



# United States Department of the Interior



FISH AND WILDLIFE SERVICE

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Reply To: 01EOW00-2014-F-0112  
File Name: USACE Nav Channel Dredging BO 2014  
TS Number: 14-391  
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JUN 06 2014

Joyce Casey  
Department of the Army  
Corps of Engineers, Portland District  
Environmental Resources Branch  
P.O. Box 2946  
Portland, Oregon 97208-2946

Dear Ms. Casey,

This letter transmits the U. S. Fish and Wildlife Service's Biological Opinion on the proposed Continued Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel in Oregon and Washington (2014 – 2018), in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). The U.S. Army Corps of Engineers determined that the proposed project may affect, and is likely to adversely affect, the streaked horned lark (*Eremophila alpestris strigata*) and its designated critical habitat. We received your March 4, 2014, request for reinitiation of formal consultation on March 5, 2014.

After reviewing the current status of the species, the environmental baseline, the effects of the proposed action and the cumulative effects, we conclude that the proposed project will not jeopardize the continued existence of streaked horned lark nor will it adversely modify or destroy designated critical habitat for the species. This Biological Opinion is based on information provided in your March 2014 Biological Assessment for the proposed project, extensive discussions with U.S. Army Corps of Engineers staff, site visits, recent research on the streaked horned lark in the action area, and other information in our files. A complete record of this consultation is on file at this office.

Thank you for your concern for the conservation of the streaked horned lark in the Lower Columbia River; we look forward to working with you to implement this Biological Opinion over the next five years. If you have any questions about this consultation, please contact Cat Brown or Jeff Dillon of my staff at (503) 231-6179.

Sincerely,

*Acting for*  
*Paul Henson*  
Paul Henson, Ph.D.  
State Supervisor

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EX-0243-000001-TSS

# Endangered Species Act - Section 7 Consultation

## **Biological Opinion**

### **Consultation for**

### **U.S. Army Corps of Engineers Continued Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel in Oregon and Washington (2014-2018)**

U.S. Fish and Wildlife Service Reference Number:  
01EOFW00-2014-F-0112

Agency: U.S. Army Corps of Engineers  
Portland District

Consultation Conducted By: U.S. Fish and Wildlife Service  
Oregon Fish and Wildlife Office

This document represents the U. S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) based on our review of the U.S. Army Corps of Engineers (Corps) proposed Continued Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel in Oregon and Washington (2014-2018), and its effects on the streaked horned lark (*Eremophila alpestris strigata*) and its designated critical habitat in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). We received your March 4, 2014, request for formal consultation on March 5, 2014.

This Biological Opinion is based on information provided in your March 2014 Biological Assessment (U.S. Army Corps of Engineers 2014) (BA) for the proposed project, extensive discussions with U.S. Army Corps of Engineers staff, site visits, recent research on the streaked horned lark in the action area, and other information in our files. A complete record of this consultation is on file at this office.

## Consultation History

The Corps has previously consulted with the Service on the effects of the Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel; previous consultations have addressed the effects of the project to various listed and proposed species, including: marbled murrelet (*Brachyramphus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), short-tailed albatross (*Phoebastria albatrus*), western snowy (coastal) plover (*Charadrius alexandrinus nivosus*), bull trout (*Salvelinus confluentus*), Oregon silverspot butterfly (*Speyeria zerene hippolyta*), Columbian white-tailed deer (*Odocoileus virginianus leucurus*), water howellia (*Howellia aquatilis*), golden paintbrush (*Castilleja levisecta*), Nelson's checker-mallow (*Sidalcea nelsoniana*), Bradshaw's lomatium (*Lomatium bradshawii*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), brown pelican (*Pelecanus occidentalis*), Aleutian Canada goose (*Branta canadensis leucopareia*) and the Southwestern Washington/Columbia River distinct population segment of coastal cutthroat trout (*Oncorhynchus clarkii clarkii*). The bald eagle, peregrine falcon, brown pelican and Aleutian Canada goose have since been delisted, and no longer require consultation under section 7 of the Act. The proposed listing of the Southwestern Washington/Columbia River distinct population segment of coastal cutthroat trout was subsequently withdrawn.

The Corps' previous consultations with the Service on the navigation channel dredging include:

- On June 14, 1991, the Service issued a Biological Opinion which found that the placement of dredged material on Rice Island is "not likely to jeopardize" the continued existence of bald eagles (Service reference #1-7-91-F-280).
- On July 9, 1991, the Corps determined that the interim disposal site at RM 5.5-6.5 would have "no effect" on bald eagle, peregrine falcon, Columbian white-tailed deer, marbled murrelet, and western snowy plover (Service reference # 1-7-91-I-398).
- On November 19, 1992, the Corps determined that ocean dredged material disposal sites would have "no effect" on marbled murrelet (Service reference # 1-7-93-I-57).
- On June 28, 1994, the Service concurred with the Corps' determination that the Baker Bay West Channel Maintenance Dredging project "may affect, but is not likely to adversely affect" bald eagle, peregrine falcon, brown pelican, and marbled murrelet (Service reference # 1-7-94-I-328).

- On February 19, 1998, the Corps determined the operations and maintenance of the Columbia River federal navigation channel from RM 3 to 106.5 would have “no effect” on peregrine falcon, Aleutian Canada goose, Oregon silverspot butterfly, water howellia, golden paintbrush, Nelson’s checker-mallow, Bradshaw’s lomatium, brown pelican, marbled murrelet, and western snowy plover (Service reference # 1-7-97-I-127).
- On February 24, 1998, the Service concurred with the Corps’ determination that operations and maintenance dredging of the Columbia River federal navigation channel from RM 3 to 106.5, “may affect, but is not likely to adversely affect” Columbian white-tailed deer and bald eagle (Service reference # 1-7-97-I-127).
- On August 14, 1998, the Corps determined that the MCR North Jetty Dredged Material Placement would have “no effect” on Aleutian Canada goose, bull trout, bald eagle, peregrine falcon, marbled murrelet, and brown pelican (Service reference # 1-3-98-I-0385).
- On December 6, 1999, the Service issued a Biological Opinion (1-7-99-F-280, 1-7-99-TA-374, 1-7-98-I-342, 1-7-98-I-138) on the Columbia River Channel Deepening project. The Corps determined that the channel deepening project would have “no effect” on Aleutian Canada goose, brown pelican, marbled murrelet, western snowy plover, Oregon silverspot butterfly, Bradshaw’s lomatium, golden paintbrush, Nelson’s checker-mallow, and water howellia. The Service concurred with the Corps’ determination of “may affect, not likely to adversely affect” for the peregrine falcon. The Corps determined the channel deepening project “may affect, and is likely to adversely affect” bald eagle and Columbian white-tailed deer.
- On April 24, 2002, the Service concurred with the Corps’ determination that the MCR dredging and disposal project “may affect, but is not likely to adversely affect” bald eagle, brown pelican, and marbled murrelet (Service reference # 02-4212).
- On May 20, 2002, the Service issued a Biological and Conference Opinion on the Columbia River Channel Improvement Project, from RM 3-106.5. The Corps found that the project “may effect, and is likely to adversely affect” the proposed Southwestern Washington/Columbia River distinct population segment of coastal cutthroat trout, bald eagle, bull trout, and Columbian white-tailed deer. The Service provided an updated incidental take statement for Columbian white-tailed deer and bald eagle to the December 6, 1999 Opinion, (Service reference #02-4212).
- On September 13, 2004, the Service concurred with the Corps’ determination that the MCR jetty rehabilitation project “may affect, but is not likely to adversely affect” bald eagle, marbled murrelet, and brown pelican (Service reference # 04-3736).
- On December 14, 2004, the Corps determined that continued operations and maintenance dredging of the Columbia River navigation channel, from RM -3.0 to 145, would have “no effect” on western snowy plover, northern spotted owl, short-tailed albatross, Oregon silverspot butterfly, and water howellia. The Service concurred with the Corps’ determination that the operations and maintenance dredging of the project “may affect,

but is not likely to adversely affect” bull trout, bald eagle, brown pelican, marbled murrelet, and Columbian white-tailed deer (Service reference # 1-7-04-I-0090).

- On December 27, 2004, the Service concurred with the Corps’ determination that de-designation and designation of the dredged material disposal sites offshore of the MCR, in Oregon and Washington, “may affect, but is not likely to adversely affect” short-tailed albatross, marbled murrelet, and brown pelican (Service reference # 1-7-04-I-489).
- On May 23, 2008, the Service concurred with the Corps’ determination that the Benson Beach sand berm restoration project “may affect, but is not likely to adversely affect” brown pelican and western snowy plover (Service reference # 13420-2008-I-0063).
- On September 29, 2010, the Corps determined that operations and maintenance dredging of the Columbia River Federal navigation channel, from RM -3.0 to 145, will have “no effect” to western snowy plover, northern spotted owl, short-tailed albatross, Oregon silverspot butterfly, and water howellia. The Service concurred with the Corps’ determination that operations and maintenance dredging of the project “may affect, but is not likely to adversely affect” bull trout, marbled murrelet, and Columbian white-tailed deer (Service reference # 13420-2010-I-0165).
- On February 23, 2011, the Service concurred with the Corps’ determination that the major rehabilitation of the MCR Jetty System “may affect, but is not likely to adversely affect” bull trout, marbled murrelet, and western snowy plover (Service reference # 13420-2011-I-0082).
- On January 24, 2012, the Service concurred with the Corps’ determination that the minor 2012 updates to the North Jetty dredged material placement site has the same effects as the 2010 consultation (Service reference # 13420-2010-I-0165) on the operations and maintenance dredging of the Columbia River Federal navigation channel. The Service concurred with the Corps’ determination that the action “may affect, but is not likely to adversely affect” bull trout, marbled murrelet, and Columbian white-tailed deer (Service reference # 13420-2010-I-0165).

The Corps’ 2010 BA for the Columbia River dredging and dredged material placement program, for which the dredging and placement action and range of effects is very similar to the proposed action in this consultation, received Service concurrence on 29 September 2010, as listed above. Therefore, the potential effects for bull trout, marbled murrelet, and Columbian white-tailed deer are consistent with previous determinations and the species are not further evaluated in this opinion. In addition, the Corps determined the proposed action will have “no effect” to western snowy plover, northern spotted owl, short-tailed albatross, Oregon silverspot butterfly, and water howellia. Therefore, these species are also not further evaluated in this Biological Opinion.

Beginning in April 2013, the Corps sought advice from the Service on ways to avoid and minimize potential adverse effects to the streaked horned lark and its habitats. Placement activities can facilitate the creation and maintenance of suitable streaked horned lark habitat and the Corps has worked with the Service and its partners to minimize potentially adverse effects and maximize the beneficial effects of dredged material placement actions throughout the lower

Columbia River for streaked horned lark. Specific meetings and phone conversations include the following:

- The Corps met with staff from the Service and the Center for National Lands Management on April 26, 2013 to discuss the dredging program and processes involved in coordinating dredging and placement at uplands sites.
- The Corps met with the Service on June 25, 2013 to discuss the dredged material placement sites and define the project area to include all placement sites within the dredged material placement network (Network).
- In August 2013, the Corps participated in a workshop with Service personnel from both the Washington and Oregon offices and the lower Columbia River ports to discuss Section 7 consultation, the Corps' proposed action and management needs.
- Staff from the Service participated in a site visit to Rice and Miller Sands Islands on September 16, 2013 to observe active dredged material placement by the Dredge OREGON.
- Following this site visit, the Corps and Service (both consultation specialists and migratory bird specialists) met on September 25, 2013 to discuss the Corps' actions in the lower Columbia River and potential impacts to Caspian terns (*Hydroprogne caspia*) and double-crested cormorants (*Phalacrocorax auritus*) in the lower estuary.
- On December 19, 2013, the Corps met with Service staff to discuss the proposed action, specifically dissuasion of terns and cormorants and monitoring of streaked horned larks, as well as how to address western yellow-billed cuckoos (*Coccyzus americanus*).
- The Corps presented the Service with an initial draft of the proposed action on January 10, 2014 and further discussed the proposed action in a follow-up meeting on 21 January 2014.
- The Corps organized a meeting on February 3, 2014 to discuss the proposed monitoring strategy for streaked horned larks, including Service staff and regional experts from the Washington Department of Fish and Wildlife, the Center for Natural Lands Management.
- On February 26, 2014, the Corps and Service staff discussed dissuasion of terns and cormorants, and possible areas of overlap with streaked horned lark habitat.
- In March 2014, staff from the Service's Oregon Fish and Wildlife Office and the Pacific Region Office of Migratory Birds and Habitat Programs discussed the potential effects of the issuance of a depredation permit under the Migratory Bird Treaty Act (MBTA) for take of Caspian tern eggs at Rice Island, Miller Sands and Pillar Rock. We determined that the effects to streaked horned larks from the issuance of the MBTA permit would be fully covered for the term of this consultation.
- On March 3, 2014, the Corps initiated formal consultation with the Service and delivered its BA to the Service for review. The BA determined that the proposed action "may affect, and is likely to adversely affect" the streaked horned lark and its designated

critical habitat, and will have “no effect” on the yellow-billed cuckoo, which was recently proposed for listing as threatened.

