Carbon River Access Management Finding of No Significant Impact

STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)

Carbon River Area Access Management
Environmental Assessment
Mount Rainier National Park, Washington

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Recommended:

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1. INTRODUCTION

This Statement of Findings (SOF) was proposed as part of the Carbon River Area Access Management Environmental Assessment (EA). The Carbon River road corridor (Figure 1) was originally constructed in the early 1920s and has historically been an important cultural resource to the region, providing access to a uniquely wet temperate rainforest habitat on Mount Rainier National Park's (MORA) northwest side. The road corridor has also been classified in the National Register of Historic Places as part of the Mount Rainier National Historic Landmark District (NHLD). Additionally, vast tracts of designated wilderness are accessible from the northwest side of the park along the roadway. The goal of the Carbon River Area Access Management plan is to preserve year-round public access to the northwest corner of the Carbon River Valley. Executive Order 11988 (Floodplain Management) requires the National Park Service (NPS) to evaluate likely impacts of actions in floodplains. NPS Directors Order #77-2 (Floodplain Management) provide policy and procedural guidance for complying with these orders. This SOF documents compliance with these orders.

The Carbon River's headwaters are at the Carbon Glacier, the lowest elevation alpine glacier in the continental United States at approximately 3,500 feet (1,067 meters) above sea level (ASL). The Carbon River then flows north and west to the park boundary at 1,750 feet (533 meters) ASL. The Carbon Glacier begins its downward movement from near the summit of Mount Rainier at Liberty Cap, approximately 14,111 feet (4,301 meters). Along the way, the glacier scrapes and scours the volcanically-formed andesite rock below and adjacent to the glacier. The glacier acts as a giant conveyor belt and carries this rock and debris downstream to the headwaters of the Carbon River, for the river to carry out of the park. The river flows as a braided stream through a wide glacially-formed valley, constantly changing its braids and bars as sediment and water discharge fluctuate. Over time and owing to the river's exceedingly large sediment source, the riverbed is rising, or aggrading, as more sediment is provided to the river than can be conveyed out of the system. The Carbon River has historically aggraded up to 0.559 feet/year (0.170 meters/year) in a period between 1915 and 1971; or raising a total of 31.329 feet (9.549 meters) in 56 years (Beason, 2006).

In November 2006, almost 18 inches of rain fell park-wide and lead to the single longest closure in the park's history (6 months between November 6, 2006-May 5, 2007; The Carbon River Road currently remains closed to public vehicle traffic at the Carbon River Entrance). The Carbon River valley was one of many areas in the park that received significant infrastructure damage. Between November 5, 2006 at 2:00 P.M. and November 7, 2006 at 2:15 P.M., 8.76 inches (22.25 cm) of precipitation was recorded at the USGS stream gauge on the Carbon River near Fairfax, WA (USGS Gauge #12094000). Flood stage of 13.5 feet (4.1 meters) was recorded at the gauge around noon on November 6th and the stream gage reached its highest recorded gauge height of 16.93 feet (5.16 meters) about six hours later. The flood significantly damaged the Carbon River Road, especially near Falls Creek (2,600 linear feet; 792 meters) and just before Ipsut Creek Campground (1,350 linear feet; 411 meters). In these locations, the road was washed away and replaced with a gully approximately 6-10 feet (2-3 meters) deep. Also, one lane of the Carbon River Road was washed away in two locations and both lanes were removed in one location between the Green Lake Trailhead and just before the Ipsut Creek Campground. Low recurrence interval (approximately 15-year) floods since 2006 have caused more damage to both the roadway and park infrastructure, mainly the loss of a structure by bank erosion at the Carbon River maintenance area.

