

Final Environmental Impact Statement

Environmental Impact of The Removal of Lost Creek Dam

Analysis of Effects on Salmonids



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**Final Environmental Impact Statement
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Analysis of Effects on Salmonids**

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Abstract:

The Lost Creek Dam was constructed in 1977 and along with the creation of the dam was the creation of many environmental and ecological issues. The dam interferes with the natural landscape, salmonids, wildlife, geology, hydrology, and overall ecology of the local and regional area. It is important that the dam be removed in order to restore the impacts that it has imposed. This Environmental Impact Statement has determined that the agency's preferred course of action would be Alternative A, removing the dam. Below will explore environmental impacts, consequences, and alternatives.

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I. Summary

The results of the Lost Creek Dam include but are not limited to, altered landscape, degraded water cycle and salmonid habitat and spawning areas, changes in wildlife, and morphed geography. It has been determined that there may be significant impacts on the above factors from the removal of Lost Creek Dam. The purpose of this Final Environmental Impact Statement (Final EIS) is to examine alternatives and mitigation options for the removal of Lost Creek Dam.

A. Major Conclusions

The removal of Lost Creek Dam will have positive impacts on ecological function within the Rogue River Basin. Restoration of the rivers natural flow will restore biological, chemical and physical aspects necessary for ESA-listed species. Alternative A, removal of Lost Creek Dam, is preferred for protection of these species. Alternative B, to implement a notch in the dam, is suggested for elimination because of the time and resources required for effective implementation. Alternative C, no action, will not be effective due to environmental degradation of habitat necessary ESA-listed species as well as indefinite need for allocation of financial support. Removal of Lost Creek Dam for cost effective improvement of ecological health.

B. Areas of Controversy

The removal of dams requires decisions regarding the final disposition of lands. All affected land parcels must be identified and their ownership rights should be determined. Information regarding any easements, leases, or rights-of-way granted by or to others is necessary to identify any potential restrictions on the future use of the land. Land values and property tax revenues within the project area may be affected by the loss of reservoir storage and by the level of flood protection provided. The sale of land or the release of easements may first require some level of site restoration to remove potential public safety or environmental hazards.

C. Resolution of Issues

Based on the findings from the Final Environmental Impact Statement (Final EIS), the agency's preferred alternative, Alternative A- Removal of Lost Creek Dam, resolves

controversy around the impacts of the removal of the dam by restoring the ecology of the local and regional environment.

II. Purpose Of And Need For Proposed Action

This section will briefly overview the purpose of and need for the proposed action as outlined under Section 1502.13 of the National Environmental Policy Act (NEPA).

A. Purpose for the Proposed Action

The purpose for this proposed action of removing Lost Creek Dam is to restore the original landscape, water cycle, salmonid habitat and spawning areas, and overall ecology of the area; both locally and regionally. Additionally, this proposed action will analyze aspects of dam removal such as the changing river patterns and mitigation options.

B. Need for Proposed Action

There is a need to analyze the effects of the dam on the surrounding environment and fix adverse effects on salmonids and other wildlife within the local and regional environment. The wildlife, hydrology, and geology, are all important aspects within the Rouge River Basin and greater Pacific Northwest region that need to be protected due to their roles in influencing the environment in which humans reside. This indicates that there is a need for restorative projects such as this proposed action. The removal of the dam is a restorative project that would there by reverse adverse effects on wildlife within the region.

C. Quantitative Arguments in Support of Need for the Proposed Action

When the proposal for the building of the dam was submitted there was public opposition. Many people in the area did not want to see the dam put in due to the environmental degradation it would cause. The degradation of the surrounding area would be extensive and have many impacts on salmonid resources which people rely heavily on. Not only is salmon consumption high in the United States, but it is a crucial part of many indigenous peoples ceremonies and cultures. Another concern for the implementation of the dam was monetary needs for maintenance and costs for eventual retrofitting. Yet another concern with the implementation of the dam was indigenous land rights in the area. Overall, these concerns

have not gone away with time, these arguments support the need for removing the Lost Creek Dam and restoring the balance of the ecosystem.

