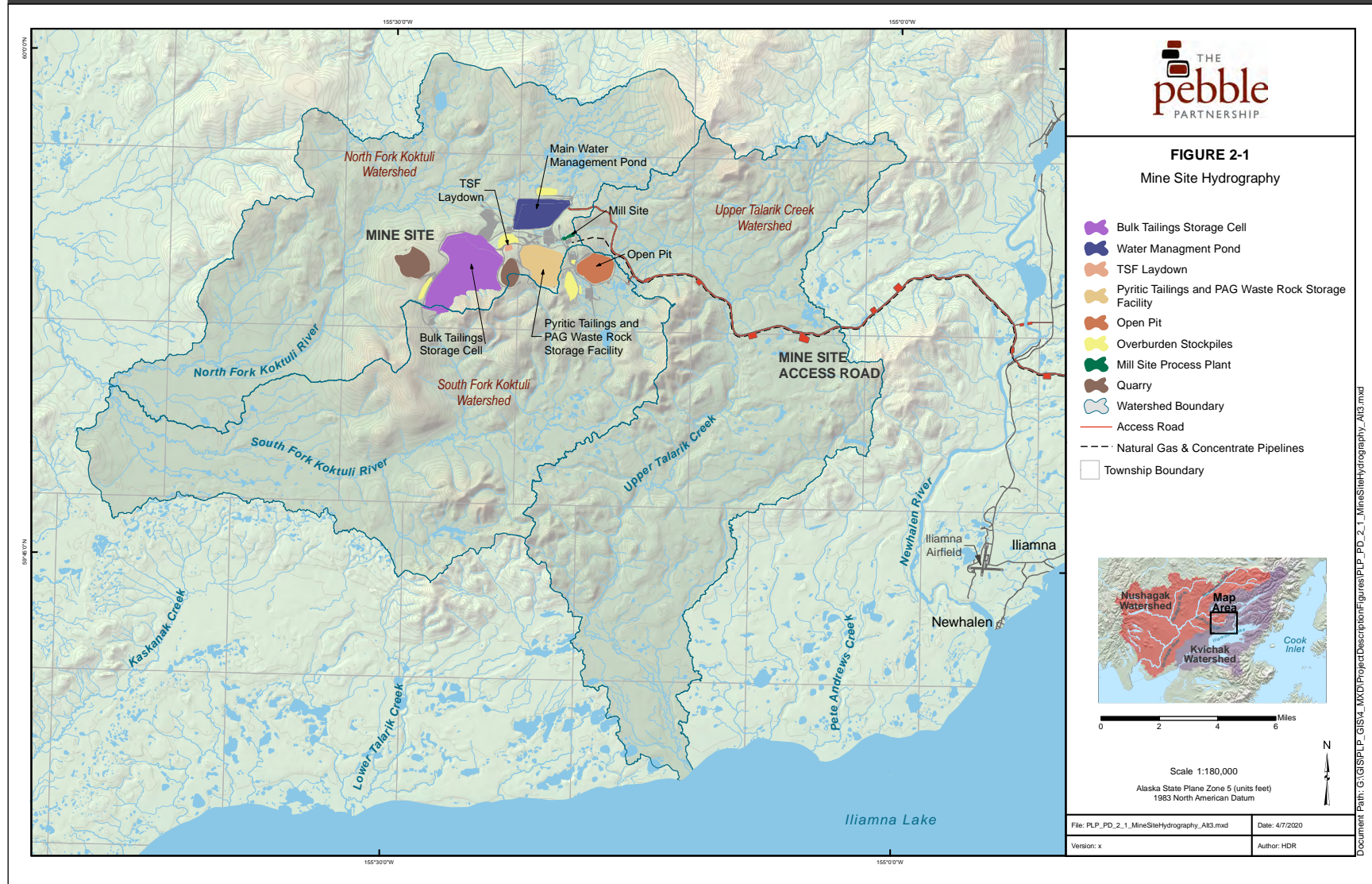


Figure ES-4. Mine site map. Figure 1-4 from PLP's June 8, 2020, Clean Water Act Section 404 permit application (PLP 2020).

