Chapter 10 – Environmental Considerations

The Environmental Considerations Chapter includes a discussion of potential environmental impacts, avoidance and mitigation activities at the policy and strategy level rather than from a project-specific level.

This discussion was developed in consultation with federal, state, tribal, wildlife, land management, and regulatory agencies, as shown on Table 10-1.

Table 10-1 – Agency Partners

Agency
Confederated Tribes of Siletz Indians
Confederated Tribes of Grand Ronde
Tolowa Dee-Ni Nation
Cow Creek Band of Umpqua Tribe of Indians
Oregon Department of Environmental Quality (DEQ)
Oregon Department of State Lands (DSL)
Oregon Department of Fish and Wildlife (ODFW)
Oregon Department of Transportation (ODOT)
Oregon Department of Land and Conservation (DLCD)
Oregon State Historic Preservation Office (SHPO)
U.S. Army Corps of Engineers (USACE)
U.S. Department of Commerce, National Marine Fisheries Service (NMFS)
U.S. Department of Transportation Federal Highway Administration (FHWA)
The Confederated Tribes of Grand Ronde
U.S. Department of Transportation Federal Transit Administration (FTA)
U.S. Environmental Protection Agency (EPA)
U.S. Fish and Wildlife Service (USFWS)

The Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58), also known as the Bipartisan Infrastructure Law (BIL), contains a number of new programs targeted at mitigating the impacts of climate change, environmental impact and increasing the resilience of the surface transportation system. Funding for these programs is both apportioned (distributed) to States based on formulas specified in Federal law, and through competitive grant programs.

Some of the BIL programs are:

- Bridge Investment Program (BIP)
- Carbon Reduction Program (CRP)
- Congestion Mitigation and Air Quality (CMAQ) Improvement Program
- Emergency Relief Program (ER)
- National Culvert Removal, Replacement, and Restoration Grants (Culvert AOP Program)
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program
- National Electric Vehicle Infrastructure (NEVI) Formula Program
- Reduction of Truck Emissions at Port Facilities
- Safe Streets and Roads
- Wildlife Crossings Pilot Program

For additional information on the Bipartisan Infrastructure Law (BIL) programs visit FHWA BIL Fact Sheet.

This RTP includes non-federally funded, regionally significant projects for air quality purposes and projects that receive federal funds. Some environmental laws and regulations are applicable regardless of the funding source. This chapter will outline the applicability of those laws and regulations as related to expected funding.

Inventory and Mapping

The MRMPO inventoried historic and natural resources within the MPO planning boundary. The work was coordinated with the appropriate federal, state, tribal, wildlife, land management, and regulatory agencies.

The MRMPO collaborated with consultation partners to identify and obtain the most current, complete, and accurate data possible from which to develop the inventory in this chapter.

This framework consists of a library of Geographical Information Systems (GIS) shape files (data layers); and a set of maps highlighting ecologically important areas, linkages within and outside of the valley, and conflicts with planned transportation projects or existing transportation structures (e.g., culverts).

Data was incorporated into GIS to create the maps that illustrate important environmental areas. Inventory and resource data are included in the discussion sections of this chapter; all maps appear in numerical order at the end of the chapter:

- Map 10-1 - Prime Agricultural Soils, Viticulture Areas, Vineyards and Orchards
- Map 10-2 - Wetlands and Special Flood Hazard Area
- Map 10-3 - Fish Passage Barriers, Salmonid Habitat, and Water Quality (TMDL) Limited Streams
- Map 10-4 - Wildlife Collision Hot Spots
- Map 10-5 - Historic Places

Details about selected maps appear below, with more in-depth discussion of issues surrounding environmental features in the sections that follow. Map pages begin on Chapter 10 - Page 20.

Prime Agricultural Soils, Viticulture Areas, Vineyards, and Orchards, Map 10-1:

Shows RTP projects that are located on agricultural soils (irrigated soils classes 1–4). This soil information is derived from U.S. Department of Agriculture (USDA) soils data, which categorize soils into eight capability classes. Viticulture areas represent the areas that meet the criteria for High Value farmland within the Viticultural Area per ORS 195.

Wetlands and Special Flood Hazard Area, Map 10-2:

Illustrates RTP projects that intersect the National Wetlands Inventory, Grants Pass Local Wetlands Inventory, and FEMA's Special Flood Hazard Areas. Note: The National Wetlands Inventory has limitations for planning efforts including the lack of mapping wetlands smaller than one acre, farmland wetlands, and some other smaller features. Due to the lacking information, some mitigation opportunities and potential impact areas may be missed if better location information is not available. (DSL 2015)

Fish Passage Barriers, Salmonid Habitat, and TMDL Streams, Map 10-3:

Identifies fish passage barriers (primarily culverts and dams) and illustrates RTP projects that intersect with salmonid habitat (Coho Salmon, Chinook Salmon, and Steelhead) and TMDL approved streams (water quality limited streams). Streams for which management plans (Total Maximum Daily Load action plans) have been approved are shown.

Wildlife Collision Hotspots Map 10-4:

Illustrates RTP projects that overlap with high frequency wildlife mortality incidents (from Oregon Department of Transportation dispatch records of carcass reports).

Historic Places, Map 10-5:

The National Park Service's National Register of Historic Places mapped with the RTP projects.

Environmental Justice

Environmental Justice encompasses three fundamental principles:

1. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. Prevent the denial of, reduction in, or significant delay of these protections for minority and low-income populations.

Environmental Justice stems from Title VI of the Civil Rights Act of 1964 and Executive Order 12898 of 1994. The latter, Executive Order 12898, directs federal agencies to incorporate achieving Environmental Justice into their missions.

The Middle Rogue Metropolitan Planning Organization maintains a separate civil rights plan: https://mrmpo.org/wp-content/uploads/2021/12/1A_MRMPO_TitleVIPlan_UPADTED-08-2021-Full-Doc.pdf

One of MRMPO's Environmental Justice goals is to achieve equal protection from environmental and health hazards and equal access to decision-making for all citizens of the MRMPO area in an effort to promote quality of life.

Environmental Justice principles are addressed through policy, as well as through actions by the MRMPO to promote equality. Through constant and consistent assessment, the MRMPO will work to ensure Environmental Justice.

Environmental Considerations in Planning

It is appropriate to begin considering the environmental consequences of any policy, project, and/or program that address transportation deficiencies. However, such consideration is not expected to be at the same level of detail as may be required by the National Environmental Policy Act (NEPA). It is important to note that a NEPA process is required for any transportation project having a federal nexus. A project has a federal nexus if it involves federal funding, a federal permit or approval, use of federal lands, or a federal program.

