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New River Health
Environmental Assessment

EA OR 128-03-11

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ACS	Aquatic Conservation Strategy
BLM	Bureau of Land Management
CHU	Critical Habitat Unit
COE	Corps of Engineers
DLCD	Division of Land Conservation and Development
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FWS	Fish and Wildlife Service
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NRCS	Natural Resource Conservation Service
ODFW	Oregon Department of Fish and Wildlife
ONHP	Oregon Natural Heritage Program
OPRD	Oregon Parks and Recreation Department
Plover	Western Snowy Plover
S&M	Survey and Manage
SPCC	Spill Control and Countermeasures Plan
USDA	United States Department of Agriculture
USDI	United States Department of Interior

Chapter 1.0 Purpose of and Need for Action

1.1 Introduction

The purpose of this Environmental Assessment (EA) is to analyze alternatives of the New River Health project. The goal of this project is to enhance habitat conditions within the New River Area of Critical Environmental Concern (ACEC) by temporarily breaching the river across the foredune to the ocean at a site located on federal lands (Figure 1). The timing and location of a temporary breach has the potential to improve aquatic and sand dune habitats for listed threatened fish and wildlife species under the Endangered Species Act (ESA), including the Oregon coast coho salmon and Western Snowy Plover. Breaching the river to improve these habitats is also meant to aid local ranchers by minimizing excessive out-of-bank winter stream flows and flooding of adjacent pastures.

Since the formation of New River in the late 1800s, it has a history of being mechanically breached by local landowners to improve their success at fishing and ranching (Appendix A). The timing and location of the mechanical breach has varied from year-to-year to increase their chances of catching migrating salmon and/or to drain adjacent lands for livestock grazing.

From 1970 to the present, New River has been breached during various winters between Floras Creek and Hanson Slough by adjacent ranchers to alleviate flooding of their pastures. In October 2000, Oregon Parks and Recreation Department (OPRD) issued a five-year Ocean Shore Permit to the local ranchers for this purpose (OPRD 2000).

Conditions of the permit were based on recommendations from an inter-agency working team. Agencies that participated in the process include: OPRD, Bureau of Land Management (BLM), Division of Land Conservation and Development (DLCD), Oregon Department of Fish and Wildlife (ODFW), U.S. Army Corps of Engineers (COE), and U.S. Fish and Wildlife Service (FWS). ODFW and DLCD determined the effects of the project, although measurable, would be acceptable. COE determined the project was not subject to federal jurisdiction under the Clean Water Act or Section 404 of the Rivers and Harbors Act. FWS suggested that consultation might be required if the proposed project involved federal land. In addition, no testimony or written statements opposing the project were submitted by the public during the 30-day comment period or at the public hearing held on September 25, 2000 (OPRD 2000).

The Ocean Shore Permit states that an alternative breach site on BLM land may be developed if the preferred site on private land does not meet the overall objectives of the permit. Since the breach site location near Floras Creek causes excessive drainage of New River and subsequent de-watering and fragmentation of the riverine system during summer low-flow conditions, the BLM is proposing an alternative breach site to improve the health of the New River system.

In the vicinity of Floras Creek and northward to Bono Ditch, the river has formed a wide cross-section and is shallow because of past repeated mechanical breaching. When a breech in this area does occur, flows reverse in the river to the south, which works against normal downward valley channel gradients and perpetuates a low-slope “high spot” in the bed of the river. These channel geometry and hydraulic relationships have the effect of causing winter flows to go out of bank

sooner and the area to retain water longer. Furthermore, summer flows in the channel become wide and shallow and sometimes lose connectivity, forming dry spots.

When a breach near Floras Creek does not occur, winter flooding flushes sediment out of the New River system to the north, creating a deeper channel that drains more readily. In order to avoid a southern breach in the future, potential temporary breach sites located on federal lands will be analyzed to determine a location best suited for maintaining a year-round connected river channel while providing adequate flood alleviation on private lands during peak winter run-off periods. The proposed alternative breach site would only be opened if all of the conditions outlined in the Ocean Shore Permit are met. Due to natural beach dynamics, this alternative breach site would only remain open temporarily during high stream flows. As the river level drops or as the ocean surf builds sand, the breach site would close naturally.

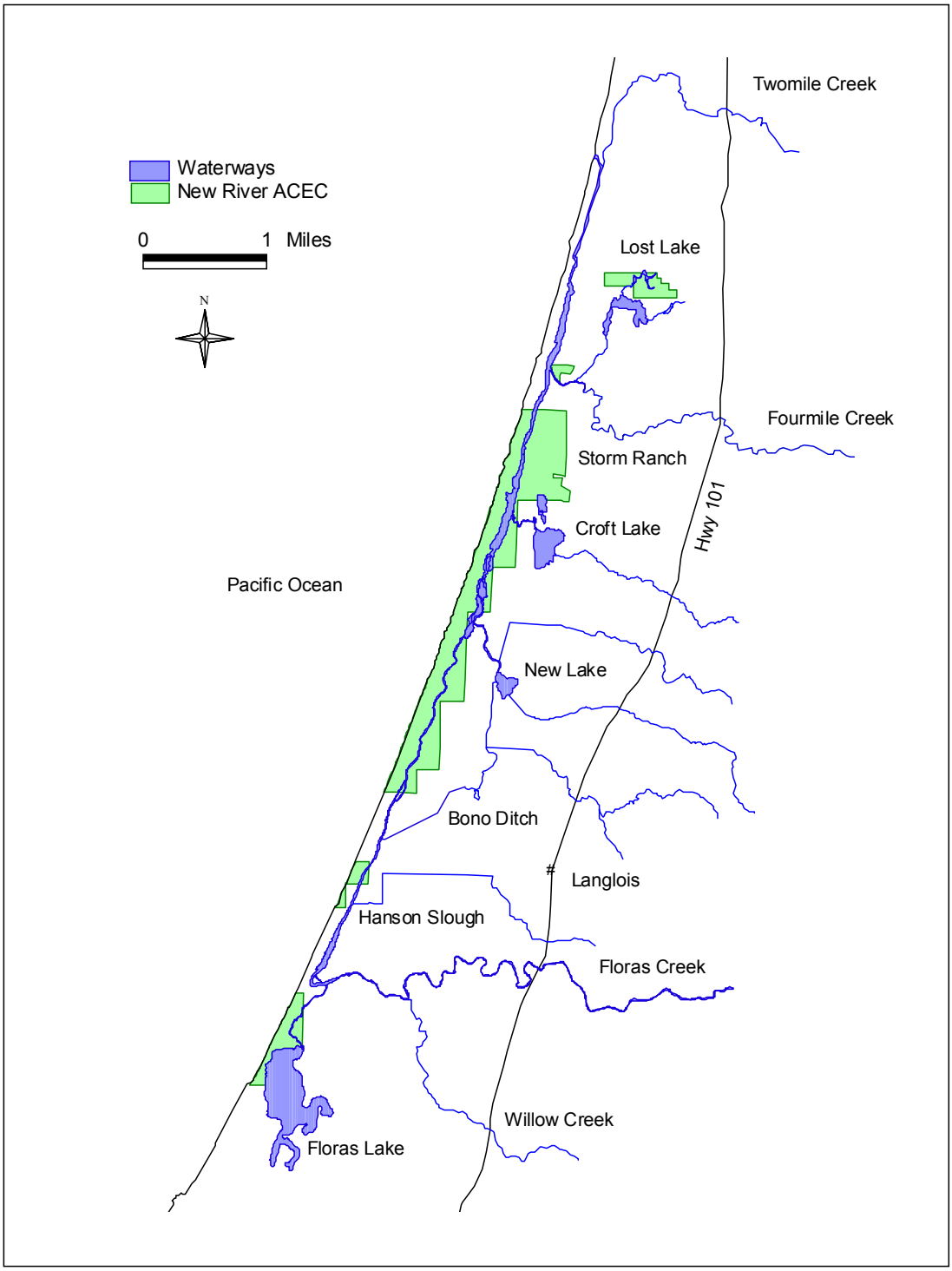
Decision for management actions regarding aquatic habitat restoration comes from the *Coos Bay District Record of Decision* and *Resource Management Plan* (USDI 1995a), which is in conformance with the *Record of Decision and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (USDA and USDI 1994).

This EA is also tiered to the final *New River ACEC Management Plan* (USDI 1995b). The primary goal of this plan is to manage habitats for biodiversity and ecosystem health with special emphasis on sensitive fish, wildlife, and botanical species. The management plan states that BLM will support the mechanical breaching of New River when approved by special permit from the State of Oregon. The plan further states that management actions are needed to establish year-round flows and to maintain riparian and wetland areas in a condition supportive of a healthy aquatic ecosystem.

1.2 Scoping Summary

The primary purpose for scoping is to identify the public's concerns relating to the proposed management action. During March of 2003, a public scoping letter requesting comments on the New River Health project was sent to individuals and organizations on the Coos Bay District's mailing list. A public notice requesting comments was also published on the Coos Bay District website and printed in the local newspaper (The World 2003). The Coos Bay District did not receive any public responses during this time.

1.3 Figure 1. Vicinity Map of New River.



Chapter 2.0 Alternatives Including the Proposed Action

2.1 Alternative 1 – No Action

The no action alternative would maintain the status quo and there would be no change in BLM's current management strategy. As a result, under the current Ocean Shore Permit, mechanical breaching of the river would continue on private land near Floras Creek to alleviate flooding of adjacent pasturelands.

2.2 Alternative 2 – Proposed Action: Breach on Federal Lands Between New Lake and Croft Lake Outlets

The proposed action is to temporarily breach New River across the foredune to the ocean on BLM land located between New Lake outlet and Croft Lake outlet (Figure 1). This temporary breach would only be opened if all conditions outlined in the Ocean Shore Permit are met. These conditions, among others, state that pre-conditioning of the breach site can only be conducted annually after September 15th to avoid potential disturbance to the Western Snowy Plover during nesting season; and that actual breaching of the river can only be conducted annually between November 15th and February 15th if Knapp Lane and/or the gate located at the end of the spur road on McKenzie's ranch are inundated by flood waters.

Depending on winter storm conditions, mechanical breaching of New River may not be necessary every year. When mechanical breaching is necessary during flood events, opening the river across the foredune between New Lake and Croft Lake outlets will help maintain a connected river channel and encourage natural breaching processes to occur on the north end of the river. A breach at this location is preferred to a southern breach near the bend in Floras Creek to avoid excessive drainage of New River and de-watering and fragmentation of the riverine system during summer low flow conditions.

Breaching New River would be carried out in two phases. Phase 1 includes pre-conditioning of the selected breach site prior to winter rains and subsequent high flow conditions. Pre-conditioning involves creating a level, 50-foot wide channel across the foredune. On the ocean-side of the foredune, a sand plug will remain at the end of the channel to insure that high surf does not fill the channel back in with sand. Phase 2 involves removal of the sand plug during high water conditions, causing the river to breach across the foredune to the ocean. Phase 2 will only be carried out if flooding occurs as defined in the Ocean Shore Permit. All work will be accomplished using a bulldozer. Access to the project site would be via Floras Lake State Natural Area with permission from the Cape Blanco Park Manager.

2.3 Alternative 3 – Breach on Federal Lands North of Croft Lake Outlet

Under this alternative, New River would be mechanically breached on BLM land located between Croft Lake outlet and the northern boundary of the Storm Ranch portion of the ACEC. As with the proposed action, a temporary breach in this vicinity would only be allowed if conditions outlined in the Ocean Shore Permit are met. Breaching in this area would be conducted in the same manner as described in Alternative 2.

2.4 Alternative 4 – Breach on Federal Lands between Bono Ditch and New Lake Outlet

Under this alternative, New River would be mechanically breached on BLM land located between Bono Ditch and New Lake outlet. As with the other alternatives, a temporary breach in this vicinity would only be allowed if conditions outlined in the Ocean Shore Permit are met.

During the winter of 2002, New River was breached on BLM land in this area at a site located one mile south of New Lake outlet. This emergency breach remained open for six weeks. New River did not breach at the Floras Creek area during storm events. When the New Lake outlet breach was open, it provided some flood alleviation on the adjacent ranches. However, after the breach sanded shut, the ranchlands were flooded for the remainder of the winter.

This alternative showed limited success in providing flood alleviation to the adjacent ranchlands during the winter of 2002. Although it improved river conditions by deepening the channel in the immediate area, the site is currently not considered a viable alternative for the ranchers. Depending on river and ocean conditions in future years, a mechanical breach in this vicinity may be more effective for the purposes of flood alleviation.

2.5 Alternative Considered but Eliminated from Further Analysis

The alternative to eliminate all mechanical breaching of New River was not analyzed, because BLM does not have the authority to dictate what types of management actions are carried out on private or state-owned lands. Since the OPRD approved a permit that authorizes the mechanical breaching of New River on private lands to alleviate flooding, BLM's approach is to find an alternative that accomplishes the goal of adequate flood relief while improving the overall health of the New River system.

Chapter 3.0 Affected Environment

3.1 Hydrology

New River flows parallel to the Pacific Ocean along a 'sand wall' feature also termed a foredune for approximately ten miles. The river is the result of stream flow from Floras Creek and other small coastal drainages (Table 1). The foredune separating New River form the Pacific Ocean is not a permanent boundary. Sea overwash occurs in low spots during winter storms. Storm-flow runoff occasionally results in natural breeches from the river side during flooding. New River has also been mechanically breached at various locations over the years to reduce flooding on pasture land and to aid in fishing. The stabilization of the foredune by European beachgrass (*Ammophila arenaria*) since its introduction in the early century has slowed the shifting of sand inland, resulting in a higher foredune that the river flow cannot overtop, even during flooding. The origin of sand along the coast from within the Bandon littoral cell and sand size has also caused variations in foredune building and beach steepness (Komar et al. 1999). The beaches are steeper to the south and flatter north of the Croft Lake area.