ENTRIX (2008) have shown that there may be an increase in the frequency and intensity of flood events as recorded by United States Geological Survey (USGS) stream gauges near the park. For instance, on the Carbon River at Fairfax, WA, the 100-year flood during the period of record from 1930-1977 now has a recurrence interval closer to 70 years when compared with the entire period of record (1930-2006). Therefore, ENTRIX (2008) states that design conditions are changing and larger, more intense floods should be anticipated. On the Nisqually River, on the park's southwest side, there were no 10-year recurrence interval floods that occurred before 1970. Since then, there have been 6, including two events with recurrence intervals greater than 50 years. The general trend for the Nisqually River and Carbon River is an increase in the size of annual peak flows since the period of record began in 1940 and 1930, respectively. According to research by the University of Washington Climate Impacts Group (UW CIG), it is anticipated that by 2080, average yearly temperatures in the Washington Cascades region will be approximately 5.9°F warmer with an overall increase in precipitation of about 1-5%. The trend is for dryer summers and wetter winters, which is significant in that the largest and most destructive floods occur in the late fall during the period of record at both the Nisqually and Carbon Rivers.

The Carbon River valley has had a long history of flooding since the establishment of the Carbon River Road. Large floods in 1990, 1996 and 2006 caused major damage to the roadway (the second, third and largest floods on record since 1930, respectively). Following the 1996 flood, MORA spent approximately $787,000 on a repair to the road. Two medium-size floods five weeks later destroyed the recently-repaired sections of roadway, washing out a 1,200 foot (366 meter) section of roadway to a depth of about 2-3 feet (0.6-1.0 meters). Even low recurrence interval floods have historically caused damage to the roadway and associated park infrastructure near the river[1]. The MORA General Management Plan (GMP) signed in 2002 stated that the park would no longer maintain the Carbon River Road after the next major washout. The GMP did not define what a "major washout" of the road would be but under the guidance of the GMP, MORA is not considering repairing and reopening the entire road corridor in its previous condition as part of the current EA.

2. PROPOSED ACTIONS

The Carbon River Area Access Management EA has five alternatives:

1) **Continue Current Management** (*no action alternative*) – Maintain a primitive trail within the historic road corridor. The Ipsut Campground would be retained with 24 individual and 2 group sites. Public vehicle access would end at the park entrance.
2) **Hike and Bike Trail** (*preferred alternative*) – Construct a formal hike/bike trial to Ipsut Creek trailhead. Retain the Ipsut Creek Campground with a minimum of 15 individual and 3 group sites. Public vehicle access would end at the Old Mine trailhead, approximately milepost 1.2 on the Carbon River Road.
3) **Public Vehicle Access** – Reconstruct a one-lane road open to public vehicle access to milepost 3.6 (near Chenuis Picnic Area). Construct a formal hike/bike trail from there to the Ipsut Creek Trailhead. Retain Ipsut Creek Campground with 15 individual and 3 group sites.
4) **Shuttle Access** – Reconstruct a one-lane road to milepost 4.4 for shuttles only. Construct a formal hike/bike trail from there to Ipsut Creek Trailhead. Retain the Ipsut Creek Campground

[1] Chapter 1 section D of the Carbon River Area Access Management EA has a flood damage timeline that shows years and extents of flood damage.

with 20 individual and 3 group sites. Public vehicle access would end at the Old Mine trailhead, approximately milepost 1.2.

5) **Wilderness Reroute Trail** – Construct a hiking-only trail in the wilderness area from the Entrance along the south valley wall to the Ipsut Creek Trailhead. Close Ipsut Creek Campground and create a new backcountry camp elsewhere. Public vehicle access would end at the park entrance.