- On May 15, 2014, the Corps provided additional detail on the monitoring and adaptive management aspects of the proposed action, and a complete description of the Caspian tern hazing activities in the lower Columbia River.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE PROPOSED ACTION**

The proposed action is described in detail in the Corps’ BA for the project, which is incorporated by reference here (U.S. Army Corps of Engineers 2014). The proposed action is the continued operations and maintenance of the Columbia River Federal Navigation Channel and upgrading the existing placement network (Network) and operations to meet current and projected dredged material placement needs for the next five years (2014 – 2018).

The sites in the Corps’ dredged material placement network are shown in Table 1 and Figure 1.

The proposed action has seven main components:

- Pre-placement site preparations and modifications
- Dissuasion of avian species
- Dredging and in-water placement
- Upland and shoreline placement (5-year placement plan)
- Post-placement site modifications
- Streaked horned lark monitoring
- Communication and coordination

A complete description of the proposed project is available in the BA on pages 20 – 68, and the supplemental appendices on Preventing Caspian Tern Nesting in the Upper Columbia River Estuary and the Monitoring and Adaptive Management Program (U.S. Army Corps of Engineers 2014).

The following narrative summarizes the proposed dredged material placement activities across the Network by year:

Eight sites will be used in 2014, totaling approximately 3,150,000 CY over 281 acres. Approximately 700,000 CY will be shoreline placement at the Miller Sands and Pillar Rock Island sites, combined. Table 2 provides the Corps’ estimated sequence and timing of placement during the 2014 dredging season. The placement sequence assumes 25,000 CY will be placed daily, working five to seven days a week, and requiring three days to move between work areas. The sequence for each subsequent dredging year will be estimated during each year’s annual coordination meeting with the USFWS.

<b>Table 1. Sites in the U.S. Army Corps of Engineers' Dredged Material Placement Network in the Lower Columbia River.</b>		
<b>Site</b>	<b>State – River Mile</b>	<b>Site Type</b>
Benson Beach	WA-Pacific Ocean	Shoreline (intertidal)
West Sand Island	OR-3.1	Upland
Rice Island	OR/WA-21.0	Upland, Sump
Miller Sands	OR-23.5	Shoreline
Pillar Rock Island	OR-27.2	Upland, Shoreline
Skamokawa - Vista Park	WA-33.4	Upland, Shoreline
Welch Island	OR-34.0	Upland
Tenasillahe Island	OR-38.3	Upland
James River	OR-42.9	Upland
Puget Island	WA-44.0	Upland, Sump
Brown Island	WA-46.3	Upland
Crims Island	OR-57.0	Upland
Hump Island	WA-59.7	Upland
Lord Island (Upstream)	OR-63.5	Upland
Dibblee Point	OR-64.8	Upland
Howard Island	WA-68.7	Upland
Cottonwood Island	WA-70.1	Upland
Northport	WA-71.9	Upland
Sandy Island	OR-75.8	Upland
Lower Deer Island	OR-77.0	Upland
Martin Bar	WA-82.0	Upland
Sand Island	OR-86.2	Shoreline
Austin Point	WA-86.5	Upland
Fazio Sand & Gravel	WA-97.1	Upland, In-water
Gateway	WA-101.0	Upland
West Hayden Island	OR-105.0	Upland

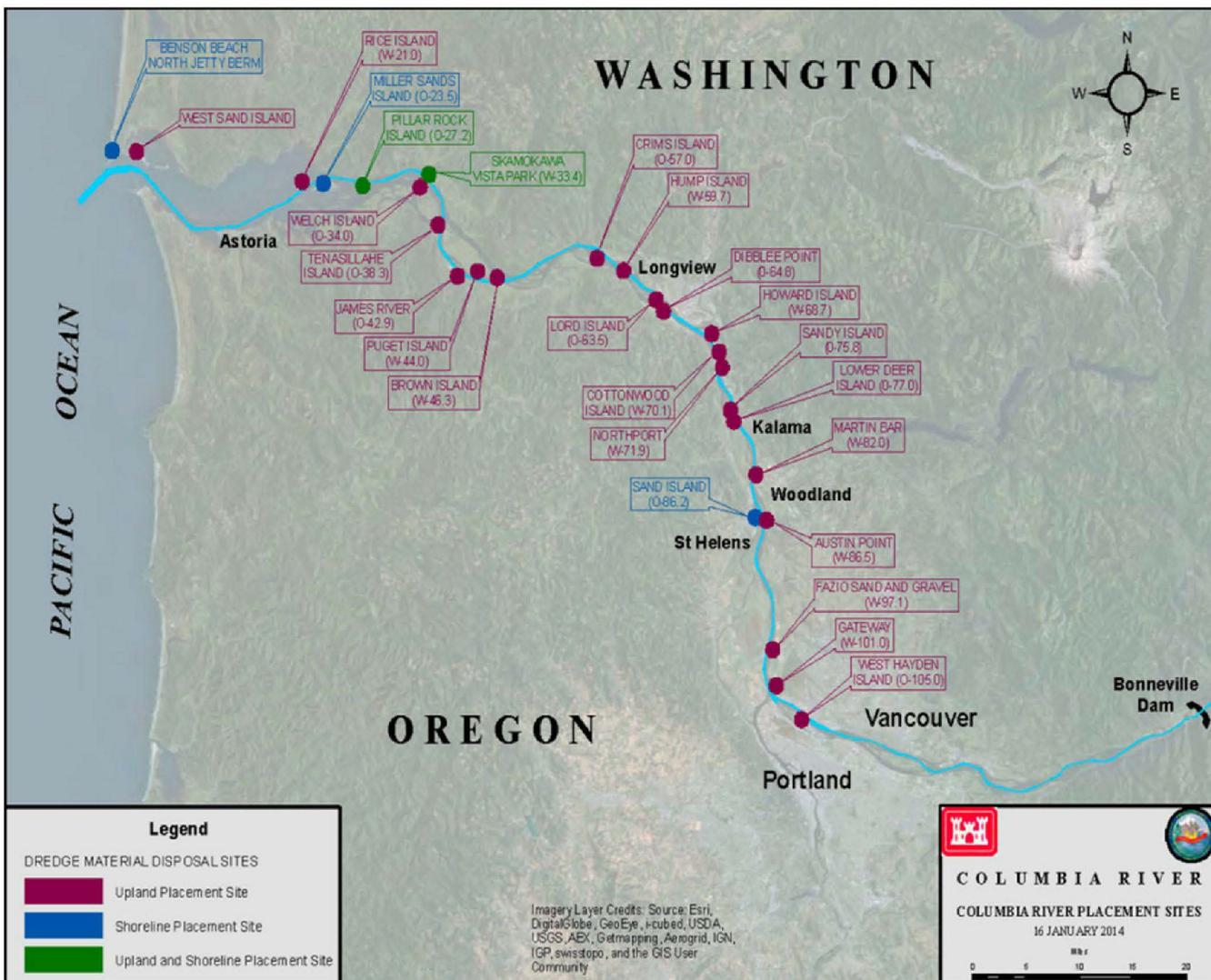


Figure 1. Lower Columbia River and Dredge Material Placement Sites.

<b>Site</b>	<b>Volume (CY)</b>	<b>Area (acres)</b>	<b>Timing</b>	<b>Notes</b>
Tenasillahe Island	400,000	14	During nesting season	Need early season site prep to remove vegetation and install lark dissuasion
Pillar Rock Island	500,000 (Shoreline)	26	During nesting season	Shoreline placement with 0.10-acre staging site
Hump Island	300,000	65	During nesting season	Need early season site prep to remove vegetation and install lark dissuasion
Martin Bar	250,000	23	During nesting season	South parcel only, no lark or migratory bird nesting at borrow site
Miller Sands	200,000 (Shoreline)	6	During nesting season	Shoreline placement with 0.10-acre staging site
Rice Island	650,000	53	After nesting season	Site prep on west end to remove vegetation with tern dissuasion
Brown Island	500,000	68	After nesting season	Site prep to remove vegetation, no dissuasion
Cottonwood Island	350,000	26	After nesting season	Site prep to remove vegetation, no dissuasion
<b>2014 TOTAL</b>	<b>3,150,00</b>	<b>281</b>		

In 2015, nine sites will be used, totaling approximately 3,450,000 CY over 400 acres. Approximately 1,100,000 CY will be shoreline placement at the Miller Sands, Pillar Rock Island, and Sand Island sites, combined.

In 2016, nine sites will also be used, totaling approximately 3,350,000 CY over 324 acres. Approximately 950,000 CY will be shoreline placement at the Miller Sands and Pillar Rock Island sites, combined.

In 2017, nine sites will be used, totaling approximately 3,200,000 CY over 372 acres. Approximately 800,000 CY will be shoreline placement at the Miller Sands, Skamokawa-Vista Park, and Sand Island sites, combined.

In 2018, nine sites will be used, totaling approximately 4,120,000 CY over 365 acres. Approximately 200,000 CY will be shoreline placement at the Miller Sands site.

All actions will necessarily be specific to each dredged material placement location, but would generally include site preparations prior to placement, avian dissuasion actions (if necessary), followed by active dredged material placement and post-dredged material placement modifications and monitoring. The Corps' 5-year program includes regular stakeholder meetings and an adaptive management process to track the effects of the proposed action. Several of these components have clear adverse effects to the streaked horned lark, although the proposed project also has significant beneficial effects in that the placement of dredged materials on previously unsuitable habitat will create areas of bare sand, which will transition into suitable breeding habitat for the species.

Streaked horned larks are not distributed evenly throughout the lower Columbia River or across all placement sites. Whereas some sites support a large proportion of the local population (Rice and Brown Islands), other sites have very few, if any, birds. For the purposes of planning and analysis, the Corps has grouped together placement sites that share certain habitat characteristics

within specific sections of the river. Six groups were identified as biologically relevant and appropriate to the operational flexibility for the O&M program, and include the following placement sites:

- Group 1: Benson Beach intertidal site and West Sand Island
- Group 2: Rice, Miller Sands, and Pillar Rock Islands
- Group 3: Skamokawa – Vista Park, Welch and Tenasillahe Islands, James River, Puget and Brown Islands
- Group 4: Crims and Hump Islands, Lord Island (upstream), Dibblee Point, Howard and Cottonwood Islands, and Northport
- Group 5: Sandy and Lower Deer Islands, Martin Bar, Sand Island, and Austin Point
- Group 6: Fazio Sand & Gravel, Gateway, and West Hayden Island

The Corps does not own or have exclusive use of the dredged material placement sites, and therefore cannot manage or regulate use of the sites prior to or following dredged material placement. Some sites may be leased by the landowner (states of Washington or Oregon, private entities, or Ports) to outside parties for the purpose of extracting the placed dredged materials for off-site uses. Other sites have public and private users for recreation, agriculture, grazing, storage, or training.

### **Action Area**

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment.

The Columbia River is the largest river in the Pacific Northwest, starting high in the Rocky Mountains of British Columbia. The river flows northwest before turning south into Washington State and then west toward the Pacific Ocean, forming the border between Oregon and Washington. The river is approximately 1,240 miles in length and, by volume, is the fourth largest river in the United States. For the purposes of this consultation, the action area is defined as the Columbia River Federal Navigation Channel from the mouth (RM -3), upstream to Bonneville Dam (RM 145), including the Portland-Vancouver Anchorages and the nine federally authorized side channel projects in this reach. The side channels include Baker Bay, Chinook Channel, Hammond Boat Basin, Skipanon Channel, Skamokawa Creek, Wahkiakum Ferry Channel, Westport Slough, Old Mouth Cowlitz River, and Upstream Entrance to Oregon Slough. The lateral extension of the action area extends at least 300 feet shoreward of the mean higher high water (MHHW) or ordinary high water (OHW) line to include direct and indirect effects from dredging and in-water placement of dredged materials in the lower Columbia River. The action area also extends at least 200 feet landward from the boundaries of the upland and shoreline dredged material placement sites.

The upland and shoreline dredged material placement network, as shown in Table 2 and Figure 2 in the BA and Table 1 above, includes 25 sites in the Columbia River between RM 3 to 105 and the Benson Beach intertidal site on the Pacific Ocean. Detailed information, figures, and current

environmental baseline conditions on the upland and shoreline placement sites are provided in Appendix B in the BA.