New River is a low gradient stream with a sand/silt bed and banks. The bed and banks are subject to shifting whenever the stream velocity is above about 0.8 cubic foot per second (cfs). The southward reach (start of New River) has a very flat slope and is wide and straight. The foredune in this area is very low because of past mechanical breaches and is also subject to natural breakout at high river flows. Normally this reach is freshwater or riverine, except for seawater inputs from overwashes. The reach between New Lake outlet and Croft Lake outlet has developed meanders because of the stabilization of in-channel bars and channel margins with aquatic vegetation. The reach between Croft Lake outlet and the natural river mouth near Twomile Creek is influenced by oceanic flood and ebb tides.

A short description of the current morphology and river processes for the five reaches of New River follows:

Reach 1. Floras Creek to Hanson Slough (Rivermile 0.0 to 1.0): The river bed is up to 200 feet wide, straight, and very flat. There is very little aquatic vegetation (sedge species) on the bed or banks. Repeated mechanical breaches in this reach of river have occurred over the years resulting in a low foredune height and loose sand banks. Winter overwashing is common. During 1964 and 1998, the river naturally breached at the bend in Floras Creek from high runoff. Floodwaters bulk in this reach of river and are temporarily stored in the channel or out-of-bank. The landward side of the river is subject to wave erosion in the winter.

Reach 2. Hanson Slough to the resistant clay island (Rivermile 1.0 to 2.2): The river is shallow and narrower, ranging from 50 to 100 feet in width. New River is straight, on a very flat slope, and has some bed and bank stabilization with aquatic vegetation (sedge species). The area from Bono Ditch to the clay island appears to be an underlying clay material that resists fluvial erosion resulting in a ridge or "high spot" in the river. Channel drying may occur in this location in the summer. The foredune is higher along this reach of river and cannot be easily overtopped by sea conditions.

Reach 3. Resistant clay island to New Lake outlet (Rivermile 2.2 to 4.2): New River along this reach is narrower and meandering with deeper pools and undercut banks. Prolific aquatic vegetation (sedge species) constrains the channel and provides some bank undercutting. The river is trending towards a C5/E5 river (Rosgen 1996). The foredune is relatively high.

Reach 4. New Lake outlet to Storm Ranch boat ramp (Rivermile 4.2 to 6.1): This reach is meandering to braided with shallow wide areas. Aquatic vegetation is common on island braids. Salt and freshwater mix and is classified as inter-tidal. River banks are dominated with European beachgrass and shore pine on the east bank. The foredune is relatively high.

Reach 5. Storm Ranch boat ramp to ocean confluence (Rivermile 6.1 to 9.0): This reach is somewhat narrower and deeper. It is constrained by a clay formation along the east bank. There is free tidal exchange from the Pacific Ocean and the water is salty or estuarine. European beachgrass is common on both sides. Shore pine is common along the east side with some emerging on the west side. European beachgrass eradication has occurred in areas on the foredune to restore the open sand dune community and aid in the recovery of the Western Snowy Plover. This restoration work has created some shifting sands and a few overwash areas. Foredune height is relatively low. To the north, New River meets south-flowing Twomile Creek and exits on a wide gently sloping dissipative beach. The mouth seems to be relatively stable between years, although it is slowly moving north. In the late summer when flows drop, movement of sand by constant winds (eolian processes) closes the mouth. Freshwater then backs up in the river until a natural breach results, usually during an early winter storm.

Winter precipitation patterns and watershed characteristics in the coastal area result in flashy stream flows. Flows in New River vary according to the winter storm season and the point of flow accumulation (entering tributaries). Analysis of available hydrologic data at the point of Croft Lake outlet suggests that mean monthly flows are the greatest during December, January, and February. The flow is in the range of 2100 to 2300 cfs. Hydraulic modeling of stream cross-section data and profiles in the same area indicate a stream flow of 4700 cfs which only covers in-channel bars and other bankfull features. The streambed is situated on cemented sands of the Blacklock formation and some silty alluvium. It may be storing water along the margins and/or losing some water through porous sections to the ocean. Bankfull river flows, based on channel geometry methods, are lower than other regional hydrologic flow estimation techniques (47 cfs per square mile [mi^2] compared with 60 to 80 cfs mi^2).

Table 1. New River tributaries and area of watershed.

Watershed Drainage	Acres	Square Miles	Cumulative Square Miles
Floras Creek	44956	70.24	70.24
Floras Lake/Boulder Creek	6626	10.35	80.59
Hanson Slough	540	0.84	81.43
Bono Ditch/Morton Creek	1651	2.58	84.01
New Lake Area	523	0.82	84.83
Bethel Creek	7003	10.94	95.77
Croft Lake/Davis/Conner Creek	3022	4.72	100.49
Fourmile Creek	13741	21.47	121.96
Twomile Creek	9870	15.42	137.38

3.2 Fisheries

New River supports a relatively diverse assemblage of fish species with a large diversity of aquatic habitat types, including stream, pond, lake, wetland, lagoon, and estuarine. Table 2 documents the species known or suspected to inhabit the system (USDI 1995b).

Very little quantitative information is available with which to assess the status of individual fish populations in the New River system. The fact that several distinct, and formerly separate, 4th and 5th order drainages now enter the New River system (see discussion below) further complicates the task of evaluating the health of individual populations. Based upon the dominance of sand in the river substrates, the predominant use of the New River system by salmonids is likely to be for migration and rearing purposes, not spawning.

Table 2. Fish species known to exist and likely to exist in New River.

Common Name	Scientific Name	Habitat[1]	Duration[2]
Known to Exist			
Chinook salmon	*Oncorhynchus tsawytscha*	Fs, Fl, E, M	A
Coho salmon[3]	*Oncorhynchus kisutch*	Fs, Fl, E, M	A
Cutthroat trout[4]	*Oncorhynchus clarkii*	Fs, Fl, E, M	A
Steelhead trout[4]	*Oncorhynchus mykiss*	Fs, Fl, E, M	A
Rainbow trout	*Oncorhynchus mykiss*	Fs, Fl	A
Largescale sucker	*Catostomus macrocheilus*	Fs, Fl	A
Shiner perch	*Cymatogaster aggregata*	E, M	I
Bay pipefish	*Sygnathus leptorhynchus*	E, M	I
Starry flounder	*Platichthys stellatus*	E, M,	A
Threespine stickleback	*Gasterosteous aculeatus*	E, Fl	A
Staghorn sculpin	*Leptocottus armatus*	E, M	A
Prickly sculpin	*Cottus asper*	Fs, Fl	A
Largemouth bass	*Micropterous salmoides*	Fs, Fl	A
Pacific lamprey	*Lampetra tridentata*	Fs, Fl, E, M	A
Western brook lamprey	*Lampetra richardsoni*	Fs, Fl	A
Likely to Exist, but not Sampled			
Bluegill	*Lepomus macrochirus*	Fl	A
Brown bullhead	*Ameiurus nebulosus*	Fl	A

[1]Habitat
Fs - freshwater stream
Fl - freshwater lake
E - estuarine
M - marine

[2]Duration
A - all year
I - intermittent

[3]Oregon coast coho salmon are listed as Threatened under the Endangered Species Act.

[4]Oregon coast ESU's for cutthroat and steelhead trout are currently listed as Candidate species for Federal listing under the Endangered Species Act.

ESA Listed Fish

The project area is within the Oregon Coast Evolutionarily Significant Unit (ESU) for coho salmon, steelhead, and cutthroat trout. Within this ESU coho salmon are listed as a threatened species. Steelhead and cutthroat trout are considered to be "candidates" for Federal listing under the Endangered Species Act (ESA); stock status reviews are ongoing to determine if future listings may be warranted.

General Aquatic Information

From a fisheries perspective, New River is a relatively unique river system for a variety of reasons. On a temporal scale, this river system is only about 100 years old. Its formation was initiated, in part; as a result of non-native European beachgrass that was introduced to the west coast in the early 1900s. This beachgrass stabilizes dune systems more aggressively than its native counterpart, American beachgrass. This occurrence has led to the vegetation-induced stabilization and an increase in the average size of foredunes along a large percentage of the Oregon coast. In the case of New River, this increasingly erosion-resistant foredune resulted in drainage waters from the immediate area flowing behind (to the east of) the foredune, in the deflation plane. In effect, these waters were not able to push through the sand dunes that had built up during the dry and windy summer months, and were forced into an area with less resistance (the depression formed in the deflation plane). As these waters collected in the deflation plane, their respective volumes and erosive forces combined to create a "New River" that flowed to the North, parallel to the Pacific Ocean shoreline.

In addition to European beachgrass encroachment and stabilizing dunes, recent information contained indicates that the beach near the southern end of New River is composed of coarse grained particles, primarily granules and pebbles from Blacklock Point (Komar et al. 1999). Coarse-grained beaches are particularly dynamic in responding rapidly to changing wave conditions and undergo large changes in elevation from summer to winter as wave energy levels are altered. In contrast, at the north end of New River the beach is composed of fine-grained sands derived from the Coquille River. As a result, the river flow, even at low discharges, finds it easier to maintain a mouth through this sand beach at the north. This information is discussed in more detail in the section below.

On a spatial scale, New River is approximately ten miles in length, averages around 100 to 200 yards away from the Pacific Ocean, and is almost completely sand bedded. It exhibits lotic (moving water) and lentic (standing water) system characteristics, depending upon the location and the time of year.

From an aquatic standpoint, the biological importance of New River likely increases as it grows in length and volume. Prior to the establishment of the New River system, the majority of the smaller drainages in the area drained directly into the Pacific Ocean. Aerial photographs taken in the late 1930s and early 1940s and the relative small sizes of these drainages indicate that it is not likely that there were large amounts of associated estuarine or fresh water lagoon habitats. With the development of New River, this situation has changed dramatically. Currently, the New River system collects the flow and aquatic resources of Floras Creek, Fourmile Creek, Twomile Creek, and numerous shallow lakes such as Floras Lake, Croft Lake, New Lake,

Muddy Lake, and Laurel Lake. Recent studies (Cederholm et al. 2000, Miller and Sadro 2003) indicate that estuarine habitat plays a much more important role in juvenile salmonid survival than previously thought.

Prior to the establishment of the New River system, the combined total area of freshwater lagoon provided by the individual stream or lake systems mentioned above is estimated to be less than 20 acres (based on aerial photo interpretation, not including distinct lake habitats). Conservative recent estimates indicate that the New River system contains over 100 acres of fresh water lagoon habitat (not counting distinct lake habitats). All other things being equal, this is a substantial increase in the amount of lagoon rearing habitat, and may represent a potentially substantial increase in the number of juvenile salmonids surviving to the smolt stage (time of ocean entrance).

Nutrient Loading

Anecdotal information reported during intensive fisheries data collection in the early 1990s suggests that there may be artificially high levels of nutrients entering the waters of New River during the summer months. These observations were reported as a result of large amounts of sheep manure that was collected during fish seining efforts at various locations in the New River system. This condition, combined with the warmer water temperatures found during the summer months and areas of discontinuous flow, may cause stream eutrophication. This would result in decreased levels of dissolved oxygen and avoidance of these areas by most fish species.

During 2002 and 2003, continuous riparian fences were installed along large portions of New River. These fences prevent livestock from entering the New River channel and should reduce the amount of nutrients deposited directly in the channel. Over time, livestock fencing will likely result in improved water quality as nutrient inputs lessen and existing nutrients are flushed through the system by river flow.

Water Temperature

Data collected at numerous sites in the New River system indicates that water temperatures can reach 76°F during summer months, and frequently exceed the State of Oregon temperature standard of 64°F. These high temperatures are approaching the lethal limits of salmon and steelhead, and there has been documentation of fish mortality associated with warm summer water temperatures. In areas where the channel becomes de-watered, near the “high spot,” stretches of warm stagnant water often develop. This, combined with the potential for high nutrient loading from livestock or fertilizer, can result in eutrophic conditions that lead to the depletion of dissolved oxygen in the water column, thereby resulting in salmonid mortality. However, it is also hypothesized that areas where cooler groundwater enters the New River system exist, and are serving as localized water temperature refugia. These areas would allow fish to escape from near lethal water temperatures and low dissolved oxygen concentrations that occur during the heat of the day, and may allow them to utilize areas of the system that would otherwise be uninhabitable during the summer months due to water stagnation and high water temperatures. To date this hypothesis has not been verified.

Aquatic Habitat Conditions - Channel Morphology

Recent Past

As mentioned above, New River is a relatively young river system. As this system grows in length, area, and volume, its relative aquatic habitat importance and its importance to fish species is likely to grow accordingly.

Current Conditions

From an aquatic habitat perspective, the New River system is currently considered to be of fair quality overall. During the winter months, the flooded pastures and terraces of New River likely serve as prime over-wintering habitat for juvenile coho salmon (Confer, ODFW, personal communication 2003). During low-flow conditions, the nature of the aquatic habitat found along this linear river system changes fairly frequently along its entire length and appears to occur in different graduations along its course. In some areas, the habitat takes on the characteristics of a lentic, or lake system, while in other areas, the habitat is more representative of a lotic, or moving water stream system. The varying channel areas found in the five New River reaches during low-flow conditions are discussed briefly below.

Reach 1. Floras Creek bend to Hanson Slough (Rivermile 0 to 1.0): This area is characterized by a relatively wide active channel (ranging from 50 to 200 feet), shallow maximum water depths, and a riparian vegetation community showing visible evidence of grazing induced bank de-stabilization in some areas. In addition, there are several actively eroding areas along the eastern stream bank. This erosion is believed to be caused primarily as a result of winter waves from the South and West, and is likely being exacerbated by the constant force of wind driven waves from the North during the summer months.