Early Consideration of Environmental Consequences

A common principle of environmental laws and regulations is a multi-step process that focuses on:

- Avoiding impacts to resources,
- Minimizing those impacts that are unavoidable, and
- If impacts are not avoidable, mitigating for those impacts.

If these processes can be considered at a regional level, projects may be able to advance through required environmental processes more quickly than projects whose impacts must be evaluated and considered independently.

Use of Environmental Information

Environmental information is typically collected and analyzed in the transportation planning process. The MRMPO maintains a GIS library of environmental data that can be used to identify and document potentially affected environmental resources. This information can then be used to identify opportunities to avoid or minimize environmental impacts of any alternative transportation solutions being considered, modify alternatives being considered, or potentially eliminate alternatives with unacceptable or greater environmental consequences.

Maps in this chapter were created by overlaying the planned transportation projects with environmental data including wetlands, floodplains, fish (salmonid) habitat, critical wildlife habitats, and ecologically sensitive areas.

Documentation – Environmental information and/or analyses used in the planning process, and environmental impact avoidance or minimization actions taken, should be thoroughly documented. This will allow information to be used again, or incorporated as evidence of mitigation, resulting in effective and expedited environmental review.

Evaluation of Impacts

The evaluation of the impacts a roadway project has on natural areas and historic resources shall take into account (Title 23 CFR § 777.7):

1. The importance of the impacted wetlands and natural habitats. Evaluation shall consider:
   - Wetland and natural habitat functional capacity,
   - Relative importance of these functions to the total wetland or natural habitat resource of the area,
   - Other factors such as uniqueness, aesthetics, or cultural values; and
   - Input from the appropriate resource management agencies through interagency coordination.

2. The extent of roadway impacts on the wetlands and natural habitats.

3. Actions necessary to comply with the Clean Water Act, Section 404; the Endangered Species Act of 1973; and other relevant Federal statutes. The short and long-term effects of the project on wetland or natural habitat functional capacity.

Avoidance, Minimization, Mitigation

The MRMPO, utilizing GIS, species accounts, soil types, and other relevant data, seeks to avoid or minimize environmental impacts to the greatest extent possible. Agency review (NOAA Fisheries and ODFW) has also emphasized the importance of avoiding and minimizing impacts.
Where impacts cannot be avoided, efforts will be made to ensure appropriate mitigation. Additionally, the MRMPO works with other agencies to provide greater benefits to the environment regionally. Additional discussion of avoidance, minimization, and mitigation appears in subsequent sections addressing specific resources.

The Rogue Valley Council of Governments has a Natural Resource Department that coordinates and facilitates resource projects within the region. This internal knowledge of natural resources, combined with regional collaboration, will lead to improved avoidance measures and natural resource mitigation activities.

Mitigation is the attempt to offset potential adverse effects of human activity on the environment. Mitigation is the last step of the avoidance and minimization process. The National Environmental Policy Act regulations define mitigation (Title 40 CFR § 1508.1) as follows:

Mitigation means measures that avoid, minimize, or compensate for effects caused by a proposed action or alternatives as described in an environmental document or record of decision and that have a nexus to those effects. While NEPA requires consideration of mitigation, it does not mandate the form or adoption of any mitigation. Mitigation includes:

1. Avoiding adverse impacts by not taking an action.
2. Minimizing impacts by limiting the degree of action.
3. Rectifying by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating impacts over time through preservation and maintenance activities.
5. Compensating for an impact by replacing or providing substitute resources or environments. In most mitigation agreements, more of a resource or habitat must be provided than was originally present. Ratios greater than 1:1 are required in part to compensate for unrealized losses and the inability of technology to completely restore the natural environment."

Wetlands and Natural Habitats

The MRMPO encourages progressive approaches to wetlands and natural habitat mitigation. These approaches include the development of conservation and mitigation banking agreements or the purchase of intact natural areas. Conservation and mitigation banks differ to some degree. Mitigation bank could refer to mitigation of any habitat, although they are typically referring to wetland mitigation per federal guidance for Compensatory Mitigation for Losses of Aquatic Resources, Federal Register / Volume 73, Number 70, Thursday, April 10, 2008 / Rules and Regulations, Army Corps of Engineers (COR), Title 33 CFR § 325 & 332, Environmental Protection Agency (EPA), Title 40 CFR § 230 or State guidance ORS 196.600 to 196.655.

Whereas conservation banks are oriented toward endangered, threatened, and other at-risk species; habitats are selected and managed based upon the needs of those specific species. Roadway projects are linear, often resulting in many small, incremental impacts. Subsequently, on-site mitigation sometimes results in isolated wetlands and natural habitat that might not provide benefits commensurate with costs and time required to establish wetland and natural habitat functions.

Wetland or habitat banks have the ability to provide more wetland or habitat values and benefits per acre; consequently, the increased habitat benefits result in greater benefits to fauna, and often result in increased biodiversity. It is noteworthy that large contiguous habitat provides more benefits than small isolated habitats due to facilitated species movements, increased colonization rates, and decreased local extinction rates and that the mitigation area needs to receive sufficient management to ensure their functions will be sustained in perpetuity. In some cases it may be mutually beneficial, both in preserving the environment and creating an effective transportation system, to preserve the same or similar habitats in relatively close proximity to the habitats being impacted. The MRMPO recognizes that the Rogue Valley provides valuable habitat along the Pacific flyway, one of four flyways nationwide. Therefore, the MRMPO will strive to lessen impacts to habitats upon which species are dependent.

Additionally, efforts will be made to establish and maintain regional collaboration, both in identifying potential mitigation areas and ensuring their management in perpetuity.

Reducing Impacts – There are a number of actions that can be taken to minimize the impact of roadway projects on wetlands or natural habitats (Title 23 CFR § 777.9).

1. Avoidance and minimization of impacts to wetlands or natural habitats through realignment and special design, construction features, or other measures.
    - Using best management practices to avoid introduction and spread of invasive species is another key issue. Road construction actions to avoid soil disturbance should be used to reduce the spread of noxious invasive plants.
    - Avoiding soil disturbance should be used to reduce the spread of noxious invasive plants.
    - Employing seasonal restrictions around bird nest sites during a critical season, thus avoiding and reducing short-term impacts to sensitive nest sites for a number of bird species in the area that could be affected, including bald eagle, golden eagle, and osprey.

2. Compensatory mitigation alternatives, either inside or outside of the right-of-way. This includes, but is not limited to, such measures as on-site mitigation, when that alternative is determined to be the preferred approach by the appropriate regulatory agency; improvement of existing degraded or historic wetlands or natural habitats through restoration or enhancement on-or off-site; creation of new wetlands; and under certain circumstances, preservation of existing wetlands or natural habitats on-or off-site. Restoration of wetlands is generally preferable to enhancement or creation of new wetlands.