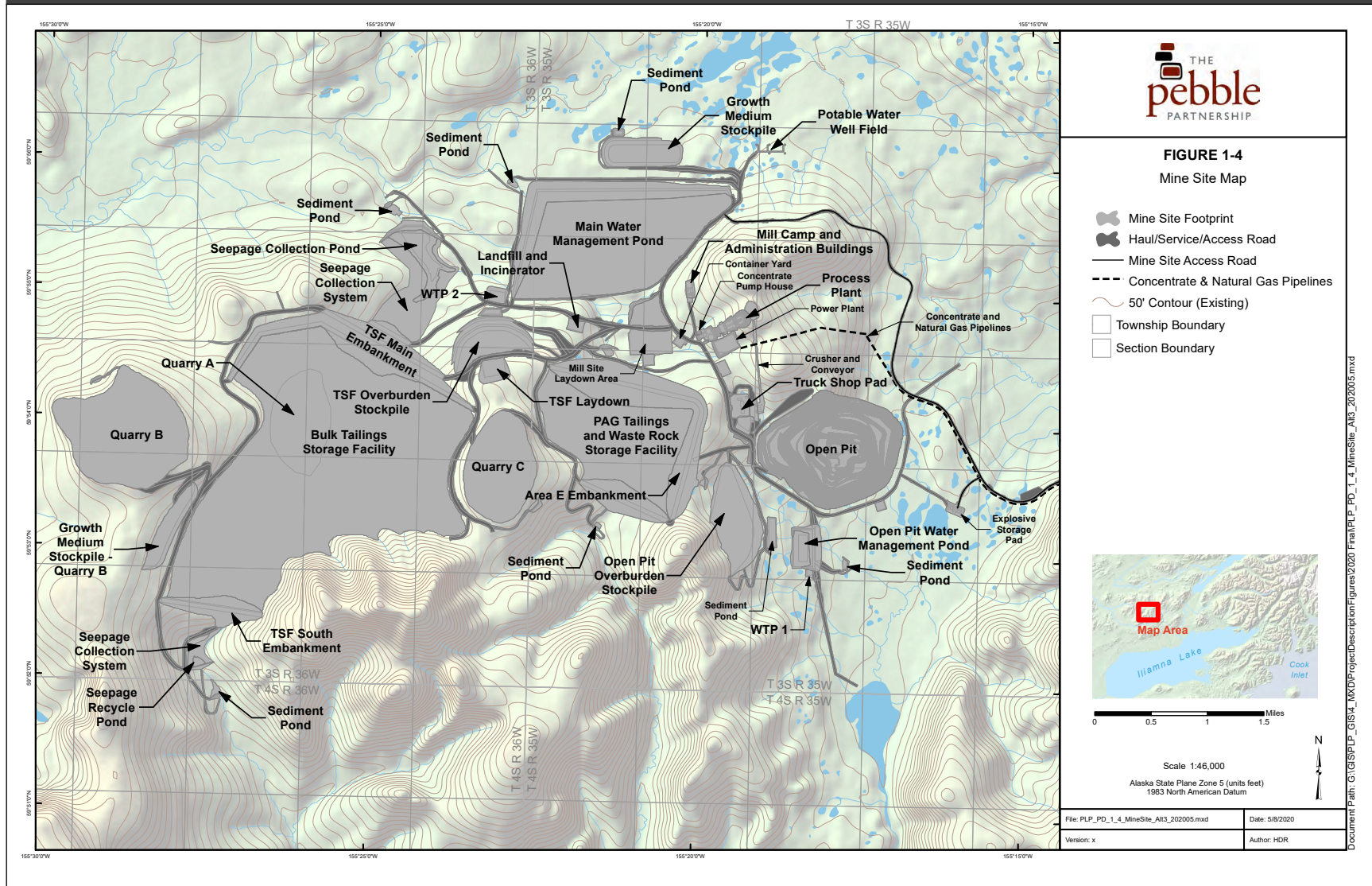
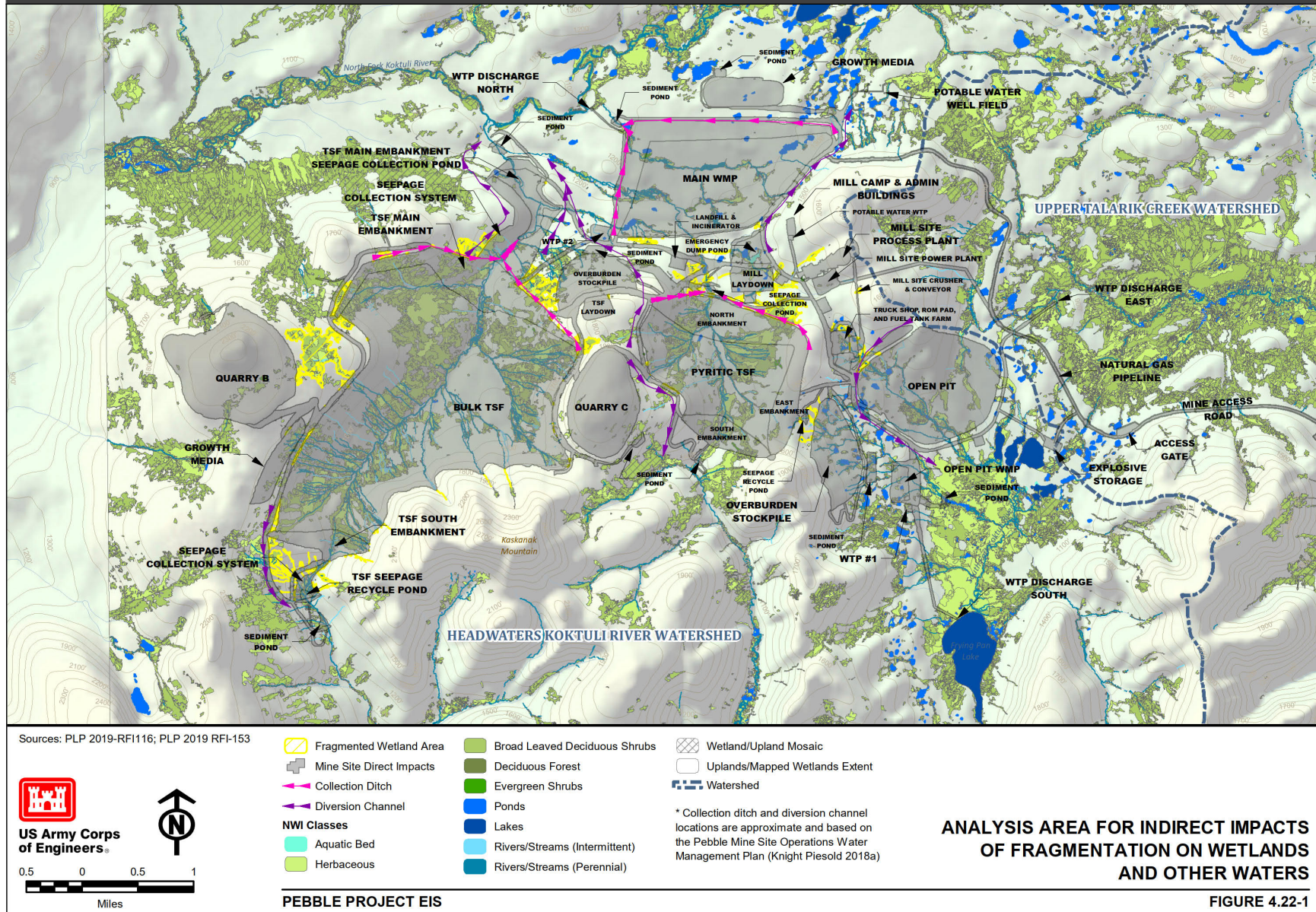


Figure ES-5. Mine site analysis area for wetlands and other waters. Figure 4.22-1 from the FEIS (USACE 2020a: Section 4.22).



The USACE permit denial addresses only PLP's specific permit application for the 2020 Mine Plan; it does not address other future plans to mine the Pebble deposit that would have adverse effects the same as, or similar or greater in nature and magnitude to the 2020 Mine Plan. Information regarding the Pebble deposit and the 2020 Mine Plan can be found in Section 2 of this recommended determination.