Alternative 2, the preferred alternative, involves the following measures:

- Visitor parking would be available at the Carbon River entrance and former Carbon River maintenance area for approximately 68 cars.
- The historic Carbon River road would be retained between the entrance to the former Old Mine trailhead, approximately 1.2 miles (1.9 kilometers). Public vehicles would be allowed to travel on this portion of the road.
- The Old Mine trailhead would become a vehicle turnaround area.
- Constructing or maintaining a 10-foot wide trail in the former road prism that can accommodate disabled visitor access, hiking, biking and occasional all-terrain vehicle (ATV) access in emergencies or for maintenance. When flood damage occurs to the roadway, a reroute trail would be constructed around the washout.
- **Carbon River entrance:** Existing buildings except vault toilets at the Carbon River entrance would be removed and the footprints from these areas would be reconfigured and replaced with formal parking and picnicking. A one-room visitor contact station would be constructed on the south side of the road at the entrance. The Carbon River entrance arch would be reconstructed.
- **Carbon River maintenance area:** All buildings and structures (except the weather station and radio tower/shed) at the Carbon River maintenance area would be removed and replaced with formal parking and picnicking.
- **Ipsut Creek campground:** Both vault toilets at the Ipsut Creek campground would be removed and replaced with backcountry (composting) toilets. All asphalt bumper-stops, buildings, some picnic tables and campsites and most signs would be removed. The former chlorinator building and amphitheater storage shed would be removed. The campground would retain a minimum of 15 individual and 3 group sites. Bear proof storage lockers would be added. The former Ipsut Creek patrol cabin would be reconstructed at the Ipsut Campground in one of the two former parking areas at the campground (exact location to be determined).
- **Erosion protection measures:**
    - Four engineered log jams would be constructed between the Carbon River Entrance and Maintenance Area. These structures would consist of:
        - stabilization/augmentation of a large natural log jam with two log reinforcing structures (LRS) upstream and downstream of a natural log jam near the Entrance,
        - one new LRS in the Maintenance Area,
        - one LRS downstream of a natural log jam located upstream of the Maintenance Area,
        - one new ELJ upstream of the natural log jam (Maintenance Area), and

        - immediately construct two temporary barbs in the Maintenance Area - to later be converted into log jam and LRS ballast when constructed.
    - As many as 24 rock-cored, log-cored, or gravel covered log road humps would be constructed to divert sheet flow on the roadway off and back to the river.
    - Toe-roughened gabion or toe-roughened log crib walls will be constructed at milepost 3.463, 3.939 and 4.484, in areas that the river as significantly eroded the bank and road prism down to one or both lanes. These structures will be approximately 200-400 feet (61-122 meters) in length.
    - Additional log crib walls would be constructed at milepost 4.658 and milepost 4.802. These structures are much smaller (approximately 50 feet in length; 15 meters) and designed to protect rapidly bank-eroding areas that are not already exposed.
    - A "launchable" groin would be constructed at milepost 4.621, at the end of the remaining road just before Ipsut Creek campground. This structure looks similar to a complex crib wall but is buried into the extant bank with the anticipation that floods will cause bank erosion up to the structure, exposing it rather than constructing it in the already-exposed riverbed.
    - In the Falls Creek area, spanning trees whose root wads are on the left (south) bank of the river will be cut, notched and pulled into the new Carbon River side channel/former road prism. The root wad would remain on the left bank. Large woody debris would be chocked on the left side of the channel behind the structure to encourage aggradation and bank protection of the left bank.
- **Grade control structures:** Where large culverts are going to be removed (e.g., at Ranger Creek and an unnamed tributary at the Chenuis Falls trailhead), a series of 3 log grade control structures will be constructed to prevent the release of stored sediment behind the culvert.
- Several culverts will be removed and replaced with trail bridges.

3.0 WETLANDS OF THE PROJECT AREA

The project area along the Carbon River Road includes approximately 5 miles of active river channel and associated riparian habitat, from the river corridor adjacent to and just upstream of Ipsut Creek campground downstream to the park boundary (Figure 1). The Carbon River valley has designated wilderness beginning 100 feet south of the road centerline until Chenuis Falls, then 100 feet on both sides of the road until the Ipsut Creek Campground. The overall Carbon River watershed at the park boundary is 52.023 square miles (134.738 square kilometers), of which, 74.7% or 38.871 square miles (100.676 square kilometers) is within the park boundary. The remaining 13.152 square miles (34.062 square kilometers is within the Mount Baker-Snoqualmie National Forest, just north of MORA.