Reach 2. Hanson Slough to the resistant clay island (Rivermile 1.0 to 2.2): This area is characterized by a relatively healthy riparian community of rush and sedge species, with evidence that the channel is beginning to narrow slightly (ranging from 50 to 100 feet). However, channel depths in this reach are relatively shallow. This is the area that appears to be the “high spot” in the New River channel. When the breach is located towards the southern end of New River, this area becomes shallow during summer low-flow conditions, and can completely dry up. In addition, salmonid mortality has been documented in this area during summer low flows.

Reach 3. Resistant clay island to New Lake outlet (Rivermile 2.2 to 4.2): This area is characterized by a healthy riparian community of older age rush and sedge species. The channel becomes relatively narrow and deep, and has numerous areas of undercut bank. This is also one of the few areas where the river flow is noticeable, and the stream takes on some of the characteristics of a Rosgen C5 or E5 channel type. Anecdotal reports, seining data, and personal observations indicate that this area is heavily utilized for rearing by a variety of fish species. Information from the *New River ACEC Management Plan* (USDI 1995b) indicates that large, deep pools persist in this area, even during summer low-flow and drought conditions.

Reach 4. New Lake outlet to Storm Ranch boat ramp (Rivermile 4.2 to 6.1): This area is characterized by the dramatic change from the C5/E5 channel type to a poorly defined, wide, shallow area. This area is likely to be of little value to salmonids during the warmer and drier summer months, but may be an important area for over-winter rearing. Both sides of the river are dominated by the European beachgrass community with shore pine being common along the east bank.

Reach 5. Storm Ranch boat ramp to ocean confluence (Rivermile 6.1 to 9.0): This area is characterized by a narrower and slightly deeper channel profile than in the previous segment. There are several large, deep pool formations towards the current mouth of New River. It is likely that these serve as important rearing and staging areas for out-migrating salmonids waiting for the mouth of the river to open each fall. Both sides of the river are dominated by the European beachgrass community with shore pine being common along the east bank.

Desired Future Conditions

Vegetation recovery is occurring in areas where grazing activity has been reduced or eliminated. In addition, vegetation in these areas is shifting away from a pasture grass community to one dominated by rush and sedge species. This change in stream bank vegetation is the initial step in the ultimate development of a narrower, deeper channel configuration. From a fish habitat perspective, a narrow, deep, and well-defined stream channel, with access to a larger floodplain complex would provide optimal habitat for salmonid rearing.

In addition, it would be desirable to develop a stable river mouth and/or breach location on the north side of the high spot in Reach 2. A mouth or breach at this location would still allow ranchers to breach New River during flood conditions and would also encourage river flow to proceed in a northward direction during this occurrence. This would likely result in the mobilization and scouring of sediments that are currently built up and forming the “high spot” in Reach 2. The expected outcome of this scenario would be the formation of a narrower, deeper channel in Reach 2 and the establishment of a more consistent stream channel that does not de-water and strand fish during the summer low-flow months.

3.3 Wildlife

The New River ecosystem is a blend of several freshwater lakes and streams, a tidally-influenced river with a mix of fresh and salt water, forest, wetland, and coastal dune habitats. Many species of waterfowl, shorebirds, wading birds, and neo-tropical migratory birds can be found in the area. New River is situated within the Pacific Flyway. During spring and fall migration it hosts tens of thousands of birds. For example, the mudflats at the mouth of Fourmile Creek are often exposed during low tide, providing optimal stopover foraging habitat for migrating shorebirds. In the uplands, flowering manzanita at Storm Ranch is an important food source for hummingbirds during their annual migration.

Mammals such as river otter, mink, and beaver utilize the many lakes, creeks and river vegetation and shoreline for foraging and den sites. Beaver routinely cut alder and willow in the vicinity of the bridge at Floras Lake and along portions of the lake outlet.

New River lies within the range of federally-listed threatened and/or endangered species. The Western Snowy Plover and the Bald Eagle are the only species documented to either nest or forage in the area. They are discussed in greater detail below.

Western Snowy Plover – General Information

A detailed account of the taxonomy, ecology and reproductive characteristics of the Western Snowy Plover (plover) can be found in the U.S. Fish and Wildlife Service's (FWS) published Final Rule in the Federal Register (58 FR 12864). This document determined the threatened status for the Pacific coast population of the plover. Currently, an estimated 1,900 plovers breed along the west coast of the United States and at least another 1,900 along the west coast of Baja California. Declines in the breeding population have been specifically documented in Oregon and California. In Oregon, plovers historically nested at 29 locations on the coast. In 1990, only six nesting colonies remained, representing a 79 percent decline in active breeding sites. Information from the 2002 breeding season estimated Oregon's coastal population at 99 to 102 adult plovers (Castelein et al. 2002). The *New River ACEC Management Plan* (USDI 1995b) states that the BLM will manage plover nesting and rearing habitat on the foredune. Since the listing of the plover, this has primarily been accomplished by seasonally restricting public access to plover nest areas during the breeding season from March 15th through September 15th and through the restoration of sand dune habitat impacted by the introduction of European beachgrass.

Habitat restoration work within the New River ACEC has been on-going since 1998. This area is commonly referred to as a Habitat Restoration Area (HRA). To date, approximately 120 acres have been treated. A bulldozer is used to remove beachgrass from the foredune and the frontal portions of the foredune are open to ocean overwashing. This type of work provides sparsely vegetated areas of open sand that the plover typically nests in. Yearly monitoring of nest sites along the Oregon coast have documented that plovers respond quickly to habitat restoration, often nesting in areas cleared of beachgrass just months later. During the 2002 breeding season, biologists located seven plover nests within the New River HRA. The draft recovery plan for the plover lists habitat restoration as key to the recovery of the species. Although restoration efforts have been focused on restoring select portions within Critical Habitat Unit (CHU) OR-7 for the recovery of the plover, other native special status species such as yellow and pink sandverbena will benefit.

Western Snowy Plover Critical Habitat

The FWS issued its Final Rule in 1999, designating Critical Habitat for the Pacific coastal population of the plover (50 CFR Part 17). This Final Rule became effective January 2000. Critical Habitat Unit OR-7 encompasses approximately 351 acres and extends 14.5 miles from China Creek (Bandon Beach State Park) south to Floras Lake. CHU OR-7 encompasses all coastal lands within the New River ACEC. The BLM manages approximately 145 acres of CHU OR-7; the remainder is in State Park, county, and private ownership. The draft recovery plan for the plover sets a recovery goal of 54 adults for this CHU and lists habitat restoration as key to accomplishing that goal.

The FWS designates critical habitat in areas that have the physical and biological features necessary to conserve a threatened or endangered species. These areas may require special management considerations. In the Final Rule, the FWS determined that the following physical and biological features and primary constituent elements are essential to the conservation of the plover:

- Space for individual and population growth,
- Food, water, air, light, minerals, and other nutritional or physiological requirements,
- Roost sites,
- Sites for breeding, reproduction, and rearing of offspring, and
- Habitats (nesting grounds and feeding sites) that are protected from disturbance and are representative of the historic geographical and ecological distribution of the species.

Bald Eagle

There are no known Bald Eagle nests within the New River ACEC. The nearest documented nest is located on privately owned land to the east in the vicinity of Twomile Creek. This site has been productive since its discovery a few years ago. It appears that New River and its adjacent wetlands are important areas for these eagles to forage. Adult and immature Bald Eagles are frequently seen flying the river or perched in shoreline trees adjacent to the river and on large driftwood.

Special Status Wildlife Species

Eight special status wildlife species (Table 3) are documented or are suspected to occur within the New River ACEC. An additional eight species are suspected to occur within the ACEC, but have not been documented in the area. Most of these species are highly mobile and may only use the ACEC for short periods of time during the year. Some of these species can be seen from the ocean shore and may not actually use the terrestrial habitats with the ACEC.

Table 3. Special status wildlife species documented (D) or suspected (S) to occur within the New River ACEC.

Scientific Name, Common Name	Life Form	Presence	Status*
Balaenoptera borealis, Sei Whale	Mammal	S	FE, SE
Brachyramphus marmoratus, Marbled Murrelet	Bird	S	FT, ST
Branta canadensis leucopareia, Aleutian Canada Goose	Bird	D	BS, SE
Caretta caretta, Loggerhead Sea Turtle	Reptile	S	FT, ST
Charadrius alexandrinus nivosus, Western Snowy Plover	Bird	D	FT, ST
Chelonia mydas, Green Sea Turtle	Reptile	S	FT, SE

Scientific Name, Common Name	Life Form	Presence	Status*
Clemmys marmorata, Western Pond Turtle	Reptile	D	BS, SSC
Dermochelys coriacea, Leatherback Sea Turtle	Reptile	S	FE, SE
Escrichtius robustus, Gray Whale	Mammal	S	BS, SE
Eumetopias jubatus, Northern (Stellar) Sea Lion	Mammal	S	FT, SSV
Falco peregrinus anatum, American Peregrine Falcon	Bird	D	BS, SE
Falco peregrinus tundrius, Arctic Peregrine Falcon	Bird	D	BS, SE
Haliaeetus leucocephalus, Bald Eagle	Bird	D	FT, ST
Lepidochelys olivacea, Pacific Ridley Sea Turtle	Reptile	S	FT, ST
Pelecanus occidentalis, Brown Pelican	Bird	D	FE, SE
Progne subis, Purple Martin	Bird	D	BS, SSC
Rana aurora, Red-legged Frog	Amphibian	D	BA, FC2

***** FE = Federal Endangered, FT = Federal Threatened, SE = State Endangered, ST = State Threatened, BS = Bureau Sensitive, BA = Bureau Assessment, SSC = State Sensitive Critical, SSV = State Sensitive Vulnerable, FC2 = Federal candidate, list 2, not enough is known to move forward in the listing process. SSC includes those species with pending threatened or endangered status if immediate conservation actions are not taken. Also considered critical are some peripheral species that are at risk throughout their range and some disjunct populations. SSV includes species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring. In some cases the population is sustainable and protective measures are being implemented. In others, the populations may be declining and improved protective measures are needed to maintain sustainable populations over time.

Migratory Birds

Neotropical migrants include a large group of bird species with diverse habitat needs spanning nearly all successional stages of most plant community types (Niles 1992). In the Pacific Northwest, migratory birds typically arrive from late April to early May, are breeding by late May, fledging young in July and August, and have departed for their wintering grounds sometime in late August or early September (Rodenkirk 2002).

Since 1996, breeding bird surveys have been conducted at the Storm Ranch portion of the New River ACEC. Approximately 86 species have been documented to breed in the area (Rodenkirk 2002). Many of them such as the Belted Kingfisher, American Goldfinch and Wilson's Warbler are identified as "riparian obligate or riparian dependent species." Riparian obligate species are defined as those species that place greater than ninety percent of their nests in riparian vegetation or for which ninety percent of their abundance occurs in riparian vegetation during the breeding season. Riparian dependent species are defined as those species that place 60 to 90 percent of

their nests in riparian vegetation or for which 60 to 90 percent of their abundance occurs in riparian vegetation during the breeding season (Rich 1999).

Migratory birds are afforded protection under the Migratory Bird Treaty Act. Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (66 FR 3853) directs Federal agencies to take certain actions to conserve migratory birds in furtherance of the United States' obligations under the migratory bird conventions and the Migratory Bird Treaty Act.

Survey and Manage Wildlife Species

There are no known survey and manage wildlife species, such as salamanders, slugs, snails, and small mammals, within the analysis area.

3.4 Botany

The plant communities, vegetation, and special status plants at New River ACEC are discussed in the *Final New River ACEC Management Plan* (USDI 1995b). There are six botanical communities in the vicinity of the New River Health project: the open sand community, the European beachgrass community, wetland community, the meadow/pasture community, the willow community, and the mixed conifer community (Barbour et al. 1985, USDI 1995b).

The proposed action is located in the open sand, European beachgrass, and wetland community types. Some plant species may be found in more than one community type or in an ecotone or transition area between plant communities that have characteristics of each. In areas of disturbance, the native plant community is invaded by exotic species, a few of which are considered noxious or invasive. A synopsis of the six vegetation community types is discussed below. The sensitive and exotic species that are found in these communities within the project area are also discussed. Table 4 is a complete listing of special status plants documented or suspected to occur at New River ACEC.

Open Sand Community

The open sand community is typically rare and has little aerial cover. It is found along the west side of the New River drainage in overwash areas where high tides and storms force ocean water over the crest of the foredune. In addition, about 120 acres between the high tide line on the Pacific Ocean and about 20 feet from the west bank of New River have been mechanically treated to remove European beachgrass. The treated area is located just south of Fourmile Creek and north of the BLM boat ramp, south 2.5 miles to near the vicinity of Croft Lake outlet. In the future, this treatment area will be extended south along the foredune to private land owned by Gerald Kamph. The open sand community has two documented special status species (Table 4): the pink sand verbena (*Abronia umbellata* ssp. *breviflora*, Bureau Sensitive and Oregon Natural Heritage Program [ONHP 2001] List 1) and the yellow sand verbena (*Abronia latifolia*, Bureau Tracking or ONHP List 3). There is potential habitat for silvery phacelia (*Phacelia argentea*, Bureau Sensitive and ONHP List 1), but no sites have been found. Other native pioneering species include beach silvertop (*Glehnia littoralis* ssp. *leiocarpa*), and seashore lupine (*Lupinus*

littoralis). Exotic plants include two species of sea-rocket (*Cakile edentula* and *C. maritima*) and beach morning glory (*Calystegia soldanella*).