2014 Proposed Determination

For more than a decade, Alaska Native communities in the Bristol Bay watershed; subsistence, commercial, and recreational fishing interests; conservation groups; and others have raised concerns about the potential impacts a large-scale mine at the Pebble deposit could have on the region's socially, ecologically, and economically important fishery areas. Starting in May 2010, these groups and others began requesting that EPA use its CWA Section 404(c) authority to protect the region's fishery areas. In February 2011, EPA decided to conduct an ecological risk assessment before considering any additional steps. In January 2014, after three years of study, two rounds of public comment, and independent, external peer review, EPA released its *Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*³ (Bristol Bay Assessment or BBA) (EPA 2014). In July 2014, after careful consideration of available information, including the findings of the BBA and consultation with PLP and the State of Alaska, EPA Region 10 published a proposed determination under Section 404(c) of the CWA to restrict the use of certain waters in the SFK, NFK, and UTC watersheds as disposal sites for dredged or fill material associated with mining the Pebble deposit (2014 Proposed Determination) for public comment.

As a result of litigation brought by PLP, EPA Region 10's CWA Section 404(c) review process was halted in November 2014 until EPA and PLP resolved the case in a May 2017 settlement agreement. As part of that settlement agreement, EPA Region 10 proposed to withdraw the 2014 Proposed Determination, and EPA ultimately withdrew the 2014 Proposed Determination in August 2019. In October 2019, 20 tribal, fishing, environmental, and conservation groups challenged EPA's withdrawal of the 2014 Proposed Determination. The ultimate result of the litigation was an October 29, 2021 decision by the U.S. District Court for the District of Alaska to vacate EPA's 2019 decision to withdraw the 2014 Proposed Determination and remand the action to the Agency for reconsideration.

The District Court's vacatur of EPA's 2019 decision to withdraw the 2014 Proposed Determination had the effect of reinstating the 2014 Proposed Determination and reinitiating EPA's CWA Section 404(c) review process. The next step in the CWA Section 404(c) review process required the Region 10 Regional Administrator to decide whether to withdraw the 2014 Proposed Determination or prepare a recommended determination within 30 days. On November 23, 2021, EPA Region 10 published in the *Federal Register* a notice extending the applicable time requirements through May 31, 2022, to provide sufficient time to consider available information and determine the appropriate next step in the CWA

³ For more information about EPA's efforts in Bristol Bay or copies of the Bristol Bay Assessment, see <http://www.epa.gov/bristolbay>.

Section 404(c) review process. In its notice, EPA concluded that it should consider information that had become available since EPA issued the 2014 Proposed Determination. Information regarding the 2014 Proposed Determination and the history of EPA's work in the Bristol Bay watershed can be found in Section 2 of this recommended determination.

2022 Proposed Determination

To determine the appropriate next step in this CWA Section 404(c) process, EPA Region 10 considered a wide array of information that had become available since it issued the 2014 Proposed Determination, including the following:

- More than 670,000 public comments submitted to EPA Region 10 in response to the 2014 Proposed Determination.
- PLP's CWA Section 404 permit application, including the 2020 Mine Plan (PLP 2020).
- USACE's FEIS evaluating the 2020 Mine Plan, including the FEIS appendices, technical support documents, and references (USACE 2020a).
- EPA's and the U.S. Fish and Wildlife Service's 12-week coordination process with USACE in Spring 2020 to evaluate PLP's proposed project for compliance with the CWA Section 404(b)(1) Guidelines.
- USACE's ROD denying PLP's CWA Section 404 permit application for the 2020 Mine Plan, including the ROD supporting documents (USACE 2020b).
- NDM's *Pebble Project Preliminary Economic Assessment* dated September 9, 2021 (Kalanchey et al. 2021).
- Updated data regarding fishery resources in the Bristol Bay watershed.
- New scientific and technical publications.

In January 2022, consistent with its regulatory procedures for proposed determinations at 40 CFR 231.3(a), EPA Region 10 notified USACE, Alaska Department of Natural Resources (ADNR), PLP, Pebble East Claims Corporation, Pebble West Claims Corporation, and Chuchuna Minerals⁴ (the Parties) of EPA Region 10's intention to issue a revised proposed determination because, based on a review of information available to that date, it continued to believe that the discharge of dredged or fill material associated with mining the Pebble deposit could result in unacceptable adverse effects on fishery areas. EPA Region 10 provided the Parties with an opportunity to submit information that demonstrated that no unacceptable adverse effects would result from discharges associated with mining the Pebble deposit or that actions could be taken to prevent unacceptable adverse effects on fishery areas.

⁴ EPA Region 10 notified Chuchuna Minerals because USACE's FEIS for the 2020 Mine Plan indicates that it is reasonably foreseeable for discharges associated with mining the Pebble deposit to expand in the future into portions of areas where Chuchuna Minerals holds mining claims.

ADNR, PLP, and Chuchuna Minerals submitted information asserting legal, policy, scientific, and technical issues. This information did not demonstrate to the satisfaction of EPA Region 10 that no unacceptable adverse effects would occur as a result of the discharge of dredged or fill material associated with mining the Pebble deposit (Section 2.2.2). Thus, EPA Region 10 decided that the appropriate next step in this CWA Section 404(c) process was the publication of a revised proposed determination (the 2022 Proposed Determination).

In May 2022, EPA Region 10 published in the *Federal Register* a notice of availability for the 2022 Proposed Determination under Section 404(c) of the CWA to prohibit and restrict the use of certain waters in the SFK, NFK, and UTC watersheds as disposal sites for the discharge of dredged or fill material associated with mining the Pebble deposit (87 FR 32021, May 26, 2022). The notice started a public comment period ending on July 5, 2022. On June 16 and 17, 2022, EPA Region 10 held three public hearings on the 2022 Proposed Determination: two in-person hearings in the Bristol Bay region (in Dillingham and Iliamna) and one virtual hearing. More than 186 people participated in the three hearings, 111 of whom provided oral statements.

EPA Region 10 received requests to extend the public comment period, as well as requests not to extend the public comment period. EPA Region 10 considered each of these requests and found good cause existed pursuant to 40 CFR 231.8 to extend the public comment period through September 6, 2022 (87 FR 39091, June 30, 2022).

On September 6, 2022, EPA Region 10 published in the *Federal Register* a notice to extend the period for the EPA Region 10 Regional Administrator to evaluate public comments. According to the notice, EPA found good cause existed pursuant to 40 CFR 231.8 to extend the time period provided in 40 CFR 231.5(a) to either withdraw the proposed determination or to prepare a recommended determination through no later than December 2, 2022, to help ensure full consideration of the extensive administrative record including all public comments (87 FR 54498, September 6, 2022). In addition to the testimony taken at the hearings, EPA Region 10 received more than 582,000 written comments during the public comment period.