Wetland Indicator Status	Occurrence in Wetlands
OBL = Obligate wetland species	> 99%
FACW = Facultative wetland species	67 – 99%
FAC = Facultative species	34 – 66%
FACU = Facultative upland species	1 – 33%
UPL = Upland	<1%

Note: FacW, Fac and FacU have + and – values to represent species near the wetter end of the spectrum (+) and species near the drier end of the spectrum (--).

Mile 0.0 to Mile 0.5: Palustine, forested, needle-leaved evergreen seasonally flooded Cowardin wetland (Section 1 on Figure 2).

Understory vegetation adjacent to this section of the project area is dominated by obligate wetland, facultative wetland and facultative species, and is the basis for classification of this area (see description and photo 29 in Chapter IV of EA). Facultative upland and upland species also occur in this area, but are restricted to elevated logs and hummocks within the matrix of wetland associated species.

Mile 0.5 to Mile 1.5: Palustine, forested, needle-leaved evergreen seasonally flooded Cowardin wetland (Section 2 on Figure 2).

Vegetation adjacent to this section of the road is similar to the previous section, except that skunk cabbage (*Lysichiton americanum* – OBL) is much less abundant, possibly indicating a shorter hydroperiod in this area. However, the dominance of facultative wetland and facultative species in the understory gives this area its wetland character. Tree species composition also changes in this section with Sitka spruce (*Picea sitchensis* – FAC) becoming less abundant, while Douglas fir (*Pseudotsuga menziesii* – FACU) becomes co-dominant (see description and photo 30 in Chapter IV of EA). Similar to the previous section of road, facultative upland and upland species also occur in this area, but are restricted to elevated logs and hummocks within the matrix of wetland associated species.

Within this section of road there are two stream crossings that include culverts under the road bed. These areas are riverine, intermittent streambed, cobble-gravel substrate Cowardin wetlands. Edges of these stream beds support dense populations of facultative wetland and facultative species. These crossings are at approximately 1.3 miles (Site 1 on Figure 2) and 1.4 miles (Site 2 on Figure 2) and are about 60 feet wide each (see photo 31 in Chapter IV of EA).

Mile 1.5 to Mile 2.0 (Falls Creek washout area): Riverine, intermittent streambed, cobble-gravel and sand substrate Cowardin wetland (Section 3 on Figure 2).

This section of the project crosses the Falls Creek washout area where Falls Creek enters the Carbon River. The proposed trail traverses a complex of intermittent water courses with cobble-gravel and sand bottoms. The temporary trail reveals a sandy alluvium mixed with rounded river rocks. The former road bed is now occupied by a downcut side channel of the Carbon River which runs parallel to the proposed trail route and no more than 25 feet from it.

Species composition is similar to the previous section of road corridor, with devil's club forming dense populations adjacent to the intermittent stream channels (see description and photos 32 and 33 in Chapter IV of EA). The trees have formed buttresses at the base indicating a saturated soil condition for at least part of the year.

Numerous actions to establish the maintained trail are proposed within this section of the corridor. Actions include construction of gabion mat trail base, crushed rock trail base, and several bridges to cross the more incised channels. Also, the removal of 17 trees of various species ranging in size from 6 inches to 24 inches DBH is proposed.

Mile 2.0 to Mile 3.1: Non-wetland (Section 4 on Figure 2).

The road corridor heads gradually uphill from the Falls Creek area and the road bed in this area is relatively intact. The composition of the understory vegetation adjacent to this section of road is more typical of an upland environment (see description and photo 34 in Chapter IV of EA).

At approximately 2.7 miles a side channel begins to run immediately adjacent to the road corridor, and at approximately 2.9 miles the road corridor borders the open flood plain of the Carbon River with a side channel running at the base of the fill slope.