European Beachgrass Community

The exotic or non-native European beachgrass (*Ammophila aernaria*) community is found on both sides of the New River drainage. This naturalized "community" became established along New River during the 1930s to 1940s when plants were purposely planted in Coos County on coastal dunes for erosion control (Hanneson 1962). Large hummocks of beachgrass stabilize sand, cause sand to accrete, compete with native foredune species (Barbour *et al*. 1985), and alter the habitat (Pickart et al. 1990, Pickart and Sawyer 1998). European beachgrass is also found in other community types, especially the mixed conifer community. There is a potential presence of two special status plants, the silvery phacelia and yellow sand verbena (Table 4). These long-lived perennial species may have persisted in spite of the encroachment by European beachgrass. The pink sand verbena, an annual species, is now found where reintroduction efforts have been conducted in overwashes and areas that are semi-cleared of European beachgrass. Native plants co-existing in the European beachgrass community include silky beach pea (*Lathyrus littoralis*) and beach pea (*L. japonicus*). Other exotic plants include seaside tansy (*Tanacetum camphoratum*), cat's ear (*Hypochaeris radicata*), and beach-bur (*Ambrosia chamissonis*), and Scotch broom (*Cytisus scoparius*).

Wetland Community

The wetland community is adjacent to the shores of New River and on islands found in the channel, especially north of the outlet of New Lake. There is one documented special status plants in this community type: short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia,* Bureau Tracking species, ONHP List 4). Native plants in this community include sickle-leaved rush (*Juncus falcatus*), springbank clover (*Trifolium wormskjoldii*), slough sedge (*Carex obnupta*), Pacific silverweed (*Potentilla pacifica*), creeping spike-rush (*Eleocharis macrostachya*), seashore saltgrass (*Distichlis spicata*), Douglas's spirea (*Spiraea douglasii*), and common cat-tail (*Typha latifolia*). Exotic plants include yellow hairgrass (*Aira caryophyllea*), Canada rush (*Juncus canadensis*), birdsfoot-trefoil (*Lotus corniculatus*), and parrot feather watermilfoil (*Myriophyllum aquaticum*).

Meadow Pasture Community

The meadow pasture community is found on lands higher in elevation than the wetland/riparian/estuary community. It is typically located below the European beachgrass community that has created higher dunes throughout the center of the spit between the Pacific Ocean and the New River channel. There are no documented special status plants in this community type. Native plants include red fescue (*Festuca rubra* ssp. *littoralis*), Canada goldenrod (*Solidago canadensis* var. *elongata*), beach sagewort (*Artemisia pycnocephala*), and seashore lupine (*Lupinus littoralis*). Exotic plants include the noxious weed Scotch broom (*Cytisus scoparius*), creeping bentgrass (*Agrostis stolonifera*), western pearly everlasting (*Anaphalis margaritacea*), sweet vernal-grass (*Anthoxanthum odoratum*), quaking grasses (*Briza maxima* and *B. minor*), brome grasses (*Bromus dianthus* and *B. hordaceus*), velvet-grass (*Holcus*

lanatus), hairy hawkbit (*Leontodon taraxacoides*), yellow gland weed (*Parentucellia viscosa*), and seaside tansy (*Tanacetum camphoratum*).

Willow Community

The willow community is adjacent to the wetland community. There are no documented special status plants in this community type. Native plants include Hooker willow (*Salix hookeriana*), sedges (*Carex* species), common cat-tail, and rushes (*Juncus* species). Exotic plants include European centaury (*Centaurium erytheaea*), sticky chickweed (*Cerastium glomeratum*), and Canada rush (*Juncus canadensis*).

Mixed Conifer Community

The mixed conifer community borders the other communities on the extreme eastern side of the New River ACEC. Native plants include shore pine *(Pinus contorta* var. *contorta*), Sitka spruce (*Picea sitchensis*), salal (*Gaultheria shallon*), huckleberry (*Vaccinium* spp.), chaparral broom (*Baccharis pilularis*), and Hooker willow. In the project area discussed by this environmental assessment, there are no documented special status plants in this community type and few exotic plants. A federally endangered plant, the western lily (*Lilium occidentale*) is found in coastal bog and scrub communities near the mixed conifer community.

Table 4. Special status plant species documented and suspected to occur at New River ACEC by scientific name, presence, status, and habitat. See footnote below for code legend.

Scientific Name (Common Name)	**Presence**	**Status**	**Habitat**
Abronia latifolia (yellow sandverbena)	D	BT, ONHP 4	coastal beaches and dunes
Abronia umbellata ssp. *breviflora* (pink sandverbena)	D	SoC, BS, ONHP 1, SE	coastal beaches and dunes
Brodiaea terrestris (dwarf brodiaea)	D	AS, ONHP 2	stabilized dunes
Calypogeia sphagnicola (liverwort)	S	AS, ONHP 2	wetlands containing sphagnum
Carex brevicaulis (short stemmed sedge)	D	AS, ONHP 2	stabilized sand dunes and meadows
Cidendia quadrangularis (= *Microcala q.*, timwort)	D	AS, ONHP 2	coastal wetlands, valley grassland, northern oak woodland, and foothill woodland
Darlingtonia californica (California pitcher-plant)	D	TS, ONHP 4	coastal bogs

Scientific Name (Common Name)	**Presence**	**Status**	**Habitat**
Eriophorum chamissonis (russet cotton grass)	D	AS, ONHP 2	coastal wetlands
Gilia millefoliata (seaside gilia)	D	SoC, BS, ONHP 1	semi-stabilized coastal dunes
Hesperevax sparsiflora var. *brevifolia* (short-leaved evax)	D	TS, ONHP 3	semi-stabilized sand dunes, sandy bluffs, and flats
Hydrocotyle verticillata (whorled marsh pennywort)	S	AS, ONHP 2	wetlands, primarily coastal, private land at Croft Lake
Kurzia makinoana (liverwort)	S	AS, ONHP 2	sphagnum moss bogs or moist mossy rock faces
Lilium occidentale (western lily)	D	FE, SE, BS, ONHP 1	coastal bogs and scrub
Lycopodium inundata (bog club-moss)	D	AS, ONHP 2	peat bogs, muddy depressions, and pond margins
Phacelia argentea (silvery phacelia)	D	SoC, ST, BS, ONHP 1	sand dunes and foredune
Schoenoplectus subterminals (=*Sicrpus subterminalis*, swaying bulrush, water clubrush, bulrush)	D	AS, ONHP 2	freshwater wetlands, lake margins and edges
Tofieldia glutinosa (sticky tofieldia)	S	TS, ONHP 3	wet meadows and bogs
Utricularia gibba (humped bladder-wort)	D	AS, ONHP 2	wetlands, ponds, shallow lakes, and sphagnum bogs
Utricularia minor(lesser bladderwort)	S	AS, ONHP 2	wetlands, ponds, shallow lakes, and bogs

* AS = Assessment Species (ONHP 2), BS = Bureau Sensitive species (ONHP 1), D = documented, FE = Federally Endangered, ONHP = Oregon Natural Heritage Program, ONHP 1= Taxa that are threatened with extinction or presumed to be extinct throughout their entire range, ONHP 2 = Taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon, ONHP 3= Taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range, ONHP 4 = Taxa which are of concern, but are not currently threatened or endangered, S = suspected, SoC = Species of Concern, ST = State Threatened, and TS = Tracking Species (ONHP 3 and ONHP 4).

3.5 Geology

The bedrock geology underlying the New River foredune area consists of Jurassic Otter Point Formation (Ramp 1977) and possibly Eocene Roseburg Formation (Phillips et al. 1982), later defined as Siltez River Volcanics and/or the Umpqua Group by others. However, the area of the project is impacted by the Quaternary sediments of sand forming the beach and accompanying dune field. The sediment on the southern portion of the spit is coarse, derived from Blacklock Point and adjacent sea cliffs. Blacklock Point is mapped as ultramafic rock containing serpentinite, peridotite and a mixture of the two. The sea cliffs directly north of Blacklock Point have been mapped as containing Pleistocene marine terrace sediments (Komar et al. 1999). The spit's sand grades from a coarse to fine material as the spit progresses north. The finer sand is derived from material transported by the Coquille River and ancient Columbia River Sediments.

The New River foredune contains characteristics of a dissipative beach along the northern, finer-grained beach and characteristics of a reflective beach along the southern, coarser-grained beach. The dissipative beach tends to be more stable, responding less to major storms and undergoing smaller changes in elevations from summer to winter. The reflective beach tends to be less stable, changing rapidly in slopes and elevations during individual storms and from summer to winter (Komar et al. 1999). A nearly completely stabilized dune field is located to the east of New River.

The mouth of New River and its accompanying foredune have progressed north by 2.9 miles in 30 years (Komar et al. 1999). This has been accompanied by expansive growth of dune vegetation. At present the level of stability of the foredune varies along its length, with it being unstable to the north where the foredune elevation is low, permitting frequent storm overwashes, unstable at the south where breaching is likely to recur due to the cutbank bend in the river. The foredune is relatively stable along its central stretch where high dunes have developed (Komar et al. 1999). This analysis was completed before the removal of European beachgrass and the reduction of dune elevation.

When European beachgrass was established in the New River area during the 1930s (USDI 1995b, as found in Komar et al. 1999), the stability of the spit was greatly impacted. The migrating sand was trapped in the beachgrass, causing the creation and elevation of the foredune. With the migrating sand being trapped by the foredune, no sediment was available for the dune field and the self-feeding and stabilization process of the dune field was initiated. By the trapping of the migrating sand, the vegetation line advanced between 50 to 100 feet seaward and created a deflation plain behind the foredune, allowing New River to extend its length to the north by 2.9 miles within 30 years. Currently, European beachgrass eradication programs are in progress to remove the vegetation and lower the elevation and reducing the stability of the foredune. The European beachgrass, and its accompanying foredune, have both protected New River from breaching of by the oceanic processes and fed its growth to the north by the starvation of the dune field, creating the deflation plain in which it can flow.

3.6 Soil

The soils environment affected by the three alternatives includes the area of breaching across the New River foredune and an area generally within one mile east of New River and Floras Lake outlet that is affected by wintertime flooding. The foredune includes the fine sands of vegetated stabilized dunes and smaller areas of shifting fine dune sand that does not support vegetation. Along the east side of the river for a width varying from several hundred feet to about one half mile there is a mosaic of fine sand soils that includes the low lying deflation plain, the stabilized dunes and the open non-vegetated dunes. All of these fine sand soils in close proximity to the river are well drained with the exception of the deflation plain, which is subject eight months of the year to a high water table within a foot below and above the surface. Permeability is rapid and the available water capacity is low for all these sand soils.

The pasture lands east of New River subject to routine flooding have soils with more organic matter, silt, and clays. These soils are defined as loams, sandy loams, and silty-clay loams. Within this area, silt loams and silty-clay loams comprise more than 90 percent of the surface area and more than half the total surface area subject to flooding at New River. These silt loams and silty-clay loams are on flood plains, low-lying terraces, and depressions on the marine terraces. They are in general poorly drained, permeate slowly, and have moderate to moderately high available water capacity. Additionally they have a high water table that fluctuates, from a foot above the surface to two feet below, for five to six months during the wet season.

A complete description of soil properties for Coos County is found in the Soil Survey of Coos County, Oregon. An updated Curry County Soil Survey has yet to be published, but soil descriptions are available online (NRCS 2003).

3.7 Recreation

The New River ACEC is primarily accessed by the public at two locations: Storm Ranch and Floras Lake. While there is some correlation between the uses at these locations, they are considered two separate visitor-use sites.

Storm Ranch

In the past, fishing and hunting were the two primary activities at New River. Currently, hiking, wildlife viewing, site-seeing, and non-motorized boating are slowly gaining popularity. For most of the year, hiking and wildlife viewing are the most significant recreational activities. An average of ten people per day visit Storm Ranch to participate in these activities. The trails are also used by bikers and horseback riders to a lesser extent. Fishing is very popular in November and December after the river naturally breaches to the north and salmon runs begin. Waterfowl hunting occurs November through January at lower levels. Motorized and non-motorized boating occurs on the river as well during the winter months. Motorized boating is primarily connected with fishing and hunting. Non-motorized boaters focus primarily on canoeing and kayaking experiences. Visitors also use boats to cross New River in order to access the beach for sightseeing and beachcombing opportunities between mid-September and mid-March. The area

is closed to visitation between March and September during the Western Snowy Plover nesting period.

Floras Lake

Floras Lake is rapidly growing in popularity as a beach and water access point. It is the only place for the public to reach the ocean beach for about twelve miles of coastline. A bridge across the outlet of Floras Lake allows the public to walk the beach or hike a system of trails in Blacklock State Park. Summertime use can sometimes exceed 100 persons per day. Floras Lake is also popular with birdwatchers that walk along the outlet of the lake to take advantage of the presence of a wide variety of bird species. Windsurfing is very popular at Floras Lake and surfers often use the west side of the lake to rest and sight-see on the ocean beach. Wind surfing and kite surfing are also increasing in popularity. The outlet of Floras Lake is popular with kayakers and fishermen who use it to access New River.

3.8 Cultural Resources

Cultural resources are not present on the foredune in either the area of the proposed or alternative actions. However, cultural resources may be present along the east bank of the river in the vicinity of either the proposed or alternative actions.

3.9 Noxious Weeds

The open sand community is present along the west side of New River in overwash areas where high tides and storms force ocean water over the crest of the foredune. Presently over 100 acres have been opened up by removal of non-native European beachgrass (not designated a noxious weed) through mechanical treatment. In the future, this zone would likely extend south through the affected foredune.

French broom (*Genista monospessulanus*), Scotch broom (*Cytisus scoparius)*, and gorse (*Ulex europaeus*) are three "B" designated noxious weeds with light to moderate cover and density on the affected area and adjacent areas of New River ACEC (Oregon Department of Agriculture 2003). Three other "B" designated noxious weeds, Canada thistle (*Cirsium arvense*), bull thistle (*C. vulgare*), and tansy ragwort (*Senecio jacobaea*), are found in small areas and in small numbers. During 2001 and 2002, Scotch broom was manually controlled at New River ACEC. No "A" or "T" designated noxious weeds have been documented on the affected area or the New River ACEC.