D. Statutory and Other Requirements for EIS

Under the Clean Water Act (CWA) section 404, a program was established to regulate the discharge of dredged or fill material into the United States waters. This includes water from infrastructure development, mining, and dams. No water is permitted to be released unless other less impactful actions have been explored and national waters will not all be dredged. The implementation of this proposed action has considered the impacts on wetlands, streams, and aquatic life. It has been determined that these impacts will in fact be beneficial to the ecology of the local and regional environment. Impacts will be significant in returning habitat, landscape, and a more even water cycle. For these reasons, a permit review process must be initiated.

This process will involve the United States Army Corps of Engineers (ACE) to review individual permits. They will assess permits under a public interest review as well as the environmental standards established in the Clean Water Act Section 404 (b)(1) under the Environmental Protection Agency (EPA). The United States EPA will assess the scope of the geographic jurisdiction of the proposed action and the U.S. Fish and Wildlife Service and National Marine Fisheries Service will evaluate impacts on fish and wildlife within the local and regional environment.

E. Other Proposed Actions of Relevance to the Proposed Action

The impacts of the proposed action require that another action may need to take place. The proposed action of taking out the dam will alter many aspects of the local ecology, on the other hand, the alternate action of no action will continue adverse effects on salmonids and other wildlife within the local and regional environment. A comparative summary of the proposed action and the alternative action would be required.

III. Alternatives

NEPA requires a list of reasonable alternatives that need to be included within the EIS. They must satisfy an indicated need and purpose, without conflicting other regulations, policies,

and or laws. In the following section, three alternatives will be considered, the removal of Lost Creek Dam, the notching of Lost Creek Dam, and no action.

A. Alt. 1 Removal of Lost Creek Dam

Alternative action A would result in removal of the Lost Creek Dam in the Rogue River Basin to increase beneficial use of resources and remain in compliance with water quality standards. The dam would be slowly breached near the center to allow for a controlled drawdown of the impoundment. Following the drawdown, the dam would be removed. This action will not affect groundwater quantity in the basin. This action may restore land classification with in the Rogue River Basin to previous conditions. Natural ecological function will be restored and monitored with in the basin. Chemical and physical parameters including temperature, dissolved oxygen and pH will be positively affected by removal of Lost Creek Dam. This will lead to restoration of ecological health to promote growth of native species, riparian vegetation and wetlands. Streamflow records should be obtained for the site and be evaluated to determine frequency flood peaks for diversion purposes during dam removal. Water surface profiles should be prepared along the stream for various discharges to develop stage-discharge relationships both with and without the dam. Restorations will increase the ability of the river to filter pollutants that may enter the river or basin.

B. Alt. 2 Notch The Dam

Notches can be excavated by a contractor through a concrete dam to permit reservoir drawdown for removal of the remaining portions of the dam in the dry. Adding notches to the dam may decrease capital costs for future operation, maintenance, repair, and safety improvements. Partial removal to retain the lower portion of a dam to some height above the streambed may serve as a silt retention barrier and for stabilization of upstream sediments to reduce the potential for dam failure. The rate of reservoir drawdown and the increased rate of water discharge should be considered when designing the notch size and the rate at which the notch is excavated. Overall cost may be lower than current mitigation efforts and structural accommodations considering availability of public funding. This option will allow fish passage and gradual restoration of the river and include monitoring of environmental responses to determine future projects for improvement.

C. Alt. 3 No action

Management and development planning by Oregon Department of Fish and Wildlife (ODFW) and ACE will continue to be integrated and updated as needed for the Rogue River Project to guide responsible stewardship and sustainability of project Resources. management, development, and use of project lands are required to align with national objectives regional needs, and resource capabilities and suitability. ODFW and ACE collaborate to protect and sustain project natural and cultural resources and provide public recreational opportunities that are consistent with authorized project purposes.