## **ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS**

### **Jeopardy Determination**

In accordance with policy and regulation, the jeopardy analysis in this Opinion relies on four components: (1) the Status of the Species, which evaluates the rangewide condition of the streaked horned lark, the factors responsible for each species' condition, and its survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the streaked horned lark in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the streaked horned lark; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the streaked horned lark.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this Opinion emphasizes consideration of the rangewide survival and recovery needs of the streaked horned lark and the role of the action area in the survival and recovery of these species. It is within this context that we evaluate the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### **Adverse Modification Determination**

This Opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this Opinion relies on four components: 1) the Status of Critical Habitat, which evaluates the range-wide condition of designated critical habitat for the streaked horned lark in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; 2) the Environmental Baseline, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; 3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and how that will influence the recovery role of affected critical habitat units; and 4) Cumulative Effects, which evaluates the effects of future, non-

Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the streaked horned lark's critical habitat are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat rangewide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the streaked horned lark.

The analysis in this Opinion places an emphasis on using the intended rangewide recovery function of streaked horned lark critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

## **STATUS OF THE SPECIES AND CRITICAL HABITAT**

### **Streaked Horned Lark**

#### *Legal Status*

The streaked horned lark (*Eremophila alpestris strigata*) was listed as a threatened species on October 3, 2013 (78 FR 61452), under the Endangered Species Act of 1973, as amended (16 U.S. C. 1531 *et seq.*).

#### *Life History*

##### *Current and Historical Range*

The current range and distribution of the streaked horned lark can be divided into three regions: (1) the south Puget Sound in Washington; (2) the Washington coast and lower Columbia River islands (including dredge spoil deposition and industrial sites near the Columbia River in Portland, Oregon); and (3) the Willamette Valley in Oregon.

The streaked horned lark's breeding range historically extended from southern British Columbia, Canada, south through the Puget lowlands and outer coast of Washington, along the lower Columbia River, through the Willamette Valley, the Oregon coast and into the Umpqua and Rogue River Valleys of southwestern Oregon (Altman 2011). The subspecies has been extirpated as a breeding species throughout much of its range, including all of its former range in British Columbia, the San Juan Islands, the northern Puget Trough, the Washington coast north of Grays Harbor County, the Oregon coast, and the Rogue and Umpqua Valleys in southwestern Oregon (Pearson and Altman 2005).

### *Breeding Range*

Streaked horned larks currently breed on six sites in the south Puget Sound. Four of these sites are on Joint Base Lewis McChord: 13th Division Prairie, Gray Army Airfield, McChord Field, and 91st Division Prairie (Pearson and Altman 2005). Small populations of larks also breed at the Olympia Regional Airport and the Port of Shelton's Sanderson Field airport (Pearson and Altman 2005; Pearson *et al.* 2008).

On the Washington coast, there are four known breeding sites in Grays Harbor and Pacific Counties: Damon Point; Midway Beach; Graveyard Spit; and Leadbetter Point (Pearson and Altman 2005). On the lower Columbia River, streaked horned larks breed on several of the sandy islands downstream of Portland, Oregon. Recent surveys have documented breeding streaked horned larks on Rice, Miller Sands Spit, Pillar Rock, Welch, Tenasillahe, Coffeepot, Whites/Browns, Wallace, Crims, and Sandy Islands in Wahkiakum and Cowlitz Counties in Washington, and Columbia and Clatsop Counties in Oregon (Pearson and Altman 2005; Anderson 2013). Larks also breed at the Rivergate Industrial Complex and the Southwest Quad at Portland International Airport; both sites are owned by the Port of Portland, and are former dredge spoil deposition fields (Moore 2011).

In the Willamette Valley, streaked horned larks breed in Benton, Clackamas, Lane, Linn, Marion, Polk, Washington, and Yamhill Counties. Larks are most abundant in the southern part of the Willamette Valley. The largest known population of larks is resident at Corvallis Municipal Airport in Benton County (Moore 2008); other resident populations occur at the Baskett Slough, William L. Finley, and Ankeny units of the Service's Willamette Valley National Wildlife Refuge Complex (Moore 2008) and on Oregon Department of Fish and Wildlife's (ODFW's) E.E. Wilson Wildlife Area (ODFW 2008). Breeding populations also occur at municipal airports in the valley (including McMinnville, Salem, and Eugene) (Moore 2008). Much of the Willamette Valley is private agricultural land, and has not been surveyed for streaked horned larks, except along public road margins. There are numerous other locations on private and municipal lands on which streaked horned larks have been observed in the Willamette Valley, particularly in the southern valley (Linn, Polk, and Benton Counties) (eBird 2013, ebird.org). In 2008, a large population of streaked horned larks colonized a wetland and prairie restoration site on M-DAC Farms, a privately owned parcel in Linn County; as the vegetation at the site matured in the following two years, the site became less suitable for larks, and the population declined (Moore and Kotaich 2010). This is likely a common pattern, as breeding streaked horned larks opportunistically shift sites as habitat becomes available among private agricultural lands in the Willamette Valley (Moore 2008).

### *Winter Range*

Pearson *et al.* (2005) found that most streaked horned larks winter in the Willamette Valley (72 percent) and on the islands in the lower Columbia River (20 percent); the rest spend the winter on the Washington coast (8 percent) or in the south Puget Sound (1 percent). In the winter, most of the streaked horned larks that breed in the south Puget Sound migrate south to the Willamette Valley or west to the Washington coast; streaked horned larks that breed on the Washington coast either remain on the coast or migrate south to the Willamette Valley; birds that breed on the lower Columbia River islands remain on the islands or migrate to the Washington coast; and

birds that breed in the Willamette Valley remain there over the winter (Pearson *et al.* 2005). Streaked horned larks spend the winter in large groups of mixed subspecies of horned larks in the Willamette Valley, and in smaller flocks along the lower Columbia River and Washington Coast (Pearson *et al.* 2005; Pearson and Altman 2005).

## ***Habitat and Biology***

### *Habitat Selection*

Habitat used by larks is generally flat with substantial areas of bare ground and sparse low-stature vegetation primarily composed of grasses and forbs (Pearson and Hopey 2005). Suitable habitat is generally 16 to 17 percent bare ground and may be even more open at sites selected for nesting (Altman 1999; Pearson and Hopey 2005). Vegetation height is generally less than 13 inches (Altman 1999; Pearson and Hopey 2005). A key attribute of habitat used by larks is open landscape context. Our data indicate that sites used by larks are generally found in open (*i.e.*, flat, treeless) landscapes of 300 acres or more (Converse *et al.* 2010).

Some patches with the appropriate characteristics (*i.e.*, bare ground, low stature vegetation) may be smaller in size if the adjacent areas provide the required open landscape context; this situation is common in agricultural habitats and on sites next to water. For example, many of the sites used by larks on the islands in the Columbia River are small (less than 100 acres), but are adjacent to open water, which provides the open landscape context needed. Streaked horned lark populations are found at many airports within the range of the subspecies, because airport maintenance requirements provide the desired open landscape context and short vegetation structure.

Although streaked horned larks use a wide variety of habitats, populations are vulnerable because the habitats used are often ephemeral or subject to frequent human disturbance. Ephemeral habitats include bare ground in agricultural fields and wetland mudflats; habitats subject to frequent human disturbance include mowed fields at airports, managed road margins, agricultural crop fields, and disposal sites for dredge material (Altman 1999).

### *Foraging*

Horned larks forage on the ground in low vegetation or on bare ground (Beason 1995); adults feed on a wide variety of grass and weed seeds, but feed insects to their young (Beason 1995). Larks eat a wide variety of seeds and insects (Beason 1995) and appear to select habitats based on the structure of the vegetation rather than the presence of any specific food plants (Moore 2008).

### *Breeding and Nesting*

Horned larks form pairs in the spring (Beason 1995) and establish territories approximately 1.9 acres in size (range 1.5 to 2.5 acres) (Altman 1999). Horned larks create nests in shallow depressions in the ground and line them with soft vegetation (Beason 1995). Female horned larks select the nest site and construct the nest without help from the male (Beason 1995). Streaked horned larks establish their nests in areas of extensive bare ground, and nests are placed

adjacent to clumps of bunchgrass (Pearson and Hopey 2004). Studies from Washington sites (the open coast, Puget lowlands and the Columbia River islands) have found strong natal fidelity to nesting sites – that is, streaked horned larks return each year to the place they were born (Pearson *et al.* 2008).

Historically, nesting habitat was found on grasslands, estuaries, and sandy beaches in British Columbia, in dune habitats along the coast of Washington, in western Washington and western Oregon prairies, and on the sandy beaches and spits along the Columbia and Willamette Rivers. Today, the streaked horned lark nests in a broad range of habitats, including native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely-vegetated edges of grass fields, recently planted Christmas tree farms with extensive bare ground, moderately- to heavily-grazed pastures, gravel roads or gravel shoulders of lightly-traveled roads, airports, and dredge deposition sites in the lower Columbia River (Altman 1999; Pearson and Altman 2005; Pearson and Hopey 2005; Moore 2008). Wintering streaked horned larks use habitats that are very similar to breeding habitats (Pearson *et al.* 2005).

The nesting season for streaked horned larks begins in early April and ends mid- to late August (Pearson and Hopey 2004; Moore 2011). Clutches range from 1 to 5 eggs, with a mean of 3 eggs (Pearson and Hopey 2004). After the first nesting attempt in April, streaked horned larks will often re-nest in late June or early July (Pearson and Hopey 2004). Young streaked horned larks leave the nest by the end of the first week after hatching, and are cared for by the parents until they are about four weeks old when they become independent (Beason 1995).

Nest success studies (*i.e.*, the proportion of nests that result in at least one fledged chick) in streaked horned larks report highly variable results. Nest success on the Puget lowlands of Washington is low, with only 28 percent of nests successfully fledging young (Pearson and Hopey 2004, Pearson and Hopey 2005). According to reports from sites in the Willamette Valley, Oregon, nest success has varied from 23 to 60 percent depending on the site (Altman 1999; Moore and Kotaich 2010). At one site in Portland, Oregon, Moore (2011) found 100 percent nest success.

### ***Threats / Reasons for Listing***

The streaked horned lark was listed as a threatened species because of the following:

- The streaked horned lark has disappeared from all formerly documented locations in the northern portion of its range, the Oregon coast, and the southern edge of its range.
- There are currently estimated to be fewer than 1,600 streaked horned larks rangewide, and population numbers are declining.
- Their range is small may be continuing to contract;
  - The south Puget Sound breeding population is estimated to be less than 170 individuals.
  - The Washington coast and Columbia River islands breeding population is less than 140 individuals.
  - Recent research estimates the number of streaked horned larks in Washington and

on the Columbia River islands is declining.

- This decline considered with evidence of inbreeding depression on the south Puget Sound indicates that the lark's range may contract further in the future.
- Their habitat is threatened throughout their entire range from loss of natural disturbance regimes, invasion of unsuitable vegetation that alter habitat structure, and incompatible land management practices.
- Large winter congregations are limited to one region, Oregon's Willamette Valley, which may put larks at risk from stochastic weather events.
- Most sites currently used by larks require some level of disturbance or management to maintain the habitat structure they need. The natural processes that previously provided this disturbance no longer operate.

### ***Population Estimates and Current Status of the Streaked Horned Lark***

Data from the North American Breeding Bird Survey (BBS) indicate that most grassland-associated birds, including the horned lark, have declined across their ranges in the past three decades (Sauer *et al.* 2012). The BBS can provide population trend data only for those species with sufficient sample sizes for analyses. There is insufficient data in the BBS for a rangewide analysis of the streaked horned lark population trend (Altman 2011); however, see below for additional analysis of the BBS data for the Willamette Valley.

An analysis of recent data from a variety of sources concludes that the streaked horned lark has been extirpated from the Georgia Depression (British Columbia, Canada), the Oregon coast, and the Rogue and Umpqua Valleys (Altman 2011); this analysis estimates the current rangewide population of streaked horned larks to be about 1,170 to 1,610 individuals (Altman 2011). In the south Puget Sound, approximately 150 to 170 streaked horned larks breed at six sites (Altman 2011). Recent studies have found that larks have very low nest success in Washington (Pearson *et al.* 2008); comparisons with other ground-nesting birds in the same prairie habitats in the south Puget Sound showed that streaked horned larks had significantly lower values in all measures of reproductive success (Anderson 2010). Estimates of population growth rate ( $\lambda$ , lambda) that include vital rates from nesting areas in the south Puget Sound, Washington coast, and Whites Island in the lower Columbia River indicate streaked horned larks have abnormally low vital rates, which are significantly lower than the vital rates of the arctic horned lark (*Eremophila alpestris leucolaema*) (Camfield *et al.* 2010). One study estimated that the population of streaked horned larks in Washington was declining by 40 percent per year ( $\lambda = 0.61 \pm 0.10$  SD), apparently due to a combination of low survival and fecundity rates (Pearson *et al.* 2008). More recent analyses of territory mapping at four sites in the south Puget Sound found that the total number of breeding streaked horned lark territories decreased from 77 territories in 2004, to 42 territories in 2007, a decline of over 45 percent in three years (Camfield *et al.* 2011). Pearson *et al.* (2008) concluded that there is a high probability that the south Puget Sound population will disappear in the future given the low estimates of fecundity and adult survival along with high emigration out of the Puget Sound.