The Recommended Determination

EPA Region 10 completed its review of the extensive administrative record, including all public comments, and has determined that the discharge of dredged or fill material associated with mining at the Pebble deposit would be likely to result in unacceptable adverse effects on anadromous fishery areas. Section 4 of this recommended determination provides the basis for EPA Region 10's findings regarding unacceptable adverse effects on anadromous fishery areas.

As demonstrated in the FEIS and ROD, construction and routine operation of the mine proposed in the 2020 Mine Plan would result in the discharge of dredged or fill material into waters of the United States, including streams, wetlands, lakes, and ponds overlying the Pebble deposit and within adjacent watersheds. The direct effects (i.e., resulting from placement of fill in aquatic habitats) and certain

secondary effects of such discharges (i.e., associated with a discharge of dredged or fill material, but not resulting from the actual placement of such material) would result in the total loss of aquatic habitats important to anadromous fishes. These losses are the result of the construction and routine operation of the various components of the mine site, including the open pit, bulk TSF, pyritic TSF, power plant, WMPs, WTPs, milling/processing facilities, and supporting infrastructure. According to the FEIS and ROD, discharges of dredged or fill material to construct and operate the mine site proposed in the 2020 Mine Plan would result in the total loss of approximately 99.7 miles (160.5 km) of stream habitat, representing approximately 8.5 miles (13.7 km) of anadromous fish streams and 91 miles (147 km) of additional streams that support anadromous fish streams. Such discharges of dredged or fill material also would result in the total loss of approximately 2,108 acres (8.5 km²) of wetlands and other waters in the SFK and NFK watersheds that support anadromous fish streams.

Additional secondary effects of the proposed discharges of dredged or fill material at the mine site would degrade anadromous fishery areas downstream of the mine site. Specifically, the stream, wetland, and other aquatic resource losses from the footprint of the 2020 Mine Plan would reverberate downstream, depriving downstream anadromous fish habitats of nutrients, groundwater inputs, and other ecological subsidies from lost upstream aquatic resources. Further, streamflow alterations from water capture, withdrawal, storage, treatment, or release at the mine site are another secondary effect of the discharge of dredged or fill material associated with the construction and routine operation of the 2020 Mine Plan. Such streamflow alterations would adversely affect approximately 29 miles (46.7 km) of anadromous fish streams downstream of the mine site due to greater than 20 percent changes in average monthly streamflow.⁵ These streamflow alterations would result in major changes in ecosystem structure and function and would reduce both the extent and quality of anadromous fish habitat downstream of the mine. As recognized in the FEIS, all instances of complete loss of aquatic habitat and most impairment to fish habitat function would be permanent and “no other wild salmon fishery in the world exists in conjunction with an active mine of this size” (USACE 2020a: Page 4.6-9).

Although Alaska has many streams and wetlands that support salmon, individual streams, stream reaches, wetlands, lakes, and ponds play a critical role in supporting individual salmon populations and protecting the genetic diversity of Bristol Bay’s wild salmon populations. The diverse array of watershed features across the region creates and sustains a diversity of aquatic habitats that support multiple populations of salmon with asynchronous run timings and habitat use patterns (i.e., biocomplexity, after Hilborn et al. 2003). These population differences are reflected in salmon genetic diversity and adaptation to local conditions within Bristol Bay’s component watersheds (e.g., Quinn et al. 2012) and provide stability to the overall system (Schindler et al. 2010). Impacts of the 2020 Mine Plan are concentrated in the SFK and NFK watersheds, which are a part of the Nushagak River watershed. Recent analysis specific to the Nushagak River watershed underscores the important role that the streams,

⁵ Streamflow alterations would vary seasonally. Streamflow reductions exceeding 20 percent of average monthly streamflow would occur in at least one month per year in at least 13.1 miles (21.4 km) of anadromous fish streams downstream of the mine site, and operation of the 2020 Mine Plan would increase streamflow by more than 20 percent of baseline average monthly streamflow in at least 25.7 miles (41.3 km) of downstream anadromous fish streams due to WTP discharges.

wetlands, lakes, and ponds across the entire Nushagak River watershed, including those that would be adversely affected by the 2020 Mine Plan, play in stabilizing the Nushagak River's productive Sockeye and Chinook salmon fisheries (Brennan et al. 2019). Similarly, both the Koktuli River (the SFK and NFK are tributaries to the Koktuli River) and UTC have been documented to support genetically distinct populations of Sockeye Salmon (Dann et al. 2012, Shedd et al. 2016, Dann et al. 2018). Loss of salmon habitats and associated salmon diversity in the SFK, NFK, and UTC watersheds would erode both the habitat complexity and biocomplexity that help buffer these populations from sudden and extreme changes in abundance and ultimately maintain their productivity.

In addition to supporting genetically distinct salmon populations, the streams and wetlands draining the Pebble deposit area provide key habitat for numerous other fish species and supply water, invertebrates, organic matter, and other resources to downstream waters (Meyer et al. 2007, Colvin et al. 2019, Koenig et al. 2019). This is particularly true in dendritic stream networks like the SFK, NFK, and UTC systems, which have a high density of headwater streams. As a result, headwater streams and wetlands play a vital role in maintaining diverse, abundant anadromous fish populations—both by providing important fish habitat and supplying the energy and other resources needed to support anadromous fishes in connected downstream habitats.

EPA Region 10 has determined the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan would be likely to result in unacceptable adverse effects on anadromous fishery areas in the SFK and NFK watersheds. In this regard, EPA makes four independent unacceptability findings, each of which is based on one or more factors, including the large amount of permanent loss of anadromous fish habitat (including spawning and breeding areas); the particular importance of the permanently lost habitat for juvenile Coho and Chinook salmon; the degradation of additional downstream spawning and rearing habitat for Coho, Chinook, and Sockeye salmon due to the loss of ecological subsidies provided by eliminated streams, wetlands, and other waters; and the resulting erosion of habitat complexity and biocomplexity within the SFK and NFK watersheds, both of which are key to the abundance and stability of salmon populations within these watersheds. EPA Region 10 has also determined that discharges of dredged or fill material associated with the development of the Pebble deposit anywhere at the mine site that would result in the same or greater levels of loss or streamflow changes as the 2020 Mine Plan also would be likely to have unacceptable adverse effects on anadromous fishery areas, because such discharges would involve the same aquatic resources characterized as part of the evaluation of the 2020 Mine Plan. These conclusions support the recommended prohibition described in Section 5.1 of this recommended determination.