Responsible parties will continue management as needed including current conservation efforts for salmonids. This will require action to:

1. Foster and sustain opportunities for sport, commercial, and tribal fishers consistent with the conservation of naturally produced native fish.
2. Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.
3. Maintain genetic resources of native fish populations spawned or reared in captivity.
4. Restrict the introduction, amplification, or dissemination of disease agents in hatchery produced fish and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic and disinfecting strategies to control the spread of disease agents in fish populations in the state.
5. Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.
6. Communicate effectively with other fish producers, managers and the public.

D. Alternatives Eliminated from Consideration

1. Alternative B- Notch the Dam

This option may be eliminated due to excessive time and resources necessary for desired ecological outcome. This gradual process will require significantly more financial and human resources compared with the agencies preferred option to remove Lost Creek Dam. Creation and implementation of restoration projects will require allocation of public funding based on availability. Subsequent Plans of Operation must be evaluated independently from this FEIS, or submitted as a Supplemental EIS to this EIS if

additional information becomes available that may be relevant to the decisions made based on this FEIS.

2. Alternative C- No Action

The no action alternative may be eliminated due to decline in ecological functions within the Rogue River Basin including biological, chemical, and physical features. This decline has an increasingly negative impact on ESA-listed species and habitat necessary for their survival. The notch depth of a concrete arch dam may be limited to ensure structural stability under potential sediment loads.

E. Agency's Preferred Action

Alternative A, removing Lost Creek Dam, is necessary to immediately implement restoration the original landscape, water cycle, salmonid habitat and spawning areas, and overall ecology within the Rogue River Basin. Restoration of the ecology of this area will be more effective and long lasting than present mitigation efforts. Potential consequences of dam failure related to endangered species of fish for dam safety risk analyses may justify corrective action. Removal of the dam is the best environmental alternative for ecological function within the Rogue River Basin.

F. Mitigation Procedures Required and Their Implementation

New management issues may be addressed through individual documentation on a project basis.

IV. Affected Environment

This section describes a baseline description of the existing environment and the effects on different aspects of the action on the local and regional environment.

A. Local and Regional Environment

The local affected environment will include the Rouge River, which stretches from Lost Creek Lake, OR to Gold Beach, OR, the overarching Rouge River Basin, and Native land

rights. The regional affected environment will include Native land rights, salminoid and beaver populations and habitat within Oregon, and finally Pacific Northwest ocean health.

B. Air Resources

According to national standards Lost Creek Dam is currently within an “attainment area” for air pollution. The deconstruction of the dam would not output enough Green House Gas (GHG) emissions to push the area into a ”nonattainment area” and therefore air resources will be narrowly impacted.

C. Hydrology

Lost Creek Dam increases the temperature of the impounded water due to its stagnant nature. Therefore the Dam is responsible for managing water temperature during timed water releases for protecting salmonid health. Water sitting in the dam is not only significantly warmed but it influences the sediment load being released into the rest of the river, and increases the chances of nutrient overloading due to the stagnant conditions the dam establishes. The removal of Lost Creek Dam would mitigate the above mentioned effects by creating a more natural sediment flow, allowing a natural nutrient cycle to take place, as well as diminishing the extent of total evaporation, restoring crucial sediment flows to create less erosion in subsequent riverbeds, and overall restoring the water table in the local region to an elevated level. These effects would benefit the local area and have positive impacts on the geology and ecology of the region.

D. Geological Resources

Geological phenomenon in the area includes but is not limited to, alluvial fans, fluvial effects, and floodplains. The proposed action of removing Lost Creek Dam would result in an altering of these characteristics, however it would not be drastic. The released water from the removal of the dam would be introduced in slow increments and therefore would carry out a conservative transformation.

