US Army Corps
of Engineers ®
Portland District

Crims Island
Section 536 Habitat Restoration Project
Lower Columbia River and Estuary

APPENDIX C

BIOLOGICAL ASSESSMENTS AND ENVIRONMENTAL OUTPUTS

Project Partners:

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
Bonneville Power Administration
U.S. Geological Survey
Columbia Land Trust

April 2004

BIOLOGICAL ASSESSMENT

COLUMBIAN WHITE-TAILED DEER, BALD EAGLE, HOWELLIA, BRADSHAW'S LOMATIUM AND NELSON'S CHECKERMALLOW

CRIMS ISLAND SECTION 536 HABITAT RESTORATION PROJECT

PROJECT DESCRIPTION

This project would entail implementation of habitat restoration measures on approximately 210 acres of the 425 acres of land on Crims Island (Map 1) in the lower Columbia River acquired by Columbia Land Trust for transfer to the U.S. Fish and Wildlife Service. An additional action affecting approximately 88 acres at the downstream end of Crims Island would be enacted if the land came into public ownership. Crims Island is located at Columbia River mile 54-57 on the Oregon side of the navigation channel.

The proposed restoration action would target development of approximately 92 acres of tidal emergent marsh, mudflat, and channel habitat plus 115 acres of riparian forest habitat on Crims Island in the upper Columbia River Estuary to benefit fish and wildlife resources. One alternative of the proposed action would result in the development of a 3-acre side channel to provide through flow to a dead-end side channel encompassing approximately 33 acres.

The restoration at Crims Island would contribute to the protection and restoration of riparian forest and tidal marsh habitats in the Columbia River estuary. Tidal marsh enhancement by restoring an intertidal regime in concert with excavation of reed canary grass on Crims Island would convert degraded reed canary grass wetland to effective tidal emergent marsh - salmon rearing habitat. The target elevations for the marsh restoration effort are based on surveyed elevations of adjacent natural marsh. To accomplish marsh restoration, excavation of approximately two feet of soil and vegetative material would be required. Tidal marsh channels would also be excavated based upon hydraulic engineering analyses of the volume of water that will occur on the restored marsh during normal tidal cycles.

The project area offers a number of opportunities for tidal channel, tidal marsh and riparian forest habitat restoration that would benefit federally listed salmonids, Columbian white-tailed deer, Neotropical migrant birds and several species of waterfowl, among other species. Restoration of tidal channels and intertidal marsh habitat would be the principal action to benefit salmon. Tidal channel and intertidal marsh habitat restoration would require excavation of sediments to attain the proper elevations. Excavated material would be disposed of on adjacent lands currently used for cattle pasture. Riparian forest habitat would be developed on the disposal sites and other areas of pasture, and would provide habitat for Columbia white-tailed deer and an additional source of detritus for aquatic invertebrates as well as cover and eventual large woody debris recruitment. Neotropical migratory birds would also benefit from riparian habitat restoration.

The acquisition and restoration of the project area on Crims Island would also allow for the establishment of a 3rd sub-population of Columbian white tailed deer. The lower Columbia River population of Columbian white-tailed deer has been federally listed as an endangered species since 1968. The habitats of two existing viable subpopulations are within the Julia Butler Hansen Refuge for the Columbian White-tailed Deer and are considered secure. However, the deer cannot be delisted until the habitat of a third subpopulation is secured and a viable population is established.

Project benefits for native fish and wildlife would be achieved by the following restoration measures:

- **Restoration of Tidal Marsh and Channel Habitat and Riparian Forest Habitat (Construction Elements 2 and 3):** The proposed restoration action would target development of approximately 92 acres of tidal emergent marsh, mudflat, and channel habitat plus 115 acres of riparian forest habitat. The accompanying Construction Narrative (Enclosure 1) provides a detailed description of the proposed action. Portions of the upstream end of Crims Island would be excavated and sloped to provide proper elevations, derived from surveys of an adjacent natural tidal marsh, for development of tidal marsh and channel habitat. This action would remove existing reed canary grass and replace it with tidal marsh and channel habitat. Inlet/outlet and sinuous shallow tidal channels would be constructed throughout the restored area to mimic naturally occurring channels (Map 1). An additional inlet/outlet channel would be constructed at location K (Map 1). These channels would also improve tidal circulation, allow for greater ingress and egress of juvenile salmonids, and increase detrital export. These channels would connect to an existing sub-tidal channel. Invertebrate production would be increased and made more available to rearing fish that could better access the tidal marsh area post-construction versus the present condition.

  Tidal marsh construction would occur in the late summer/early fall. Tracked excavators and tracked trucks would be used to excavate the site to the appropriate depths. A temporary plug (Map 1) comprised of in situ soil would block the mouth of the existing inlet channel at Bradbury Slough to prevent tidal flow from entering the construction site, thus allowing construction in the dry. A pump or culvert with tidegate would be used to further dewater the T-Channel and tidal marsh construction site. The temporary dam would be removed immediately upon completion of the tidal marsh habitat.

  Excavated soils from the tidal marsh and channel construction elements would be placed on adjacent pasturelands and these lands (Map 1) would be subsequently restored to riparian forest habitat through natural seeding and planting of riparian forest tree and shrub cuttings and seedlings. Borrow material from tidal marsh and channel construction would be disposed on adjacent pasturelands and leveled post-placement. Material placement would result in an approximately 2-foot lift to the existing elevation of the current pasturelands. It is anticipated that these soils would be tilled the following spring if necessary to control weeds and prepare the site for natural establishment of riparian forest trees. Natural seed dispersal from adjacent cottonwoods and willows that occurs in May and June would be relied upon for riparian forest establishment on approximately 65 acres. Placement of cuttings and/or seedlings to establish riparian forest trees and shrubs would occur on approximately 50 acres and this technique would be used to supplement additional acreage if natural stand establishment via seedlings was unsatisfactory.

- **Connector Channel (Construction Element 1):** One shallow subtidal channel (Site 40, Map 1) may be excavated through a portion of the upstream end of Crims Island to connect one through-flowing side channel to an existing dead-end side channel at the upstream end of Crims Island. The accompanying Construction Narrative (Enclosure 1) provides a detailed description of the proposed action. This element of the restoration would provide for through flow of Columbia River waters and improve juvenile salmonid access and egress to approximately 33 acres of the northern side-channel. The constructed channel banks would have 1 vertical to 4 horizontal side slopes to prevent stranding of fish.

  Side channel construction would occur in the late summer/early fall. Tracked excavators and tracked trucks would be used to excavate the site to the appropriate depths. The interior portions of

this channel would be constructed first and only day-lighted at the completion of construction. Daylighting would occur on a low tide. This construction scenario will allow for construction in the dry and only minimal siltation when flows begin through the channel.

- **Downstream Plug Removal (Construction Element 4):** An existing plug (Map 1) that presently blocks tidal exchange to approximately 88 acres of wetland habitat at the downstream end of Crims Island would be removed to restore tidal flow to interior marshes and forested swamp. The accompanying Construction Narrative (Enclosure 1) provides a detailed description of the proposed action. The action would also allow greater ingress and egress of juvenile salmonids and increase detrital export from these marshes.

  Plug removal would be accomplished by a tracked excavator with borrow material placed on an immediately adjacent upland location. Approximately 800 cubic yards of material would be excavated and roughly leveled on the adjacent disposal area.