Surface disturbing activities are the principal spread of noxious weeds and are generally a project design issue for noxious weed prevention. Vegetation communities along New River are influenced by ocean salt water spray and consequently are low profiled and form tufted, island like communities. Because of this, noxious weeds found in this type of community are difficult to remove and control.

3.10 Hazardous Materials/Solid Wastes

No hazardous substances or solid waste issues exist in the proposed project area.

3.11 Port-Orford-cedar

There is no Port-Orford-cedar present in the proposed area or in the area influenced by the alternative actions.

Chapter 4.0 Environmental Consequences

4.1 Hydrology

4.1.1 Alternative 1 – No Action

Direct and Indirect Effects

Ranchers adjacent to New River can alleviate flooding by breaching the foredune under conditions specified in their Ocean Shore Permit. These conditions include: 1) mechanical breaching only from November 15th to February 15th of each year, and 2) the floodwater must be over the elevation of Knapp Lane and/or the gate at the end of the spur road on McKenzie's southern ranch. Knapp Lane is an access road running east-west to the river a short distance south of Bono Ditch. Landowners typically breach the river at the Floras Creek/New River bend, although they also have the option of breaching at the Kamph Ranch/Bono ditch area or the Knapp Ranch/Hanson Slough area. These breach sites would perpetuate a low foredune south of Bono Ditch where repeated breaches have occurred in the recent past. These breach sites result in New River flowing north from Floras Creek/Floras Lake to the breach location and cause New River to flow south (reverse flow) to as far north as the New Lake/Croft Lake outlet vicinity. North of Croft Lake outlet the river flow would split again and flow north, being controlled by the stable mouth between Fourmile and Twomile Creeks and tidal cycles.

The southern end of New River is very flat and wide and during winter runoff acts as detention storage, resembling a lake. Mechanical breaches in this area are the most effective in draining the largest amounts of water the fastest in two to three days. Stream flow and storage from about 81 mi^2 of watershed would be drained from the south and about 14 mi^2 from the north for a total of 95 mi^2. The initial breach draw-down, may erode stream banks of Floras Creek, for as much as two miles upstream. Contributing factors may include higher velocities entraining sediments or saturated bank collapse with rapid draw-down. The stream channel would deepen in the area of the breach, based on exit velocities and channel substrate. Reverse flow south of New Lake outlet, from a sudden release of waters in a breach, would carve a negative slope to the point of the breach in a usually northward flowing river. The longitudinal profile of the river through this southern section is already very flat. This condition may lead to summer drying in areas between Bono Ditch and New Lake outlet. Any selected breach site would lower the water level to the breach control elevation. There would be an initial embayment of mostly riverine water near the breech site as it closes. During the winter, sea overwash may erode the eastern shoreline of New River.

New River may breach naturally from large flood events at the bend where Floras Creek and New River converge. This is because the easily erodible sand foredune is along the outside of the bend where stream velocities are the highest.

Cumulative Effects

The area would be very efficiently drained, including a lowering of inland pasture and wetland water tables. This may result is less spring and summer flows, because water would have been

depleted from floodplain storage. New River would continue to have seasonal split mouths in the winter and summer drying in sections of the channel in the summer. The northern small coastal watersheds (Twomile, Fourmile, Croft Lake, and New Lake) in the New River system would be disconnected from the southern feeding watersheds (Floras Creek and Boulder/Floras Lake) during the summer.

4.1.2 Alternative 2 – Proposed Action

Direct and Indirect Effects

Placing a mechanical breach site between New Lake and Croft Lake outlets would encourage the river to move north in one direction. A positive declining channel bed slope would be maintained. This should help prevent summer drying of sections of the river. The breach zone is between Rivermile 4.2 to 5.2. There is a very long, flat and wide area, particularly in the first two miles that can pond floodwaters. Because the breach site is further north from the main body of stored floodwater, the initial draw-down period would be between five to seven days. Stream flow and storage from about 95 mi^2 of watershed would be drained to the breach elevation. The stream channel would be deepened in the area of the breach, based on exit velocities and channel substrate. Because the foredune is relatively high, estimated at 50 feet, excavation for a breach would involve movement of a large amount of sand. The dune height and steepness near the breach opening would likely sand shut faster than a low dune because of lee slopes present from the prevailing winds. There would be an initial embayment of mixed salt and freshwater near the breech site as it closes.

Cumulative Effects

The southern New River and floodplains area would be less efficiently drained and there would be a gradual lowering of inland pasture and wetland water tables. This may result is somewhat less spring and summer flows, because water would have been depleted from floodplain storage. New River would continue to have seasonal split mouths in the winter and a thread of continuous low flow in the summer.

4.1.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct and Indirect Effects

This reach of river is between Rivermile 5.0 to 7.0. This reach of river is controlled by the stable mouth between Fourmile and Twomile creeks. A mechanical breach in this reach may only be minimally effective in reducing winter floodwaters to the south since this reach of river is fairly uniform, wide and at a low gradient. A mechanical breach would allow seawater to enter at floodtides in combination with the Twomile natural opening. This estuarine water backflow into riverine water would act as a brake and detain more floodwater. Riverine water may escape only on the ebb tides in combination with seawater that entered through the breach. So there may be a tremendous volume of water that must escape, and would be controlled by the breach size and control elevation, water slope and depth of the river above the control, tidal cycles and the New River/Twomile Creek opening, the main storage of floodwater in and along the river is between Floras Creek and New Lake. Therefore, there is a much longer time factor for a parcel of water

to arrive at the discharge point. The stream channel may be deepened in the area of the breach, based on entrance and exit velocities and channel substrate.

Sea water entering through a mechanical breach on a flood tide could cause shoreline erosion on the eastern shoreline of New River. Because the beach types are changing in this reach from a steeper reflective beach to a flatter dissipative beach, the breach opening may erode wider and may stay open longer. These factors in combination with ocean conditions may give more opportunity for storm surge seawater to enter the river and erode the eastern shoreline.

Cumulative Effects

There may be beneficial recharge of near surface groundwater in upper New River. Spring and summer flows may be greater, than if the breach was placed further upstream. There may be prolonged eastern shoreline erosion.

4.1.4 Alternative 4 - Breach between Bono Ditch and New Lake Outlet

Direct and Indirect Effects

The breach zone for this alternative would be located between Rivermile 1.7 to 4.2. The river is 50 to 100 feet wide with a very flat slope and resistant clay bed and banks north of Bono Ditch to approximately Rivermile 2.2 in the area of a clay island. A breach along this reach of river may/may not deepen the channel locally depending on the ability of flowing water to shear the bed and bank sediments. It is likely that split flow would result, with water running in both directions. South flowing water would perpetuate a flat or negative river slope. This would likely lead to channel drying when stream flow is low during the summer period.

Reach 3 of New River is a narrower meandering river with deeper pools and undercut banks. Aquatic vegetation (sedge species) constrains the channel and provides some bank undercutting. The river is trending towards a C5/E5 river (Rosgen 1996). A breach along this zone would likely set back the natural progression of states of the system in trending towards a more stable channel form as bank vegetation would be washed away by exiting floodwater. Flow would most likely proceed in a northerly direction because this reach of river has a somewhat steeper slope.

Cumulative Effects

A breach between Bono Ditch and New Lake outlet would be more efficiently drain the floodplains at the southern end of New River and there would be a more rapid lowering of inland pasture and wetland water tables. This may result is somewhat less spring and summer flows, because water would have been depleted from floodplain storage. New River would continue to have seasonal split mouths in the winter and may have a zone of dry channel in the summer south of resistant clay island. Because the foredune is relatively high (estimated at 50 feet), excavation for a breach would involve movement of a large amount of sand. The dune height and steepness near the breach opening would likely sand shut faster than a low dune because of lee slopes present from the prevailing winds. There would be an initial embayment of riverine water near the breech site as it closes.

4.2 Fisheries

4.2.1 Alternative 1 – No Action

The no action alternative would maintain the status quo and there would be no change in BLM's current management strategy. As a result, under the current Ocean Shore Permit, mechanical breaching of the river would continue on private land near Floras Creek to alleviate flooding of adjacent pasturelands. Mechanical breaching would be permitted annually between November 15th and February 15th.

Direct and Indirect Effects

Aquatic Habitat. When a breach event occurs, a common direct effect is a sudden surge of water through the breach, and gradual widening and deepening of the breach area as large volumes of water easily cut through and transport sandy bottom substrates. This rapid drainage of water results in a relatively quick drop in the depth of New River and the lower one to two miles of Floras Creek and drainage of adjacent flooded pastures. Anecdotal observations from local ranchers and BLM staff indicate that it takes approximately two to three days for flooded pastures to drain when New River is breached at this location. In addition, the majority of the water in New River that had been moving in a northerly direction would suddenly shift direction, and flow in a southerly direction towards the breach location.

An indirect effect of status quo management would be the continued maintenance of marginal aquatic habitat along several reaches of New River. This marginal aquatic habitat is believed to have developed, in part, as a result of flow reversal and consequent loss and interruption of sediment transport capabilities that occur when New River breaches at the southern bend. The "high spot" in Reach 2 of New River would likely be maintained.

Fish. No direct effects to adult salmon, steelhead, or cutthroat trout would be anticipated as a result of this action. Indirect effects can be evaluated based on past history. Once a breach location has developed, either naturally to the north, or mechanically elsewhere, adult salmon and steelhead will enter the system at various times on their respective spawning migrations. Anecdotal observations by local ranchers indicate that occasionally, adult salmon (primarily coho) have been stranded in pastures or caught in pasture fences as flood waters recede relatively quickly (over a period of two to three days). Although it has not been documented, it is also possible that juvenile salmonids present in and around the flooded pastures may be stranded as the flood waters recede.

The direct effects of this action on juvenile fish populations are more difficult to predict. At the time when mechanical breaching is permitted (November 15th to February 15th), it is unlikely that many juvenile Chinook salmon would be present in the New River system. Typically, juvenile Chinook salmon smolts utilize the New River estuary later in the spring and summer, entering the ocean between June and October (USDI 1995b). Recent smolt trapping efforts conducted in the Floras Lake system, coho salmon, steelhead, and cutthroat trout indicate that smolts typically enter the New River estuary and ocean in mid to late spring, between April and June. Therefore, the majority of these salmonid smolts would not be present in the New River system at the time of mechanical breaching.

The extent of juvenile salmonid use in New River during the late fall and winter months has not been determined, primarily due to the extreme high water and flooding conditions encountered at this time of year. However, juvenile salmonids with extended freshwater rearing patterns, such as pre-smolt coho salmon, steelhead, and cutthroat trout may be present in the New River system at the time of mechanical breaching. If juvenile salmonids are in the immediate vicinity of the breach, they may be flushed out of New River due to high water velocities at this location.

Cumulative Effects

Aquatic Habitat. Under status quo management, channel dimensions within the active channel of New River are likely to remain similar to their current conditions over time. The majority of recent breaching events at New River, whether natural or human-induced, have taken place near the southern bend. Under the no action alternative, this situation would persist. Considering this, it is likely that future breaching events in a similar location would contribute towards the maintenance of channel conditions very similar to those currently existing.

As a result, aquatic habitat conditions for salmonids are not likely to change substantially in New River. New River would continue to contain several channel reaches that are relatively wide and shallow, and subject to stream heating and eutrophication during the summer months. These areas would likely remain uninhabitable to salmonids, and may also result in stranding of fish and fish mortality, as has been seen in the past.

Riparian vegetation and stream bank stability would continue to improve along most areas of New River as a result of riparian fencing and planting activities that were implemented in 2002 to 2003.

Fish. As mentioned above, sporadic breaching events at the southern bend of New River would result in the maintenance of marginal aquatic habitat conditions. In addition, the breaching events in this area would be expected to result in occasional stranding and mortality of adult salmon and steelhead in pastures, as seen in the past. In addition, there is the possibility that juvenile salmonid mortality would also occur, either through stranding in pastures, or direct displacement into the ocean prior to complete physiological preparation for an ocean existence.

There is also a high likelihood that the "high spot" in Reach 2 would become dewatered during summer low-flow conditions, potentially resulting in stranding and mortality of salmonid juveniles, as has been seen in the past. Therefore, it is not likely that fish populations in the New River/Floras Creek system would benefit from status quo management.

4.2.2 Alternative 2 – Proposed Action

Under the proposed action the foredune would be pre-conditioned and New River would be mechanically breached between the outlets of New Lake and Croft Lake. Mechanical breaching would be permitted between November 15th and February 15th.

Direct and Indirect Effects

Aquatic Habitat. The direct effects of this action would be somewhat similar to those of the No Action alternative. One slight difference over status quo management would be the actual pre-conditioning of the chosen breach location during the summer months. The pre-conditioning work involves the use of large tractors to push aside large amounts of sand and European beachgrass, effectively creating a channel for future floodwaters to flow through. A relatively large amount of sand is left in the created channel towards the ocean side in order to plug the channel and prevent high surf from entering and filling it in with sand prior to its use. This work is usually done in association with the Western Snowy Plover habitat restoration work already being carried out on the beach and would not have an effect on aquatic habitat.

If floodwaters in Floras Creek and New River reach the areas designated in the Ocean Shore Permit, the local ranchers are allowed to mobilize equipment to the pre-conditioned area, remove the remaining sand plug, and breach New River.

When a breach event occurs, a common direct effect is a sudden surge of water through the breach, and gradual widening and deepening of the breach area as large volumes of water easily cut through and transport sandy bottom substrates. This rapid drainage of water results in a relatively quick drop in the depth of New River and the lower one to two miles of Floras Creek, and drainage of adjacent flooded pastures. Anecdotal estimations from local ranchers and BLM staff indicate that it may take approximately seven days for flooded pastures to drain when New River is breached at this location.

Stream flows that had been moving in a northerly direction from Floras Creek to the breach location (about 4.5 mi) would continue to flow in that direction. A portion of the stream flows from the breach location to the north (about 4.5 mi) would suddenly shift direction, and flow in a southerly direction.