Further, EPA Region 10 has determined the discharge of dredged or fill material for the construction and routine operation of a mine at the Pebble deposit anywhere in the SFK, NFK, and UTC watersheds would be likely to result in unacceptable adverse effects on anadromous fishery areas if the effects of such discharges are similar or greater in nature and magnitude to the adverse effects of the 2020 Mine Plan. In this regard, EPA makes four independent unacceptability findings, each of which is based on one or more factors, including the pristine condition and ecological importance of anadromous habitat throughout the SFK, NFK, and UTC watersheds; how aquatic habitats across these three watersheds

function similarly to support productive anadromous fishery areas; the large amount of permanent loss of anadromous fish habitat; the degradation of additional downstream spawning and rearing habitat for Coho, Chinook, and Sockeye salmon due to the loss of ecological subsidies provided by the eliminated streams, wetlands, and other waters; and the resulting erosion of habitat complexity and biocomplexity within the SFK, NFK, and UTC watersheds, both of which are key to the abundance and stability of salmon populations within these watersheds. This conclusion supports the recommended restriction described in Section 5.2 of this recommended determination.

Based on the foregoing, the EPA Region 10 Regional Administrator determined that the appropriate next step in this CWA Section 404(c) review process is to transmit this recommended determination, along with the administrative record, to EPA's Assistant Administrator for Water for review and final action.

Overview of Prohibition and Restriction in the Recommended Determination

This recommended determination includes two parts: a recommended prohibition and a recommended restriction, which are described in more detail in Sections 5.1 and 5.2, respectively.

Recommended Prohibition

The EPA Region 10 Regional Administrator has determined that discharges of dredged or fill material for the construction and routine operation of the mine at the Pebble deposit identified in the 2020 Mine Plan (PLP 2020) would be likely to result in unacceptable adverse effects on anadromous fishery areas in the SFK and NFK watersheds. Based on information in PLP's CWA Section 404 permit application, the FEIS, and the ROD, such discharges would result in the following aquatic resource losses and streamflow changes:

- The loss of approximately 8.5 miles (13.7 km) of documented anadromous fish streams (Section 4.2.1).
- The loss of approximately 91 miles (147 km) of additional streams that support anadromous fish streams (Section 4.2.2).
- The loss of approximately 2,108 acres (8.5 km²) of wetlands and other waters that support anadromous fish streams (Section 4.2.3).
- Adverse impacts on approximately 29 additional miles (46.7 km) of anadromous fish streams resulting from greater than 20 percent changes in average monthly streamflow (Section 4.2.4).

EPA Region 10 has also determined that discharges of dredged or fill material associated with the development of the Pebble deposit anywhere at the mine site that would result in the same or greater levels of loss or streamflow changes as the 2020 Mine Plan also would be likely to have unacceptable adverse effects on anadromous fishery areas, because such discharges would involve the same aquatic resources characterized as part of the evaluation of the 2020 Mine Plan.

Sections 4.2.1 through 4.2.4 describe the basis for EPA Region 10's determination that each of the above impacts independently would be likely to result in unacceptable adverse effects on anadromous fishery areas (including spawning and breeding areas).

Accordingly, the Regional Administrator recommends that EPA prohibit the specification of waters of the United States within the Defined Area for Prohibition (Figures ES-6, ES-7, and ES-8), as disposal sites for the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan. For purposes of the prohibition, the 2020 Mine Plan is (1) the mine plan described in PLP's June 8, 2020 CWA Section 404 permit application (PLP 2020) and the FEIS (USACE 2020a); and (2) future proposals to construct and operate a mine to develop the Pebble deposit with discharges of dredged or fill material in the Defined Area for Prohibition that would result in the same or greater levels of loss or streamflow changes as the 2020 Mine Plan. Because each of the losses or streamflow changes described in Sections 4.2.1 through 4.2.4 independently would be likely to result in unacceptable adverse effects on anadromous fishery areas, proposals that result in any one of these losses or streamflow changes would be subject to the prohibition.

Recommended Restriction

The Regional Administrator has determined that discharges of dredged or fill material associated with future plans to mine the Pebble deposit would be likely to result in unacceptable adverse effects on anadromous fishery areas (including spawning and breeding areas) anywhere in the SFK, NFK, and UTC watersheds if the adverse effects of such discharges are similar or greater in nature⁶ and magnitude⁷ to the adverse effects of the 2020 Mine Plan described in Sections 4.2.1 through 4.2.4 of this recommended determination.

Accordingly, the Regional Administrator recommends restricting the use of waters of the United States within the Defined Area for Restriction (Figures ES-7 and ES-8) for specification as disposal sites for the discharge of dredged or fill material associated with future proposals to construct and operate a mine to develop the Pebble deposit that would either individually or cumulatively result in adverse effects similar or greater in nature and magnitude to those described in Sections 4.2.1 through 4.2.4 of this recommended determination. Because each of the losses or streamflow changes described in Sections 4.2.1 through 4.2.4 independently would be likely to result in unacceptable adverse effects on anadromous fishery areas, proposals that result in any one of these losses or streamflow changes would be subject to the restriction. To the extent that such future discharges would be subject to the prohibition, the restriction would not apply.

⁶ *Nature* means type or main characteristic (see Cambridge Dictionary available at: <https://dictionary.cambridge.org/us/dictionary/english/nature>).

⁷ *Magnitude* refers to size or importance (see Cambridge Dictionary available at: <https://dictionary.cambridge.org/us/dictionary/english/magnitude>).

Figure ES-6. The Defined Area for Prohibition at the 2020 Mine Plan mine site. Figure based on information from PLP (2020), USGS (2021a), and USGS (2021b).

