

APPENDIX P:

**FLOODPLAIN/WETLAND ASSESSMENT OF THE EFFECTS
OF ENERGY CORRIDOR DESIGNATION IN THE 11 WESTERN STATES**

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APPENDIX P:**FLOODPLAIN/WETLAND ASSESSMENT OF THE EFFECTS OF ENERGY
CORRIDOR DESIGNATION IN THE 11 WESTERN STATES****P.1¹ INTRODUCTION**

The Department of Energy (DOE), Bureau of Land Management (BLM), and cooperating agencies propose to designate energy transport corridors in an 11-state area of the western United States, including Washington, Oregon, California, Idaho, Nevada, Montana, Wyoming, Colorado, Utah, Arizona, and New Mexico. Corridor designation is intended to facilitate the establishment of rights-of-way (ROWs) in these states, and to minimize the environmental impacts of ROW construction by avoiding sensitive resources.

This floodplain/wetland assessment has been prepared, pursuant to Executive Order (E.O.) 11988 (Floodplain Management), E.O. 11990 (Protection of Wetlands), and DOE regulations for implementing these Executive Orders as set forth in Title 10, Part 1022, of the *Code of Federal Regulations* (CFR) (Compliance with Floodplain and Wetland Environmental Review Requirements), to evaluate potential impacts to floodplains and wetlands from the designation of energy corridors in the 11-state area.

**P.2 DESCRIPTION OF THE
ALTERNATIVES**

Under the No Action Alternative, consolidated energy transport corridors would not be designated in the 11-state area. Future energy transport projects would typically not cross federal lands within common, shared,

energy transport corridors, but rather use separate ROWs. Future energy transport projects would continue to be evaluated on an individual, project-by-project basis, and there would be no comprehensive process for implementing energy transport projects and ensuring consistency across federal lands.

Under the Proposed Action, approximately 6,112 miles of energy transport corridors, with a nominal 3,500-foot width, would be designated on federal lands throughout the 11-state area of the western United States (Figure P-1). Many of the corridor segments under the Proposed Action would include locally designated energy corridors that are currently designated in federal land use plans. Energy transport projects proposed for the corridors would incorporate by reference this Programmatic Environmental Impact Statement (PEIS) for their environmental analyses, and would also be required to do additional project-specific National Environmental Policy Act (NEPA) analyses.

**P.3 FLOODPLAINS ALONG THE
DESIGNATED CORRIDORS**

E.O. 11988, "Floodplain Management," requires all federal agencies to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Floodplain values include the attenuation of the extent of flooding, which (1) reduces the risk of flood loss; (2) minimizes the impacts of floods on human safety, health, and welfare; and (3) supports wetlands, fish, and wildlife. Title 10 of the *Code of Federal Regulations*, Part 1022 (10 CFR 1022), sets forth DOE guidelines for implementing E.O. 11988.

¹ Shaded text indicates portions of the document that underwent revision between the draft and the final PEIS in response to comments received during the public comment period as well as additional information provided by local federal land managers and resource specialists.