An indirect result of this action would be the deepening of the channel in Reach 2, the area currently thought to be the “high spot.” A breach at the proposed location would result in flows from Floras Creek and Floras Lake combining with flows from the New Lake area, and proceeding northward to the breach location. Sediment transport processes would proceed in a northward direction.

Fish. No direct effects to adult salmon, steelhead, or cutthroat trout would be anticipated as a result of this action. No heavy equipment would be allowed to operate within the wetted channel and no adult salmonids are likely to be located near the outer edge of the pre-treated breach channel at the time when the sand plug is removed.

Indirect effects can be evaluated based on past history. Once a breach location has developed naturally to the north, adult salmon and steelhead will enter the system at various times on their respective spawning migrations. As floodwaters rise and cover pasturelands, these fish are typically seen moving out onto these flooded pastures, presumably in search of their spawning streams. The flooded pastures and increasing floodwaters may eventually trigger a desire by the local ranchers to mechanically breach the river south of the naturally formed mouth and thereby

increase the rate of floodwater drainage. Based on the swimming abilities of adult salmonids, it is not likely that adult salmon and steelhead already in New River would be entrained in the drainage flows leaving New River at the mechanical breach site. These fish would be able to easily avoid this area and continue their upstream spawning migration. If it takes approximately seven days for flooded pastures to drain when New River is breached at this location, then this slower rate of pasture drainage may also result in fewer incidents of adult coho salmon being stranded in pastures or fencelines. Although not documented, this slower rate drainage may result in a lower likelihood of juvenile salmonid strandings as well.

The direct effects of this action on juvenile fish populations are more difficult to predict. At the time when mechanical breaching is permitted (November 15th to February 15th), it is unlikely that many juvenile Chinook salmon would be present in the New River system. Typically, juvenile Chinook salmon smolts utilize the New River estuary later in the spring and summer, entering the ocean between June and October (USDI 1995b). Based on recent smolt trapping efforts conducted in the Floras Lake system, coho salmon, steelhead, and cutthroat trout smolts typically enter the New River estuary and ocean in mid to late spring, between April and June. Therefore, the majority of these salmonid smolts would not be present in the lower New River system at the time of mechanical breaching.

The extent of juvenile salmonid use in New River during the late fall and winter months has not been determined, primarily due to the extreme high water and flooding conditions encountered at this time of year. However, juvenile salmonids with extended freshwater rearing patterns, such as pre-smolt coho salmon, steelhead, and cutthroat trout may be present in the New River system at the time of mechanical breaching. If these juvenile salmonids are in the immediate vicinity of the breach, they may be flushed out of New River due to high water velocities at this location.

Cumulative Effects

Aquatic Habitat. A cumulative effect of this action would likely be the eventual build up and stabilization of the foredune in the vicinity of the southern bend, where Floras Creek becomes New River. As the breach of New River during the winter months is maintained to the North, the erosive forces that continually removed sand accumulations at the southern bend in the past would be redirected to the north. Over time, this would result in sand accumulation and dune formation, followed by dune stabilization by beachgrass in this area. This would reduce the likelihood of natural breaching events occurring near this southern bend and would encourage the development of a more stable mouth and breach location to the north.

In addition to the increased foredune development mentioned above, it is likely that the active channel of New River may start to narrow and deepen over time. This channel shift would be a result of three actions: the increased erosive force being directed in a northward direction, the increase in communities of sedge, rush, and willow due to riparian fencing, and the trapping and retaining of sediments transported in the water column during higher flows by the riparian vegetation. Over time, the trapped sediment builds up vertically and horizontally, and is continually stabilized by riparian vegetation. This situation would continue to occur until channel equilibrium is reached.

Fish. The channel changes mentioned above would likely have a beneficial effect on rearing habitat, by deepening channels, reducing water temperatures, and providing more refuge from predators. In addition, the breaching events in this area would be expected to result in fewer occurrences of stranding and mortality of adult salmon and steelhead in pastures (as seen in the past) due to the increased time it takes for water to drain (seven days vs. two days). There is also a high likelihood that the former "high spot" would not become de-watered during summer low-flow conditions, due to channel scour and deepening. Therefore, fewer incidents of juvenile salmonid stranding and mortality would occur. These changes would likely result in a cumulative beneficial effect on fish and wildlife populations living in this area.

4.2.3 Alternative 3 – Breach North of Croft Lake Outlet

Under this alternative, the foredune would be pre-conditioned and New River would be mechanically breached between the outlet of Croft Lake and the northern boundary of the Storm Ranch portion of the ACEC. Mechanical breaching would be permitted between November 15th and February 15th.

Direct and Indirect Effects

Aquatic Habitat. The direct and indirect effects of this action would be similar to those of the Proposed Action alternative. The primary difference would be a slight increase in the length of river with a northward flow direction, and a slight decrease in the length of river with a southward flow directions immediately following the mechanical breach. Stream flows from Floras Creek to the breach location (about 5.5 mi) would continue to flow in a northerly direction. A portion of the water from the breach location to the north (about 3.5 mi) would suddenly shift direction, and flow in a southerly direction. Anecdotal observations from local ranchers and BLM staff indicate that it takes approximately ten days for flooded pastures to drain when New River is breached at this location.

Fish. The direct and indirect effects of this action would be similar to those of the Proposed Action.

Cumulative Effects

New River was historically breached at this location annually by Jack Storm from the 1950s until the mid 1970s in order to maintain a popular recreational fishery (USDI 1995b). Since that time, no mechanical breaching is known to have occurred in this vicinity. Recent work to restore habitat for the plover has resulted in the treatment of many acres previously dominated by European beachgrass along the foredune in this area. As a result, the foredune in this vicinity is lower in overall height and is more susceptible to ocean overwashing during winter storm events. The cumulative effects of this action on fish and aquatic habitat are likely to be similar to those of Alternative 2.

4.2.4 Alternative 4 - Breach between Bono Ditch and New Lake Outlet

Direct and Indirect Effects

Aquatic Habitat. The direct and indirect effects of this action would be similar to those of the previous alternatives. The primary difference would be a slight decrease in the length of river with a northward flow direction and a slight increase in the length of river with a southward flow direction immediately following the mechanical breach. Stream flows from Floras Creek to the breach location (about 3.5 to 4 mi) would continue to flow in a northerly direction. A portion of the water from the breach location to the north (about 5 to 5.5 mi) would suddenly shift direction, and flow in a southerly direction. Anecdotal observations from local ranchers and recent observations from BLM staff indicate that it takes approximately two weeks for flooded pastures to drain when New River is breached at this location.

There is speculation as to why floodwaters take so long to drain when a breach is placed at this location when compared to other breaches to the north and immediate south. This area is the area considered to be the "high" spot in the New River channel. As a result, flood waters may not have the energy to erode the dunes down to a low base level as seen at other breach locations. In addition, a breach in this location results in water from Floras Creek (flowing from south to north) colliding with water from New Lake and the other systems to the north (flowing from north to south). This may be resulting in an overall loss of momentum and erosive energy as these two flows merge prior to exiting the system, thereby slowing the rate of floodwater drainage and decreasing overall channel cutting and enlargement.

Fish. The direct and indirect effects of this action would be similar to those of the Proposed Action.

Cumulative Effects

The cumulative effects of this action on fish and aquatic habitat are likely to be similar to those of the Proposed Action alternative.

A summary of the proposed actions and their affects on the fishery resources is presented in Table 5.

Table 5. Summary of key differences between the four alternatives on the fishery resources.

Alternative	Draw-Down Rate	Channel Effects	Aquatic Habitat Effects	Effects on Fish Populations
Alternative 1 (No Action)	About 2 to 3 days to drain flooded areas, possibly resulting in stranded adult and juvenile salmonids.	No change. High spot and shallow channel maintained. Areas of discontinuous flow commonly occur.	Marginal rearing habitat maintained. Continued risk of juvenile fish stranding and related mortality. Increased risk of thermal stress and eutrophication in stagnant waters.	Minor risk of flushing fish to ocean during breach. Long-term risk of fish stranding and mortality due to rapid drainage of floodwaters and maintenance of shallow or discontinuous channel areas during summer low flow conditions
Alternative 2 (Proposed Action)	About 7 days to drain flooded areas, reducing likelihood of stranded adult and juvenile salmonids.	Channel deepening through high spot. No areas of discontinuous flow.	Improved rearing habitat. Reduced risk of juvenile fish stranding and related mortality. Reduced risk of thermal stress and eutrophication in continuously flowing waters.	Minor risk of flushing fish to ocean during breach. Reduced risk of adult fish stranding and mortality due to moderate drainage time of floodwaters. Reduced risk of juvenile fish stranding and mortality due to continuous flow.
Alternative 3	About 10 days to drain flooded areas, reducing likelihood of stranded adult and juvenile salmonids.	Channel deepening through high spot. No areas of discontinuous flow.	Improved rearing habitat. Reduced risk of juvenile fish stranding and related mortality. Reduced risk of thermal stress and eutrophication in continuously flowing waters.	Minor risk of flushing fish to ocean during breach. Reduced risk of adult fish stranding and mortality due to moderate drainage time of floodwaters. Reduced risk of juvenile fish stranding and mortality due to continuous flow.
Alternative 4	About 14 days to drain flooded areas, reducing the likelihood of stranded adult and juvenile salmonids.	Some channel deepening through high spot. No areas of discontinuous flow.	Improved rearing habitat. Reduced risk of juvenile fish stranding and related mortality. Reduced risk of thermal stress and eutrophication in continuously flowing waters.	Minor risk of flushing fish to ocean during breach. Reduced risk of adult fish stranding and mortality due to moderate drainage time of floodwaters. Reduced risk of juvenile fish stranding and mortality due to continuous flow.

Compatibility with the Aquatic Conservation Strategy

The four components of the Aquatic Conservation Strategy are 1) Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis, and 4) Watershed Restoration.

1. Virtually all of the actions associated with a mechanical breach of New River would be located within Riparian Reserves (on Federally-managed lands) or within the area of riparian influence (on privately-managed lands). The intent of a mechanical breach of New River to the north of the New Lake outlet is to promote and maintain riverine processes in order to scour a more distinct river channel. Therefore, the proposed action is designed with the intent

of restoring conditions within Riparian Reserves on Federally-managed lands, as well as riparian areas along privately managed parcels.

2. There are no Key Watersheds in the Floras Creek/New River system. The nearest key watersheds are found in the Sixes and Elk River systems, to the South, and the upper South Fork Coquille River, to the North.

3. No Watershed Analysis has been conducted for the Floras Creek/New River system. However, the South Coast Watershed Council conducted a Watershed Assessment of the Floras Creek system, and developed a Watershed Action Plan in 2001. Unfortunately, this assessment was focused on Floras Creek and did not address recommendations regarding flood control or breaching of New River. However, the purpose of the proposed action is to improve channel conditions and aquatic habitat while still providing flood relief for private landowners. Therefore, the general purpose of this project is consistent with other recommendations in the watershed assessment, which also promote improved aquatic conditions within the watershed.

4. As discussed above, the proposed action is primarily a modification of existing flood control efforts with a shifted emphasis towards aquatic and riparian restoration. Completion of the action would result in improved channel conditions, and improved aquatic habitat overall.

Threatened and Endangered Species and ESA Consultation

The entire analysis area is within the Oregon Coast coho salmon Evolutionarily Significant Unit (ESU). The Oregon Coast coho salmon is a Federally-listed threatened species. Impacts to this species and designated critical habitat have been addressed in consultation with the National Marine Fisheries Service (NMFS). All mandatory terms and conditions from the NMFS' Biological Opinion have been or will be incorporated in accordance with the Endangered Species Act.

All alternatives are likely to impact coho salmon to some extent, either directly, indirectly, or cumulatively. The largest risk of an impact occurring from the actions associated with this project would come from the no-action alternative. See the discussions of direct, indirect, and cumulative impacts above. Therefore, the Proposed Action or Alternatives 3 and 4 are likely to be the most beneficial options for improving the health of the New River system. Under the proposed action, there are no direct mechanisms for an aquatic impact to occur as a result of mechanically breaching New River. However, the indirect mechanisms of impact would fall under the categories of "harming or harassing" coho salmon, and would be considered "Likely to Adversely Affect," resulting in formal consultation with NMFS.

Magnuson-Stevens Fishery Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires Federal action agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH) identified under the MSA. The NMFS has found that the existing National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) environmental review

process, including the Interagency Streamlined Consultation Procedure for Section 7 of the Endangered Species Act (1999), used by the United States Forest Service (USFS) and the Bureau of Land Management (BLM) for Federal Activities can be used to satisfy the EFH consultation requirements of the MSA.

Based on the information provided in the discussions above and in the Biological Assessment, the potential impacts of the proposed actions on Federally-managed lands would be insignificant. However, ESA consultation has resulted in a "Likely to Adversely Affect" determination due to the potential to "harm or harass" coho salmon (and consequently Chinook salmon). The proposed action would have a beneficial effect on fish habitat and therefore would not adversely affect EFH for coho or Chinook salmon.

The NMFS is required to provide EFH conservation recommendations to the BLM for actions that adversely affect EFH. Since the impacts of the proposed action are likely to be beneficial, no EFH conservation recommendations would be proposed for these projects. The BLM must reinitiate consultation with NMFS if the action is substantially revised in a manner that may adversely affect EFH or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR Section 600.920 [k].)

4.3 Wildlife

4.3.1 Alternative 1 – No Action

Direct and Indirect Effects

Under Alternative 1, the no action alternative, existing conditions would likely be maintained. Natural breaching that has occurred at numerous locations along New River since the late 1800's may occur during years of high rainfall. If the adjacent private pastures incur flooding, mechanical breaching at the south end of the spit would be granted from Oregon Parks and Recreation Department to local ranchers. In 1998, the breach that naturally occurred at the bend in the river remained open into mid-summer, lowering river water levels and allowing easier access by the public to sensitive areas (i.e., plover nest areas) to the north. Natural and mechanical breaching at the south end of the New River Spit could be detrimental to wildlife such as the federally-listed Western Snowy Plover.