THREATENED AND ENDGANGERED SPECIES

Columbian White-tailed Deer

Columbian white-tailed deer (CWTD) are terrestrial species and occur on the Oregon and Washington mainland and instream islands primarily from Skamokawa, Washington (CRM 34.0) upstream to about Diblee Point, Oregon (CRM 65.0). The Julia Butler Hansen NWR for Columbian White-tailed Deer is located between Skamokawa and Cathlamet, Washington. Tenasillahe, Puget, Hunting, Welch, and Wallace Islands and the bottomlands around Westport, Oregon also support populations of this white-tailed deer subspecies. Deer have been introduced to Crims, Fisher, and Lord-Walker Islands. A few individuals occur outside these general locations, such as near Brownsmead, Oregon. The USFWS, in addition to managing NWR lands for deer, has entered into or is in the process of implementing Cooperative Management Areas with private companies or individuals in the Westport, Oregon area.

Columbian white-tailed deer are near the upstream end of their recent distribution on the Columbia River at Crims Island. The USFWS reintroduced 60 Columbian white-tailed deer to the island from 1999-2000 in an effort to establish another secure and viable subpopulation of this listed species. An estimated 20-30 deer remain on the island in 2003 (Joel David, USFWS, pers. comm. 2003). These deer do not generally occur in the proposed tidal marsh, channel and riparian forest restoration area due to the presence of cattle grazing the location year-round, the lack of woody cover and the dominance of reed canarygrass, which is not a preferred forage (A. Clark, USFWS, pers. comm. 2004).

Riparian forest, old field, agricultural pasturelands and croplands, Sitka spruce swamp, cottonwood/willow/ash swamp, emergent wetlands, and hybrid popular plantations are habitats inhabited by this subspecies.

The vegetative cover of the upland portions of the proposed restoration site is primarily a grass-forb (pasture) community. Where tidal influence still occurs, the vegetative cover is dominated by reed canarygrass.

Discussion: The proposed action will improve overall habitat conditions at Crims Island for Columbian white-tailed deer. Development of riparian forest habitat on the higher ground at the upstream end of Crims Island will provide cover and forage resources for the species that should

seldom be inundated. Much of the rest of the island, outside the pasture lands at the upstream end, is subject to seasonal or tidal flooding which can reduce habitat availability to the species, particularly during the winter and spring months. Development of tidal wetlands will result in the growth of a variety of wetland forbs, grasses, rushes, etc., many of which are more desirable forages than the existing reed canarygrass.

The proposed action would be anticipated to result in some localized disturbance to Columbian white-tailed deer. Deer would be expected to avoid the construction area(s) during the day. The area affected by habitat restoration construction actions represents only a small percentage of the island habitat. Cattle grazing and the lack of cover and forage on the proposed restoration area currently preclude most deer use of the area (A. Clark, USFWS, pers. comm.). Cover and forage availability on the remainder of the island would exceed deer requirements during the construction phase. Further, the proposed actions are not dissimilar from management actions, e.g., revetment, mowing, weed control, and wetland enhancement that have occurred on the Julia Butler Hansen Columbian White-tailed Deer NWR in recent years. Those actions have not had a demonstrable adverse affect on the species.

Conclusion: The proposed action may affect, but is not likely to adversely affect Columbian White-tailed deer. Post-construction, the restoration of riparian forest and tidal marsh habitat will be beneficial to the species.

Bald Eagle

Bald eagles that constitute nesting pairs in the Columbia River estuary are considered year-round residents of the area. The project area also supports wintering bald eagles. Garrett et al. (1988) estimated a maximum wintering population of 170 bald eagles downstream of Longview, Washington. Wintering birds are most abundant in the estuary and at the Sauvie Island-Vancouver Lowlands. The number of wintering bald eagles fluctuates annually, probably in response to local and external weather patterns and prey availability. Regardless, the lower Columbia River downstream of Portland represents an important wintering area for bald eagles. Migrant bald eagles also are expected to occur as transients in the project area although their number cannot be determined.

Members of these resident pairs and eagles wintering in the lower Columbia River area would be expected to make use of the Columbia River shoreline, associated shallow subtidal and intertidal habitats, and inland wetlands and waterfowl habitat on Sauvie Island; Vancouver Lowlands; Ridgefield NWR; Scappoose Bottoms; Deer, Martin, Burke and Cottonwood Islands; Trojan Nuclear Power Plant; Woodland Bottoms; Crims, Wallace, and Tenasillahe Islands; and Cathlamet, Grays, Baker, Youngs, and Trestle Bays. Use of deep, open water by bald eagles is generally considered to be minimal given distance from shoreline perches and depth of water.

Bald eagles occur at Crims Island as resident nesting adults and wintering/transient birds. They use the riparian trees around the island and project perimeter for hunting and loafing perches. Scientific Resources, Inc. (1990) investigated the resident pair and identified breeding and post-breeding home ranges plus foraging areas. The determined that the highest centers of activity for both seasons were focused around the original Crims Island nest site (#300; Isaacs and Anthony 2003). Gull Island was outside the high use contours but within the 95 percent contour. Most perch (hunting, loafing) locations for this pair were also centered upon the Crims Island nest site (#300). Two perch locations were noted on Gull Island. Foraging activities for this pair were centered upon Bradbury Slough; this is at least partially an artifact of sampling. Observation conditions were optimum for the Bradbury Slough area and more difficult for other locations within their territory. One predation attempt

immediately upstream of Gull Island and four attempts in the Columbia River between Gull Island and the mouth of Abernathy Creek were observed.

Crims Island lies within the Abernathy, WA – Crims Island, OR bald eagle territory. This territory has been occupied since 1983 (Isaacs and Anthony 2003). Three of five nests previously located in this pair's territory no longer exist. An alternate nest (656-2) at Abernathy, WA is still present for use (Isaacs and Anthony 2003). Since 1996, the resident pair has occupied nest 701 on Crims Island, which is approximately 1,000 feet distant from the nearest edge of the proposed restoration action. Nest 701 lies north of the northern (deadend) side channel and is located on the far side of the northern arm of Crims Island adjacent to the mainstem Columbia River. Mature cottonwood trees provide a visual screen between nest 701 and the restoration site.

The Corps funds bald eagle nest occupancy and productivity flights along both sides of the Columbia River downstream of Portland. These flights are intended to monitor existing territories and identify new territories as they are established. This information is then used to help direct Corps dredging and other activities to preclude or limit potential impacts to bald eagles. The nest occupancy and productivity flights, per the Dredged Material Management Plan ESA consultation agreement with the USFWS, represent a required condition. This monitoring action will be ongoing during implementation of the restoration action at Crims Island. Thus, information will be available to the Corps regarding nesting location and status for this bald eagle pair during construction.

Reproductive performance of the bald eagles occupying the Abernathy, WA – Crims Island, OR bald eagle territory has been pretty dismal since observations were first recorded in 1983. A total of 5 young have been produced in the 21-years of record (Isaacs and Anthony 2003).

Reproductive success, specifically young produced per occupied territory, for bald eagles nesting along the lower Columbia River (Recovery Zone 10) had been lower than the average for Oregon (Isaacs and Anthony 2003). Contaminants, particularly DDE, PCB's and dioxins have been implicated as causal factors in the lower reproductive success experienced by lower Columbia River bald eagles (Garrett et al., 1988 and USFWS, 1996). However, recent data tabulated by Isaacs and Anthony (2003) indicate that the young produced per occupied territory (Y/OT) for bald eagles nesting along the lower Columbia River (Recovery Zone 10) is now approaching the statewide average for Oregon. The 5-year average in 2003 was 0.95 Y/OT for Recovery Zone 10 (Oregon and Washington) versus an Oregon average of 1.03 Y/OT (Isaacs and Anthony 2003).