On the Washington coast and Columbia River islands, there are about 120 to 140 breeding larks (Altman 2011). Data from the Washington coast and Whites Islands were included in the population growth rate study discussed above; populations at these sites appear to be declining by 40 percent per year (Pearson *et al.* 2008). Conversely, nest success appears to be very high at the Portland industrial sites (Rivergate and the Southwest Quad). In 2010, nearly all nests successfully fledged young (Moore 2011); only 1 of 10 monitored nests lost young to predation (Moore 2011).

There are about 900 to 1,300 breeding streaked horned larks in the Willamette Valley (Altman 2011). The largest known population of streaked horned larks breeds at the Corvallis Municipal Airport; depending on the management conducted at the airport and the surrounding grass fields each year, the population has been as high as 100 breeding pairs (Moore and Kotaich 2010). In 2007, a large (580-acre) wetland and native prairie restoration project was initiated at M-DAC Farms on a former rye grass field in Linn County (Cascade Pacific RC&D 2012). Large, semi-permanent wetlands were created at the site, and the prairie portions were burned and treated with herbicides (Moore and Kotaich 2010). These conditions created excellent quality ephemeral habitat for streaked horned larks, and the site was used by about 75 breeding pairs in 2008 (Moore and Kotaich 2010), making M-DAC the second-largest known breeding population of streaked horned larks that year. M-DAC had high use again in 2009, but as vegetation at the site matured, the number of breeding larks has declined, likely shifting to other agricultural habitats (Moore and Kotaich 2010).

We do not have population trend data in Oregon that is comparable to the study in Washington by Pearson *et al.* (2008). However, research on breeding streaked horned larks indicates that nest success in the southern Willamette Valley is higher than in Washington (Randy Moore, Oregon State University, Corvallis, Oregon, pers. comm., 2011). The best information on trends in the Willamette Valley comes from surveys by the ODFW; the agency conducted surveys for grassland-associated birds, including the streaked horned lark, in 1996 and again in 2008 (Altman 1999; Myers and Kreager 2010). Point count surveys were conducted at 544 stations in the Willamette Valley (Myers and Kreager 2010). Over the 12-year period between the surveys, measures of relative abundance of streaked horned larks increased slightly from 1996 to 2008, according to this report. Detections at both point count stations and within regions showed moderate increases (3 percent and 6 percent, respectively) (Myers and Kreager 2010). Population numbers decreased slightly in the northern Willamette Valley and increased slightly in the middle and southern portions of the valley (Myers and Kreager 2010).

Data from the BBS may provide additional insight into the trend of the streaked horned lark population in the Willamette Valley. Although the BBS does not track bird counts by subspecies, the streaked horned lark is the only subspecies of horned lark that breeds in the Oregon portion of the Northern Pacific Rainforest Bird Conservation Region (BCR). Therefore it is reasonable to assume that counts of horned larks from the breeding season in the Willamette Valley are actually counts of the streaked horned lark. The BBS data regularly detect horned larks on several routes in the Willamette Valley, and counts from these routes show that horned larks in this BCR have been declining since 1960s, with an estimated annual trend of -4.6 percent (95 percent confidence intervals -6.9, -2.4) (Sauer *et al.* 2012). The U.S. Geological Survey (USGS), which manages the BBS data, recommends caution when analyzing these data due to the small sample size, high variance, and potential for observer bias in the raw BBS data.

The BBS data from the Willamette Valley indicate that horned larks (as mentioned above, the BBS tracks only the full species) have been declining for decades, which is coincident with the restrictions on grass seed field burning imposed by the Oregon Department of Agriculture (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011). Prior to 1990, about 250,000 acres of grass seed fields in the Willamette Valley were burned each year. Public health and safety issues led the Oregon legislature to order gradual reductions in field burning beginning in 1991. By 2009, field burning was essentially banned in the Willamette Valley (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011). We believe that some of the observed declines in lark detections in the BBS data are attributable to the reduction of highly suitable burned habitats due to the field burning ban. Since the ban is now fully in effect, the decline in BBS observations of streaked horned larks is not expected to continue at the previously noted rate. We do not have conclusive data on population trends throughout the streaked horned lark's range, but the rapidly declining population on the south Puget Sound suggests that the range of the streaked horned lark may still be contracting.

## **Critical Habitat**

### *Legal Status*

In October 2013, the U.S. Fish and Wildlife Service designated critical habitat for the threatened streaked horned lark (78 FR 61506). Approximately 4,629 acres (1,873 ha) in Grays Harbor, Pacific, and Wahkiakum Counties in Washington, and in Clatsop, Columbia, Marion, Polk, and Benton Counties in Oregon, fall within the boundaries of the critical habitat designation for the streaked horned lark.

Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features: (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary.

### *Primary Constituent Elements*

Under the Act and its implementing regulations, the physical or biological features essential to the conservation of the streaked horned lark must be identified in areas occupied at the time of listing, focusing on the features' primary constituent elements. Primary constituent elements are the features that provide for the species' life-history processes and are essential to the conservation of the species. The primary constituent elements specific to the streaked horned lark are areas having a minimum of 16 percent bare ground that have sparse, low-stature vegetation composed primarily of grasses and forbs less than 13 inches (33 cm) in height found in: (1) Large (300-acre [120-ha]), flat (0–5 percent slope) areas within a landscape context that

provides visual access to open areas such as open water or fields, or (2) areas smaller than described in (1), but that provide visual access to open areas such as open water or fields. All of the units designated as critical habitat are currently occupied by the streaked horned lark and contain the primary constituent elements to support the life-history needs of the subspecies.

### *Critical Habitat Units and Subunits*

The Service designated two units of critical habitat for the streaked horned lark based on the presence of sufficient elements of physical or biological features to support life history processes during the breeding or winter seasons. (The two units are identified as Unit 3 and Unit 4; there are no Units 1 or 2. The reason for this is that critical habitat for the streaked horned lark was designated at the same time as critical habitat for Taylor's checkerspot butterfly [*Euphydryas editha taylora*]; Units 1 and 2 contain critical habitat only for the butterfly). The two units designated for the streaked horned lark are further divided into 16 subunits. The two units designated as critical habitat are: Unit 3 (Washington Coast and Columbia River, with 13 subunits), and Unit 4 (Willamette Valley, with 3 subunits) (Table 3).

<b>Table 3. Critical Habitat Units for the Streaked Horned Lark. All units were occupied by larks at the time of designation.</b>						
<b>Unit 3: Washington Coast and Columbia River Islands</b>		<b>Federal</b>	<b>State</b>	<b>Private</b>	<b>Tribal</b>	<b>Other*</b>
Subunit name		Ac (Ha)	Ac (Ha)	Ac (Ha)	Ac (Ha)	Ac (Ha)
3-A	Damon Point	0	456 (185)	24 (10)	0	0
3-B	Midway Beach	0	611 (247)	0	0	0
3-C	Shoalwater Spit	0	377 (152)	102 (41)	0	0
3-D	Leadbetter Point	564 (228)	101 (41)	0	0	0
3-E	Rice Island	0	224 (91)	0	0	0
3-F	Miller Sands	0	123 (50)	0	0	0
3-G	Pillar Rock/Jim Crow	0	44 (18)	0	0	0
3-H	Welch Island	0	43 (18)	0	0	0
3-I	Tenasillahe Island	0	23 (9)	0	0	0
3-J	Whites/Brown	0	98 (39)	0	0	0
3-K	Wallace Island	0	13 (5)	0	0	0
3-L	Crims Island	0	60 (24)	0	0	0
3-M	Sandy Island	0	37 (15)	0	0	0
<i>Unit 3 Totals</i>		564 (228)	2,209 (894)	126 (51)	0	0
<b>Unit 4: Willamette Valley:</b>		1,006 (407)	0	0	0	0
4-A	Baskett Slough NWR	264 (107)	0	0	0	0
4-B	Ankeny NWR	459 (186)	0	0	0	0
4-C	William L Finley NWR					
<i>Unit 4 Totals</i>		1,729 (700)	0	0	0	0
<i>Grand Total—all Units</i>		2,293 (928)	2,209 (894)	126 (51)	0	0
GRAND TOTAL OF ALL UNITS, ALL OWNERSHIP.		.....	.....	4,629 (1,873)	.....	.....

\* Other = Ports, local municipalities, and nonprofit conservation organizations.

### *Unit 3: Washington Coast and Columbia River*

The Washington Coast and Columbia River Unit totals 2,900 acres (1,173 ha) and includes 564 acres (228 ha) of Federal ownership, 2,209 acres (894 ha) of State-owned lands, and 126 acres (51 ha) of private lands. On the Washington coastal sites, the streaked horned lark occurs on sandy beaches and breeds in the sparsely vegetated, low dune habitats of the upper beach. There

are four subunits (Subunits 3–A, 3–B, 3–C and 3–D) and a total of 2,235 acres (904 ha) of critical habitat on the Washington coast. The coastal sites are owned and managed by Federal, State, and private entities. The physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to reduce human disturbance during the nesting season, and the continued encroachment of invasive, nonnative plants requires special management to restore or retain the open habitat preferred by the streaked horned lark. Subunits 3–A, 3–B, 3–C and 3–D overlap areas that are designated as critical habitat for the western snowy plover. The snowy plover nesting areas are posted and monitored during the spring and summer to keep recreational beach users away from the nesting areas (Pearson *et al.* 2009); these management actions also benefit the streaked horned lark. In the lower Columbia River, there are nine island subunits (Subunits 3–E through 3–M) for a total of 665 acres (269 ha). The island subunits are owned by the States of Oregon and Washington. On the Columbia River island sites, only a small portion of each island is designated as critical habitat for the streaked horned lark; most of the areas mapped are used by the U.S. Army Corps of Engineers for dredge material deposition in its channel maintenance program. Within any deposition site, only a portion is likely to be used by the streaked horned lark in any year, as the area of habitat shifts within the deposition site over time as new materials are deposited and as older deposition sites become too heavily vegetated for use by streaked horned larks. All of the island subunits are small, but are adjacent to open water, which provides the open landscape context needed by streaked horned larks. The main threats to the essential features in the critical habitat subunits designated on the Columbia River islands are invasive vegetation and direct impacts associated with deposition of dredge material onto streaked horned lark nests during the nesting season. In all subunits, the physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to manage, protect, and maintain the PCEs supported by the subunits.

#### *Unit 4: Willamette Valley*

The Willamette Valley Unit totals 1,729 acres (700 ha) and is entirely composed of Federal lands. There are three subunits (4–A, 4–B and 4–C) for the streaked horned lark in the Willamette Valley, all on the Willamette Valley National Wildlife Refuge Complex. These subunits at the Basket Slough, Ankeny and William L. Finley refuge units are managed for restored native prairie habitat and as agricultural land to provide forage for wintering dusky Canada geese (*Branta canadensis occidentalis*). This management is compatible with maintaining the essential habitat features for the streaked horned lark. The refuge complex has incorporated management for streaked horned lark into its recently completed comprehensive conservation plan (U.S. Fish and Wildlife Service 2011), and streaked horned lark habitat conservation is being implemented in the refuge units. In all subunits, the physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to manage, protect, and maintain the PCEs supported by the subunits.

## **ENVIRONMENTAL BASELINE**

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all

proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultation in progress.

### Status of the Species in the Action Area

The available data estimates there are approximately 120-140 adults (perhaps 60-70 breeding pairs) throughout the action area (Altman 2011). There are not currently any sites within the action area that are protected and managed for streaked horned larks.

Of the dredged material placement sites recently surveyed for presence/absence, nine have known breeding pairs of streaked horned larks: Rice, Miller Sands, Pillar Rock, Welch, Tenasillahe, Brown, Wallace, Crims and Sandy Islands. Rice and Brown Island both support substantial local populations of streaked horned larks, where each island is estimated to sustain over 20 pairs of breeding adults (Anderson 2013). Two upland (non-island) sites used for dredge material disposal have also had recent detections of larks: Northport and Gateway; whether these sites have been used for breeding is unknown. There are also two sites (Rivergate and the Southwest Quad at Portland International Airport) known to have small breeding populations of streaked horned larks in Portland, within the action area but not part of the Corps' disposal Network. Table 4 shows the number of breeding pairs estimated between 2011 and 2013. It should be noted that because not all potentially available sites were surveyed by a systematic method, the number of pairs estimated between 2011 and 2013 does not reflect total streaked horned lark abundance throughout the action area, but rather the abundance at those sites surveyed during the course of the investigation.