3. Improvements to existing wetlands or natural habitats. Such activities may include, but are not limited to, construction or modification of water level control structures or ditches, establishment of natural vegetation, re-contouring of a site, installation or removal of irrigation, drainage, or other water distribution systems, integrated pest management, installation of fencing, monitoring, and other measures to protect, enhance, or restore the wetland or natural habitat character of a site.

Rogue Wild and Scenic River Designation

The Rogue Wild and Scenic River is best known for its outstanding natural scenery, fishing, whitewater boating, and wildlife and cultural resources. Eighty-four miles of the Rogue River was designated wild and scenic by Congress in 1968, under the Wild and Scenic Rivers Act, to preserve its outstanding qualities. The Applegate River (7 miles west of Grants Pass, Oregon) is the east boundary and Lobster Creek (11 miles east of Gold Beach, Oregon) is the west boundary.

The area gets over half a million visitors, annually. Recreation opportunities include boating, fishing, guided motorized tour boat trips, guided whitewater fishing and float trips, camping, hiking, swimming, picnicking, wildlife viewing, and sunbathing.

Although the Wild and Scenic section is not within the MRMPO Boundary, consideration of downstream impacts of projects is recommended.

Mitigation Banks

The MRMPO encourages the use of mitigation banks, or other habitat preservation measures, to offset habitat impacts. Banks will be approved in accordance with the Federal Guidance for Compensatory Mitigation for Losses of Aquatic Resources, Federal Register / Volume 73, Number 70, Thursday, April 10, 2008 / Rules and Regulations, Army Corps of Engineers (COR), Title 33 CFR § 325 & 332, Environmental Protection Agency (EPA), Title 40 CFR § 230, State guidance ORS 196.600 to 196.655, or other agreement between appropriate agencies. Where feasible, the MPO will attempt to collectively conserve habitat areas that provide greater environmental benefits.

Mitigation Bank Areas in the MRMPO

The MRMPO provides a discussion of the types of potential environmental mitigation activities and potential areas to carry out these activities. This section of the chapter provides an overview of the potential areas to carry out mitigation activities.

There are no existing or proposed mitigation bank areas in the MRMPO area, but the MRMPO area is part of the service area for the Oregon Department of Transportation (ODOT) operated Vernal Pool Mitigation/Conservation Bank (Bank) near Central Point, used for ODOT projects.

The Bank is located near the intersection of Newland and Truax Roads, in White City, Jackson County, Oregon. The bank objectives include protection and management of 80.23 acres of high functioning Agate Desert vernal pool complex (vernal pools, and uplands including chaparral, open prairie, and oak woodland), Including areas designated as critical habitat and wetlands. Bank operations include restoration of wetland hydrology to 3 acres of vernal pools.

Figure 10-1 - ODOT Vernal Pool Mitigation Bank

The Bank is located west of and directly adjacent to the Nature Conservancy's Whetstone Savanna Preserve (a registered Oregon Natural Heritage Resource) and is of similar character. In 2014, ODOT completed the purchase of four additional parcels (106 acres) adjacent and to the west and north of the original Bank parcels to serve as Individual Permittee Responsible Mitigation for ODOT's Highway 62: Interstate 5 to Dutton Road Project.

The Rogue Valley Council of Governments identified the site as one of the highest functioning vernal pool complexes remaining. A Vernal Pool complex functional assessment methodology developed by regulators and stakeholders identified this complex as one the three complexes with highest potential "sustainability" scores.

The adjacent preserve's acreage is approximately 106 acres of which roughly 13 acres is high functioning. The remaining 100 plus acres will be enhanced and restored to high functioning habitat. Upon completion of restoration activities, approximately 196 acres of contiguous high functioning vernal pool complex will be protected and under management to sustain wetland functions and values.

Wildlife Habitat

The Oregon Department of Fish and Wildlife (ODFW) follows a conservation strategy that focuses on habitat restoration and maintenance to address the needs of game and nongame species.

The strategy highlights specific actions that can conserve Oregon's fish and wildlife when the chances of success are greatest before they become sensitive or endangered.

The strategy provides information about species and habitats in every region in Oregon and the issues affecting their present and future health. This information is included in the RTP for the purpose of:

- Landowners and land managers who want to improve conditions for at-risk wildlife;
- Agencies and organizations interested in making conservation investments more effective and efficient; and
- Oregonians who want a better understanding of the conservation issues in their area.

The link follows offers more information on the ODFW Conservation Strategy for Oregon: ODFW Conservation (state.or.us)

Conservation Strategy for Oregon: Klamath Mountains Ecoregion

The MRMPO is situated within the Klamath Mountains ecoregion which covers much of southwestern Oregon, including the Umpqua Mountains, Siskiyou Mountains and interior valleys and foothills between these and the Cascade Range. Several popular and scenic rivers run through the ecoregion, including the: Umpqua, Rogue, Illinois, and Applegate.

Within the ecoregion, there are wide ranges in elevation, topography, geology, and climate. The elevation ranges from about 600 to more than 7400 feet, from steep mountains and canyons to gentle foothills and flat valley bottoms. This variation along with the varied marine influence supports a climate that ranges from the lush, rainy western portion of the ecoregion to the dry, warmer interior valleys and cold, snowy mountains.

The Klamath Mountains ecoregion boasts a high rate of species diversity, including many endemic species. In fact, the Klamath-Siskiyou region was included in the World Wildlife Fund's assessment of the 200 locations most important for species diversity worldwide.

The region is particularly rich in plant species, including many pockets of endemic communities and some of the most diverse plant communities in the world. For example, there are more kinds of cone-bearing trees found in the Klamath Mountains ecoregion than anywhere else in North America. In all, there are about 4,000 native plants in Oregon, and about half of these are found in the Klamath Mountains ecoregion.

The ecoregion is noted as an Area of Global Botanical Significance (one of only seven in North America) and world "Centre of Plant Diversity" by the World Conservation Union. The ecoregion boasts many unique invertebrates, although many of these are not as well studied as their plant counterparts.

While the Klamath Mountains ecoregion is ecologically unique, it embodies many of the conservation issues facing other parts of Oregon. For example, increasing population growth and development in rural residential and urban communities strain resources, particularly in the southern and eastern portions of the ecoregion. The Klamath Mountains are the second fastest-growing ecoregion in Oregon (the Willamette Valley is experiencing the fastest rate of expansion). Much of the population growth is concentrated in valleys along the Interstate 5 corridor. Demands for choice building sites often coincide with good quality habitat.