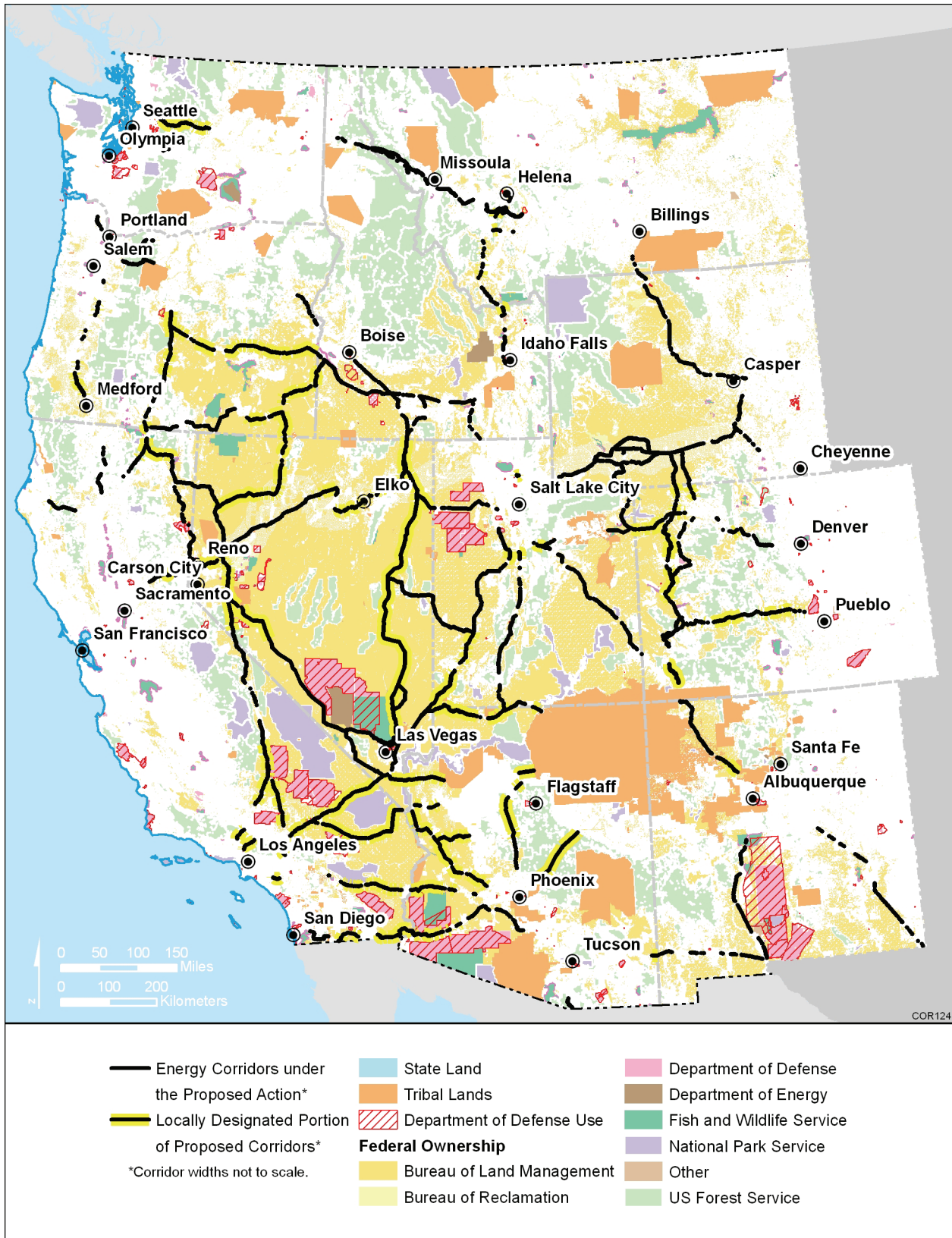


FIGURE P-1 Corridors Proposed for Designation

Base floodplains are the lowlands adjoining inland and coastal waters where there is a 1.0% chance of flooding in any given year, also referred to as the 100-year floodplain. Under 10 CFR 1022, floodplain boundaries may be determined from Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA).

Critical action floodplains are at a minimum 500-year floodplains (floodplains with a 0.2% chance of flooding in any given year), in which a federal agency action would occur for which even a slight chance of flooding would be too great (such as the storage of highly volatile, toxic, or water reactive materials). The federal agency action for this assessment is the designation of energy corridors; no critical action floodplains occur along the corridors.

The 100-year floodplains in the vicinity of the corridors were determined from FEMA floodplain maps. Although floodplain data is available for many portions of the 11-state area, floodplains are not mapped in many areas remote from human development.

P.4 WETLANDS ALONG THE DESIGNATED CORRIDORS

E.O. 11990, "Protection of Wetlands," requires all federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Title 10 of the *Code of Federal Regulations*, Part 1022 (10 CFR 1022), sets forth DOE guidelines for implementing E.O. 11990.

Under 10 CFR 1022, wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas. Wetlands may be

identified by the Fish and Wildlife Service (USFWS) National Wetlands Inventory.

Wetlands provide a number of valuable functions within the landscape (NRC 1995). Surface water storage in wetlands provides for the absorption of stormwater flows, recharging groundwater as well as reducing downstream flood peaks and subsequent damage from floodwaters. Wetlands help maintain water quality by the retention and removal of dissolved substances, sediments, and contaminants. The transformation and cycling of elements in wetlands maintain nutrient levels that promote wood production. Many fish and wildlife species depend on wetlands for habitat. These species contribute to the recreational and aesthetic values of wetlands.

Wetlands occurring throughout the 11-state area are extremely varied, and include a number of wetland types such as marshes, bogs, vernal pools, and forested wetlands. Wetland types, along with general hydrologic and geologic landscape features, tend to vary by ecoregion. Descriptions of the ecoregions, and many of the wetland types within them, that occur in the 11-state area are presented in Appendix Q. Wetland areas are typically inundated or have saturated soils for a portion of the growing season, and support plant communities that are adapted to saturated soil conditions. Streambeds, mudflats, gravel beaches, and rocky shores are wetland areas that may be unvegetated (Cowardin et al. 1979).