<b>Table 4. Estimated number of streaked horned lark breeding pairs in the action area</b> (data from Moore 2012; Anderson 2013; U.S. Army Corps of Engineers 2014; Martha Jensen, US Fish and Wildlife Service, Lacey, Washington, pers. comm., 2014; Carrie Butler, Port of Portland, Portland, Oregon, pers. comm., 2014; Nick Atwell, Port of Portland, Portland, Oregon, pers. comm., 2014 ).			
<b>Site</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Rice Island	13	14	22
Miller Sands Island	4	2	5
Pillar Rock Island	4	3	2
Welch Island	0	1	0
Tenasillahe Island	2	2	1
Brown Island	14	18	23
Wallace Island (not in Corps network)	0	1	0
Crims Island	7	4	2
Northport	-	-	3
Sandy Island	2	1	4
Gateway	-	-	*
Rivergate	6	3	5
Southwest Quad	4	2**	2**
<b>Total</b>	<b>56</b>	<b>51</b>	<b>69</b>
*Streaked horned larks detected briefly during the breeding season, but no evidence of nesting at the site.			
** Possibly 1-2 more pairs, not confirmed, no nest located.			

Nest success in the action area has been estimated at approximately 33 percent on the lower Columbia River island (Pearson and Hopey 2005) and virtually 100 percent at the breeding sites in Portland (Rivergate and Southwest Quad) (Moore 2012).

### Status of Critical Habitat in the Action Area

Critical habitat for the streaked horned lark has been designated at nine subunits in the lower Columbia River; these sites are on state-owned, small islands, and are adjacent to open water in the landscape context preferred by lark. Only a portion of each Corps placement site overlaps with the designated critical habitat on each island. Within any Corps placement site, only a portion of the site is likely to be suitable and used by larks in any year. The designated subunits of critical habitat do not shift over time because they are fixed geographic units. However, the availability of suitable nesting habitat within each placement site and each subunit shifts over time as new materials are deposited, vegetation is established, and older placement sites become too heavily vegetated for nesting by larks. The total acreage of designated critical habitat for the streaked horned lark in the lower Columbia River is 665 acres (Table 5). All of the designated critical habitat subunits in the lower Columbia River overlap with the Corps' Network, with the exception of Wallace Island (see Figure 48 in the BA).

The main threats to streaked horned lark critical habitat in the Columbia River are natural vegetation succession, invasive vegetation and direct impacts associated with dredged material placement during the breeding season or on foraging habitat for wintering birds.

Suitable nesting habitat for streaked horned larks typically contains all of the PCEs of designated critical habitat. However, not all of each designated critical habitat subunit is always suitable for nesting because of natural vegetative succession both within and adjacent to specific subunits. Table 5 shows the acreages of designated lark critical habitat, overlap with each placement site, and how much of that critical habitat subunit is currently suitable lark nesting habitat. Overall, about 45 percent of designated critical habitat currently contains the PCEs that make up suitable habitat for the streaked horned lark.

<b>Subunit</b>	<b>Subunit (acres)</b>	<b>Placement Site (acres)</b>	<b>Designated Critical Habitat Within the Placement Site (acres)</b>	<b>Currently Suitable Lark Nesting Habitat Within Critical Habitat (acres)</b>
Rice Island (RM 21.0)	224	264	219	150
Miller Sands Island (23.5)	123	117	88	0
Pillar Rock Island (27.2)	44	52	41	4
Welch Island (RM 34.0)	43	41	37	10
Tenasillahe Island (RM 38.3)	23	41	23	2
Brown Island (RM 46.1)	98	102	97	72
Wallace Island (RM 47)*	13	n/a	n/a	3
Crims Island (RM 57.0)	60	59	53	25
Sandy Island (RM 75.8)	37	32	32	32
<b>TOTAL (acres)</b>	<b>665</b>	<b>708</b>	<b>590</b>	<b>298 (45% of 665)</b>

\* Wallace Island is not included in the Corps' dredged material placement network.

## Factors Affecting the Species' Environment in the Action Area

Most of the known locations of streaked horned larks in the action area are found on the islands in the lower Columbia River; the habitat at these sites is maintained by recurring placement of dredged material, and has relatively low levels of disturbance from recreation or other industrial uses. There are also mainland (upland, non-island) sites used by the lark in the action area; these tend to be active dredge material disposal sites that receive frequent disturbance from industrial activities (*e.g.*, sand extraction) and recreation. Streaked horned larks have been documented at few of these sites, but the presence of nests, while suspected, has not been documented.

Streaked horned larks in the lower Columbia River use a shifting mosaic of habitat created by dynamic natural and anthropogenic processes. In a recent analysis of habitat conditions in the lower river, Anderson (2013) found that larks did not nest in areas with no vegetation (>90 percent) and did not frequent areas covered by more than 50 percent vegetation. Deposition of dredged material in an area with the proper landscape context (large, flat, open) creates potential habitat for the streaked horned lark; following dredged material deposition there is a natural progression from bare sand to vegetation too dense to provide habitat for streaked horned larks. The amount of time needed for vegetation succession varies throughout the lower Columbia River. Current research shows that it takes longer for vegetation to establish on Rice, Miller Sands, and Pillar Rock Islands, which are nearest to the Pacific Ocean of all the Network sites; presumably this extended time is a result of high winds and harsher climatic conditions (Anderson 2013). For this reason, it is assumed that vegetation takes three growing seasons to become established on these islands, and habitat is suitable for streaked horned lark nesting at the beginning of the fourth breeding season following placement. For all other Network sites (from Skamokawa–Vista Park at RM 33.4 to West Hayden Island at RM 105), research shows that vegetation transitions more quickly and vegetation becomes established after one full growing season (Anderson 2013). In these areas, it is likely that placement sites transition into suitable habitat at the beginning of the breeding season in the second year following placement.

In some instances, vegetation has been observed growing in placement areas within one year of placement, likely as a result of organic materials in the dredged sediments supporting establishment of quick-growing plants (Anderson 2013). While vegetation establishment and succession occurs at different rates throughout the Network, a habitat analysis by Anderson showed that once areas become suitable, they remain suitable for approximately 6 to 7 years (2013), provided the areas do not experience other disturbances during this time.

### *Climate Change*

It is likely that climate change will play an increasingly important role in future years in determining the distribution of species and the conservation value of currently important habitats. Increasing air temperature will affect precipitation, stream flow, habitat quality, the abundance of predators and competitors, and marine productivity (CIG 2004, ISAB 2007). According to the U.S. Global Change Research Program (USGRP), the average regional air temperatures have increased by an average of 1.5°F over the last century (up to 4°F in some areas), with warming trends expected to continue into the next century (2009).

Precipitation trends during the next century are less certain than those for temperature, but increased precipitation is likely to occur during October through March and less during summer, with more winter precipitation falling as rain rather than snow (ISAB 2007, USGCRP 2009). Where snow occurs, a warmer climate will cause earlier runoff resulting in lower stream flows and warmer water temperatures in late spring, summer, and fall (ISAB 2007, USGCRP 2009). These changes will not be uniform across the Columbia River basin. Areas with elevations high enough to maintain temperatures well below freezing for most of the winter and early spring would be less affected. Low-lying areas that historically have received scant precipitation during the winter and contribute little to total stream flow and are likely to be more affected. The ISAB recommends planning now for future climate conditions by implementing protective tributary, mainstem, and estuarine habitat measures; as well as protective hydropower mitigation measures (2007).

The effects of climate change in the Action Area could lead to a change in the timing of precipitation, the extent of snowpack, and rain-on-snow events. These changes in weather patterns could influence seasonal river flows, subsequently influencing the presence of size of shoaling in the lower Columbia River, thereby influencing the timing of dredging and placement of materials. The proposed action spans just 5 years, and therefore the effects of climate change are likely to be negligible to the streaked horned lark and its habitat in this timeframe.

## **EFFECTS OF THE ACTION**

### **Overview of the Analytical Approach**

During this consultation, we worked with the Corps to develop the framework for the analysis of the effects of the action. The BA (U.S. Army Corps of Engineers 2014) has a rigorous and detailed analysis of the project's effects to the streaked horned lark and its designated critical habitat; we incorporate this analysis by reference here.

In the Corps' BA, the analysis of effects to the streaked horned lark and its habitat was based on recent research into habitat succession on the lower Columbia River islands (Anderson 2013); in this Biological Opinion, we also adopt this method for our evaluation of the effects of the proposed action. In Anderson's (2013) study on vegetation succession on the Columbia River islands, she determined that streaked horned lark habitat developed on dredge material deposition sites on a predictable course from bare sand (immediately post-deposition) to suitable habitat, and then after a period of several years, to unsuitable, densely vegetated habitat. Anderson (2013) classified habitats as either: (1) suitable, where habitat consists of 50 percent to 90 percent bare sand with some vegetation; (2) yet-to-be suitable, where vegetation has not yet established across the site and there is greater than 90 percent bare sand; and (3) unsuitable, where vegetation exceeds 50 percent cover and the area is too dense for use by streaked horned larks. Anderson's (2013) "time to suitability" analyses showed that all of the sites in the Corps' Network upstream of the Columbia River Estuary transition to suitable habitat within one year of dredge material deposition, and remain suitable as streaked horned lark habitat for about six years. The Network sites in the Columbia River Estuary (Rice, Miller Sands and Pillar Rock Islands) behave somewhat differently than the upriver sites; at the estuary sites, fresh dredge material takes longer (2.5 years) to transition to suitable habitat, and remains in a suitable condition for slightly longer (6.5 years) (Anderson 2013). Actual observations on Rice Island

suggest that habitat remains suitable for as long as 12 years after a placement event (U.S. Army Corps of Engineers 2014). Anderson (2013) speculates that the relatively harsher climate and higher wind speeds in the estuary retard vegetation succession, compared to the upriver sites. This understanding of the dynamics of habitat succession informs our analysis throughout this Biological Opinion.

### **Effects of the Action to the Streaked Horned Lark**

#### ***Pre-placement site preparations and modifications***

See the analysis on page 70 in the BA. Prior to placement of dredged sediments, upland and shoreline sites may need to be prepared to facilitate placement and minimize adverse impacts to sensitive species and habitat. There are two phases to site preparations: activities that occur prior to the breeding season and those that occur immediately prior to placement of dredged material. In all cases, site preparations begin with delineation of the dredged material placement footprint by a Corps technical channel maintenance representative, dredge manager, and a Corps biologist. The first phase of site preparations will occur in the winter and early spring months outside of the streaked horned lark breeding season to minimize future direct impacts to nesting birds. During this time period, over-wintering adults may be present on placement sites and these individuals are expected to be disturbed out of the area of active site preparation. There is little information about the distribution of streaked horned larks on the Network sites during the winter, and we assume that larks will be present at all sites where breeding season occurrence has been recorded. All larks at a particular site will likely be disturbed by the site preparation activities. Although flushing events during the non-breeding season could lead to a decrease in overall fitness of individuals, as energy is expended or foraging is interrupted to flee from people and equipment, these effects are likely minor as larks will not be defending territories or nests, and there will always be refugial habitat (suitable undisturbed habitats) on the site or at an adjacent Network site, as described in the Corps' analysis of the 5-year plan.

The second phase of site preparations will occur immediately prior to dredge material placement, which may be during the breeding season or after the breeding season, depending on the site and year. We believe that the effects of this second phase of site preparations will be minimal, given that the earlier site preparations and dissuasion measures (discussed below) will likely have made the disposal site unattractive to larks. The effects are likely limited to disturbance of larks foraging or breeding in areas adjacent to the placement site.

#### ***Dissuasion of avian species***

See the analysis on pages 71-72 in the BA.

#### ***Dissuasion of Streaked Horned Larks from Placement Sites***

This aspect of the proposed project aims to deter nesting by streaked horned larks at sites that are slated for dredge material placement later in the year. Dissuasion actions that coincide with site preparations are intended to minimize site use by larks and other migratory birds where active dredged material placement will occur during or after the breeding season of that year. The Corps will implement early-season (February-March) dissuasion to reduce the potential for more severe impacts to streaked horned larks later in the nesting season. All dissuasion practices are

intended to discourage nesting, roosting and foraging behaviors, with the ultimate intent to avoid, minimize and reduce adverse effects to adults, juveniles or nestlings during the breeding season. No active dissuasion of larks will occur during the breeding season (15 April through 30 August).