The 2003 bald eagle nesting population along the lower Columbia River (Recovery Zone 10) is now at 105 breeding territories of which 96 territories were occupied (Isaacs and Anthony 2003). The current number of breeding territories (occupied) well exceeds the Habitat Management Goal (47) and Recovery Population Goal (31) established for Recovery Zone 10 (Pacific Bald Eagle Recovery Plan, USFWS, 1986).

Wintering bald eagles occur in the general area using Crims and Gull Islands plus perching/foraging from the riparian forest stands located downstream of the proposed disposal site on the Oregon shoreline.

Sediments at Crims Island were sampled in 2003 to determine if contaminants were present. Samples were analysed for metals (9 inorganic), total organic carbon, pesticides and polycholorinated biphenyls, phenols, phthalates, miscellaneous extractables and polynuclear aromatic hydrocarbon.

Only one chemical of concern, benzyl alcohol, was detected in levels in excess of those established as triggers for further analyses in the Dredge Material Evaluation Framework, and that in only sample. Two means are available to manage soils containing benzyl alcohol, e.g., avoid disturbance or place the material in an upland disposal location where in dry soil, it is expected to display high mobility and readily leach through the soil and volatilize into the air.

Discussion: Potential disturbance to foraging bald eagles is the primary concern associated with this project. Alternative foraging areas are available to bald eagles throughout the Crims and Gull Islands area. These include the bulk of Crims Island, Gull Island, and the Washington shoreline opposite Crims Island which lies within the Crims Island – Abernathy, Washington bald eagle pair's breeding territory. Thus the disturbance issue relative to foraging eagles is considered minor. The potential exists for disturbance to nesting bald eagles occupying nest tree 701. This nest location is approximately 1,000 feet from the nearest edge of the restoration area and is well screened by tall, mature stands of riparian trees, principally cottonwoods. Restoration actions are scheduled for mid-July into early fall during the period when juveniles are near fledging or have fledged. The construction time period would preclude impacts to wintering bald eagles. Given the intervening vegetative screening and distance between the nest location and restoration area, construction related disturbance would be minimal or non-existent to the nesting pair. The monitoring actions that the Corps funds will also provide information on nesting status that can be utilized to direct construction actions if the nest location is different than present. Given the reproductive performance associated with this bald eagle territory, it is most likely that no young approaching fledging would be present during the construction start. Construction features that exceed 1,500 feet in distance from nest 701 can be implemented if young are present on the nest at construction startup to further minimize the potential to disturbance to bald eagles at nest 701.

Contaminants, such as DDE, PCBs and dioxins, tend to attach to fine-grained sediments or organic material. These fine-grained sediments are typically more prevalent in backwater situations where they tend to settle. The sediment contaminant analysis did not detect these chemicals of concern. The upland disposal of material excavated from the restoration site represents a proper treatment for the one chemical of concern detected, e.g., benzyl alcohol. Therefore, we do not believe there are any concerns associated with contaminants at the restoration location on Crims Island.

The restoration of riparian forest habitat would eventually provide alternate nest trees for bald eagles. As the restored riparian forest habitat would abut the tidal marsh restoration area, it will also provide future foraging perches for bald eagles. Tidal marsh and associated channel habitat would attract waterfowl and fish to the location and thus would provide additional foraging habitat for the resident pair and wintering/transient bald eagles.

Conclusion: The proposed restoration action at Crims Island may affect, but would not adversely affect bald eagles. Development of tidal marsh and channel habitat, plus future maturation of the riparian forest habitat restored at this location is expected to be beneficial to bald eagles.

Water Howellia

Water Howellia grows in firm consolidated clay and organic sediments that occur in wetlands associated with ephemeral glacial pothole ponds and former river oxbows (Shelly and Moseley, 1988 and Lesica, 1992, both cited from USFWS, 1998). These wetland habitats are filled by spring rains and snowmelt run-off; and depending on temperature and precipitation, exhibit some drying during the growing season. This plant's microhabitats include shallow water and the edges of deep ponds that are

partially surrounded by deciduous trees (Shelly and Moseley, 1988; Gamon, 1992; all citations from USFWS, 1998).

Although the historic type locality for this species is Sauvie Island, no population currently has been found on Sauvie Island. Water Howellia is apparently extirpated from Oregon (USFWS, 1998). Virtually all of the remaining populations of this species are clustered in two metapopulations. One occurs near Spokane, Washington and the second is in the Swan River drainage of northwestern Montana (USFWS, 1998). The only known populations in the general area occur at Ridgefield NWR. Two small populations are located there in close proximity (Gamon, 1992 cited in USFWS, 1998).

Suitable habitat for this species does not occur at Crims Island. The tidal marsh restoration area is subject to tidal inundation under present conditions and is dominated by reed canarygrass.

Conclusion: The proposed Crims Island habitat restoration project would have no effect on water Howellia.

Bradshaw's Lomatium

Bradshaw's lomatium is found in low, seasonally wet, native prairies dominated by tufted hairgrass and sedge species in the Willamette Valley. The species was once widespread throughout the Willamette Valley but is now restricted to a few sites in Lane, Marion and Benton Counties, Oregon and one population in Clark County, Washington. Land development for agricultural, industrial or housing purposes has resulted in loss of habitat for this species. The encroachment of woody vegetation, a result of fire suppression, also represents a threat to the habitat conditions required by this species. Suitable habitat for this species does not occur at Crims Island.

Conclusion: The proposed Crims Island habitat restoration project would have no effect on Bradshaw's lomatium.

Nelson's Checkermallow

This species is scattered throughout the Willamette Valley and occurs at other locations in Oregon and Washington (CH2M Hill, 1993). The majority of sites where this species presently occurs lie in the Willamette Valley of Oregon; several sites where the species occurs are in the Oregon Coast Range (USFWS, 1998). One site occurs in Cowlitz County, Washington in the Coast Range (USFWS, 1998). The species was once very occasional in the Willamette Valley, from Linn and Benton Counties north to near Portland and westward to eastern Tillamook County (USFWS, 1998).

Nelson's checkermallow primarily occurs in open, sunny areas with little or no shade (USFWS, 1994). The species does not tolerate encroachment of woody species (USFWS, 1994). Threats to the plant's populations in the Willamette Valley include agricultural land conversion, stream channel alteration, plowing, deposition of fill or yard debris, and intensive roadside management (USFWS, 1994).

The species occurs in a variety of habitats, i.e., relatively undisturbed seasonal wetlands, annually mowed roadside ditches, margins of cultivated fields in the Willamette Valley and high meadows in the Coast Range (CH2M Hill, 1993). Examples of habitats where the species has been located include:

- Hummocks in seasonal wetland habitat;
- Meadow habitat dominated by various grasses and forbs, including fallow fields and formerly cultivated sites;

- Wooded swales dominated by Oregon ash with scattered shrubs and a diversity of herbaceous species; and
- Roadsides and ditch banks.

The species most frequently occurs in ash swales and meadows with wet depressions (USFWS, 1998). This species may tolerate a limited amount of disturbance, but it is unlikely to tolerate frequent or excessive ground disturbance over consecutive years. Suitable habitat for this species does not occur at Crims Island.

Conclusion: The proposed Crims Island habitat restoration project would have no effect on Nelson's checkermallow.

LITERATURE CITED

CH2M Hill. 1993. *Technical Memorandum. Biological Assessment of Federal Listed and Candidate Species for the Barney Reservoir Expansion Project*. Prepared for U.S. Army Corps of Engineers, Portland District, Portland, OR.