Over much of this area, riparian habitats are an important feature on the landscape. Riparian vegetation communities occur along rivers, perennial and intermittent streams, lakes, reservoirs, and at springs. These communities generally form a vegetation zone along the margin, distinct from the adjacent upland area in species composition and density. Riparian communities are dependent on the stream flows or reservoir levels and are strongly influenced by the hydrologic regime, which affects the frequency, depth, and duration of flooding or soil saturation. Riparian communities may

include wetlands; however, the upper margins of riparian zones may be only infrequently inundated.

Wetlands are often associated with perennial water sources, such as springs, perennial segments of streams, or lakes and ponds. Riparian areas and wetlands are valued because of the important services they provide within the landscape, such as providing fish and wildlife habitat, maintaining water quality, and flood control. Total wetland area present within each of the 11 states, on the basis of estimates from the 1980s, ranges from about 236,350 acres in Nevada to 1,393,900 acres in Oregon (Table P-1). These estimates represent less than 2.5% of the total surface area of any of the 11 states, and less than 1% of the total state surface area for six of the states.

P.5 EFFECTS OF THE ALTERNATIVES

The relative impacts of potential ROW construction under the two alternatives under consideration, No Action and the Proposed Action (designate new and currently approved

corridors), are presented below. The Proposed Action does not specify complete corridors that would represent a fully integrated energy transport network. For this alternative, ROWs that would connect the corridor segments designated by the alternative would need to be constructed to complete the transmission network. These unspecified ROWs could follow a variety of paths across the landscape on other federal and nonfederal land, with varying degrees of resulting impact on ecological resources.

The proposed corridor designations intersect with floodplain and wetland areas across the 11 states. It is expected that following corridor designation and land use plan modification, ROWs could be constructed within the corridors and intervening areas connecting corridor segments. The impacts described here are impacts common to ROW construction and would occur if construction occurs, regardless of the alternative chosen.

The construction and placement of some pipelines, electricity transmission line support structures, and access roads, along with the establishment of temporary work areas, could occur within 100-year floodplains. The presence of support structures and excavated soils from footings would result in the displacement of a small amount of floodplain volume and flood storage capacity of 100-year floodplains.

Impacts to wetlands include direct impacts of facility construction, routine operations, and spills, as well as indirect effects. Indirect effects may occur within the corridor or outside the corridor on other federal or nonfederal land, and they may include changes in water quality or hydrologic regime (such as timing, depth, and duration of inundation or soil saturation), changes in soils (such as compaction, sedimentation, or erosion), or changes in vegetation community structure or species composition. These impacts are associated with both the elimination of wetland habitat and the degradation of habitat from activities occurring

TABLE P-1 Wetland Area in the 11 Western States, 1980s Estimates

State	Wetland Area (acres)	Percent of Surface Area
Arizona	600,000	0.8
California	454,000	0.4
Colorado	1,000,000	1.5
Idaho	385,700	0.7
Montana	840,300	0.9
Nevada	236,350	0.3
New Mexico	481,900	0.6
Oregon	1,393,900	2.2
Utah	558,000	1.0
Washington	938,000	2.1
Wyoming	1,250,000	2.0

Source: Dahl (1990).

to a wetland adjacent to or within the watershed of a wetland. The construction of facilities, access roads, and electrical transmission towers, could potentially result in the direct loss of wetlands from the placement of fill material. Construction of pipeline stream crossings, where directional drilling is not used, and access road bridges could also result in losses of wetland habitat. Wetland losses could result in the localized reduction or loss of wetland functions.

Many types of wetlands occur within the 11-state area. However, throughout the region wetlands are frequently associated with perennial streams, including floodplain and riparian wetlands and seeps and springs that feed these streams. Wetlands that are associated with intermittent streams would be expected to occur along the tributaries of these streams and rivers. Springs supporting wetlands may occur along either perennial or intermittent streams. The degree of impacts to wetlands would depend on the degree of wetland development along the perennial streams, lakes, and ponds identified, the presence of associated tributaries with wetland habitats, other wetlands within the corridor segments, and the degree to which wetlands could be avoided during ROW construction.

P.5.1 Effects of the No Action Alternative on Floodplains

Under the No Action Alternative, ROW planning and development would proceed without coordination or expedited systematic planning. Individual project proponents would independently identify preferred routes and project design. More ancillary facilities such as access roads, pumping stations, and electrical substations (with greater amounts of land disturbance) would likely be developed if ROWs were not colocated. Therefore, there is a greater possibility that more energy transport ROW development would occur under the No Action Alternative. Consequently, there is the possibility that there would be more total development under No Action with potentially

greater impacts to floodplains. Under No Action, individual project proponents would not benefit from the expedited permitting facilitated by the Proposed Action. Therefore, under this alternative, development may proceed at a slower pace, resulting in less impact to floodplains because of increased time to site projects, obtain permits, and meet multiple permitting requirements.