E. Ecology

Wildlife within the Lost Creek Dam region includes, the American Bullfrog (*Lithobates catesbeianus*), Magnificent Bryozoan (*Pectinatella magnifica*), Northern River Crangonyctid

(*Crangonyx pseudogracilis*), A Calanoid Copepod (*Eurytemora affinis*), Harris Mud Crab (*Rhithropanopeus harrisi*), Signal crayfish (*Pacifastacus leniusculus*), Spotted Bass (*Micropterus punctulatus*), Black Crappie (*Pomoxis nigromaculatus*), and American Shad (*Alosa sapidissima*). Some vegetation includes, Beck's Water-Marigold (*Bidens beckii*), Carolina Fanwort (*Cabomba caroliniana*), Variable-Leaf Watermilfoil (*Myriophyllum heterophyllum*), Wild-Celery (*Vallisneria americana*), Saltmarsh Rush (*Juncus gerardii*), and American White Waterlily (*Nymphaea odorata*).

The proposed action will give many of these species improved habitat by enlarging their habitat space, contributing more resources, and overall creating more habitat for the species. An example of this is the American Bullfrog (*Lithobates catesbeianus*). Once the river is restored to its original path, the banks will provide a muddy habitat for the toads.

F. Socioeconomic Resources

House boats, patio boats, patio cruisers, paddle boards, kayaks, tubs, and metal fish boats, are all a part of recreation use on the Lost Creek Dam. There is also wildlife viewing such as bird watching and waterfowl hunting. Lost Creek Dam also provides educational tours to youth, informing them about the use of the dam and ecology in the local area.

G. Land Use

Lost Creek Dam is located within a primarily rural area, historically the land was utilized through agriculture, lumber production, and the railroad industry. Today, a sizable part of the area is now being dominated by the dam and the lake it creates. There are few towns in and around the dam and further out, the region has scattered agriculture. If the proposed action were to be implemented, then the land use could shift to river based fishing and recreation, hydrophyte dominant farming, and conservation and management efforts.

H. Noise

This region has a low to medium ambient noise level due to its rural nature, with the occasional human induced clamor.

V. Environmental Consequences

This section is required by NEPA for analysis and comparison of environmental impacts corresponding to each alternative. Alternatives have been developed as a result of

interdisciplinary review of the project area to identify management options and opportunities and comments received during public seeing.

A. Environmental Consequences of Alternative A- Remove Lost Creek Dam

Direct impacts

Implementation of option A would be preferred by the agency and would result in positive effects to ecological processes within the Rogue River Basin. Removal of Lost Creek Dam would restore chemical, biological and physical features of the river resulting in increased biodiversity necessary for environmental health and ecological functions. The removal of the dam would effectively reconnect habitat upstream with habitat downstream and would provide passage for fish and other aquatic species. Groundwater would re-establish a new equilibrium with the surface water of the restored river flowline.

Indirect impacts

Construction of the project may cause an insignificant, temporary reduction in local ambient air quality because of emissions generated by construction equipment. Equipment operating on the construction site would emit pollutants that contribute to temporary and localized increased levels of criteria pollutants. Shoreline frontage along impoundments confers no increase in residential property value compared to frontage along free-flowing streams. Residential property located in the vicinity of a free-flowing stream is estimated to be more valuable than similar property in the vicinity of small impoundment.

Cumulative impacts

The amount of sediment in the water flowing downstream from the dam would possibly increase for a short duration immediately following dam removal and would depend on the rate of discharge and volume of water discharging. Any elevation of total suspended solids and turbidity levels during construction would gradually diminish with distance and would not be discernable from naturally occurring sediment beyond the area immediately downstream of the dam. Eventually, the amount of sediment in river water would reach a stable condition with normal river flows.

Unavoidable adverse impacts

The channel immediately downstream from the dam would be expected to exhibit the greatest changes. Surficial groundwater levels are expected to be reduced within a localized zone surrounding the impoundment following dam removal. Impacts to groundwater use are not expected under this alternative. A rapid reservoir drawdown may release a flood wave and pose

a possible danger to people downstream. Potential impact of dewatering on discharge from the valley walls is difficult to predict with certainty.