Gamon, J. 1992. *Report on the Status in Washington of Howellia aquatilis (Gray)*. Unpub. report. Washington Natural Heritage Program, Olympia, WA. 46 pp.

Garrett, M.R. G. Anthony, J.W. Watson, and K. McGarigal. 1988. *Ecology of Bald Eagles on the Lower Columbia River*. Final Report, US Army Corps of Engineers Contract No. DACW57-83-C-0l00. 189 pp.

Isaacs, F.B. and R.G. Anthony. 2003. *Bald Eagle Nest Locations and History of Use in Oregon and the Washington Portion of the Columbia River Recovery Zone, 1971 through 2003*. Oregon Cooperative Fish and Wildlife Research Unit, Oregon State University, Corvallis, OR. 24 pp, 6 tables, 2 figures, 1 appendix.

Scientific Resources, Inc. 1990. *Biological Assessment. Endangered Species and the WTD Site at Port Westward, near Clatskanie, Oregon*. Prepared for U.S. Army Corps of Engineers, Portland District, Portland, OR. Biological assessment submitted by WTD Industries, Inc., Portland, OR.

Shelly, J.S. and R. Moseley. 1988. *Report on the Conservation Status of Howellia aquatilis, a Candidate Threatened Species*. Unpub. Report, Montana Natural Heritage Program, Helena, MT. 166 pp.

U.S. Fish and Wildlife Service. 1986. Pacific Bald Eagle Recovery Plan.

U. S. Fish and Wildlife Service. 1994. Formal consultation letter for Barney Reservoir Expansion Project. Letter dated June 28, 1994.

U.S. Fish and Wildlife Service. 1996. Letter and table: Results of the bald eagle productivity overflights and egg collections along the Columbia River in 1995.

U.S. Fish and Wildlife Service. 1998. *Final Rule: Water Howellia*. *Federal Register*, July 14, 1994.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Oregon Fish and Wildlife Office
2600 SE 98th Avenue, Suite 100
Portland, Oregon 97266
Phone: (503)231-6179 FAX: (503)231-6195

Reply To: 8330.01804 (04)
File Name: I180.doc
TS Number: 04-1433

Mr. Robert Willis
Chief, Environmental Resources Branch
Corps of Engineers, Portland District
P.O. Box 2946
Portland, Oregon 97208-2946

Subject: Section 536 Habitat Restoration Project for Columbian White-tailed Deer, Crims Island, Columbia County, Oregon (USFWS reference # 1-7-04-I-180)

Dear Mr. Willis:

This is in response to your letter dated February 3, 2004, transmitting a Biological Assessment (BA) and request for concurrence on the proposed Army Corp of Engineers' (Corps) Section 536 habitat restoration project on Crims Island, located at river mile (RM) 57 in the Columbia River, Columbia County, Oregon. We received your letter on February 4, 2004. Of interest to the Fish and Wildlife Service (Service) is your evaluation of impacts to bald eagles (*Haliaeetus leucocephalus*) and Columbian white-tailed deer (*Odocoileus virginianus leucurus*), listed as threatened and endangered, respectively; and three plant species, Howellia (*Howellia aquatilis*) and Nelson's checkermallow (*Sidalcea nelsoniana*), listed as threatened, and Bradshaw's lomatium (*Lomatium bradshawii*), listed as endangered. A "no effect" determination has been made for the latter three plant species and, therefore, these species will not be considered further in this consultation. Our review and comments are provided pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1536 et seq.) (Act).

The proposed project involves habitat restoration on approximately 210 acres of the 425 acres of land on Crims Island acquired by Columbia Land Trust for transfer to the Fish and Wildlife Service. An additional action affecting about 88 acres of land at the downstream end of Crims Island would be enacted if the land came into public ownership. The proposed project would restore about 92 acres of tidal emergent marsh, mudflat, and channel habitat plus 115 acres of riparian forest habitat. The project also involves the possible development of a 3-acre side channel to provide through-flow to a dead-end side channel encompassing approximately 33 acres. The proposed project would restore native wetland plant communities; improve floodplain connectivity and water quality; improve forage for Columbian white-tailed deer and bald eagles; increase the quality of rearing habitat for juvenile salmonids and other native species; and increase biological diversity on Crims Island.

The Columbian white-tailed deer was once abundant in the grasslands, meadows, and riparian woodlands of the lower Columbia River and the Willamette Valley. However, the deer is now restricted to habitats located on refuge lands, islands, and diked lands along the lower Columbia River or in the

Roseburg, Oregon area. The Julia Butler Hansen National Wildlife Refuge for the Columbian White-tailed Deer is located between Skamokawa and Cathlamet, Washington and supports two viable subpopulations of this listed species. Columbian white-tailed deer are also distributed on Tenasillahe, Puget, Hunting, Welch, and Wallace Islands and along the bottomlands associated with Westport, Oregon. Deer have also been introduced to Crims, Fisher, and Lord-Walker Islands on the Columbia River.

Columbian white-tailed deer populations on Crims Island are near the upstream end of their distribution. The Fish and Wildlife Service introduced 60 deer to the island from 1999 to 2000 in an effort to establish another secure and viable subpopulation in the lower Columbia River. About half of the population is still present on the island. These deer do not presently utilize the Crims Island area proposed for restoration because of permanent cattle grazing activities in the area and the presence of reed canarygrass, which is not a preferred forage species. The proposed rehabilitation of this area would result in an increase of riparian forest habitat as well as tidal wetlands which would provide cover and forage opportunities for the deer. Construction activities may cause localized disturbances to the deer but these disturbances are expected to be minor and temporary in nature and the overall project effect on the Columbian white-tailed deer is expected to be beneficial. Therefore, the Service concurs that the project "may affect, but is not likely to adversely affect" Columbian white-tailed deer.

Bald eagles nest in the tops of large trees and are strongly associated with aquatic habitats. Most eagle nests are located within a mile of water to take advantage of the presence of fish, their primary prey species. The general nesting period for bald eagles in Oregon is January 1 through August 31. Incubation lasts for about 35 days and rearing of young generally takes 11 to 12 weeks, at which time (mid to late July) most young are ready to fledge (FWS 1999). Parental care of the fledged young, however, may continue for an additional 4 to 11 weeks. Wintering bald eagles use the lower Columbia River from November 15 to March 15.

Bald eagles occur on Crims Island as resident nesting adult pairs and as wintering/transient birds. These birds use the riparian trees around the island and project perimeter for hunting and loafing perches. Active foraging occurs on both Crims Island and the adjacent Gull Island. An active nest site is located on Crims Island within approximately 1,000 feet of the nearest edge of the proposed restoration action. However, this nest is located north of the restoration site on the Columbia River side of the island and is screened from the restoration site by a dense stand of cottonwoods. Construction relating to restoration activities is scheduled for mid-July into early fall during the period when young are near fledging or have fledged. Construction would also occur outside the wintering period for bald eagles. Contaminant analysis of the sediments in the proposed restoration area detected only one sample that contained a chemical of concern, benzyl alcohol, at levels in excess of those established as triggers for further analysis under the Dredged Material Evaluation Framework. However, the planned upland disposal of sediments that may contain benzyl alcohol is the approved and recommended procedure for negating possible impacts from this chemical of concern. Therefore, the BA concludes that contaminant impacts associated with restoration construction activities would be negligible.