Land use conversion and urbanization, loss of habitat connectivity, and invasive species are limiting factors identified by the Strategy for this ecoregion. Appropriate transportation planning as well as project design and implementation can be a valuable tool in addressing these factors.

Recent indicators suggest that water quality and riparian condition in the ecoregion may be improving. Much of this change could be attributed to local collaborative conservation efforts via watershed councils and other groups.

For more information on the Klamath Mountains Ecoregion and possible actions recommended to restore habitats identified in this ecoregion check out Klamath Mountains – Oregon Conservation Strategy

Habitat Conservation Opportunities

As defined in the Conservation Strategy, Conservation Opportunity Areas (COAs) are landscapes where broad fish and wildlife conservation goals would be best met. COAs were developed to guide voluntary, non-regulatory actions. ODFW is in the process of updating the COAs and has expanded the North Medford COA so that a portion of the MRMPO planning area is now included.

Barriers to Wildlife Movement

Barriers to wildlife movement is identified in the Oregon Conservation Strategy as one of the key conservation issues facing Oregon's habitat and species. Highway and road networks are particularly disruptive to carnivore species that require long-distance movements to meet their life-history requirements, herptiles such as Pacific Giant Salamander, Northwestern Garter Snake, Common Kingsnake, Common Gartersnake and Western Pond Turtles in the area and migratory deer that are especially vulnerable during fall and spring to vehicle collisions. ODFW is working with the Oregon Department of Transportation, county transportation departments, and other partners to identify and reduce fish passage barriers and areas where wildlife mortality on highways occurs. Also, the Bipartisan Infrastructure Law (BIL) establishes a Wildlife Crossing Pilot Program (WCPP) to provide discretionary grants for projects that seek to achieve a reduction in the number of wildlife-vehicle collisions and improved habitat connectivity for terrestrial and aquatic species.

ODFW's fish passage rules can be found here: https://www.dfw.state.or.us/fish/passage/ (OAR Chapter 635 Division 412).

ODFW notes that stream crossing designs must meet fish passage criteria in order to provide fish passage for Oregon's native migratory fish species. Barriers to migration are a big challenge to recovery for the fish species in the Rogue Basin. In the MRMPO area numerous tributaries have significant barriers near their confluence with the Rogue River. Restoration of native fish populations will lag if fish are not able to utilize the habitat available in the watershed, including urban streams.

During a project near a stream, it may be possible to utilize equipment and personnel to do smaller scale restoration projects on the nearby waterbody, such as adding some minor retrofits to improve fish passage. This can be scoped with ODFW pre-project.

ODOT is a cooperator on the Oregon Wildlife Movement Strategy, an interagency partnership to inventory and prioritize wildlife movement barriers on the state highway system. ODOT's Geo-Environmental Section is developing a Wildlife Collision Prevention Plan that addresses Federal Highway Administration and Oregon Department of Fish and Wildlife concerns for animal-vehicle collisions on the state highway system.

The effects of roads on wildlife can be mitigated through the design and construction of underpasses and overcrossings. For more information on wildlife and roads, click on the links below:

- Oregon Department of Transportation : Wildlife Crossings : Geo-Environmental : State of Oregon
- http://www.defenders.org/programs_and_policy/habitat_conservation/habitat_and_highways/index.php

Endangered Species Act

The Endangered Species Act (ESA) provides for the conservation of species that are endangered or threatened as well as the conservation of the ecosystems on which they depend. Table 10.2 identifies a list of species (birds, fish, flowers, and mammals); their status at the local, state, or federal level, and if there is critical habitat in the MRMPO area.

Table 10-2 – Threatened and Endangered Local Species

Species common name	Species scientific name	Status	Critical Habitat (CH)
Birds			
Northern Spotted Owl	Strix occidentalis caurina	T	Y
Fish			
Coho Salmon	Oncorhynchus kisutch	T	Y
North American Green Sturgeon	Acipenser medirostris	T	N
Pacific Eulachon	Thaleichthys pacificus	T	N
Flowers			
Gentner's Fritillary	Fritillaria gentneri	E	N
Mammals			
Gray Wolf	Canis lupus	E	N
Fisher	Martes pennanti	pT	N

The ESA allows agencies to issue permits to entities who conduct activities that may result in "incidental take" of a protected species. For the three fish species listed as threatened under the ESA, as well as critical habitat designated for Southern Oregon/Northern California Coasts (SONCC) Coho Salmon, section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires entities to consult with NMFS when their actions adversely affect essential fish habitat (EFH) (*NOAA Fisheries* 2015).

Addressing Impaired Water Resources

This portion of the Rogue Valley, like many regions in the United States, has experienced development and modification of the natural landscape. Subsequently, modifications of the natural landscape have led to water resource impacts. Surface waters and associated vegetation have been altered, leaving bodies of water with impairments, such as increased temperatures, decreased dissolved oxygen levels, high levels of bacteria, and other concerns.

As a result of combined impairments to water bodies across the nation, the Clean Water Act was established. The Act includes a system for identifying and working to repair impaired water bodies. The system for identifying impaired water bodies is known as the 303(d) list and requires states to identify impaired waters within their state. The list identifies both the body of water and what impairments it has. The states are then required to prioritize their impaired water bodies and develop action plans, known as total maximum daily loads (TMDLs), to improve water quality of the listed systems.

TMDLs for the streams within the MRMPO (Rogue River Basin) have been approved that meet the requirements of Section 303(d) of the Federal 1972 Clean Water Act. Map 10-3 illustrates TMDL water bodies and fish passage barriers; the Rogue River is TMDL listed for bacteria (E. coli and temperature). Table 10-3 lists TMDL stream segments within the MRMPO along with their identified impairments.

Table 10-3 – Impaired Local Streams

Stream	Pollutants
Applegate River	pH, mercury, flow modification, dissolved oxygen, and temperature
Birdseye Creek	temperature
Cheney Creek	dissolved oxygen
Evans Creek	bacteria and biological criteria
Galls Creek	temperature
Jackson Creek (Applegate)	dissolved oxygen
Jones Creek	E. coli and dissolved oxygen
Jumpoff Joe Creek	temperature
Kane Creek	biological criteria
Quartz Creek	temperature
Rogue River	bacteria and temperature

Stormwater Monitoring and Management

Stormwater is the flow of water created by impermeable surfaces, such as roads, highways, bridges, sidewalks, and parking lots. There are additional forms of development that contribute to stormwater runoff, such as commercial and residential buildings. Ultimately, the combinations of these impervious surfaces prevent water from infiltrating and percolating through the soils and into the groundwater (groundwater recharge). Consequently, water that used to be available through groundwater, as well as seeps, which is needed by streams and other surface waters during the summer months is no longer available. Therefore, a variety of interrelated impacts can occur.