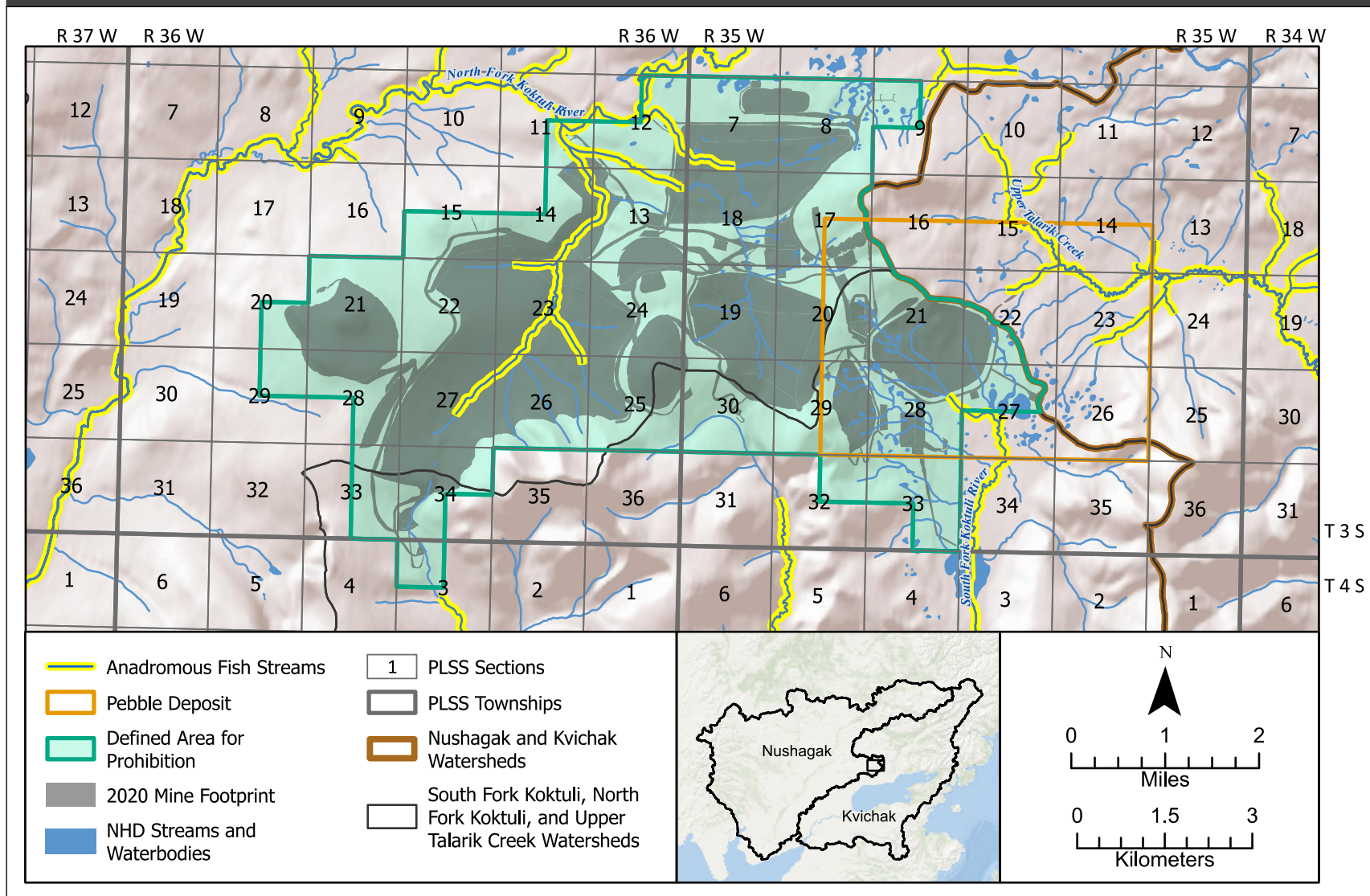


Figure ES-7. The Defined Area for Restriction and the defined area for prohibition overlain on wetlands from the National Wetlands Inventory (USFWS 2021).