Mile 3.1: Ranger Creek Culvert: Riverine, lower perennial, cobble-gravel unconsolidated bottom and palustrine, forested, broad leaved deciduous and needle leaved evergreen Cowardin wetlands (Site 3 on Figure 2).

The road corridor crosses Ranger Creek just before it enters the Carbon River. Species associated with this wetland area are dominated by FAC and FACW species (see description in Chapter IV of EA). The road corridor crosses the creek and associated wetlands for about 100 feet associated with erosion and cutbank damage to the road bed.

Mile 3.3: Existing twin culvert: Riverine, intermittent, cobble-gravel and sand streambed and palustrine, forested, needle leaved evergreen Cowardin wetlands (Site 4 on Figure 2).

An intermittent stream crosses the road corridor through twin culverts that are plugged with debris. The water has been diverting down both sides of the road such that the road corridor is now included as part of the intermittent stream channel.

Understory species in the wetland associated with the streambed are dominated by OBL and FAC species (see description in Chapter IV of EA) The road corridor crosses the old intermittent stream channels for about 30 feet, but the evidence of water running down both sides of the road extends over 100 feet to the west.

Mile 3.5: Road Washout: Riverine, intermittent, cobble-gravel and sand streambed and palustrine, forested, needle leaved evergreen Cowardin wetlands (Site 5 on Figure 2).

Two branches of an intermittent stream come together just before the road corridor and washed out the road as it joined the Carbon River. The proposed trail crosses the intermittent streambed and associated wetlands for about 120 feet.

Dominant understory species include both FACW and FAC species (see description in Chapter IV of EA) and are the basis of the classification of these wetlands.

Mile 3.6 to Mile 3.8: Chenuis Falls Parking Area: Riverine, lower perennial, cobble-gravel unconsolidated bottom and palustrine, forested, broad leaved deciduous and needle leaved evergreen seasonally flooded Cowardin wetlands (Section 5 on Figure 2).

Two streams come together at beginning of this section and enter the Carbon River through a “hanging” culvert. East of the culvert and parking area the road corridor has a perennial branch of the carbon river on the north side and an intermittent stream bed with standing water on the south side. The trail route is river alluvium and rounded river rock as a result of water channeling down and along both sides the road bed.

The forested wetlands associated with the riverine wetlands on both sides of the road corridor are dominated by FAC tree species and both FAC and FACW understory species (see description and photo 35 in Chapter IV of EA) and are the basis of the classification in this area.

Mile 3.9: Riverine, intermittent, cobble-gravel bottom streambed Cowardin wetland (Site 6 on Figure 2).

An intermittent side channel of the Carbon River crosses the road corridor and continues south into the surrounding forest. The proposed route crosses the intermittent channel for about 30 feet (See photo 36 Chapter IV of EA).

Mile 3.9 to Mile 4.5: Palustrine, forested, needle-leaved evergreen seasonally flooded Cowardin wetland (Section 6 on Figure 2).

This section of the road corridor is similar to the second section described above. Understory vegetation is dominated by facultative wetland and facultative species and are the basis for the classification of this area (see description and photo 37 in Chapter IV of EA). Facultative upland and upland species also occur in this area, but are restricted to elevated logs and hummocks within the matrix of wetland associated species.

Mile 4.5 to Mile 4.8: Palustrine, forested, needle-leaved evergreen seasonally flooded Cowardin wetland (Section 7 on Figure 2).

This section of the road corridor is where the former road bed is now occupied by a perennial branch of Ipsut Creek, therefore the proposed trail is through previously undisturbed vegetation. Numerous blow-down trees have exposed the river alluvium and rounded river rock that is below 4” to 6” of organic matter. This area is a forested wetland because the understory vegetation is dominated by FAC and FACW species, including dense patches of FAC and FACW ferns in the lower, wetter spots (see description and photo 38 in Chapter IV of EA).