Although nesting occurs on Crims Island, there are no "line-of-site" nests within the project area and most construction activity would occur after any young have fledged. Your analysis finds that negative impacts to bald eagles associated with the proposed restoration activities are expected to be minimal or non-existent, and that, overall, the restoration of tidal channels, intertidal marshes, and riparian forest habitat is expected to have a beneficial impact on bald eagles. Therefore, the Service concurs that the project may affect bald eagles, but is unlikely to affect them adversely.

The requirements established under section 7(a) (2) and 7(c) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), have been met, thereby concluding the consultation process. Should new information indicate additional listed or proposed threatened or endangered species to be present in your project area, the Corps should be aware of its continuing responsibilities as described in Section 7(a) and (c) of the Act. If you have any questions or need more information, please contact Kathi Larson at (503) 231-6179.

Sincerely,

/Signed March 8, 2004/
Kemper M. McMaster
State Supervisor

LITERATURE CITED

Fish and Wildlife Service. 1999. Proposed rule to remove the bald eagle in the Lower 48 States from the list of endangered and threatened wildlife. Federal Register 64 (128):36454-36464.

BIOLOGICAL ASSESSMENT
FISH SPECIES

CRIMS ISLAND SECTION 536 HABITAT RESTORATION PROJECT

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and Bonneville Power Administration (BPA) initiated a partnership to restore tidal emergent marsh, mudflat, channel habitat, and riparian forest areas on Crims Island, Oregon under Section 536 of the Water Resources Development Act of 1999. Crims Island is located on the Columbia River between river miles 54-57 on the Oregon side of the river. The proposed restoration action would target development of approximately 92 acres of tidal emergent marsh, mudflat, and channel habitat plus 115 acres of riparian forest habitat on Crims Island in the upper Columbia River Estuary to benefit fish and wildlife resources. This action is in accordance with the Federal Columbia River Federal Power System (FCRPS) Biological Opinion (BiOp), Reasonable and Prudent Alternative (RPA) 160.

The benefit from the proposed project is based upon historic losses of off-channel salmonid rearing habitat, their importance to juvenile salmonids, and the need to improve this habitat for 12 Columbia River Salmon and Steelhead Evolutionary Significant Units (ESU) that have been listed under the Endangered Species Act (ESA) by the NOAA Fisheries. These species will benefit, to varying degrees, from habitat restoration actions such as the proposed action.

In assessing the effects of the proposed project on listed species, the environmental baseline for the project area and a document evaluating how the proposed actions would affect the environmental baseline was done. To ensure a thorough review of all the habitat pathways and indicators that could impact fish, we followed the methods outlines in "*Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale*" (NOAA Fisheries 1996). Emphasis of the effects analysis was placed on effects of suspended sediments/turbidity associated with the excavation and physical disturbance of the floodplain since this was considered the most likely impact. Direct, interrelated, interdependent and cumulative effects of the various project components were also considered.

Based on the analysis of effects and consideration of conservation measures that would be implemented to avoid and reduce effects we determined the proposed project actions may affect, but are not likely to adversely affect with regard to the following ESU's:

Chum salmon (Lower Columbia River) (*Oncorhynchus keta*), Threatened
Steelhead (Middle Columbia River) (*Oncorhynchus mykiss*), Threatened
Steelhead (Upper Columbia River) (*Oncorhynchus mykiss*), Endangered
Steelhead (Upper Willamette River) (*Oncorhynchus mykiss*), Threatened
Steelhead (Lower Columbia River) (*Oncorhynchus mykiss*), Threatened
Steelhead (Snake River Basin) (*Oncorhynchus mykiss*), Threatened
Snake River Sockeye Salmon (Salmon River tributary to the Snake River, Idaho) (*Oncorhynchus nerka*), Endangered, Critical habitat designated
Snake River Chinook Salmon (Fall runs in the Snake River) (*Oncorhynchus tshawytscha*), Threatened, Critical habitat designated

Snake River Chinook Salmon (Spring/summer runs in the Snake River) (*Oncorhynchus tshawytscha*), Threatened, Critical habitat designated
Chinook Salmon (Lower Columbia River) (*Oncorhynchus tshawytscha*), Threatened
Chinook Salmon (Upper Columbia River) (*Oncorhynchus tshawytscha*), Endangered
Chinook Salmon (Upper Willamette River) (*Oncorhynchus tshawytscha*), Threatened

Based on considerations of the EFH requirements for chinook, chum, and coho salmon, the potential direct, indirect, and cumulative effects of this restoration action will increase the amount of salmon habitat, and will in fact have a benefit impact on salmon Essential Fish Habitat within the basin.

1.0 INTRODUCTION

The purpose of this consultation is to address the potential impacts on listed species resulting from the proposed habitat restoration project. The U.S. Army Corps of Engineers (USACE) prepared this document to provide NOAA Fisheries with our detailed determination concerning potential effects. Section 7 of the Endangered Species Act assures that, through consultation (or conferencing for proposed species) with the U.S. Fish and Wildlife Service (USFWS) and the NOAA Fisheries federal actions do not jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of critical habitat.

The following listed species may occur in the vicinity of the project action areas. Those species under the jurisdiction of the NOAA Fisheries only are addressed in this consultation:

1.1 LISTED SPECIES

Chum salmon (Lower Columbia River)(*Oncorhynchus keta*), Threatened
Steelhead (Middle Columbia River)(*Oncorhynchus mykiss*), Threatened
Steelhead (Upper Columbia River)(*Oncorhynchus mykiss*), Endangered
Steelhead (Upper Willamette River)(*Oncorhynchus mykiss*), Threatened
Steelhead (Lower Columbia River)(*Oncorhynchus mykiss*), Threatened
Steelhead (Snake River Basin)(*Oncorhynchus mykiss*), Threatened
Snake River Sockeye Salmon (Salmon River tributary to the Snake River, Idaho)(*Oncorhynchus nerka*), Endangered, Critical habitat designated
Snake River Chinook Salmon (Fall runs in the Snake River)(*Oncorhynchus tshawytscha*), Threatened, Critical habitat designated
Snake River Chinook Salmon (Spring/summer runs in the Snake River)(*Oncorhynchus tshawytscha*), Threatened, Critical habitat designated
Chinook Salmon (Lower Columbia River)(*Oncorhynchus tshawytscha*), Threatened
Chinook Salmon (Upper Columbia River)(*Oncorhynchus tshawytscha*), Endangered
Chinook Salmon (Upper Willamette River) (*Oncorhynchus tshawytscha*), Threatened

1.2 ESSENTIAL FISH HABITAT

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1801 et seq.) require the identification of Essential Fish Habitat (EFH) for Federally managed fishery species and the implementation of measures to conserve and enhance this habitat. The MSA requires the federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH (MSA section 305(b)(2)).

2.0 PROJECT DESCRIPTION

This project would acquire and develop approximately 425 acres of tidal emergent marsh, mudflat, side-channel, and riparian forest habitat on Crims Island in the upper Columbia River Estuary to benefit fish and wildlife resources. Crims Island is located at Columbia River mile 54-57 on the Oregon side of the navigation channel. The restoration at Crims Island would contribute to the protection and restoration of riparian forest and tidal marsh habitats in the Columbia River estuary. Tidal marsh enhancement by restoring an intertidal regime in concert with excavation of reed canary grass on Crims Island would convert degraded reed canary grass wetland to effective tidal emergent marsh, that functions as juvenile salmon rearing habitat.