B. Environmental Consequences of Alternative B- Notch Lost Creek Dam

Direct impacts

The loss of dam benefits in the Rogue River Basin may adversely affect local community with socio economic impacts including flood control and recreation. Downstream water quality may be impacted by the passage of natural sediments that had previously been contained within the reservoir and may require long-term maintenance. It may also produce significant impacts to infrastructure within the reservoir area. Rapid drawdown of a reservoir pool could possibly induce landslides along the reservoir shoreline. Hazards include the potential for loss of life, property damage or environmental degradation in the event of failure or improper operation.

Indirect impacts

Loss of channel depths may affect river navigation. Restoration activities proposed under this alternative would reduce erosion and have a long-term beneficial impacts. Minor short term impacts from construction may affect adult salmon runs.

Cumulative impacts

Improves fish passage for salmon and other species. How well fish passage is improved may be limited due to the flow concentrating too much during higher flows. Expenditure of public financial resources may be significant for a partial solution. Remaining parts of the dam will still require maintenance over time.

Unavoidable adverse impacts

Same as Alternative A

C. Environmental Consequences of Alternative C

Direct impacts

Lost Creek Dam currently cuts off access to cold mountain waters necessary for the survival of ESA-listed species. This interferes with the biological triggers that guide migration of protected species and depletes water oxygen content.

Sediment necessary for habitat of listed species is depleted in the lower section of the river. The river recaptures sediment by eroding the downstream river bed and banks which can undermine bridges and other riverbank structures, as well as riverside woodlands. Riverbeds downstream of dams are typically eroded by several meters within

one decade of first closing a dam. Damage has been found to extend for tens or even hundreds of kilometers below a dam.

Indirect impacts

Coastal recession with widespread impacts including loss of fisheries habitats, reduced coastal protection from storm events, decreased biodiversity, loss of estuarine livelihoods, and increased release of carbon previously stored in coastal sediments

Increasing water use for agriculture and growing human population, and heat and drought predicted to intensify with climate change increases challenges to allocate cold water for protected species.

Cumulative impacts

Large-scale water transfer and dam construction impacts estuarine processes important for marine species listed under the Endangered Species Act. Researchers found that inland river dams can have highly destructive effects on the stability and productivity of coastline and estuarine habitats.

Unavoidable adverse impacts

Evaporation in reservoirs is significant and organic matter rotting in reservoirs emits methane. Changes in temperature, chemical composition, dissolved oxygen levels and the physical properties of a reservoir are often not suitable to the aquatic plants and animals that evolved within the river system. Life in and around a river evolves and is conditioned on the timing and quantities of river flow. Disrupted and altered water flows can be as severe as completely de-watering river reaches and the life they contain. Subtle changes in the quantity and timing of water flows impact aquatic and riparian life, unraveling the ecological web of a river system necessary for the survival of ESA-listed species.

VI. Preparer, Key Agencies, and Stakeholders

Preparers

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Key Agencies

National Marine Fisheries Service

Oregon Department of Fish and Wildlife

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

Stakeholders

Cow Creek Band of Umpqua Tribe of Indians

Jackson Oil and Water Conservation District

Native Fish Society

Rogue Riverkeeper

Rogue River Watershed Council

Southern Oregon Forest Restoration Collaborative

Southern Oregon Land Conservancy

Trout Unlimited

VII. Index And References

Abbreviations and Acronyms

ACE	U.S. Army Corps of Engineers
CEQ	Council on Environmental Quality
CWA	Clean Water Act
ESA	Endangered Species Act
EPA	Environmental Protection Agency
GHG	GreenHouse Gas Emissions
NEPA	National Environmental Protection Act
ODFW	Oregon Department of Fish and Wildlife

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