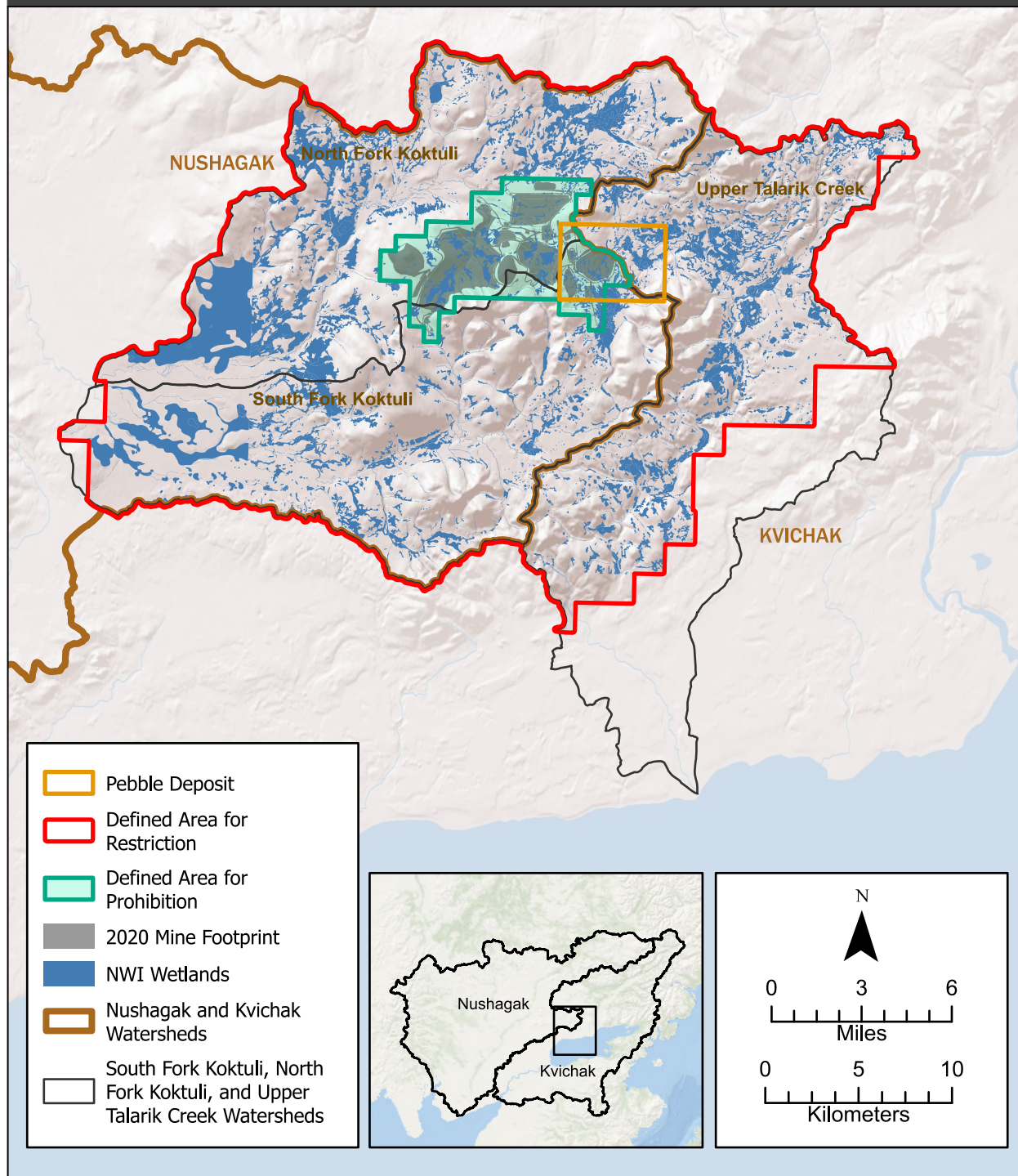
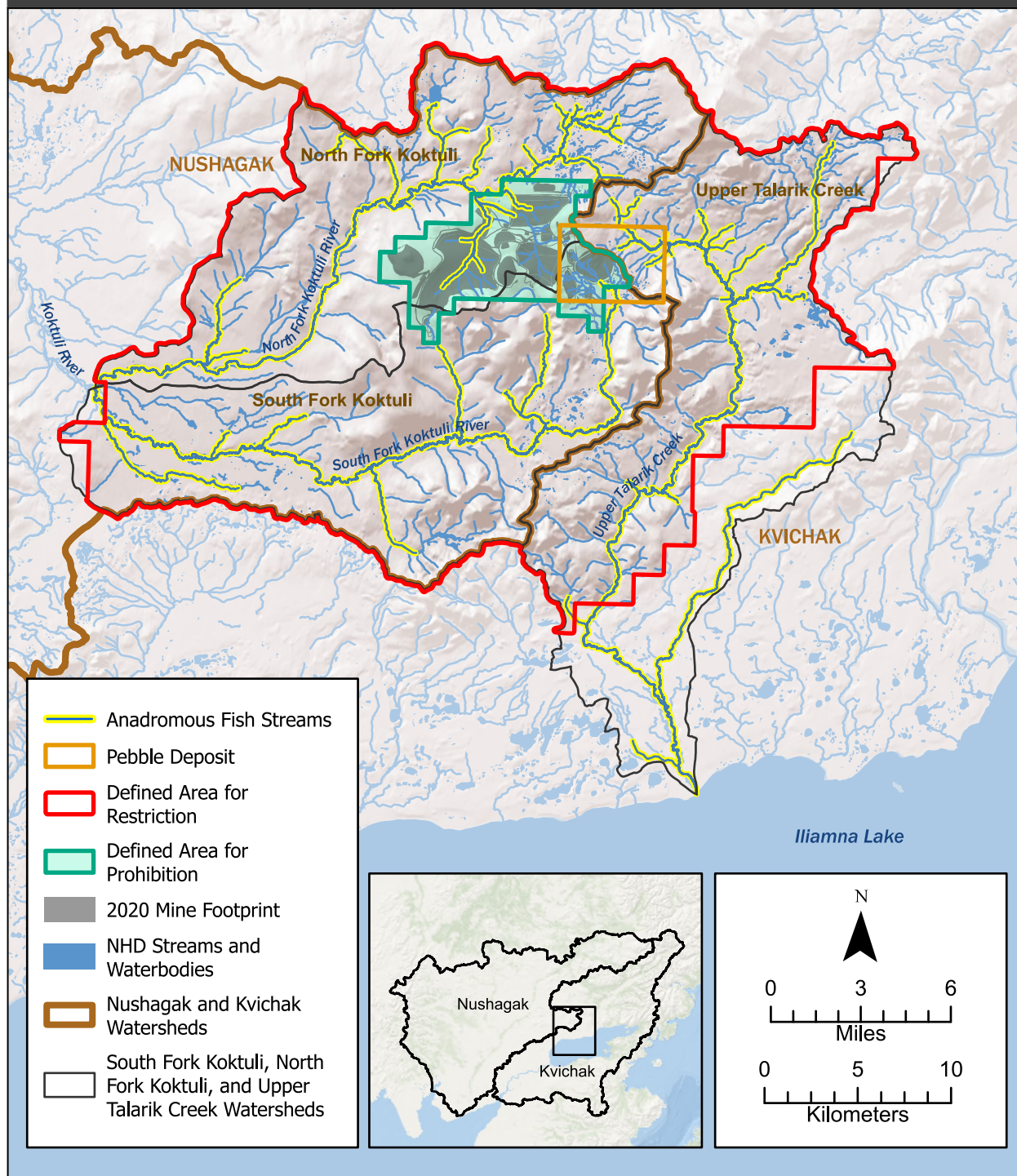


Figure ES-8. The Defined Area for Restriction and the defined area for prohibition overlain on streams and waterbodies from the National Hydrography Dataset (USGS 2021b).



When a Proposal is Not Subject to this Determination

Proposals to discharge dredged or fill material into waters of the United States associated with mining the Pebble deposit that are not subject to this determination remain subject to all statutory and regulatory authorities and requirements under CWA Section 404.

In light of the immense and unique economic, social, cultural, and ecological value of the aquatic resources in the region, including the fishery areas in the SFK, NFK, and UTC watersheds, and their susceptibility to degradation, EPA will carefully evaluate all future proposals to discharge dredged or fill material in the region.

Evaluation of Portions of the CWA Section 404(b)(1) Guidelines

EPA's Section 404(c) regulations provide that consideration should be given to the "relevant portions of the Section 404(b)(1) Guidelines" in evaluating the "unacceptability" of effects (40 CFR 231.2(e)). EPA Region 10's consideration of the relevant portions of the Section 404(b)(1) Guidelines further confirm EPA Region 10's unacceptable adverse effects finding.

Specifically, EPA Region 10 has determined that direct and secondary effects of the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan, as well as discharges that would result in adverse effects similar or greater in nature and magnitude to the 2020 Mine Plan, would result in significant degradation under the Section 404(b)(1) Guidelines. These findings are based on the significantly adverse effects of the discharge of dredged or fill material on special aquatic sites, life stages of anadromous fishes, anadromous fish habitat, and aquatic ecosystem diversity, productivity, and stability under the Section 404(b)(1) Guidelines.

Region 10 evaluated PLP's two compensatory mitigation plans and neither plan adequately mitigates adverse effects described in this recommended determination to an acceptable level. EPA Region 10 also evaluated additional potential compensation measures for informational purposes. Available information demonstrates that known compensation measures are unlikely to adequately mitigate effects described in this recommended determination to an acceptable level. Information regarding evaluation of the Section 404(b)(1) Guidelines can be found in Section 4.3 of this recommended determination.