In 2013, the Corps experimented with trenching and mounding the sand at placement sites to make the sites unsuitable for streaked horned larks and piscivorous birds, which prefer flat sites with open sightlines. These techniques had mixed success. Trenches established at Rice Island in fall 2013 were completely obliterated by high winds by spring 2014. Mounding at Miller Sands apparently was more successful, and seems to have persisted through the winter. Other techniques may be implemented, as appropriate, to reduce the suitability of a site, including installation of ropes, fencing or other physical barriers to reduce the attractiveness of sites to larks. While some uncertainty remains regarding the effectiveness of early season dissuasion, the Corps will continue to explore dissuasion measures that will preclude site use by larks, which will substantially reduce the potential negative effects of placement on occupied habitat during the breeding season.

There will also be clear beneficial effects resulting from the dissuasion measures, in that it will prevent dredge material placement sites from becoming habitat sinks (attractive areas for nesting that will be altered during the breeding season, destroying nests and harassing adults). Implementation of dissuasion measures to avoid the creation of habitat sinks will substantially reduce the likelihood of lethal take of lark eggs and nestlings, as has been documented when dredged material was placed on occupied lark breeding habitat on several occasions in the past (Stinson 2005, Pearson and Altman 2005, Pearson et al. 2008).

#### *Dissuasion of Piscivorous Birds from Network Sites*

The second aspect of this component of the proposed project is the dissuasion of piscivorous birds in the lower Columbia River. This activity is a requirement in the National Marine Fisheries Service's 2012 Biological Opinion to the Corps (Term and Condition 1(k)) specifying that if piscivorous birds are identified in the action area, hazing actions must be implemented to intentionally flush birds and discourage nesting on upland placement sites. These activities will entail human presence and passive dissuasion measures, including the use of physical barriers (nets and fencing, flagging, etc.) and habitat modifications (vegetation removal, trenching, mounding, etc.) to minimize the extent and suitability of habitat available for foraging and nesting. In addition, if nesting activity is observed on placement sites, the Corps must actively discourage these behaviors, including destruction of nests; the U.S. Fish and Wildlife Service's Office of Migratory Birds and Habitat Programs has issued a depredation permit under the Migratory Bird Treaty Act for take of Caspian tern eggs (see Consultation History, above). Dissuasion activities directed at piscivorous birds will generally be conducted from mid-April to mid-June each year. Initial surveys will be conducted from boats with binoculars; if terns are present, the surveyors will access the sites on foot.

Caspian terns select habitat that consists of bare sand, which is not considered suitable habitat for the streaked horned lark (habitat for larks is considered suitable when there is some vegetation on the site, and a range of 50 percent to 90 percent bare sand). Currently, dissuasion of piscivorous birds only occurs at the islands in the Columbia River Estuary (Rice, Miller Sands

and Pillar Rock Islands), which have previously provided habitat for Caspian terns. On Rice Island, terns use the lower bench on the downstream end of the island, which does not overlap with the upper bench where larks nest. Miller Sands and Pillar Rock Islands have potential tern habitat that is near to or overlaps with suitable nesting habitat for the lark. On Rice Island, the potential tern habitat on the downstream end has been modified with silt fences, and terns have routinely been hazed from the island to prevent occupation and nesting. The habitat modification actions accelerate the development of dense vegetation, reducing the availability of bare ground and precluding the use of these areas as nesting and foraging habitat for terns or streaked horned larks. Similarly, hazing actions directed at terns can have adverse effects to larks, if active dissuasion occurs in suitable lark nesting habitat. Terns have not attempted to nest in the areas used by larks on Rice, Miller Sands or Pillar Rock Islands so far. However, if tern dissuasion is necessary in suitable lark nesting habitat in the future, there may be direct and indirect effects to streaked horned larks and their nesting habitat.

Implementation of these activities to dissuade piscivorous birds may result incidental adverse effects to streaked horned larks, depending on the timing, location and intensity of hazing and dissuasion. The effects to larks may include flushing adults or young, increased exposure of eggs and juveniles to weather and predation, nest abandonment or destruction, and possible mortality of eggs or young. Depending on the proximity, frequency and duration of these activities, dissuasion of avian predators could result in reduced survival of affected larks. Dissuasion measures could preclude the use of suitable nesting habitat, which would indirectly affect individual larks. However, habitat availability is not assumed to be a limiting factor in the action area (Pearson et al. 2008, Schapaugh 2009, and Camfield et al. 2011). Given the experience of the past few years, and the Corps' direction to the contractors implementing the piscivorous bird dissuasion, we expect low levels of disturbance of adult streaked horned larks and no mortality of eggs or young on the three lower estuary islands associated with these activities.

The Corps does not expect dissuasion of piscivorous birds to be required on Network sites upstream of the estuary. If Caspian terns or double-crested cormorants are detected at other islands beyond the estuary where larks are present, the adaptive management group would convene to review options for minimizing the incidental negative effects to streaked horned larks.

### ***Dredging and in-water placement***

See the analysis on page 72 in the BA. Activities associated with dredging and in-water placement will have no effect on the streaked horned lark.

### ***Upland and shoreline placement (5-year placement plan)***

The BA has a rigorous and detailed analysis of the effect of dredge material placement on the streaked horned lark and its habitat; see pages 72-90 in the BA. As stated above, we incorporate this analysis by reference here. We present additional considerations in our analyses of the effects of upland and shoreline placement below.

The Corps has developed a 5-year plan to direct upland and shoreline placement of dredge materials on sites throughout the Network, which will sustain a shifting mosaic of suitable

habitat for the streaked horned lark in the lower Columbia River. The BA provides a detailed placement plan by island, Group (there are seven geographic groupings of placement sites within the Network) and year, with resulting habitat projections each year. One of the key assumptions in the analysis of the effects of dredge material placement on streaked horned larks is that larks will move within the Network as sites become unsuitable, either through habitat succession processes or fresh dredge material placement. This is consistent with the streaked horned lark's evolutionary history, as a species that requires frequent disturbance to create habitat by resetting vegetative succession. This assumption is also supported by recent empirical observations at Brown Island (Anderson 2013). In 2011, 14 pairs of larks were observed during the breeding season at Brown Island, distributed throughout the available habitat. In late 2011, approximately half of the suitable habitat was covered in dredge material, and in 2012, 18 pairs of larks were observed to be breeding in the remaining suitable habitat area, with territories estimated to be about 1.5 acres/pair. By 2013, the material placed on the island in late 2011 had transitioned into suitable habitat, and the local population of larks had spread out across the available habitat again. This demonstrates two important points, that larks are not saturating all available habitat, and that larks can move to nearby suitable habitat when previously used habitat becomes unavailable to the larks.

Anderson (2013) recommends maintaining enough suitable habitat in each Group to support a relatively large population (10 or more pairs) of larks each year (note that not all groups have evidence of breeding larks; Group I, nearest the Pacific Ocean, and Group VI, farthest upstream, do not have documented breeding on Network sites). The Corps' habitat modeling and analysis of the lark population response projects that there will be more than enough suitable habitat available to support at least 10 breeding pairs of larks in each Group each year, and generally each Group will continue to have enough habitat to support the current estimated number of breeding pairs in that group.

These projections of lark populations by site hinge on expected territory size; that is, how many pairs of larks can a given amount of suitable habitat support? A fundamental component of the Corps' analytical approach is the assumption regarding territory size. There is empirical evidence that larks establish territories of about 1.5 acres on Columbia River islands (Anderson 2013), and up to 2.5 acres in the Willamette Valley (Altman 1999), although both of these findings are based on small sample sizes (e.g., the Willamette study had sample size of N=3). In our analysis of the effects of the proposed action, we also use these expected territory size estimates, although we note that there is also no evidence that habitat is limiting in the action area, and there appears to be suitable, unoccupied habitat on the Network. Studies elsewhere within the range of the streaked horned lark have also noted that larks do not pack into all available habitat (Pearson et al. 2008, Schapaugh 2009, Camfield et al. 2011). Table 6 (see Appendix A) shows the number of pairs of larks that could be supported on each island and group by year, as the amount of suitable habitat changes following placement events. If the habitat succession model is correct, the effect of the dredge material placement plan will be maintenance of the existing population, and may even result in an increased population if the population grows and occupies additional suitable habitat that will be created.

### *Review of likely take associated with dredge material placement*

The conservation measures that will be implemented prior to dredge material placement make it unlikely that adult larks will be killed. It is likely that in some cases, dissuasion efforts will be unsuccessful, and some larks may establish territories and nests in sites slated for placement during the breeding season. Adults will likely be disturbed out of the area; any eggs or unfledged juveniles present will be killed by the material placement. We cannot predict the actual amount of harassment, death or injury caused by failed dissuasion measures, but expect it to be small, for the following reasons:

- Most Network sites have small populations of larks (fewer than five pairs),
- Only two Network sites (Rice Island and Brown Island) have large population of larks (more than 20 pairs),
- Most of the dredge material placement events that are scheduled to occur during the breeding season will occur on the sites with small populations, so if dissuasion measures are not fully successful, there will likely be few larks that will have established territories and nests in the planned placement footprint;
- There are three large dredge material placement events planned for Rice Island and Brown Island, but two of these events (Brown Island in 2014, Rice Island in 2017) will occur after the breeding season, and will therefore have no chance of destroying eggs or nestlings.
- Only one placement event will occur on a Network site with a large population during the breeding season, at Brown Island in 2016. If dissuasion measures are not fully successful, there is a possibility that adult larks will abandon nests or that nests will be buried by dredge materials.

For these reasons, we believe that few lark nests will be destroyed by dredge material placement events, either directly through burial or indirectly through abandonment. Given the range of conservation measures to be implemented to prevent this occurrence, we estimate the number of nests destroyed to be no more than 2 nests per year (3-5 eggs or nestlings per nest) lost to abandonment, and an additional 2 nests per year (3-5 eggs or nestlings per nest) as a result of burial by deposition of dredge material.

### ***Post-placement site modifications***

See the analyses on pages 90-91 of the BA. The expected effect of post-placement site modifications is negligible, as no larks are likely to be present in new placement area, due to the presence of unsuitable habitat.

### ***Streaked horned lark monitoring***

See the analyses page 91 in the BA and the supplemental Monitoring and Adaptive Management appendix. The Corps will contract with a highly qualified surveyor to track the population of streaked horned larks on all the Network sites. These well-trained surveyors are likely to have

minimal adverse effects to breeding larks. Based on discussions with the contractor regarding surveys in previous years and our own experience in these surveys, there is at most some brief disturbance of adults caused by surveyors walking through suitable habitat while conducting surveys, but it is unlikely that the disturbance will be prolonged enough to cause nest abandonment or expose the eggs and young to predators.

### ***Communication and coordination***

Activities associated with communication and coordination will have no effect on the streaked horned lark.

### ***Summary of the Effects of the Action to Streaked Horned Lark***

There are clear adverse effects to streaked horned larks from the proposed project; these effects include disturbance and flushing of individuals, injury or death of eggs or nestlings, and modification of habitat important for feeding, breeding and sheltering. To the extent practicable, the timing of certain components of the proposed action will minimize disturbance to the birds. Maintenance of the navigation channel requires annual dredging and some effects will be sustained for the life of individuals, which might have lasting effects to population growth rate and recovery of the Columbia River population.

The long-term beneficial effects resulting from the maintenance of abundant suitable nesting habitat are expected to outweigh short-term adverse effects to individuals and habitat. Without periodic placement of dredged materials, the 1,826 acres of the Network would eventually transition to conditions unsuitable for streaked horned lark nesting habitat in the next 12 to 20 years. Implementation of the 5-year dredged material placement plan is projected to result in a 100 percent increase in the amount of suitable nesting habitat within the Network, while also providing a substantial amount of yet-to-be suitable habitat acres ready to transition into suitable after 2018. Without implementation of the 5-year dredging plan, suitable habitat acreage within the Network is reduced by about a third, with zero acres of yet-to-be suitable habitat available to transition into suitable after 2018. Therefore, while the Corps' analysis in this BA is only for the years 2014 - 2018, comparing the status of the lark's habitat with and without the proposed action clearly indicates the long term benefits to suitable lark habitat from the periodic placement of dredged materials at shoreline and upland sites across the Network and the likely downward trajectory of suitable habitat conditions that could support the local population of larks that would result without these activities.

### **Effects of the Action to Streaked Horned Lark Critical Habitat**

See pages 99 – 113 in the BA for the Corps' detailed analysis of the effects of the proposed action on designated critical habitat of the streaked horned lark; we incorporate the analysis by reference here.