Cumulative Effects

The New River area including adjacent pasture and wetland areas would be drained possibly resulting in less spring and summer flows, because water would have been depleted from floodplain storage. Drying in sections of the river channel during the summer months may eventually change current plant and animal communities now established within the ACEC over the long-term.

4.3.2 Alternative 2 – Proposed Action

Direct and Indirect Effects

Under Alternative 2, the proposed action, a breach location would be established across the spit between the outlets of New Lake and Croft Lake. Although water levels in the river are expected to drop quickly the first few days the breach is open, it is not expected to impact wildlife use in the area. Breaching at this location should effectively reduce flooding on the adjacent private pastures and still maintain adequate water levels in the river for wildlife use. This breach location is in an area where the BLM has been restoring coastal dune habitat for the plover and reintroducing native dune plant species since 1998. A breach in this location would encourage ocean overwashing, maintain open sand habitat for nesting plovers and native dune plants and eliminate non-native European beachgrass from the immediate area.

Cumulative Effects

Breaching and overwashing of the spit is a naturally occurring process within the New River ecosystem. The wildlife that populate this area have evolved with the dynamics of this unstable environment, therefore, encouraging the river to breach at this location is not expected to negatively affect wildlife use of the area. It is expected that wildlife and dune plant habitat will continue to improve over the long-term followed by an increase in those populations that utilize these habitats.

4.3.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

Under Alternative 3, a breach on federal lands north of Croft Lake outlet, the effects to wildlife resources would be similar to the direct and indirect effects described above for Alternative 2. The cumulative effects would be similar those described above for Alternative 2.

4.3.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Direct, Indirect, and Cumulative Effects

Under Alternative 4, a breach on federal lands between Bono Ditch and New Lake outlet, the effects to wildlife resources would be similar to the direct and indirect effects described for Alternative 1. The cumulative effects would be similar those described for Alternative 1.

4.4 Botany

4.4.1 Alternative 1 – No Action

Direct and Indirect Effects

Under Alternative 1, the no action alternative, the existing conditions would likely be maintained. Additional treatments of the foredune community in support of habitat improvement for the endangered plover are likely to continue. This effort creates additional open sand community, a habitat that is favored by native coastal dune species. The populations of special status plants in the open sand community would likely increase in size and number. Concomitantly, the aerial extent of the nonnative European beachgrass community would decrease.

If private land owners breach New River in the Floras Creek area, sediment in the New River channel north of the break would not be transported north along the New River system by the peak flow of winter floods into the Pacific Ocean. Sediment would accumulate in the river channel, especially adjacent and north to the outlet of New Lake. It is likely that the river channel would become shallower than at present. Aquatic and wetland plants would colonize the sediment deposited along the channel bottom and riverside banks in low velocity areas. The wetland community type would likely increase in size due to the increase in available created habitat. Little to no change would be expected for the meadow pasture, willow, or mixed conifer communities.

Cumulative Effects

If sufficient sediment accumulates in the New River system, the channel may become partially blocked at one or more places. Water would pond south of the blockage, forming a temporary lake. Eventually, water would overtop the sediment block and flow would transport sediment downstream or north of the constriction. Some plants may be uprooted by this change in substrate. Sediment would redeposit in lower velocity areas and shorelines, downstream of the constriction. The newly created sediment would continue to be colonized by aquatic and riparian plants. If conditions continue to be static, the meadow pasture and willow community would encroach upon the former riverine system. No change is expected for the mixed conifer communities.

4.4.2 Alternative 2 – Proposed Action

Direct, Indirect, and Cumulative Effects

Under Alternative 2, the proposed action, the open sand community would increase in size. Additional treatments of the foredune community in support of habitat improvement for the endangered plover are likely to continue. This effort creates additional open sand community, a habitat that is favored by native coastal dune species. The populations of special status plants in the open sand community would likely increase in size and number. Concomitantly, the aerial extent of the nonnative European beachgrass community would decrease. The wetland community type, the meadow pasture, willow, or mixed conifer communities would likely

remain at their present size and extent. The cumulative effects would be similar to the direct and indirect effects described for Alternative 1 above.

4.4.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

Under Alternative 3, a breach on federal lands north of Croft Lake outlet, the effects would be similar to the direct and indirect effects described for Alternative 2. The cumulative effects would be similar to the direct and indirect effects on the botanical communities described for Alternative 1.

4.4.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Direct, Indirect, and Cumulative Effects

Under Alternative 4, a breach on federal lands between Bono Ditch and New Lake outlet, the effects would be similar to the direct and indirect effects described for Alternative 2 above. The cumulative effects would be similar to the direct and indirect effects on the botanical communities described for Alternative 1.

4.5 Geology

4.5.1 Alternative 1 – No Action

Direct and Indirect Impacts

This alternative would allow currently permitted actions to proceed. The breach site has been identified as one of the least stable on the foredune. The most efficient location to complete the breach would be at the permitted location, the southern end of the foredune. This is due to the low elevation of the foredune at this point due to previous breaching, coarseness of sediment size, and the continued cutting of the fluvial cutbank. As with previous breaches at this location, the foredune may be removed for over a mile north of the foredune due to the northerly approach of storm waves. Further efficiency of this alternative could be dependent on the breaches correspondence with any rip currents and their embayments.

Cumulative Impacts

Continued breaches at a single location may continuously reduce the foredune elevation and width during the seasonal rebuilding of the breach. Each annual breaching prevents a complete restoration of the foredune by the growth of European beachgrass and its accompanying entrapment of sand. This continued reduction of the foredune could allow for the creation of a permanent breach within the foredune. This possibility is further exasperated by the presence of a cut bank in a meander of New River, which could assist the erosion from the landward side.

4.5.2 Alternative 2 – Proposed Action

Direct and Indirect Impacts

This alternative would place a new breach between Croft and New Lake outlets. Studies cite that this is the most stable portion of the spit. This location has shown a net increase in foredune width and height. In utilizing oceanic process to aid in the efficiency of breaching, the beach slope is intermediate to others on the spit which reduces the run-up elevation and its accompanying erosional force elevation. Therefore, this location may close quicker than the southern locations, allowing less drainage time of New River. As with Alternative 1, the foredune may be removed for over a mile north of the spit due to the northerly approach of storm waves.

If this alternative is selected, the breach location should be correlated to rip currents and their accompanying embayments to utilize as much oceanic process as possible to maintain the breach. Like Alternative 1, continued breaching may allow each subsequent breach to be more efficient, as the size of the foredune is continuously decreased.

Cumulative Impacts

Continued breaches at a single location may continuously reduce the foredune elevation and width during the seasonal rebuilding of the breach. Each annual breaching would prevent a complete restoration of the foredune by the growth of beach grass and its accompanying entrapment of sand. This continued reduction of the foredune could allow for the creation of a permanent breach within the foredune. However, the rate may be much slower than Alternative 1 as this location is stable and the foredune has a history of increasing in size. Qualitatively based on oceanic process and shoreline geomorphology, it will take more effort to maintain a long-term breach at this site than the other alternatives.

4.5.3 Alternative 3 – Breach North of Croft Lake Outlet

Alternative 3 proposes breaching north of Croft Lake and the northern boundary of Storm Ranch. This location corresponds to two survey profiles of the foredune (Komar et al. 1999). The location is halfway between Fourmile Creek and New Lake. Therefore, because of the grading characteristics of the spit from south to north, the breach site would most emulate the conditions found here. This area is some of the newest portion of the spit to form and considered by Komar et al. (1999) to be less stable than the middle portion of the spit. The beach slope of this area has the lowest elevation of the New River foredune. If the breach within this area could be matched to a local rip current embayment, then the beach slope would be greatly increased, allowing wave energy to impact the beach. Given the reduced foredune elevation and width within this area, then such energies could have long-term impacts to maintaining the breach.

Direct and Indirect Impacts

This alternative would place a new breach north of the Croft Lake outlet. This area is some of the newest portion of the spit and considered to be less stable than the middle portion of the spit (Alternative 2), but more stable than the southern part of the spit (Alternative 1). In utilizing

oceanic process to aid in the efficiency of breaching, the beach slope is the least, giving the least run-up elevation and its accompanying erosional force elevation. However, the foredune elevation and width is much decreased compared to the Alternative 2 location. Therefore, this location may close quicker than Alternative 1, but may be more longstanding than Alternative 2. If the breach within this area could be matched to a local rip current embayment, then the beach slope would be greatly increased, allowing wave energy to impact the beach. Given the reduced foredune elevation and width within this area, then such energies could have positive long-term impacts in maintaining the breach. As with Alternative 1 and 2, the foredune may be removed for over a mile north of the spit due to the northerly approach of storm waves.

Cumulative Impacts

Continued breaches at a single location may continuously reduce the foredune elevation and width during the seasonal rebuilding of the breach. Each annual breaching would prevent a complete restoration of the foredune by the growth of beachgrass and its accompanying entrapment of sand. This continued reduction of the foredune could allow for the creation of a permanent breach within the foredune. The rate may be much slower than Alternative 1 but may be quicker than Alternative 2. The unknown is the impact of the gentle beach slope. Rip-current embayments are migratory and may not stay at the breach location. Therefore, wave run-up may not be a long-term force in the breach's maintenance. However, the sand size is finer than the rest of the spit and thereby not as mobile in water velocity regimes as the coarse sand. This would be a factor in the breach longevity by the subsequent filling in by sand.

4.5.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Alternative 4 proposes breaching south of the New Lake outlet and north of the Bono Ditch. The Komar et al. (1999) studied two profiles, one across the foredune near New Lake and one near Bono Ditch. There is a relatively large difference in beach slope grade between these two profiles with the grade increasing as the beach progresses from north to south. The beach slope to the south allows greater beach run-up, thereby greater erosional energy than the beach slope to the north. Dune 'toe' elevation is more elevated at Bono Ditch than the rest of the section, indicating greater seaward erosion. However, dune elevation is greater on the southern portion of this section than on the northern portion. Breaches would gain efficiency proportionally to the south. If the breach within this area could be matched to a local rip current embayment, then the beach slope would be increased, allowing wave energy to have greater impact on the beach.

Direct and Indirect Impacts

This alternative would utilize beach slope and oceanic processes more efficiently than Alternative 2 or Alternative 3. Efficiency would be increased by more southerly placements of the breaches. Impacts, especially in a most southerly breach scenario, may be similar to Alternative 1, given similarities in model variables to Alternative 1. More northerly breach locations may have impacts similar to Alternative 2.

Cumulative Impacts

Continued breaches at a single location may continuously reduce the foredune elevation and width during the seasonal rebuilding of the breach. Each annual breaching would prevent a complete restoration of the foredune by the growth of beachgrass and its accompanying entrapment of sand. This continued reduction of the foredune could allow for the creation of a permanent breach within the foredune. Southerly breaches within this section would have impacts similar to Alternative 1. Northerly breaches within this section would have impacts similar to Alternative 2.

4.6 Soil

4.6.1 Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

If there is no action to breach New River on BLM land, then local private landowners have stated their intention of breaching the river at the big bend near Floras Creek to alleviate flooding of nearby pasture lands using the authority of the current Ocean Shore Permit. Observation from local ranchers and BLM staff indicate a breach at this site can stay open through May if initial breaching is in December while it generally takes 2 to 3 days for flooded pastures to drain at this location. The observed and possible consequences for soils and soil productivity, both beneficial and adverse, of breaching occurring annually here are many and often interchangeable and interdependent.

Some direct effects are:

- Lowering of the foredune and the removal of dune (open and stabilized) and beach sand that will be mobilized by wind and wave action to be deposited on beaches and dunes nearby.
- Flood relief on adjacent meadow and pasture lands with the consequent lowering of the surrounding water table.
- Livestock will have increased access to all areas relieved by flooding.

Some possible indirect effects are:

- Increased movement of mobilized sand inland.
- Decreased deposition of enriching sediments on meadows and pasture land when flooding becomes less frequent and of a shorter duration.
- Decreased recharge of floodplains and the surrounding groundwater table under soils on low lying terraces. Groundwater recharge and the subsequent gradual water release supports wetlands and lessens the effect of low flows and soil desiccation on terraces in summer.
- Increased access of livestock on flood-relieved areas may increase the duration of grazing with a reduction in the amount and types of current vegetation.

- Because the water table on adjacent floodplains and terraces is connected to river water, the surrounding water table could be lowered throughout the year with the excessive de-watering, sediment buildup, and consequent disconnected river reaches when the river reverses flow north of the breach site.

Cumulative effects of long-term annual breaching at this location:

- Less frequent and shorter flood periods and a reduction in groundwater recharge on a regular annual basis will likely change the present groundwater regime to a condition with a lower 'high' water table in winter and a lower 'low' water table in the summer. If drier soils result, this could adversely affect the overall soil productivity in the affected flood areas by changing the types of vegetation and livestock forage which can be supported.
- Incremental decreases in the annual deposition of organic matter and enriching sediments on meadows and pasture land represent a change from the present rate of accumulation.
- Increased grazing pressure on flood alleviated pasture lands could pose a serious risk of compaction to soils that are vulnerable, like silt loams and silty-clay loams. As soils increase in compaction there is a consequent decrease in productivity, decrease in water infiltration rates, and an increase in runoff and surface erosion.