A consequence of decreasing groundwater is a decrease in the amount of water available to surface waters, such as through seeps or springs. Typically, during the warmer months when water levels are lower, seeps may be needed to augment stream flows in order to prevent surface waters (e.g., streams) from becoming shallow and warmer. Surface waters that do not receive appropriate inflow from seeps or springs may not properly function. Subsequently, the lower volumes of surface water led to temperature increases which result in changes to aquatic and terrestrial species.

Impervious surfaces also lead to increased flows during months with high precipitation. Precipitation runs off and flows downhill (path of least resistance) and ends up in a receiving water body. It is noteworthy that increased runoff causes increased flow rates (seasonal peaks) which in turn causes scour and erosion, often resulting in modifications to the shape of the stream channel. For example, months with a lot of rain create peak flows in stream systems from the increased water being conveyed to them as a result of an increase in impervious surfaces. Consequently, stream channels can scour, and banks can erode resulting in the channel being altered and subsequent changes to habitats and composition of species.

As stormwater runoff flows over ground surfaces, it can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly into a lake, stream, river, wetland, or coastal water. Anything that enters a storm drain untreated is discharged into the water bodies. Pollutants commonly found in stormwater include nutrients (nitrogen and phosphorus), oil, bacteria, fertilizers, and metals (e.g., copper, lead, and zinc from automobile brake pads).

Impacts to aquatic and terrestrial habitats and associated fish and wildlife can result from roads and other impervious surfaces. Erosion and scour that changes a stream channel will modify flow, vegetation, and temperature and subsequently favor species adapted to the newly created conditions. In addition, pollutants draining from roads and parking lots can contribute to impaired water quality and degraded wildlife habitat. In relation to fish and aquatic species, these pollutants are a source of potent adverse effects to the biotic ecosystem, even at ambient levels. They are known to accumulate in the prey and tissues of juvenile salmon where they cause a variety of lethal and sublethal effects including disrupted behavior, reduced olfactory function, immune suppression, reduced growth, disrupted smoltification, hormone disruption, disrupted reproduction, cellular damage, and physical and developmental abnormalities (NOAA Fisheries 2015). Therefore, care in the design of the transportation system is important. Stormwater discharge is regulated under the Clean Water Act, Section 402. Projects will need to meet the requirements of any local programs (e.g., NPDES Phase II) and design manuals (e.g. *Rogue Valley Stormwater Water Quality Design Manual*).

Historic and Archaeological Considerations

Protection of historic and archaeological resources must be considered as part of the decision-making process for transportation projects.

Numerous laws and regulations call for preservation and/or enhancement of cultural resources. These include the Department of Transportation (DOT) Act of 1966, the Federal-Aid Highway Act of 1968, the National Environmental Policy Act (NEPA) of 1969, the National Historic Preservation Act of 1966, the Archaeological Resource Protection Act of 1979 and the Surface Transportation and Uniform Relocation Assistance Act of 1987. In addition, regulations by the Council on Environmental Quality (Title 40 CFR §1500-1508) and the Advisory Council on Historic Preservation (ACHP) (Title 36 CFR § 800) have been promulgated to assure that effects on historic properties are considered in the development of federal undertakings. Historic properties are any historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places.

Transportation officials are required to make a good faith effort to identify historic properties that may be affected by a transportation project. A discussion of the effects on historic properties must be included in the environmental documentation. This discussion is to be commensurate with the importance of the historic properties as well as the magnitude of the project's impacts on those properties.

The primary provisions related to historic preservation for transportation projects are Section 106 of the National Historic Preservation Act and Section 4(f) of the DOT Act. These provisions are applicable to actions that require federal approval or are undertaken with federal funds.

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. The historic preservation review and consultation process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (Title 36 CFR § 800), became effective January 10, 2001, and were further amended in August 2004.

Federal agencies are responsible for initiating Section 106 review, most of which takes place between the agency and state and tribal officials. Appointed by the governor, the State Historic Preservation Officer (SHPO) coordinates the state's historic preservation program and consults with agencies during Section 106 review. Agencies also consult with officials of federally recognized Indian tribes when tribal lands or historic properties of significance to such tribes are involved. Some tribes have officially designated Tribal Historic Preservation Officers (THPOs), who function as a SHPO on tribal lands, while others designate representatives to consult with agencies as needed.

The MPO will consult with the Confederated Tribes of Grande Ronde; Confederated Tribes of Siletz; and Cow Creek Band of Umpqua Indians for each Regional Transportation Plan update. The appropriate tribe to consult will be determined based upon historic and current information provided.

According to the Advisory Council on Historic Preservation, Section 106 review and consultation requires federal agencies to do the following:

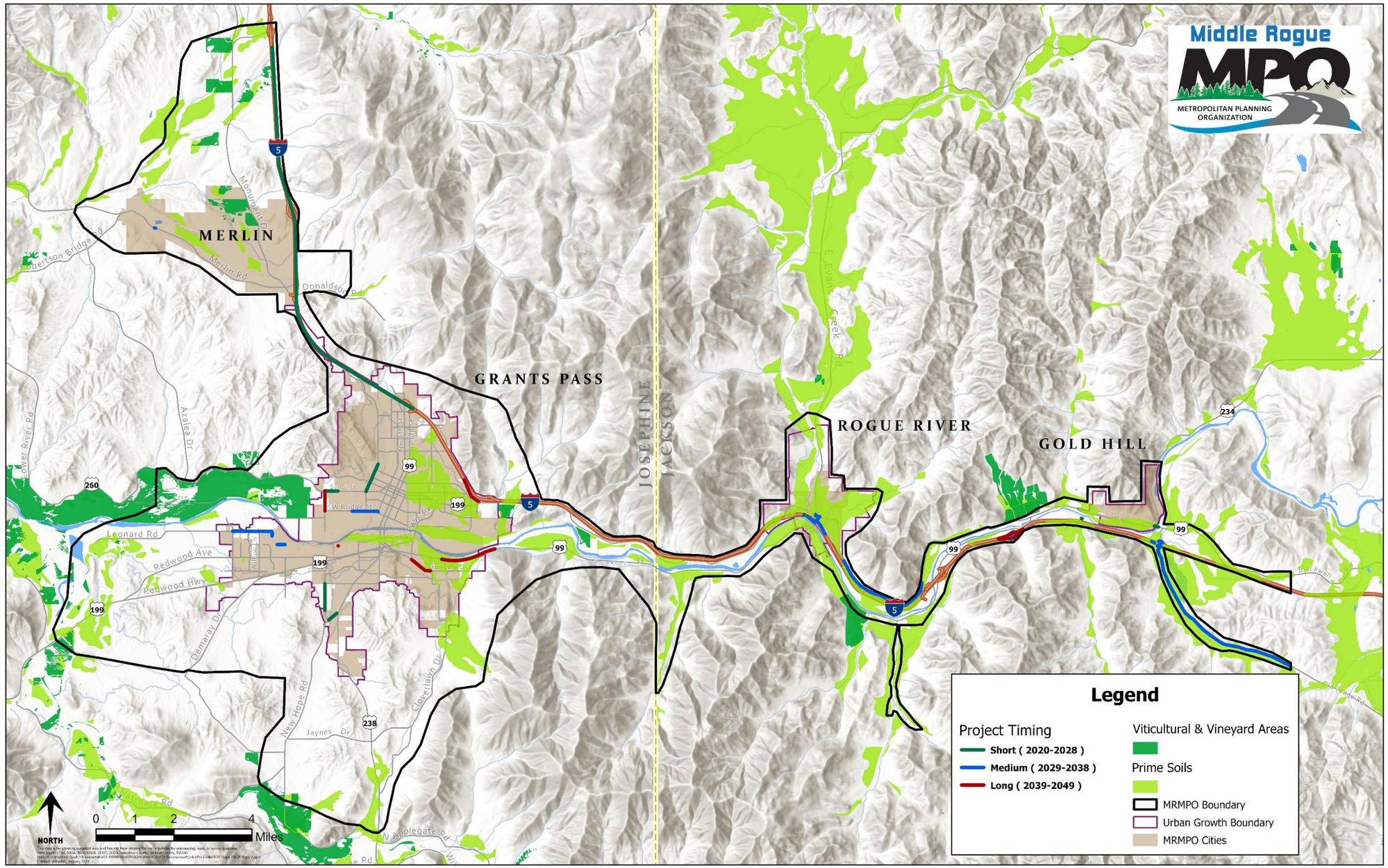
- Determine if Section 106 of the NHPA applies to a given project and, if so, initiate consultation;
- Gather information to decide which properties in the project area are listed in or eligible for the National Register Historic Places;
- Determine how historic properties might be affected;
- Explore alternatives to avoid or reduce harm to historic properties; and
- Reach agreement with the SHPO/THPO (and the ACHP in some cases) on measures to resolve any adverse effects to historic properties.

Another protection to park and wildlife areas is provided by Section 4(f) of the U.S. Department of Transportation Act of 1966. This environmental regulation applies to projects that receive Department of Transportation (FHWA or FTA) funds. Section 4(f) (recodified in 49 USC 303, but still known as Section 4(f)) includes provisions prohibiting federal transportation agencies from using land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or any land from an historic site of national, state, or local significance unless:

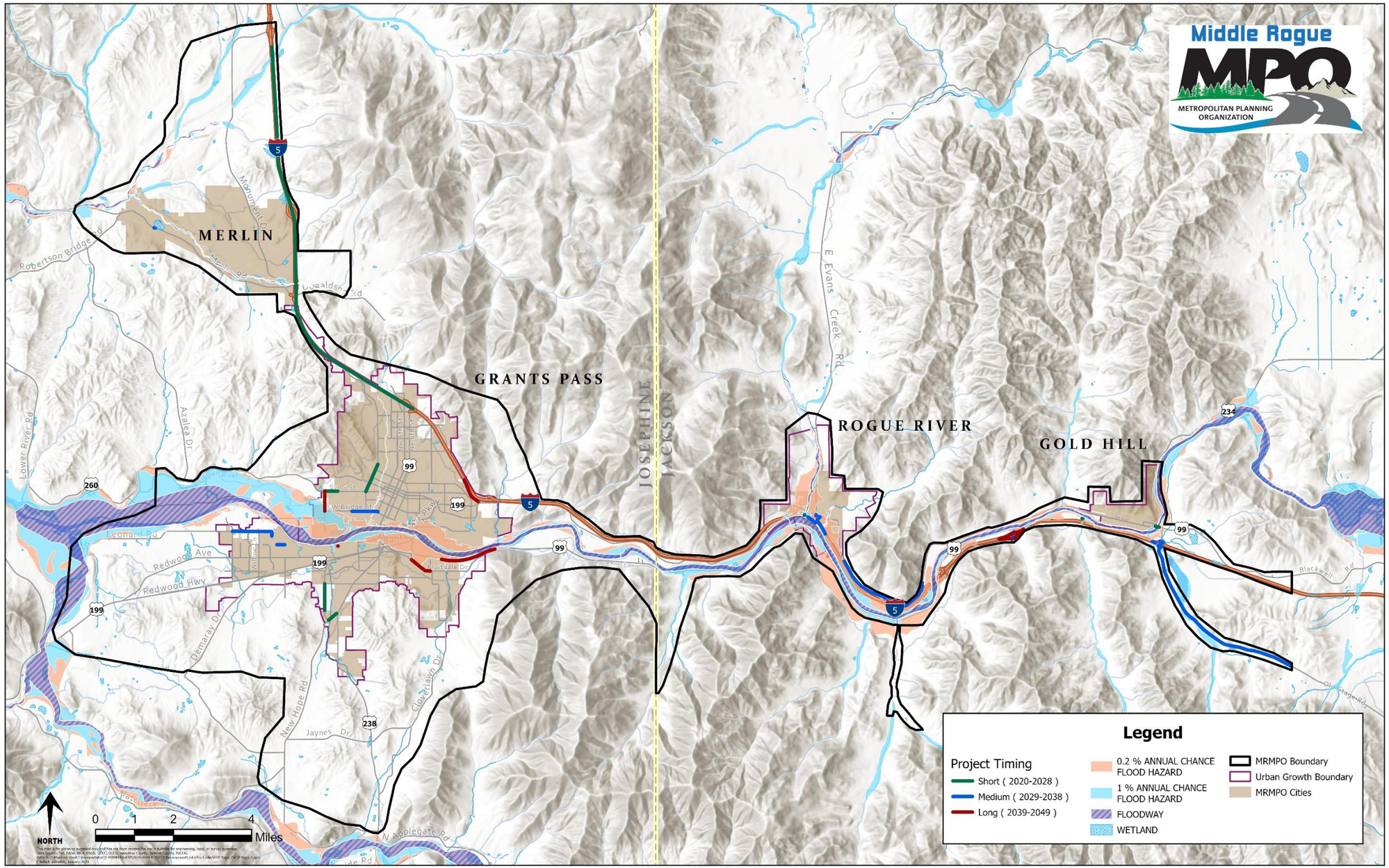
- There is no feasible and prudent alternative to the use of land, and
- The action includes all possible planning to minimize harm to the property resulting from use.