Mile 4.7: Riverine, intermittent, bedrock bottom streambed (Site 7 on Figure 2)

Proposed trail route crosses an intermittent stream bed. Crossing is about 60 feet wide. A 30”X30” culvert is proposed for this site to accommodate seasonal flows.

Mile 4.8: Riverine, lower perennial, bedrock and rubble bottom Cowardin wetland (Site 8 on Figure 2).

Existing log bridge over Ipsut/Carbon River is about 40 feet long. Existing concrete bridge over Ipsut/Carbon is about 70 feet long, and would be maintained as long as practical. A new log bridge is proposed that would be aligned with the old road bed and the existing concrete bridge.

Mile 4.9: Ipsut Campground: Non-Wetland.

End of project.

4.0 WETLAND FUNCTIONS OF THE PROJECT AREA

The primary functions of the wetlands in the project area include recharge of groundwater, support of biogeochemical processes, support of a characteristic plant community, and provision of suitable habitat for native fish and wildlife.

Forested wetland habitats, and intermittent and perennial riverine wetland habitats are used by a variety of birds, fish and other wildlife. The forested wetland along the first section of the road corridor supports a population of Sitka spruce (*Picea sitchensis*) that is the furthest inland from the coast of any known population. Some of the fish habitat has been degraded by culverts along the road corridor that do not provide for fish passage.

5.0 SPECIAL STATUS SPECIES

Five federally listed species occur in the project area, two bird and three fish species.

The northern spotted owl (*Strix occidentalis caurina*) is listed as a threatened species. Northern spotted owls are long-lived, non-migratory birds that establish territories that they defend against other owls and avian predators. Suitable spotted owl habitat is generally mature or old-growth forest that has a moderate to high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; numerous large snags and down logs; and sufficient open space below the canopy for owls to fly through. Forests with these characteristics provide nesting and roosting sites for spotted owls and support the highest densities of northern flying squirrels

The marbled murrelet (*Brachyramphus marmoratus marmoratus*) is listed as a threatened species. Marbled murrelets are small, diving seabirds that spend most of their life in nearshore marine waters foraging on small fish and inverterbrates, but use old-growth forests for nesting. Murrelets nest in forested areas up to 52 miles inland from their saltwater foraging areas. Nests occur primarily in large, old-growth trees, with large branches or deformities that provide a suitable nest platform. Murrelets do not build a nest, but rather create a nest depression in moss or litter on large branches.

Bull trout (*Salvelinus confluentus*) are listed as a threatened species. The project area contains designated critical habitat for bull trout. Bull trout are salmonid fishes native to the Pacific Northwest and western Canada. Bull trout exhibit both resident and migratory life-history strategies. Resident bull trout completed their life cycles in the streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where juvenile fish rear 1 to 4 years before migrating to either a lake (adfluvial form), river (fluvial form), or saltwater (anadromous form) to rear as subadults and to live as adults. They are iteroparous (they spawn more than once in a lifetime).

Puget Sound Chinook Salmon (*Oncorhynchus tshawytscha*) are listed as a threatened species. The project area contains designated critical habitat for Puget Sound Chinook salmon. The Puyallup River basin has two historically independent populations of Chinook: Puyallup River fall-run and White River spring-run. The Puyallup River fall-run includes Chinook that spawn and rear in the Carbon River and its tributaries.

Puget Sound Steelhead (*Oncorhynchus mykiss*) are listed as a threatened species. The steelhead is the anadromous form of rainbow trout; offspring from either steelhead or rainbow trout can become anadromous, or remain in freshwater (resident form) their entire lives. However, the Federal threatened species status does not pertain to resident rainbow trout. Steelhead are generally categorized as winter-run or summer-run, depending on the time of the year they return to freshwater river systems to reproduce. The majority of steelhead returning to the Puyallup River system are winter-run fish that generally enter the river beginning in winter.