Information about Other Adverse Effects of Concern on Aquatic Resources

While not a basis for EPA Region 10's recommended determination, EPA Region 10 has identified additional potential adverse effects of concern on aquatic resources within the SFK, NFK, and UTC watersheds associated with discharges of dredged or fill material from mining the Pebble deposit and is presenting this discussion solely for informational purposes. First, adverse effects could result from accidents and failures, such as a tailings dam failure. Uncertainty exists as to whether severe accidents

or failures could be prevented over a management horizon of centuries (or in perpetuity), particularly in such a geographically remote area. If such events were to occur, they would have profound ecological ramifications. Second, there are potential adverse impacts associated with the ancillary project components along the transportation corridor and at the Diamond Point port. Third, there are potential adverse impacts associated with the reasonably foreseeable expansion of the 2020 Mine Plan evaluated in the FEIS. The FEIS finds that it is reasonably foreseeable that the 2020 Mine Plan would expand in the future into a plan that would mine approximately 8.6 billion tons of ore over 78 years. The FEIS estimates that the discharge of dredged or fill material for the construction and operation of this expanded mine would result in the total loss of approximately 430 miles (6921 km) of streams at the expanded mine site, representing approximately 43.5 miles (70 km) of anadromous fish streams and approximately 386 miles (621 km) of additional streams that support anadromous fish streams. Further, the FEIS estimates that discharges of dredged or fill material to construct and operate the expanded mine site would also result in the total loss of more than 10,800 acres (43.7 km²) of wetlands and other waters that support anadromous fish streams. These would represent extraordinary and unprecedented levels of anadromous fish habitat loss and degradation, dramatically expanding the unacceptable adverse effects identified for the 2020 Mine Plan. For example, significant additional anadromous fish habitat losses and degradation in SFK, NFK, and UTC caused by future expansion of the mine would threaten genetically distinct Sockeye Salmon populations in both the Koktuli River and UTC.

See Section 6 of this recommended determination for a discussion of other concerns and considerations.

Authority and Justification for Undertaking a CWA Section 404(c) Review at this Time

EPA may act “whenever” it makes the required determination under the statute and regulations. The Agency may use its CWA Section 404(c) authority “at any time,” including before a permit application has been submitted, at any point during the permitting process, and after a permit has been issued (33 U.S.C. 1344(c); 40 CFR 231.1(a), (c); *Mingo Logan Coal Co. v. EPA*, 714 F.3d 608, 613 (D.C. Cir. 2013)).

Congress enacted CWA Section 404(c) to provide EPA the ultimate authority, if it chooses on a case-by-case basis, to make decisions regarding specification of disposal sites for dredged and fill material discharges under CWA Section 404 (*Mingo Logan Coal Co. v. EPA*, 714 F.3d 608, 612-13 (D.C. Cir. 2013)). EPA Region 10 has reviewed the available information, including the permitting record, and the record supports the findings reported in this recommended determination.

By acting now, EPA clarifies its assessment of the effects of discharges of dredged or fill material associated with the construction and routine operation of the 2020 Mine Plan in light of the importance of the anadromous fishery areas at issue⁸ and, therefore, promotes regulatory certainty for all

⁸ In this recommended determination, EPA Region 10 has concluded that each of the losses or changes to streamflow identified in Sections 4.2.1 through 4.2.4 independently would be likely to result in unacceptable adverse effects. That finding is distinguishable from the USACE permit denial, in which USACE reached its conclusions based on consideration of total project impacts to aquatic resources.

stakeholders. If EPA acts now, based on an extensive and carefully considered record, EPA, USACE, and the regulated community can also avoid unnecessary expenditure of resources. The federal government, the State of Alaska, federally recognized tribal governments, PLP, and many interested stakeholders have devoted significant resources over many years of engagement and review. Considering the extensive record, it is not reasonable or necessary to engage in one or more additional multi-year NEPA and CWA Section 404 processes for future plans⁹ that propose to discharge dredged or fill material associated with mining the Pebble deposit in the SFK, NFK, or UTC watersheds that would be likely to result in effects that are the same as, or similar or greater in nature and magnitude to the effects of the 2020 Mine Plan. Ultimately, recommending the prohibition and restriction now provides the most effective, transparent, and predictable protection of valuable anadromous fishery areas in the SFK, NFK, and UTC watersheds against unacceptable adverse effects.

Conclusion

The EPA Region 10 Regional Administrator completed his review of the extensive administrative record, including all public comments, and has determined that discharges of dredged or fill material into waters of the United States for the construction and routine operation of the 2020 Mine Plan would be likely to result in unacceptable adverse effects on anadromous fishery areas (Sections 4.2.1 through 4.2.4 of this recommended determination). The Regional Administrator also has determined that discharges of dredged or fill material associated with future plans to develop the Pebble deposit would be likely to result in unacceptable adverse effects on anadromous fishery areas in the SFK, NFK, and UTC watersheds if the effects of such discharges are similar or greater in nature and magnitude to those of the 2020 Mine Plan described in Sections 4.2.1 through 4.2.4 of this recommended determination. Based on these findings, the Regional Administrator recommends prohibiting and restricting the use of certain waters in the SFK, NFK, and UTC watersheds as disposal sites for the discharge of dredged or fill material associated with developing the Pebble deposit (Section 5 of this recommended determination).

Accordingly, the Regional Administrator determined that the appropriate next step in this CWA Section 404(c) review process is to transmit this recommended determination, along with the administrative record, to EPA's Assistant Administrator for Water at EPA Headquarters for review and final action. EPA's Assistant Administrator for Water will review this recommended determination and the administrative record, including written public comments received on the 2022 Proposed Determination, public hearing transcripts, and other information considered by the Regional Administrator. After reviewing the recommendations of the Regional Administrator, the administrative record, and any information provided by ADNR, PLP, Chuchuna Minerals, and USACE about their intent to take corrective action to prevent unacceptable adverse effects, the Assistant Administrator will issue a final determination affirming, modifying, or rescinding the Regional Administrator's recommended determination.

⁹ USACE's denial of PLP's permit application does not address any other plan to mine the Pebble deposit that would have adverse effects the same as, or similar or greater in nature and magnitude to the 2020 Mine Plan.

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