In assessing the environmental effects of an action through the National Environmental Policy Act process, FHWA includes an evaluation of the use of land protected under Section 4(f). The environmental regulations for applying Section 4(f) to transportation project development can be found at Title 23 CFR § 771. For other detailed guidance on applying the requirements of Section 4(f), the FHWA wrote the Section 4(f) Policy Paper, which discusses such topics as the history of Section 4(f), alternatives analysis, mitigation, and how Section 4(f) relates to other statutes and regulations which protect the same types of resources, including Section 106 of the National Historic Preservation Act.

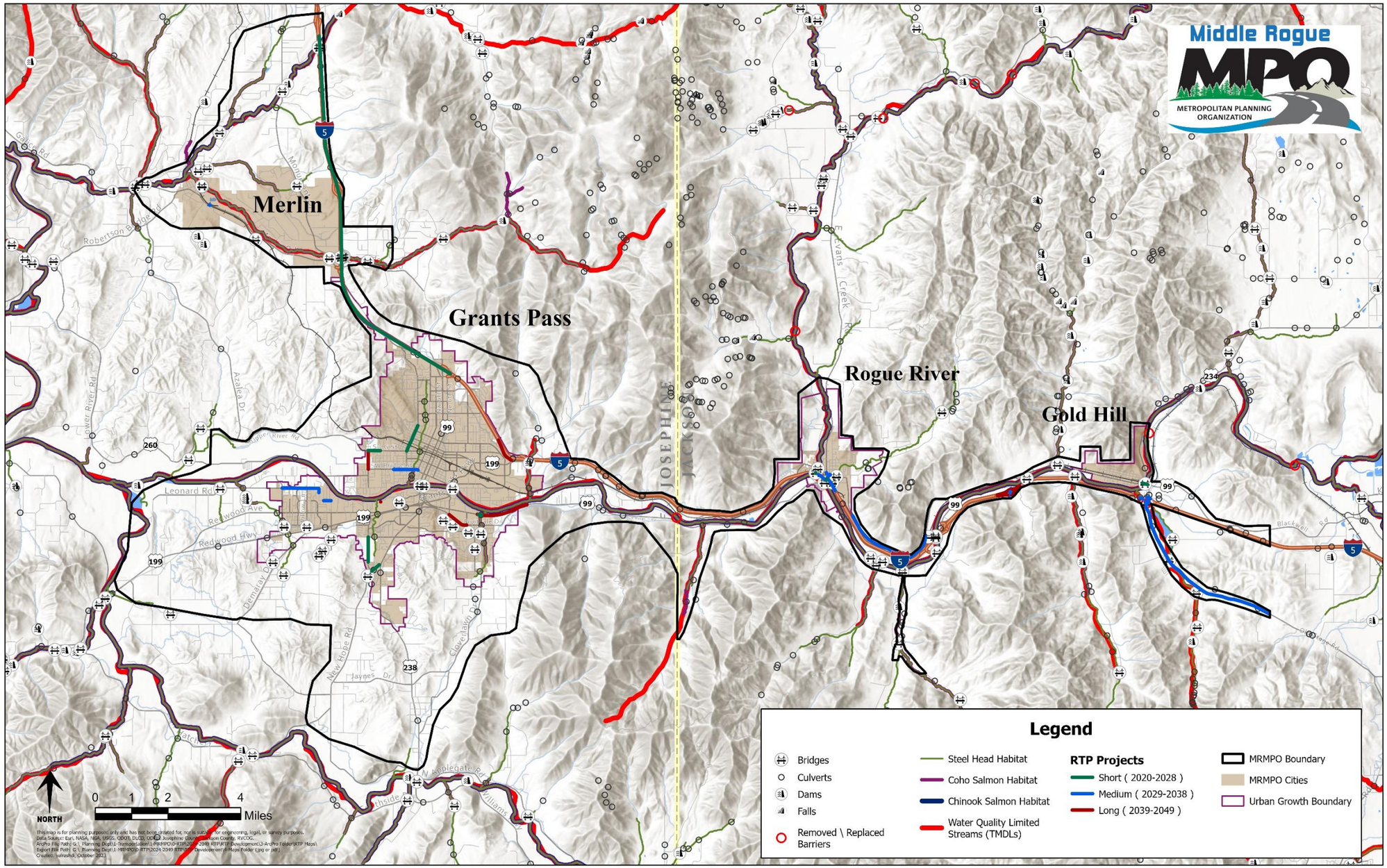
In order for FHWA field offices to make key determinations on projects having minor impacts or a net benefit on areas protected by Section 4(f), the agency issued several Nationwide Section 4(f) Programmatic Statements. Section 4(f) is considered by the preservation community to be one of the most effective tools in the protection of historic properties. But its stringent standards and interpretations by various court rulings have had the transportation community seeking revisions to provide more flexibility in implementing the law.