Of the 20 sites with planned placement in the next five years, seven sites overlap with designated critical habitat subunits for the streaked horned lark: Rice Island, Miller Sands, Pillar Rock Island, Welch Island, Tenasillahe Island, Brown Island, and Crims Island. No placement is planned for the Sandy Island in the next five years; therefore, no placement will occur within the

Sandy Island critical habitat subunit. For the seven placement sites that overlap with designated critical habitat and have planned placements of dredged materials in the next five years, only portions of each critical habitat subunit will be used in any given year, with the exception of Welch Island in 2015. In 2015, the entire 41-acre Welch Island site is planned for upland placement. However, only 37 acres of placement will overlap with the 43-acre Welch Island critical habitat subunit. Partial placements on all other critical habitat subunits will allow suitable breeding habitat, which corresponds to the areas with the PCEs of critical habitat, to be available on each critical habitat subunit in every year. Placements of dredged material and availability of suitable nesting habitat on each designated critical habitat subunit in the Network are displayed on figures located in Appendix D in the BA. Table 8 in the BA details the analysis of the dredge material placement plan and its effects on the PCEs of lark critical habitat throughout the 5-year plan.

### ***Pre-placement site preparations and modifications***

Pre-placement site preparations and modifications will temporarily remove the PCEs associated with vegetation structure and bare ground. These modifications are temporary, and the PCEs will likely become reestablished within 2.5 years for sites in the estuary, and within 1 year for sites upstream of the estuary. The shifting mosaic of suitable habitat that will be created by the 5-year placement plan will actually maintain the PCEs of streaked horned lark critical habitat across the Network throughout the proposed action.

### ***Dissuasion of avian species***

Activities associated with harassment of avian species will have no effect on critical habitat of the streaked horned lark. However, activities that alter habitat in ways that encourages dense growth of vegetation could remove the PCEs of lark critical habitat. This may occur at two sites, Miller Sands and Pillar Rock Island.

### ***Dredging and in-water placement***

Activities associated with dredging and in-water placement will have no effect on critical habitat of the streaked horned lark.

### ***Upland and shoreline placement (5-year placement plan)***

Shoreline placement is unlikely to have any effect to the PCEs of streaked horned lark critical habitat, as the actions will occur on beaches, where larks may forage, but where there is likely too much bare ground and insufficient vegetation structure to provide the PCEs. Placement on upland sites, however, will temporarily remove the PCEs associated with vegetation structure and bare ground at seven of the designated critical habitat subunits in Unit 3. As with pre-placement site modifications, these modifications will be temporary, and the PCEs will likely become reestablished within 2.5 years for sites in the estuary, and within 1 year for sites upstream of the estuary. The shifting mosaic of suitable habitat that will be created by the 5-year placement plan will actually maintain the PCEs of streaked horned lark critical habitat across the Network throughout the proposed action.

### ***Post-placement site modifications***

Post-placement site modifications are unlikely to have any effect on the PCEs of critical habitat, as the activities associated with pre-placement site modifications and the actual placement of dredge material will have removed the PCEs associated with vegetative structure and amount of bare ground at the site.

### ***Streaked horned lark monitoring***

Activities associated with streaked horned lark monitoring will have no effect on the streaked horned lark.

### ***Communication and coordination***

Activities associated with communication and coordination will have no effect on critical habitat of the streaked horned lark.

### ***Summary of the Effects of the Action to Streaked Horned Lark Critical Habitat***

The effects of the proposed action to designated critical habitat of the streaked horned lark include temporary alteration of the primary constituent elements that provide necessary habitat features on Network sites. Only eight dredged material sites overlap with designated critical habitat subunits for the lark: Rice Island, Miller Sands, Pillar Rock Island, Welch Island, Tenasillahe Island, Brown Island, Crims Island, and Sandy Island. No placement is planned for the Sandy Island in the next five years; therefore, no effect to the Sandy Island critical habitat subunit will occur. The Wallace Island subunit is not within the Corps' Network and will not be affected by the proposed action. Only portions of each critical habitat subunit in the Corps' Network will be used in any given year. Placements on critical habitat subunits will allow suitable breeding habitat with the PCEs of lark critical habitat to be available on Rice Island, Tenasillahe, Brown Island, Wallace Island, Crims Island, and Sandy Island subunits in every year. The Miller Sands subunit will not have suitable habitat until 2018, which would not form without the Corps' action. The Pillar Rock Island subunit will lose its suitable habitat to natural vegetation succession while the Corps rebuilds the site with shoreline placements. The Welch Island subunit will not have suitable habitat in 2015 and 2016, but will increase suitable habitat from 2014 (10 acres) to 2018 (17 acres).

Not all habitats within individual subunits provide all the PCEs of suitable lark habitat. Currently, only 298 acres of the 665 acres designated as critical habitat contain all the PCEs that provide suitable nesting habitat (approximately 45 percent of all designated critical habitat in the lower Columbia River). Through the 5-year placement plan, suitable nesting habitat within the designated critical habitat subunits ranges from current baseline (2014) estimates of 298 acres to a low of 221 acres (33 percent) in 2015 and a high of 319 acres (48 percent) by 2018, a seven percent increase over 2014 baseline acreage.

Without periodic dredged material placement within the designated critical habitat subunits, these areas would all eventually transition to unsuitable habitat conditions that do not support the necessary PCEs of lark critical habitat. The long-term beneficial effects from periodically

resetting the vegetative successional clock through shoreline and upland placement of dredged materials are clear. Through implementation of the proposed action, the Corps will maintain the availability of important habitat elements identified as PCEs within the critical habitat subunits in the Network. Should shoreline and upland placement cease in these critical habitat subunits, the long-term viability of critical habitat in the lower Columbia River will be in doubt.

## **EFFECTS OF INTERRELATED AND INTERDEPENDENT ACTIONS**

Interrelated actions are part of a larger action and depend on the larger action for their justification. Interrelated actions are typically associated with the proposed action. Interrelated and interdependent effects of the Corps action include changes in other avian species that use the placement sites. The placement of dredged material at shoreline and upland sites in the lower Columbia River, particularly at Rice Island, Miller Sands, and Pillar Rock Island, has in part, increased the nesting habitat for Caspian terns and cormorants, which may in turn reduce the availability of nesting habitat for the streaked horned lark on Corps placement sites in the Columbia River estuary. As described in the effects section above, efforts to reduce the establishment of other avian species (terns and cormorants) include habitat modifications and physical barriers (placing fences in open areas); these deterrent actions are also expected to reduce available habitat for larks; currently the overlap of potentially suitable habitat occurs only on Pillar Rock Island.

Commercial sand mining currently occurs at several upland placement sites within the Network. These commercial facilities operate as a result of the Corps' placement of dredged material at these sites. Due to the frequent site disturbance at active sediment borrow sites (Skamokawa, James River, Dibblee Point, Northport, Martin Bar, and Gateway) and Austin Point (heavy equipment training school) and lack of suitable nesting habitat, it is unlikely that streaked horned larks will use these sites and be exposed to potential adverse effects in the future. It is likely that the effects from on-going commercial sand mining at upland placement sites within the Network will generally preclude larks from nesting due to the amount of human activity and constant habitat disturbance that prevents suitable nesting habitat from developing.

There may be requests in the future to mine or borrow placed dredged materials from current, non-commercial dredged material placement sites. On-going placement of dredged material creates a source of sediment for commercial purposes, independent from the Corps' action. The Corps does not own or maintain any of the placement sites, or own the dredged material following placement, and therefore the Corps has no authority for long-term management or control of the sites or the dredged materials. The Oregon Department State Lands (DSL) has recently received a proposal for sediment extraction at Rice Island. It is uncertain at this point when or if this will occur. If the proposal is approved by Oregon DSL, the Corps expects that the project will have adverse effects to the streaked horned lark and its critical habitat on Rice Island. If no Federal permit or authorization is required for the project, the applicant would likely need to prepare a Habitat Conservation Plan and seek a permit under section 10(a)(1)(B) of the Endangered Species Act for the project.

## CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Current non-federal activities in the area that are ongoing and anticipated to continue at relatively similar levels include: upland and shoreline recreation, including camping, fishing, and all-terrain (ATV) or off-highway vehicle (OHV) operations, continued regional and shoreline development in support of economic growth by local communities, and non-federal actions to protect and restore habitat within the river and estuary.

The Portland/Vancouver metro area has grown 10.3 percent over the past decade. Residential, commercial, industrial, or recreational development may occur within the vicinity of the project area. As the metro area expands, there are increasing needs for recreational areas and natural areas. Easily accessible placement sites will likely continue to be popular recreational use areas for the foreseeable future, including ATV or OHV use. Those sites that are only accessible by boat generally will have very limited access, but still may receive some use, mostly for shoreline camping and recreational fishing. These recreational activities may cause adult streaked horned lark to be disturbed and likely flush from the area, which could result in nest abandonment, increased predation, decreased foraging opportunities and increased energetic expenditures. In the event that nests are in the area, recreational activities may result in the direct mortality to eggs and nestlings; adults are expected to flush from the area and avoid direct mortality. However, areas that receive intense levels of recreational activity are not likely to support use by streaked horned larks, so the number of birds directly affected is likely very low.

## CONCLUSION

After reviewing the status of the streaked horned lark and its designated critical habitat, the environmental baseline for the action area, and the effects of the proposed action, including all measures proposed to avoid and minimize adverse effects, and the cumulative effects, it is the Service's Biological Opinion that the continued operations and maintenance dredging program for the Columbia River Federal Navigation Channel (2014-2018) is not likely to jeopardize the continued existence of the streaked horned lark nor is it likely to destroy or adversely modify the lark's designated critical habitat.

This finding of no jeopardy for the streaked horned lark is supported by the following:

1. The Corps has dredged the lower Columbia River for over one hundred years and has disposed of the dredged material on island and mainland sites without regard to the effects of these actions to the streaked horned lark. For the first time, the operations and maintenance dredging program will be managed to maintain breeding habitat and to minimize adverse effects to the lark.
2. The project includes measures designed to reduce the potential for creating habitat sinks for the lark. Both pre-placement site preparations and dissuasion activities will minimize

the likelihood that larks will be attracted to breeding sites that will be destroyed during the breeding season when dredged material is placed on the site.

3. Conservation measures built into the project substantially reduce the likelihood that larks will be killed by the Corps' activities. We estimate that no adult streaked horned larks will die as a result of direct effects of the project. A small number of eggs and nestlings may die if the pre-placement site preparations and dissuasion measures are ineffective in preventing larks from establishing nests within dredge material placement boundaries.
4. Effects to the streaked horned lark from the proposed project will be mainly through disturbance associated with dredge material placement and dissuasion measures.
5. The 5-year operations plan will maintain adequate habitat area to support at least the current population of the streaked horned lark on sites in the Corps' Network.
6. The Corps' modeling of the habitat dynamics of the Network sites projects an increase in the amount of suitable habitat for the streaked horned lark of approximately 100 percent over the course of the proposed action.
7. Comprehensive monitoring of the lark population at every site in the Network is unprecedented, and will allow for detailed tracking of the effects of the project. If habitat succession or lark response is not as predicted by the Corps' models, the adaptive management process will allow the Corps and the Service to respond by prescribing new actions to protect the streaked horned lark during the implementation of the action.
8. The proposed project will maintain a shifting mosaic of suitable habitat for the streaked horned lark along the lower Columbia River. This pattern is likely consistent with the natural processes and habitat patterns that supported the streaked horned lark before the Columbia River was dammed or dredged. This intentional use of dredge material placement as a means of creating and maintaining target amounts of suitable habitat for the streaked horned lark, together with the presumed reduction in the level of direct lethal and sublethal effects as a result of "mindful" placement of dredge material is likely to maintain, and may even increase, the population of larks in the action area. The expected effect of the project is therefore not likely to permanently decrease reproduction, numbers, or distribution of the species.

This finding of no destruction or adverse modification of critical habitat is supported by the following:

1. The continued presence of the primary constituent elements of critical habitat for the streaked horned lark is dependent on the periodic disturbance of the sites to set back vegetation succession. The Corps' proposed project will provide the necessary disturbance, without which all of the sites would transition to dense vegetation unsuitable for the streaked horned lark within the next 12 to 20 years.
2. The Corps' planned placements on designated critical habitat subunits will temporarily reduce the total acreage of habitat supporting the PCEs in the first two years of the project, but will slightly increase the availability of the PCEs by the end of the project.
3. The intentional use of dredge material placement as a means of creating and maintaining the PCEs of critical habitat for the streaked horned lark is likely to sustain the essential components of critical habitat for streaked horned larks in the action area. The expected effect of the project is therefore not likely to appreciably diminish the conservation value

of the designated critical habitat units within the action area, nor will it reduce the conservation value of the designated critical habitat elsewhere in Unit 3.

### INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. *Harm* is defined by the Service as an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). *Harass* is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps fails to assume and implement the terms and conditions the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR 402.14(i)(3)].

#### Amount or Extent of Take

The Service anticipates that the Continued Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel in Oregon and Washington (2014 – 2018) will result in the following forms of take of streaked horned larks:

- Virtually all streaked horned larks present on suitable habitat in the Network will be non-lethally harassed by the placement of dredge material on occupied sites, and by the dissuasion measures directed at piscivorous birds and streaked horned larks.
- An unquantifiable number of streaked horned larks will be harmed through loss of suitable habitat caused by dredge material deposition, pre-placement site preparations and modifications, and post-placement site modifications.
- A small but unquantifiable number of streaked horned larks will be harassed by surveys on Network sites during the nesting season.
- A small number of streaked horned lark eggs and nestlings may die as a result of temporary abandonment by adults that are harassed due to dredge material placement, dissuasion measures or surveys. We estimate this number to be no more than 2 nests per year (3-5 eggs or nestlings per nest).

- A small number of streaked horned lark eggs and nestlings may die as a result of burial by deposition of dredge material. We estimate this number to be no more than 2 nests per year (3-5 eggs or nestlings per nest).

The take described above will be difficult to detect; the sublethal effects of harassment and harm through habitat loss may take years to manifest, and nests destroyed by dredge material placement may be missed, even with pre-placement surveys. Instead the amount of take authorized by this Biological Opinion will be tracked through the Network-wide population surveys, because the overall population size of streaked horned larks in the Network will integrate the effects of the expected take. **The amount of take authorized by this Biological Opinion will have been exceeded if the annual Network-wide population estimate of streaked horned larks is less than 52 pairs (this is the “3-year running average” of the baseline population measured from 2011 to 2013), and there is no other rangewide decline in the streaked horned lark population that would explain the decline of the population in the Network.**

The Service will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-711), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

### **Effect of the Take**

In the accompanying Biological Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the streaked horned lark.

### **Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the streaked horned lark:

1. Reduce the likelihood that dredge material placement sites will function as habitat sinks for breeding streaked horned larks by developing and refining the dissuasion measures used to prevent larks from nesting at those sites.
2. Ensure that all conservation measures are fully implemented by training all staff and contractors in the field about the conservation measures that are necessary to minimize the effects of the project to the lark.
3. Monitor the implementation of the proposed project and its effects on the streaked horned lark and its habitat. Monitoring must include Network-wide population monitoring and habitat monitoring that will enable the Corps and the Service to validate the habitat succession model that provided the basis for the effects analysis.
4. Submit annual and final reports to the Service on the implementation of the project, and the effects of the project on the streaked horned lark and its habitat.

### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures

described above and outline required reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following Terms and Conditions are required for the implementation of RPM 1:

- 1.1 Develop and test new dissuasion techniques to prevent larks from colonizing sites planned for dredge material placement.
  - a. Each year from 2015 to 2018, before the dredging season begins, convene a meeting with the Service and the contractor responsible for lark surveys to review the effectiveness of the previous season's dissuasion measures and to discuss potential new dissuasion measures to protect larks at Network sites planned for placement in the coming year.
  - b. Use an experimental approach in deploying new dissuasion measures and monitor the effectiveness of those new measures.

The following Terms and Conditions are required for the implementation of RPM 2:

- 2.1 Provide annual training to all Corps staff in the field, including dredge and equipment operators and contractors, to ensure that conservation measures to protect the streaked horned lark are fully implemented. Training should include a review of the relevant conservation measures and the reasons for those measures.
  - a. Corps staff must develop a training program and submit the details of the program to the Service for approval.
  - b. Corps staff will deliver the annual training to staff in the field, with assistance from the Service or lark survey contractor, as appropriate.
  - c. Encourage staff in the field to contribute their on-the-ground knowledge to the effort to protect the streaked horned lark. Ask field staff to report any deviations from the expected implementation of conservation measures, and to share ideas for new or enhanced conservation measures.

The following Terms and Conditions are required for the implementation of RPM 3:

- 3.1 Conduct rigorous population monitoring and gather habitat data to evaluate the habitat succession model, and to validate the attendant assumptions regarding the effect to the Network-wide streaked horned lark population.
  - a. Engage a highly qualified contractor to complete statistically rigorous surveys of the lark population throughout the Network each year. This information is critical to evaluating the Corps' compliance with the take limit set in the **Amount or Extent of Take** section, above.
  - b. Analyze the actual habitat succession that occurs each year and use this to refine the habitat succession model.
  - c. If succession progresses at a rate not predicted by the current model, and less habitat is available to larks than was predicted, adapt the dredge material placement plan, or implement other adaptive management options, to maintain a

sufficient amount of suitable habitat to maintain the baseline population (52 pairs) in the Network each year.

The following Terms and Conditions are required for the implementation of RPM 4:

- 4.1 The Corps shall submit an annual report by March 31 of each year for the previous year's actions. Each year's annual report must include:
- a. A summary of the project as implemented, including the implementation of the Reasonable and Prudent Measures and Terms and Conditions in the Biological Opinion. The report must include explanation of any activities which deviated from the 5-year plan;
  - b. The results of the Network-wide streaked horned lark population monitoring;
  - c. A summary of the habitat on all Network sites (by category: suitable, yet-to-be suitable, unsuitable), and an assessment of the validity of the habitat model used in the analysis of effects;
  - d. A discussion of the adaptive management process, and any corrections that resulted from that process.
- 4.2 The Corps shall submit a final report by March 31, 2019, summarizing the 5-year placement plan. The report must include:
- a. A summary of the project as implemented, and an explanation of any activities which deviated from the 5-year plan;
  - b. The results of previous 5 years of the Network-wide streaked horned lark population monitoring, within the context of the status of the lark throughout its range;
  - c. An analysis of the observed habitat succession on the Network sites, and discussion of the utility of the model used to predict the habitat effects of the 5-year placement plan;
  - d. A review of lessons learned from the implementation of the proposed action and the attendant habitat and lark monitoring. Provide recommendations for the next 5-year dredge material placement plan.
- 4.3 Provide all reports to the Service's Oregon Fish and Wildlife Office at the following address:

State Supervisor  
US Fish and Wildlife Service  
Oregon Fish and Wildlife Office  
2600 SE 98th Avenue, Suite 100  
Portland, OR 97266

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action and subsequent monitoring, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of

consultation and review of the reasonable and prudent measures provided. The Corps must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

The Service is to be notified within three working days upon locating a dead, injured or sick endangered or threatened species specimen. Initial notification must be made to the nearest U.S. Fish and Wildlife Service Law Enforcement Office. Notification must include the date, time, precise location of the injured animal or carcass, and any other pertinent information. Care should be taken in handling sick or injured specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Contact the U.S. Fish and Wildlife Service Law Enforcement Office at (503) 682-6131, or the Service's Oregon Fish and Wildlife Office at (503) 231-6179.

## **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We encourage the Corps to:

1. Seek funding and authority to implement alternate methods of creating and maintaining suitable habitat for streaked horned larks at Network sites that are transitioning to unsuitable habitat, and that are not slated for deposition. This could increase the availability of suitable habitat for the lark, and would allow the Corps more flexibility in its use of the sites in the Network.
2. Take the lead for the recovery of the streaked horned lark in the lower Columbia River by engaging with the lower Columbia River ports to develop a comprehensive plan for activities that could affect the lark throughout the area.
3. Fund research to fill critical knowledge gaps regarding the ecology of the streaked horned lark in the area, including a study of lark demography and movement among the sites in the Network.
4. Conduct a comprehensive survey for yellow-billed cuckoos in all suitable habitats on the Network. Mature cottonwood forests on islands in the lower Columbia River are some of the most likely areas to support cuckoos in the region, and they have not been well surveyed to date.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

**REINITIATION NOTICE**

This concludes formal consultation on the Continued Operations and Maintenance Dredging Program for the Columbia River Federal Navigation Channel in Oregon and Washington (2014 – 2018). As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. If you have any questions about this consultation, please contact Cat Brown or Jeff Dillon of my staff at (503) 231-6179.

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### PERSONAL COMMUNICATIONS

- Atwell, Nick. 2014. Port of Portland, Portland, Oregon. E-mail to Cat Brown, U.S. Fish and Wildlife Service, Portland, Oregon, dated 3 June 2014 (Subject: RE: 2012 and 2013 lark numbers at PDX and Rivergate?)
- Butler, Carrie. 2014. Port of Portland, Portland, Oregon. E-mail to Cat Brown, U.S. Fish and Wildlife Service, Portland, Oregon, dated 2 June 2014 (Subject: FW: STHL"s at Rivergate)
- Jensen, Martha. 2014. US Fish and Wildlife Service, Lacey, Washington. E-mail to Cat Brown, U.S. Fish and Wildlife Service, Portland, Oregon, dated 16 May 2014 (Subject: Fwd: USACE BA -- appendix B)
- Moore, Randy. 2011. Oregon State University, Corvallis, Oregon. E-mail to Cat Brown, U.S. Fish and Wildlife Service, Portland, Oregon, dated 8 October 2011 (Subject: RE: questions about lark population trends)

**Appendix A.**

Table 6. Projected range of breeding pairs of streaked horned larks on suitable habitat throughout the Network, 2014-2018.

Pairs of larks are projected for territories of 2.5 acres and 1.5 acres.

Placement Site	Baseline - 2013		2014			2015			2016			2017			2018		
	Habitat	Estimated Pairs	Suitable Habitat	Pairs		Suitable Habitat	Pairs		Suitable Habitat	Pairs		Suitable Habitat	Pairs		Suitable Habitat	Pairs	
				2.5 acres	1.5 acres		2.5 acres	1.5 acres		2.5 acres	1.5 acres		2.5 acres	1.5 acres			
Benson Beach	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Sand Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Group I Total</b>		<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>
Rice Island	150	22	150	60	100	122	48	81	122	48	81	122	48	81	134	53	89
Miller Sands Island	0	5	0	0	0	0	0	0	0	0	0	0	0	0	34	13	22
Pillar Rock Island	4	2	4	1	2	4	1	2	4	1	2	0	0	0	0	0	0
<b>Group II Total</b>		<b>29</b>		<b>61</b>	<b>102</b>		<b>49</b>	<b>83</b>		<b>49</b>	<b>83</b>		<b>48</b>	<b>81</b>		<b>66</b>	<b>111</b>
Skamokawa - Vista Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Welch Island	10	0	10	4	6	0	0	0	0	0	0	18	7	12	18	7	12
Tenasillahe Island	3	0	2	0	1	23	9	15	10	4	6	10	4	6	23	9	15
James River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puget Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown Island	72	23	72	28	48	21	8	14	49	19	32	49	19	32	99	39	66
<b>Group III Total</b>		<b>23</b>		<b>32</b>	<b>55</b>		<b>17</b>	<b>29</b>		<b>23</b>	<b>38</b>		<b>30</b>	<b>50</b>		<b>55</b>	<b>93</b>
Crims Island	25	2	25	10	16	20	8	13	20	8	13	42	16	28	42	16	28
Hump Island	0	0	0	0	0	0	0	0	17	6	11	17	6	11	65	26	43
Lord Island (upstream)	10	0	10	4	6	10	4	6	10	4	6	0	0	0	0	0	0
Dibblee Point	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Howard Island	5	0	5	2	3	5	2	3	0	0	0	173	69	115	173	69	115
Cottonwood Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northport	3	0	3	1	2	3	1	2	0	0	0	0	0	0	0	0	0
<b>Group IV Total</b>		<b>2</b>		<b>17</b>	<b>27</b>		<b>15</b>	<b>24</b>		<b>18</b>	<b>30</b>		<b>91</b>	<b>154</b>		<b>111</b>	<b>186</b>
Sandy Island	32	4	32	12	21	32	12	21	32	12	21	32	12	21	32	12	21
Lower Deer Island	0	0	0	0	0	0	0	0	0	0	0	11	4	7	23	9	15
Martin Bar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sand Island	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Austin Point	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Group V Total</b>		<b>4</b>		<b>12</b>	<b>21</b>		<b>12</b>	<b>21</b>		<b>12</b>	<b>21</b>		<b>16</b>	<b>28</b>		<b>21</b>	<b>36</b>
Fazio Sand & Gravel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gateway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Hayden Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Group VI Total</b>		<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>
<b>Range of Breeding Pairs</b>		<b>58</b>		<b>122</b>	<b>205</b>		<b>93</b>	<b>157</b>		<b>102</b>	<b>172</b>		<b>185</b>	<b>313</b>		<b>253</b>	<b>426</b>