The project area offers a number of opportunities for tidal channel; tidal marsh and riparian habitat restoration that would benefit federally listed salmonids, Columbian white-tailed deer and several species of waterfowl, among other species. Restoration of tidal channels and intertidal marsh habitat would be the principal action to benefit salmon. Tidal channel and intertidal marsh habitat restoration would require excavation of sediments to attain the proper elevations. Excavated material would be disposed of on adjacent lands currently used for cattle pasture. Riparian forest habitat would be developed on the disposal sites and other areas of pasture, and would provide habitat for Columbia white-tailed deer and an additional source of detritus for aquatic invertebrates as well as cover and eventual large woody debris recruitment.

Project benefits for native fish and wildlife would be achieved by the following restoration measures:

- **Restoration of Tidal Marsh Habitat:** Portions of the upstream end of Crims Island would be excavated and sloped to provide proper elevations for intertidal marsh and mudflat development. This action would remove existing reed canary grass and replace it with intertidal mudflat and marsh habitat. Sinuous shallow tidal channels would be constructed through the restored intertidal mudflat and marsh to mimic naturally occurring channels. These channels would also improve tidal circulation, allow for greater ingress and egress of juvenile salmonids, and increase detrital export. These channels would connect to an existing sub-tidal channel. Invertebrate production would be increased and made more available to rearing fish that could better access the tidal marsh area post-construction versus the present condition.

  Tidal marsh construction would occur in the late summer/early fall. Tracked excavators and tracked trucks would be used to excavate the site to the appropriate depths. A temporary dam comprised of in situ soil would block the mouth of the T-Channel to prevent tidal flow from entering the construction site, thus allowing construction in the dry. A pump or culvert with tidegate would be used to dewater the T-Channel and tidal marsh construction site. The temporary dam would be removed immediately upon completion of the tidal marsh habitat.

- **Channel Construction:** One shallow subtidal channel would be excavated through the will be constructed into the tidal marsh restoration element from a downstream location along the northern side channel. These shallow channels would improve water flow and circulation through the restored tidal marsh habitat by providing an additional downstream entrance/exit to the tidal marsh restoration site. This would improve access to the site for juvenile salmonids and increase the export of detritus to Bradley Slough and the mainstem Columbia River. The constructed channel banks would have 1 vertical: 6 horizontal sideslopes to prevent stranding of fish.

Side channel construction would occur in the late summer/early fall. Tracked excavators and tracked trucks would be used to excavate the site to the appropriate depths. The interior portions of these channels would be constructed first and only day-lighted at the completion of their construction to either the northern side channel or the Columbia River at the upstream end of the island.

- **T-Channel:** The present inlet channel (T-Channel) banks would be sloped and allowed to naturally revegetate. The existing channel is a remnant drainage ditch with steep sided banks that are vegetated with reed canary grass and blackberries. The banks would be sloped to promote natural revegetation by native tree species and tidal marsh plants.

  A temporary dam comprised of in situ soil would block the mouth of the T-Channel to prevent tidal flow from entering the construction site, thus allowing construction in the dry. A pump or culvert with tidegate would be used to dewater the T-Channel and tidal marsh construction site. The temporary dam would be removed immediately upon completion of the tidal marsh habitat.

- **Plug Removal:** A plug that presently blocks a former tidal channel would be removed to restore tidal flow to interior marshes and forested swamp located in the downstream portion of Crims Island. The action would also allow greater ingress and egress of juvenile salmonids and increase detrital export from these marshes. Plug removal would be accomplished by a tracked excavator with borrow material placed on an immediately adjacent upland location. However, this action is dependent on the acquisition of property that is presently under private ownership.

- **Riparian Forest Restoration:** Excavated soils from the tidal marsh and channel construction elements would be placed on adjacent pasturelands and subsequently be restored to riparian forest. Pasturelands not used for disposal of excavated material would be tilled and developed as riparian forest habitat, too.

  Borrow material from other project elements would be leveled post-placement. It is anticipated that these soils would be tilled the following spring if necessary to control weeds and prepare the site. Natural seed dispersal from adjacent cottonwoods and willows would be relied upon for riparian forest establishment. Placement of cuttings and/or other means to establish riparian forest would be considered if natural stand establishment was unsatisfactory.

3.0 SPECIES INFORMATION

3.1 CHUM SALMON – Threatened (Lower Columbia River)

Chum salmon are distributed from Bonneville Dam to the mouth of the Columbia River. Adults migrate from early October through November and spawning occurs in November and December. A majority of spawning habitat is in lower portions of rivers just above tidewater (Grays River, Washington) and in the side channel near Hamilton Island below Bonneville Dam. Spawning occurs in the mainstem Columbia River in areas where substrate (gravel) is 2-4 cm in diameter but spawning in gravels up to greater than 15 cm is known. Juveniles outmigrate during spring. Most juveniles rear extensively in estuaries. Historically, Blind Slough and its tributaries supported small number of chum salmon (Braun, personal communication). Currently, limited documentation exists on juvenile chum salmon use in the project area. Pre-construction Research, Monitoring and Evaluation did not detect any chum salmon using the existing site (Kenneth Tiffan, pers com.).

3.2 STEELHEAD –
Threatened (Middle Columbia River)
Endangered (Upper Columbia River)
Threatened (Upper Willamette River)
Threatened (Lower Columbia River)
Threatened (Snake River Basin)

Steelhead populations within the Columbia River Basin include two spawning migrations throughout the year, one in winter and one in summer. Spawning habitat for steelhead include upper reaches of tributaries. Juveniles spend from 1-7 years (average 2) in freshwater and outmigrate during the spring and early summer, primarily in the main channel. Steelhead would not be expected to occur in the project area.

3.3 SOCKEYE SALMON - Endangered (Salmon River tributary to the Snake River, Idaho)

This population occurs in the Salmon River, a tributary of the Snake River. This population migrates in spring and summer and spawning occurs in February and March. Spawning occurs in inlets or outlets of lakes or in river systems. Juveniles rear in freshwater and outmigrate in spring and early summer as yearlings. Sockeye would not be expected to occur in the project area.

3.4 CHINOOK SALMON – Threatened (Fall runs in the Snake River)

Adult Snake River fall chinook salmon enter the Columbia River in July and August and reach the mouth of the Snake River from the middle of August through October. Spawning occurs in the Snake River and lower reaches of tributaries to the Snake River in October and November. Juvenile Snake River fall chinook salmon move seaward slowly as subyearlings, or "ocean-type". Studies of the downstream migration of chinook salmon in the lower Columbia River concluded that they were present from June to October. Chinook salmon tend to linger in the lower Columbia River and may spend a considerable portion of their first year in the estuary. Adults return to the Snake River at ages 2-5, with age 4 the most common age at spawning (Chapman et al. 1991). While no documentation exists on the use of Snake River fall chinook within the project area, their life cycles suggests use of backwater habitat like that of the Crims Island area for rearing prior to ocean entry, and pre-construction RM&E did determine subyearling chinook salmon using the existing site. However, all salmonids were absent from the existing site after late July (Kenneth Tiffan, pers com.).

3.5 CHINOOK SALMON – Threatened (Spring/summer runs in the Snake River)

Adult Snake River spring and summer chinook salmon migrates upstream past Bonneville Dam from March through May and June through July, respectively. Spring and summer runs of chinook salmon in the Snake River prefer smaller, higher elevation streams and tend to migrate quickly to sea as yearling or "stream-type" smolts. Snake River spring/summer salmon would not be expected to occur in the project area.