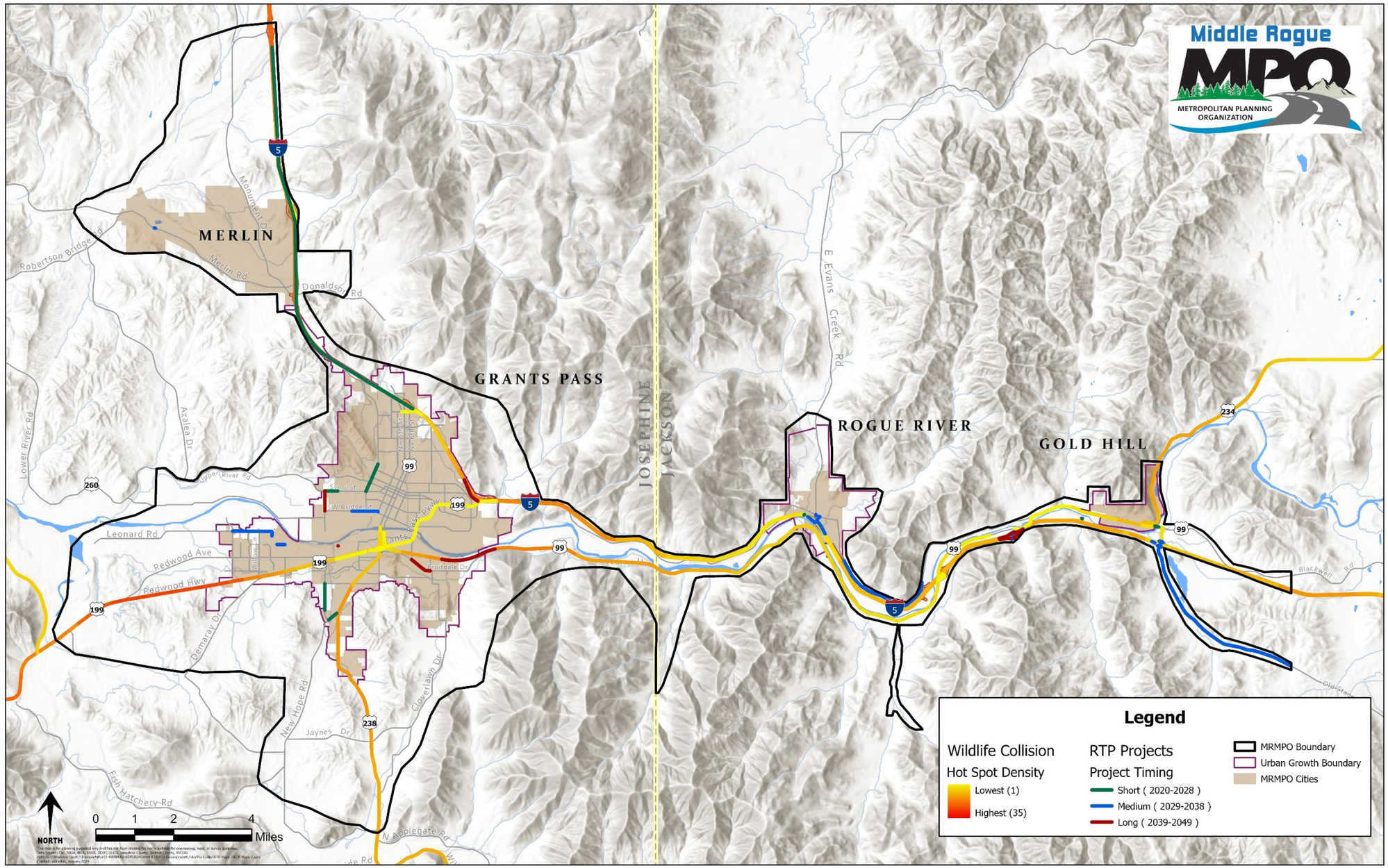
Map 10-1 - Prime Agricultural Soils, Viticulture Areas, Vineyards and Orchards



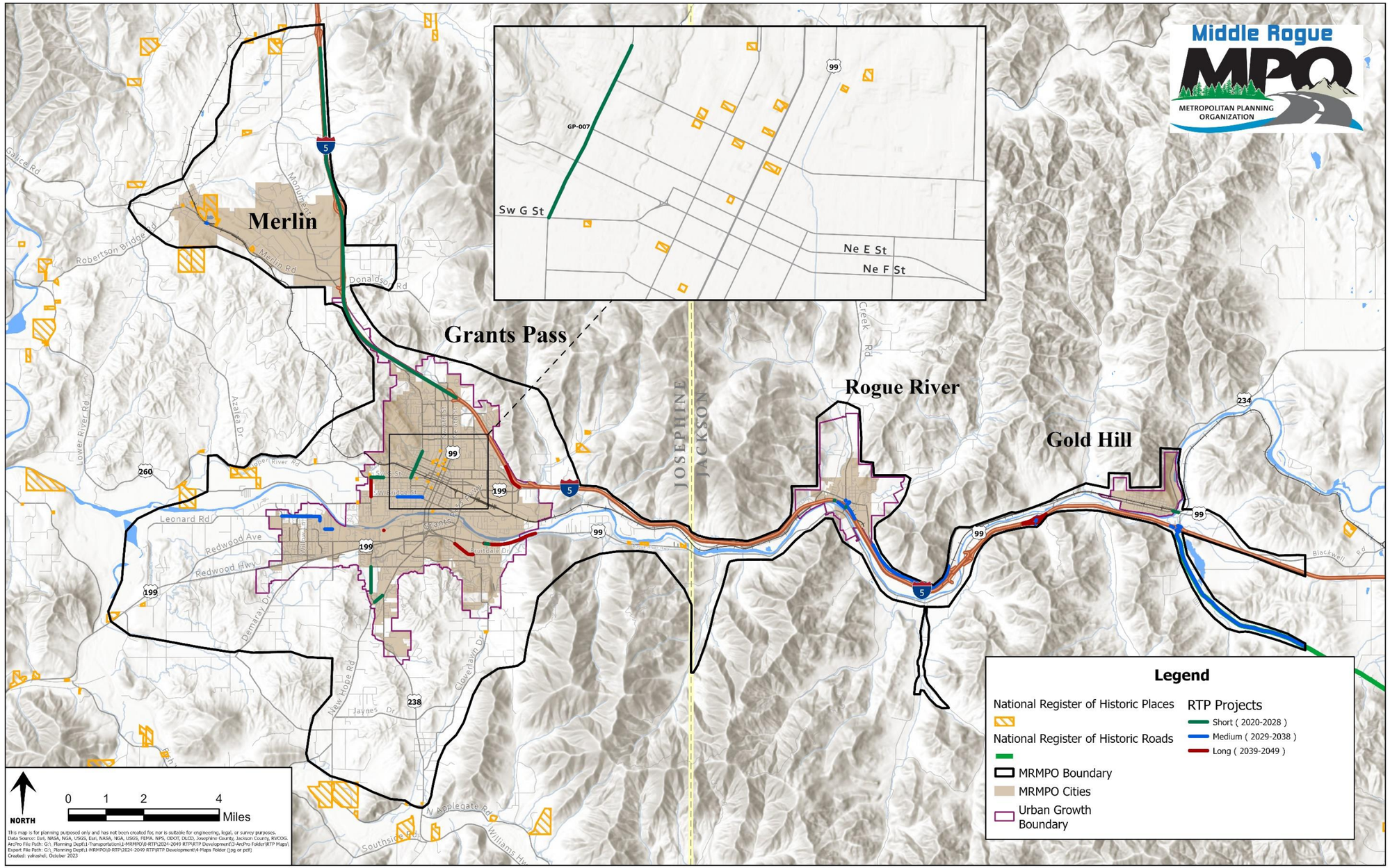
Map 10-2 - Wetlands and Special Flood Hazard Area



Map 10-3 - Fish Passage Barriers, Salmonid Habitat, and Water Quality (TMDL) Limited Streams



Map 10-4 - Wildlife Collision Hot Spots



Map 10-5 - Historic Places