6.0 WETLAND IMPACTS OF THE PREFERRED ALTERNATIVE

Direct impacts to wetlands are quantified as the areal extent of wetlands occupied by the proposed maintained trail constructed outside of the footprint of the former road. The preferred alternative would construct approximately 4,224 linear feet of maintained trail outside the footprint of the road, or about 0.97 acre. This includes 2,640 feet in the Falls Creek washout area (Section 3 on Figure 2) and 1,584 feet in the Ipsut Creek area (Section 7 on Figure 2). Four logjams near the entrance area would fill another approximately 0.50 acre. Proposed erosion protection structures, including the toe-roughened gabion or log crib walls, additional log crib walls, and "launchable" groin, would be within the prism of the former road and are not included as fill impacts to wetlands of the proposed action. Therefore, the preferred alternative would adversely impact approximately 1.5 acres of wetland through fill activities.

Design to Reduce Impacts and Mitigation of Impacts

The project would reduce and mitigate impacts to wetlands by replacing existing culverts that are barriers to fish passage with bridges and culverts designed to facilitate fish passage. This would open up approximately 1.3 acres of fish habitat within Ranger Creek, the unnamed tributary, and the Falls Creek area. However, the unnamed tributary and the Falls Creek area are intermittent streams currently, so may not be effective fish habitat. Ranger Creek would provide approximately 0.9 acre of fish habitat with perennial water flow. While the four logjams would add material to the riverine wetland, these structures would provide 0.50 acre of beneficial effect to the fish habitat function of these wetlands. The trail tread would be designed to allow water to pass through the tread and thereby reduce the impacts of the trail on water movement. Within sections of the road classified as wetlands, remnants of the 20 foot wide road that were not destroyed or severely eroded by the floods would be removed and replaced by the 10 foot wide trail tread, which would be a reduction of the footprint within wetlands and a long-term beneficial effect. Additionally, any asphalt that remains in the project area from the road would be removed.

7.0 JUSTIFICATION FOR USE OF WETLANDS

The park's General Management Plan (GMP) Record of Decision states that the park would eventually "close the Carbon River Road to private vehicles when there is a major washout of the road and convert the Ipsut Creek Campground to a walk-in / bike-in camping area." The 2006 fall flooding was a major washout.

However, the Mount Rainier National Park GMP also calls for the preservation of the Carbon River Road corridor so as to have no adverse effect on the Mount Rainier National Historic Landmark District. Although the GMP calls for closure of the Carbon River Road to private vehicles following a major washout, it also provides for continued use by administrative vehicles and conversion of the road to a hike and bike trail.

The preferred alternative was thought to meet both management direction from the GMP and the Park's goal to preserve year round public access to the northwest corner of the park including the unique and popular natural, historical and recreational features of the Carbon River Valley.

8.0 CONCLUSION

The project under the preferred alternative would adversely affect up to 1.5 acres of wetlands by removal of vegetation and filling wetlands through construction of a maintained trail tread and four logjams, and placement of bridge pilings and supports. However, the project would have beneficial effects to wetlands through replacement of existing culverts that block fish passage with bridges and culverts designed to facilitate fish passage, and make an additional 1.3 acres of wetland habitat available to fish, including three Federally listed species. The addition of wood to the river through construction of the four logjams would be another 0.5 acre of beneficial effects to the fish habitat function of the wetlands. Therefore, compensation actions would total 1.8 acres and give a compensation ratio of 1.2:1.

The NPS finds that the proposed action (preferred Alternative) is consistent with the servicewide no net loss of wetland policy and is acceptable under Executive Order 11990 for the protection of wetlands.

9.0 REFERENCES

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Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. USDOI, USFWS, Office of Biological Services, Washington D.C. FWS/OBS-79/31. 131 pp.