3.6 CHINOOK SALMON – Threatened (Lower Columbia River)

Fall run chinook salmon are predominant in this region, and return to the river in late August to spawn within a few weeks. Spring-run chinook salmon on the lower Columbia River enter freshwater in March and April well in advance of spawning in August and September. Spawning occurs from late

August to November. Juveniles outmigrate from early spring to fall depending upon run type. While no documentation exists on the use of Lower Columbia River fall chinook within the project area, their life cycles suggests use of backwater habitat like that of the Crims Island area for rearing prior to ocean entry, and pre-construction RM&E did determine subyearling chinook salmon using the existing site. However, all salmonids were absent from the existing site after late July (Kenneth Tiffan, pers com.).

3.7 CHINOOK SALMON – Endangered (Upper Columbia River)

This population of chinook salmon occur in Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding Okanogan River. Adults migrate from late winter to spring and spawn from late August to November. Spawning occurs in the mainstem Columbia River to upper reaches of tributaries. Juveniles outmigrate from early spring to summer.

Use of Action Area: Sub-yearling, or ocean-type, Upper Columbia River fall chinook are most likely to use the project area only for rearing during migration downstream (streamnet.org). Sub-yearling chinook enter the Columbia River Estuary in late May and again between July and August (NOAA Fisheries 2001). Some sub-yearling salmon reside in the estuary for as long as several months and rear in areas, such as the project area, in the estuary, or in backwaters. While no documentation exists on the use of Upper Columbia River fall chinook within the project area, their life cycles suggests use of backwater habitat like that of the Crims Island area for rearing prior to ocean entry, and pre-construction RM&E did determine subyearling chinook salmon using the existing site. However, all salmonids were absent from the existing site after late July (Kenneth Tiffan, pers com.).

3.8 CHINOOK SALMON – Threatened (Upper Willamette River)

This population of chinook salmon occurs above Willamette Falls in three major tributaries, the McKenzie River and South and North Forks of the Santiam River. Adult spring-run chinook enter the Columbia River in March and April, but they do not ascend the Willamette Falls until May or June, and spawn from late August to early October. Juveniles outmigrate from early spring to summer. They are currently not anticipated to occur in the project area.

General. In general, adults use the lower river principally as a migration corridor to spawning areas in the upper basin and tributaries. They are actively migrating and normally do not spend much time in the lower river. Steelhead (Lower Columbia River) populations' spawn in tributaries to the Columbia River and chinook and chum salmon (Lower Columbia River) spawn in the mainstem and tributaries of the Columbia River in gravels of appropriate size. Spawning typically does not occur in the vicinity of the project area due to its lack of spawning habitat and appropriate sized gravels.

Juveniles occur in the lower river during their migration to the ocean. Juveniles that have already become smolts are present in the lower river for only a short period of time.

Juveniles that have not become smolts such as fall chinook sub-yearlings spend extended periods of time rearing in the lower river. They normally remain in the lower river or estuary until fall or the following spring when they become smolts and then migrate to the ocean. Rearing occurs primarily in the shallow backwater areas.

4.0 ANALYSIS OF EFFECTS

4.1 DIRECT EFFECTS

The proposed project may cause temporary and short-term impacts to anadromous salmonids during project construction. The probability for direct mortality to juveniles or adults of listed salmonids during the proposed project is very low because of their low abundance in the area and the temporary nature of the actions. The potential direct impacts are listed below:

- Surface water runoff during construction may increase suspended sediment levels in Bradbury Slough. Elevated turbidity levels have the potential to disrupt feeding and growth patterns of juveniles (Bjornn and Reiser 1991). No spawning occurs in the project area of Crims Island, therefore no direct impacts to redd, eggs or alevins are anticipated. The potential impacts are expected to be small because of the erosion and sedimentation control measures that will be used during construction and the duration of the impact, and the very short timeline for this action.

- Construction activities will cause noise and vibration that may be detected by fish and could alter fish behavior in the action area (EPA 1971). However, these construction activities will be intermittent and short term and are not expected to have a significant impact on listed fish. Further, pre-construction RM&E has shown all salmonids have left the immediate site in late July, which will be before construction in this area begins.

- Marginal disruption of rearing habitat will occur in the project area during the construction period. However, this project will ultimately increase available rearing habitat and function. The creation of additional rearing habitat and back channels are considered a beneficial impact to salmonids.

4.2 INDIRECT EFFECTS

Indirect impacts of construction activities on listed species include the loss and degradation of rearing habitat. The actions described above are expected to have no indirect effects.

4.3 INTERRELATED AND INTERDEPENDENT EFFECTS

Interrelated actions include actions that are part of a larger action and depend on the larger action for justification. Interdependent actions are defined as actions with no independent utility apart from the proposed action. The actions described above do not represent a new level of service, or require new roads. The proposed project is expected to have long-term benefits to listed species by increasing water flow throughout the tidal system, and improving rearing and refugia habitat.

4.4 CUMULATIVE EFFECTS

Cumulative effects are defined as the effects of future state, local or private activities that are reasonably certain to occur. No projects are known in the foreseeable future in the vicinity of the proposed project area.

5.0 CRITICAL HABITAT

Critical habitat was designated for Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon on December 28, 1993 (58 FR 68543), effective on January 27, 1994. Critical habitat was designated for the additional 9 ESU's designated in this biological assessment on 16 February 2000, but withdrawn with NOAA Fisheries consent by the U.S.

District Court in 2002. The designation of critical habitat provides notice to Federal agencies and the public that these areas and features are vital to the conservation of listed salmon.

The essential features of the critical habitat of Snake River salmon have been further defined to include four components: (1) spawning and juvenile rearing areas, (2) juveniles migration corridors, (3) areas for growth and development to adulthood, and (4) adult migration corridors. Growth and development to adulthood occurs in the Pacific Ocean, therefore, critical habitat on-site would include juvenile migration corridors and rearing habitat, both of which are expected to be improved by the project.

6.0 ESSENTIAL FISH HABITAT

The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevens Act establishing requirements for EFH. Groundfish and Chinook and coho salmon have designated EFH (Pacific Fisheries Management Council 1999) in the project area.

The only managed groundfish species in the project area is starry flounder which use the area as rearing and feeding areas for both juveniles and adults. Existing EFH for starry flounder is limited and likely of poor quality because of the lack circulation and poor water quality. Completion of the restoration actions will improve and increase the EFH for Starry flounder.

Freshwater EFH for chinook and coho salmon consists of four major components: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; and (4) adults migration corridors and adult holding habitat. Important features of EFH for spawning, rearing and migration include adequate substrate composition, water quality (dissolved oxygen, nutrients, temperature, etc.), space, access and passage, and flood plain and habitat connectivity.

The proposed project will enhance salmonid habitat quality and rearing habitat by restoring and enhancing tidal marsh habitats. Proposed actions will substantially increase tidal marsh habitat and riparian forest habitat.

Based on EFH requirements of chinook and chum salmon, the potential direct, indirect, and cumulative effects of the proposed habitat restoration project are not likely to adversely affect any identified salmonid EFH for the action area evaluated, but will provide additional salmonid essential fish habitat.

7.0 DETERMINATION OF EFFECT

USACE has made the following determination of effect for endangered and threatened species reviewed under this biological assessment.

7.1 Fish Species

Based on the review of existing conditions and analysis of likely effects of the proposed project, we believe that a determination of “may effect, not likely to adversely affect” is appropriate for the following listed species.