P.5.2 Effects of the Proposed Action on Floodplains

ROW construction under the Proposed Action, if energy transport projects are authorized for the designated corridors, is expected to have less impact than under No Action because there would be a greater likelihood for colocation of energy transport facilities and fewer project-specific ROWs overall. Consequently, it is anticipated that there could be less potential impact to floodplains. Under the Proposed Action, there is a greater likelihood that fewer lands under nonfederal jurisdiction would be crossed than under No Action. Consequently, there is a greater possibility that energy corridors under the Proposed Action would undergo more consistent environmental review. The length and area of floodplain crossings by designated corridors under the Proposed Action are given in Table P-2.

P.5.3 Effects of the No Action Alternative on Wetlands

Under the No Action Alternative, individual project proponents would independently identify preferred routes and project designs, and it is likely more ancillary facilities would be developed than under the Proposed Action. Consequently, there is the possibility that there would be more total development under No Action, with potentially greater impacts to wetlands. However, under this alternative, impacted habitats would be less likely to be

TABLE P-2 Floodplain Areas Crossed by Corridors under the Proposed Action

State	Total Miles	Total Acres
Arizona	11	8,686
California	11	10,665
Colorado	0	0
Idaho	1	215
Nevada	8	3,186
New Mexico	1	295
Montana	0	0
Oregon	0	246
Utah	0	0
Washington	1	49
Wyoming	1	510
Total	34	23,853

TABLE P-3 Named Streams Intersected by Corridors under the Proposed Action

State	Number of Streams	Miles of Stream
Arizona	36	55
California	4	75
Colorado	41	52
Idaho	15	12
Montana	14	21
Nevada	41	93
New Mexico	11	4
Oregon	18	16
Utah	31	46
Washington	6	4
Wyoming	36	34
Total	273 ^a	412

^a Does not equal sum of column due to multiple intersections of some streams.

repeatedly affected by additional projects, as could occur under the Proposed Action, and restoration of impacted areas would more likely progress uninterrupted. Under No Action, individual project proponents would not benefit

from the expedited permitting facilitated by the Proposed Action. Therefore, under this alternative, development may proceed at a slower pace, resulting in less impact to wetlands, because of increased time to site projects, obtain permits, and meet multiple permitting requirements.

P.5.4 Effects of Corridor Designation on Wetlands

Wetlands that are crossed by the proposed corridors may be affected by project development within the designated corridors if energy transport projects are authorized. The wetland types associated with the ecoregions for each state would be potentially affected by corridor development (see Section 3.8 for a discussion of ecoregion impacts under the alternatives). However, avoidance of wetland concentration areas, as well as other sensitive ecological resources, was considered during corridor routing. Across much of the 11-state region, riparian zones along rivers and streams represent important and sensitive habitats. The number of perennial and intermittent named streams crossed by the corridor segments under the Proposed Action in each of the 11 states are presented in Table P-3. The stream length represents the total length of streams lying within the corridor segments. Riparian habitats are also located along many of the unnamed intermittent streams that are tributaries of these water bodies. Under this alternative, 273 named streams occur within the corridor segments, with a total stream length of 412 miles. Additional stream crossings would be expected to occur within the ROWs that would be constructed between these corridor segments.

P.6 CONCLUSIONS

Impacts to floodplains and wetlands could occur as a result of the implementation of either of the alternatives. If energy transport projects were authorized within designated corridors, their construction (including pipelines,

electricity transmission lines, and ancillary facilities) within or outside of designated corridors could result in impacts to wetlands and floodplains, ranging from small indirect effects to losses of wetland or floodplain area or functions. Such impacts would be evaluated in site- and project-specific analyses.

E.O. 11990, "Protection of Wetlands," requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial uses of wetlands. Title 10 of the *Code of Federal Regulations*, Part 1022 (10 CFR 1022), sets forth DOE regulations for implementing E.O. 11990 as well as E.O. 11988, "Floodplain Management." Unavoidable impacts to wetlands under the jurisdiction of Section 404 of the Clean Water Act (CWA) would require a permit from the U.S. Army Corps of Engineers and CWA Section 401 Water Quality Certification from the state. Mitigative measures, possibly including compensatory mitigation, might be stipulated in

these permits. A mitigation plan would be required prior to the initiation of construction.

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