4.6.2 Alternative 2 – Proposed Action

Direct, Indirect, and Cumulative Effects

A breach site between New Lake and Croft Lake outlets is being proposed because it is thought this location would cause less de-watering and fragmentation of the river channel during the summer than the site near Floras Creek, while still providing adequate flood relief for local ranchers. In the winter of 2002-2003 the river was breached about one mile south of New Lake outlet and the breach provided adequate flood relief while it remained open. After six weeks however, the breach sanded shut and flooding reoccurred on adjacent ranchlands. This site is now considered unviable by the ranchers. It is difficult if not impossible to accurately estimate how long a breach at the new proposed location would stay open or how quickly it would drain flooded pastures. There is reason to believe it would not stay open longer or provide more effective flood relief than the site one mile south of New Lake outlet. Stream head-flow from flooded upstream areas and ocean shoreline processes may be the dominant and overwhelming factors that determine how long a breach stays open. If floodwater head-flow diminishes further downstream from the area of flooding, then the proposed location may close more quickly than the site one mile south of New Lake outlet. Regardless of how natural forces play out after breaching at the proposed site, it is probably correct to assume that de-watering of the river channel would be less severe, and the breach may stay open for a shorter duration than the site near the bend at Floras Creek.

All effects discussed for Alternative 1 would apply for Alternative 2, however, to a lesser degree. Compared to Alternative 1, there would be:

- Less flood relief and for a shorter duration.
- Less severe de-watering in river channel.

- Less drop in water table.
- The same lowering of the foredune and the resulting removal and mobilization of sand in the same relative quantities.
- More limited access for livestock with a reduced effect to vegetation loss and soil compaction, if flooding periods persist for a longer duration.
- Less reduction in floodwater deposition of soil-enriching sediments on surrounding meadows and pastures.

4.6.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

A breach at this location would have similar effects on the soils and productivity as discussed for Alternative 1; however, the impacts may be even less as discussed for Alternative 2. A further reduction in flood relief and channel de-watering may occur because this site is more downstream from the area affected by winter-time flooding than the proposed breach location, and would experience a still greater diminishing of floodwater headflow that could reduce the effectiveness of the breach. Additionally, shoreline processes may close the breach sooner and tidal influence coming from the northern mouth may slow stream flow as it approaches the breach from the south. As a further complication, the foredune is narrower and lower in height in this area, and these conditions could function to keep a breach open for a longer duration than Alternatives 2 and 4.

4.6.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

As mentioned previously a breach in this vicinity during the winter of 2002-2003, at a site one mile south of New Lake outlet provided adequate flood relief while it remained open. However, after six weeks the breach sanded shut and flooding reoccurred on adjacent ranchlands. Because of this, the site is now considered unviable by the ranchers.

Direct, Indirect, and Cumulative Effects

Assuming that a breach in this area will remain open for a shorter time period and provide somewhat less flood relief than the site at the Floras Creek bend, all the effects discussed for Alternative 1 will be similar, but less in severity and intensity. As in the vicinity for the Proposed Action, predicting how long a breach will stay open and how much de-watering of New River will take place is difficult because of unpredictable and counteracting processes at work.

Some factors working to prolong an open breach at this location would be:

- Greater floodwater head-flow to maintain a breach than the locations further north and downstream.
- If the same breach site of 2002-2003 is used, the reduction of the foredune and of the amount of sand immediately available for blowing and drifting into the breach that occurred may serve to maintain an effective breach for a longer duration.

Factors working that could shorten the duration of breaching as compared to locations downstream and to the north are:

- Other than the recent breach site in 2002, the foredune in this general area is wider and higher than the foredune north of Croft Lake outlet.
- At the breach site in 2002-2003, where the river normally continues flowing north, the flow reversed and brought flow south from the New Lake outlet. The flow coming north from Floras Creek met the reversed flow coming from the south and slowed the velocity of the river flowing through the breach.

4.7 Recreation

4.7.1 Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

This action would continue the long-standing tradition of breaching New River to the south, near the bend at Floras Creek. This action would have a negative impact on recreation. It essentially drains New River into the ocean before it begins and limits the possibility of recreational boating on several miles of stream. It would also lower the level of the outlet of Floras Lake, making non-motorized boating difficult due to the shallow water. This action also limits opportunities for recreational fishing by diverting salmon and steelhead runs directly into Floras Creek, which has little public access. Waterfowl hunting at Floras Lake and on New River is also affected, since access becomes more difficult due to lower flows.

4.7.2 Alternative 2 – Proposed Action

Direct, Indirect, and Cumulative Effects

The proposed action would have a positive effect on low-impact recreational use of New River. Fishing is generally best where the river is breached in the fall and winter due to a deepening of the river channel. By breaching between New Lake and Croft Lake outlets, fishermen would be able to access this fishing site from the Storm Ranch boat ramp. The difficulty of accessing the southern breach site would provide a more wilderness experience for those who are willing to work for it. Jet boat users would be negatively impacted as they may be unable to launch boats due to a shallower channel near the boat ramp.

4.7.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

This alternative would mimic the conditions found during Jack Storm's ownership of the property. Historically, hundreds of fishermen lined the lower river each fall to take advantage of salmon and steelhead fishing. By breaching near the boat ramp, the ocean carved a large and

deep resting pool at the base of the clay ledge on the east side of New River. This was a very popular fishery among older people who had trouble accessing other nearby streams.

The late timing of the mechanical breach for this alternative would not necessarily increase fishing success, because the salmon runs would already have occurred from the ocean confluence. This would limit fishermen from catching salmon as they enter New River.

Negative impacts to fishing are of concern. Since parking is limited at the boat ramp, some people would be forced to walk the half mile from the upper parking lot near the Ellen Warring Learning Center. Increased public use of boat ramp would require increased management and maintenance of facilities. Breaching here may also increase the use of motorized watercraft on New River due to the deepening of the river channel. This may affect wilderness experience.

4.7.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Direct, Indirect, and Cumulative Effects

Although access to fishing near the breach would be more difficult, the affects of this alternative are similar to the preferred alternative for recreation.

4.8 Cultural Resources

Since cultural resources are present in places along the east bank of New River, any ground-disturbing activities conducted in connection with this project will require a field survey and possible monitoring during the action. This includes movement of breach-constructing machinery along the bank.

4.9 Noxious Weeds

4.9.1 Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

Noxious weeds would continue to spread and be aggravated with any surface disturbance activities. Habitat restoration for the Western Snowy Plover would continue and at some future date dominate the proposed area. Integrated Pest Management techniques would be used to control existing populations of noxious weeds.

4.9.2 Alternative 2 – Proposed Action

Direct, Indirect, and Cumulative Effects

Initially, construction would remove any existing noxious weeds on the proposed site. However, if present, noxious weed seeds could potentially sprout and new populations would invade the

affected area. Over time, this site may have to be treated either by mechanical or chemical means. Of concern would be the importation during construction of additional species of noxious weeds or new, non-native invasive species. Project design should include weed prevention best management practices such as washing all equipment prior to arriving on site. This project is not expected to significantly increase existing noxious weed populations but has the potential to introduce new species of noxious weeds into the area. Post project monitoring would facilitate early detection of sprouting noxious weeds and any new species of non-native invasive plants if present.

4.9.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

Same as described under Alternative 2.

4.9.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Direct, Indirect, and Cumulative Effects

Same as described under Alternative 2.

4.10 Hazardous Materials/Solid Wastes

4.10.1 Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

Continued breaching as it currently exists will continue to create the deposition and stream channel concerns as noted in Chapter 1. There are no discernible effects on Hazardous Materials and Solid Wastes from this alternative.

4.10.2 Alternative 2 – Proposed Action

Direct and Indirect Effects

There are no direct effects anticipated. The use of heavy equipment in the performance of the work identified under this alternative creates a risk to the environment as a result of any release of petroleum product, particularly near surface waters. Any such release is governed under provisions of State of Oregon Administrative Rule No. OAR 340-108. A Spill Control and Countermeasures Plan (SPCC) conforming to the standards of OAR 340-108 is required. The SPCC should also correlate to the Coos Bay District Hazardous Materials Contingency Plan and the District Spill Plan for Riparian Operations. Included in the SPCC and District plans is the requirement of an oil spill kit to be on site during operations. The contents and use of the spill kit are to be detailed in any contract provisions or work orders resulting from this alternative.

Cumulative Effects

In the event of a release of hazardous substances or petroleum product, migration of the contaminant to the surface waters would create a variety of problems, dependent upon amount and type. Most probable source would be the rupture of hydraulic fluid lines or poor maintenance of equipment, resulting in the leak or discharge of oil. The current patterns of New River, tidal influence if any, and the type of soils at the waterline would dictate how much of the contaminant could be contained, removed, or allowed to dissipate. A spill confined to dry land would be contained and cleaned up to appropriate levels.

Under Oregon State Law, a Reportable Quantity of petroleum product to water is defined by the Oregon Administrative Rule No. 340-108-010, Reportable Quantities as: "…any quantity of oil that would produce a visible oily slick, oily solids, or coat aquatic life, habitat or property with oil…." Such a release would generate a series of reporting, response, and monitoring requirements by Federal and State authorities.

4.10.3 Alternative 3 – Breach North of Croft Lake Outlet

Direct, Indirect, and Cumulative Effects

Same as described under Alternative 2.

4.10.4 Alternative 4 – Breach between Bono Ditch and New Lake Outlet

Direct, Indirect, and Cumulative Effects

Same as described under Alternative 2.

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Appendix

New River Breach History

The following chronologic summary was taken in part from Appendix A (USDI 1995b) and historical documents, journals, newspapers, personal interviews, and BLM record and correspondence files. Only those events pertaining to the breaching of New River or pertinent to this environmental assessment are listed below.

1890. A tremendous flood wipes out farms along Floras Creek and the floodwaters flow through the deflation plain north of Floras Lake outlet, prompting local ranchers to name it New River.

1897. Floras Creek and the outlet of Floras Lake join to form a short river that runs north for about one mile and enters the ocean southwest of New Lake. New Lake and surrounding marshes are drained by a short river that enters the ocean northwest of New Lake. Fourmile Creek is the third outlet shown entering the ocean northwest of Croft Lake. Croft Lake is drained by a narrow channel that flows south into New Lake. These streams are connected by a deflation plain extending from north of Floras Lake to Laurel Lake that fills with water each winter. The beach in front of this deflation plain is very flat and is constantly breached in different locations.

1900-1935. Each fall, New River is artificially breached by farmers who supplement their income by gillnetting salmon for sale to local canneries. The location of the breach changes often as adjacent landowners compete to see who can get to the salmon first.

1955-1975. An intensive sport fishery develops at the mouth of New River. Local landowner Jack Storm controls the access to the fishing, and charges a one to two dollar entry fee. Several thousand fishermen visit his property each year and catch large numbers of coho and Chinook salmon and steelhead. Jack Storm artificially breaches the river each fall in front of his property to control the fishery and to maintain a deep lagoon (10-15 feet) at the river's mouth. In 1970, the Oregon Fish Commission begins stocking Floras Lake with coho smolts, which greatly enhances the New River fishery.

1964. A major flood occurs at Christmas, inundating much of the farmland around New Lake and lower Floras Creek. New River is artificially breached near Floras Lake to help alleviate the flooding. This was an emergency measure that was not carried out for several subsequent years, probably because of the influence of Jack Storm.

1973. New River is breached near the outlet of Floras Lake for the first time since the Christmas flood of 1964. This breaching is unauthorized and provokes a great deal of opposition from local sportsmen and Jack Storm. BLM representatives attend a hearing at Langlois to help resolve the differences between Storm and the newly-organized Floras Creek Water Control District (comprised of local ranchers). The BLM adopts the position supporting artificial breaching of the seawall near Hanson Slough between November and December of each year to help alleviate flooding and yet not interfere with the important fall sport fishery. This breach allows for about one mile of rearing habitat/estuary between the outlet of Floras Lake and the mouth.

1981-1982. Heavy flooding and high winds precipitate a major move northward by New River. The mouth of New River and its channel move from Storm Ranch to the north of Fourmile Creek. This move is consistent with a gradual shifting of the mouth northward since 1950, when the foredune became established. The location of the mouth was somewhat consistent during the 1960s and early 1970s when Jack Storm artificially breached the river each fall near the north line of Section 10. Since Storm sold his ranch, the river is allowed to breach naturally most years, and has slowly carved its way north through the foredune.

1985, August. While helping Gerald Kamph build the fence at the southern boundary of the ACEC, BLM employees discover that the river has dried up between Hanson Slough and New Lake, causing a considerable loss of salmon and steelhead smolts.

1986, September. BLM fishery biologists, Keith Carpenter and Victoria Ursitti, complete a two-month inventory of New River. They observe that surface flow in portions of New River between Bono ditch and New Lake outlet was often greatly reduced or interrupted for several weeks during late July/August. Reduction in flow can lead to isolation of fish, warming of water temperature, and high fish mortality due to suffocation, stress, and predation.

1986. New River is mechanically breached at the southern bend near Floras Creek, which has occurred periodically since 1973.

1995. New River is once again mechanically breached near the bend at Floras Creek.

1996. New River naturally breaches during a major storm event near the southern bend at Floras Creek. This natural breach occurs at the same location as the mechanical breach from the previous year, possibly due to a weakening of the foredune in this location.

1997. New River naturally breaches to the north. The mouth of New River converges with the mouth of Twomile Creek, creating a single opening across the foredune to the ocean.

1998-1999. New River breaches on the southern bend near Floras Creek at the same site of the mechanical breach from previous years.

2000. Local ranchers receive a five-year Ocean Shore Permit for emergency flood control to breach New River near the southern bend at Floras Creek. New River breached naturally to the north near Twomile Creek. No severe flooding occurs in the area due to mild winter storms.

2001. New River breaches on southern bend near Floras Creek during a major storm event.

2002. As permitted by the five-year Ocean Shore Permit (BA-512-00), New River is mechanically breached at a pre-conditioned site located 1 mi south of New Lake outlet on BLM lands. The breach remained open for six weeks then sanded shut. Near the breach site, the New River channel has deepened considerably.