Chum salmon (Lower Columbia River), Threatened
Steelhead (Middle Columbia River), Threatened
Steelhead (Upper Columbia River), Endangered

Steelhead (Upper Willamette River), Threatened
Steelhead (Lower Columbia River), Threatened
Steelhead (Snake River Basin), Threatened
Snake River Sockeye Salmon (Salmon River tributary to the Snake River, Idaho) Endangered, Critical habitat designated
Snake River Chinook Salmon (Fall runs in the Snake River), Threatened, Critical habitat designated
Snake River Chinook Salmon (Spring/summer runs in the Snake River), Threatened, Critical habitat designated
Chinook Salmon (Lower Columbia River), Threatened
Chinook Salmon (Upper Columbia River), Endangered
Chinook Salmon (Upper Willamette River), Threatened

8.0 REFERENCES

Bjornn, T.C. and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83-138 in W.R. Meehan (ed). Influences of forest and rangeland management on salmonid fishes and their habitats. Am. Fish. Soc. Spec. Publ. 19.

Braun, Keith. Oregon Department of Fish and Wildlife. Personal communication: Phone conversation with Anne Birnie, U.S. Army Corps of Engineers, Portland District. 19 December 2002.

National Marine Fisheries Service. 2001. Salmon at river's end: the role of the estuary in the decline and recovery of Columbia River salmon. Seattle District.

National Oceanic and Atmospheric Administration. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries, Vol. II: Species Like History Summaries.

Oregon Department of Fish and Wildlife. 1997. Oregon guidelines for timing in-water work to protect fish and wildlife resources. Habitat Conservation Division, Portland, Oregon.

Pacific Fisheries Management Council. 1997. Amendment 14 to the Pacific Coast Salmon Plan. Portland, Oregon.

From: "Willis, Robert E NWP" <Robert.E.Willis@nwp01.usace.army.mil>
To: <robert.c.anderson@noaa.gov>
Cc: "Larson, Kim W NWP" <Kim.W.Larson@us.army.mil>; "Ebberts, Blaine D NWP" <Blaine.D.Ebberts@nwp01.usace.army.mil>; "Braun, Eric P NWD" <Eric.P.Braun@nwd01.usace.army.mil>
Subject: Crims Island
Date: Wednesday, April 14, 2004 11:48 AM

On April 5, 2004, the Corps submitted a request for informal consultation. Based on information developed with you during informal consultation, the Corps has determined that the proposed action may adversely affect ESA-listed salmon and steelhead. We have also determined that the work may adversely affect EFH for groundfish species, chinook salmon, and coho salmon. The purpose of this memo is to initiate formal consultation, as required under section 7(a)(2) of the ESA, and under section 305(b) of the MSA. The project description and biological evaluation remain unchanged with the exception of the conclusion that this project may adversely affect listed stocks of salmonids and Essential Fish Habitat.

The Corps requests that a biological opinion be prepared by your agency. As we discussed, this ecosystem restoration is to partially fulfill FCRPS biological opinion habitat development requirements. To construct this project this year, we need to conclude consultation no later than 1 June. We also discussed the need to develop procedures, such a programmatic consultation, to facilitate such ecosystem restoration projects.

ENVIRONMENTAL OUTPUTS
CRIMS ISLAND SECTION 536 HABITAT RESTORATION PROJECT

Crims Island Wildlife Benefits Estimate

Construction Element	Estimated Total Cost	Acres	Net Quality Factor (0-1.0)	Net Outputs (acres)	Remarks
Connector Channel (from north through channel to dead-end channel).	$303,900	36	0.1	3.6	3 acres of connector channel and 33 acres of backwater slough affected. At Crims Island interagency meeting, backwater slough conditions during bulk of outmigrant period were considered good quality; only during latter portion of outmigrant period does water temperature become an issue. For benefit calculation, improvement estimated to be 10% above background and equates to slightly better foraging conditions for fish.
Upstream Tidal Wetland (volume includes material excavated to restore marsh and to develop sinuous channels to handle water volume; also includes the riparian forest restoration element).	$1,525,500	178	0.9 for tidal wetland and channels, including sinuous; 0.9 for riparian forest	160	Net value for tidal wetland and channels, including sinuous channels, estimated at 0.9 for 62.9 acres and 0.9 for 114.6 acres of riparian forest. Tidal marsh - 52; riparian forest - 114.6; and channels - 10.9. Restoration effort should result in a more natural and diverse tidal marsh plant community than current monoculture to benefit wildlife. Existing value low due to dominance by reed canarygrass and limited wildlife forage value. Riparian forest establishment has value for many wildlife species through provision of habitat for cover, forage, and nesting, among other values. Site for riparian restoration currently cattle pasture/grassland thus given a low existing value.
Downstream Tidal Marsh (d/s of the T-channel branch).	$966,400	29	0.8 for tidal wetland and channels, including sinuous.	26	Net value for tidal wetland and channels, including sinuous channels, estimated at 0.9 for 29acres; 22.8 acres of tidal wetland and 6.2 acres of channels. Restoration effort should result in a more natural and diverse tidal marsh plant community than current monoculture to benefit wildlife. Existing value low due to dominance by reed canarygrass and limited wildlife forage value. Riparian forest establishment has value for many wildlife species through provision of habitat for cover, forage, and nesting, among other values. Site for riparian restoration currently cattle pasture/grassland thus given a low existing value.
Downstream Plug Removal	$16,700	87.9	0.2	17.6	Provides tidal exchange to 87.9 acres; allows fisheries access and egress plus detrital export. Existing wetland behind plug has relatively good wildlife value attributable to vegetation and water components. Small gain in value for wildlife due to tidal exchange and improved foraging for fish.

Crims Island Fisheries Benefit Estimate

Construction Element	Estimated Total Cost	Acres	Net Quality Factor (0-1.0)	Net Outputs (acres)	Remarks
Connector Channel (from north through channel to dead-end channel).	$303,900	36	0.1	3.6	3 acres of connector channel and 33 acres of backwater slough affected. At Crims Island interagency meeting, backwater slough conditions during bulk of outmigrant period were considered good quality; only during latter portion of outmigrant period does water temperature become an issue. For benefit calculation, improvement estimated to be 10% above background.
Upstream Tidal Wetland (volume includes material excavated to restore marsh and to develop sinuous channels to handle water volume; also includes the riparian forest restoration element).	$1,525,500	178	0.8 for tidal wetland and channels, including sinuous; 0.4 for riparian forest	96	Net value for tidal wetland and channels, including sinuous channels, estimated at 0.8 for 62.9 acres and 0.4 for 114.6 acres of riparian forest. Tidal marsh - 52; riparian forest - 114.6; and channels - 10.9. Restoration effort should result in a more natural and diverse tidal marsh plant community than current monoculture to benefit fish. Existing value low due to dominance by reed canarygrass, lack of sinuous channels, and poor fish access/egress. Sinuous channels not present but represent natural condition. If not constructed, they are likely to form of their own accord based on ebb and flood tide. Riparian forest establishment has some value for fish. Site for riparian restoration currently cattle pasture/grassland, thus given a low existing value.
Downstream Tidal Marsh (d/s of the T-channel branch).	$966,400	29	0.8 for tidal wetland and channels, including sinuous.	23	Net value for tidal wetland and channels, including sinuous channels, estimated at 0.8 for 29acres; 22.8 acres of tidal wetland and 6.2 acres of channels. Restoration effort should result in a more natural and diverse tidal marsh plant community than current monoculture to benefit fish. Existing value low due to dominance by reed canarygrass, lack of sinuous channels, and poor fish access/egress. Sinuous channels not present but represent natural condition.
Downstream Plug Removal	$16,700	87.9	0.8	70.3	Provides tidal exchange to 87.9 acres; allows fisheries access and egress plus detrital export. Existing wetland behind plug has relatively poor fisheries value attributable to blocked access; hence, increase in net value.