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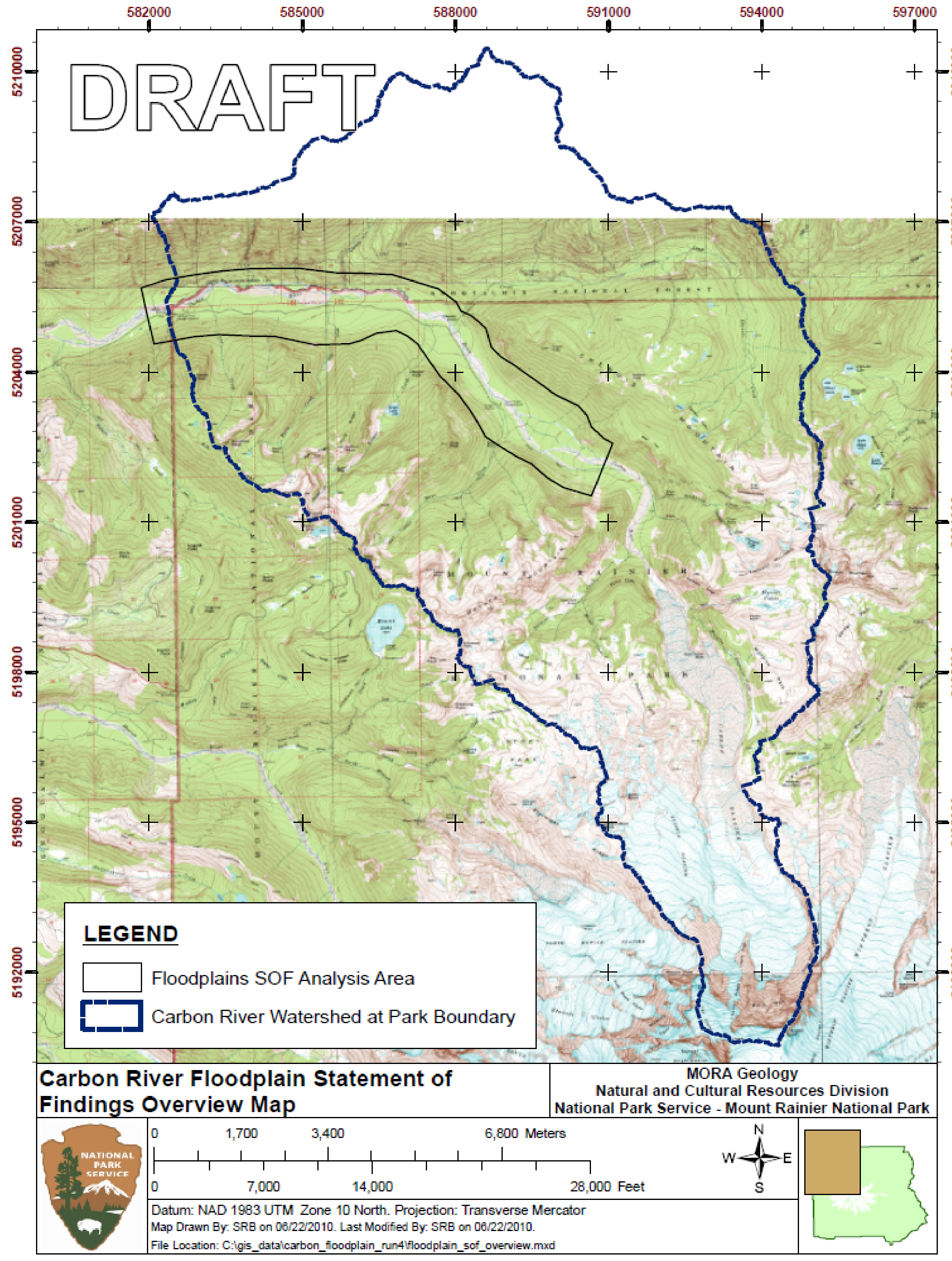

Figure 1: Overview map of the Carbon River watershed at the park entrance and the analysis area covered by this SOF.

Figure 2: Map of Wetlands and Sites Along Carbon River Road Corridor