

CHAPTER 8

ENVIRONMENTAL PROTECTION

Introduction

One of the planning requirements in the federal transportation law of 2005, *Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users* (SAFETEA-LU, U.S. Code Title 23), addresses review of environmental and resource issues. In addition to consultation with federal and state agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation, the process includes discussion of potential environmental mitigation strategies.

Environmental Review Process

In 2008, COMPASS initiated an environmental review process to more closely link transportation planning and environment, to allow consideration of environmental, community, and economic goals early in the planning stage, and to carry them through project development, design, and construction. The goal is a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delays in project implementation.

The process was designed to facilitate consultation and resource agency interaction with COMPASS to focus on areas of “regulatory” concern and identify potential transportation impacts on the environment and other resources. Agencies considered participation and consultation in light of their core mission, and some opted out because the agency perceived no “stake” in the planning area at this time. Sixteen environmental and resources agencies have been active participants in the process.

The process started in fall 2008, and resulted in data sharing, an inventory of environmental amenities and concerns in the planning area, and general mitigation strategies.

Participating Agencies

- Idaho Transportation Department
- Idaho Department of Fish and Game
- Idaho Department of Environmental Quality
- Idaho Department of Water Resources
- Idaho State Historical Society
- Idaho Office of Species Conservation
- Idaho Department of Lands
- Idaho Department of Agriculture – Soil Conservation Commission
- Local Highway Technical Assistance Council
- Ada County Development Services
- U.S. Department of Transportation – Federal Highway Administration
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Bureau of Land Management
- U.S. Natural Resources Conservation Service

Environmental Concerns

While the environmental review revealed a limited number of potential environmental and resource conflicts in the planned (and funded) transportation corridors, they can be appropriately addressed in project design and planning to mitigate impacts to sensitive resources. The following is a brief description of the broad environmental issues and concerns in the regional transportation planning area.

Water Quality: Surface and Groundwater

Typical water quality impacts of transportation projects result from runoff from construction sites and stream or wetland disturbances.

Runoff can be a particular concern in areas with water bodies that don't meet surface water quality standards and that have a "cleanup plan," called a Total Maximum Daily Load (TMDL). A TMDL includes recommendations for reducing pollution loading, as well as a monitoring plan to verify compliance. The TMDLs are also tied to U.S. Army Corps of Engineers Section 404 and 401 water quality permit requirements for dredging and filling.

Within Ada and Canyon counties, there are two water bodies with water quality TMDL plans:

- Lower Boise River - *Lower Boise River TMDL: Subbasin Assessment, Total Maximum Daily Loads*. Approved in January 2000. *Sediment and Bacteria Addendum* approved in December 2003.
- Snake River - *Mid Snake River/Succor Creek Subbasin Assessment and Total Maximum Daily Load*. Approved in January 2004. *Succor Creek Temperature Revised Addendum* approved in December 2007.

The dredging and filling of waters of the United States is regulated under the federal Clean Water Act by the U.S. Army Corps of Engineers, with oversight by the U.S. Environmental Protection Agency (EPA). Preliminary identification of such waters, including wetlands, can be done using National Wetland Inventory maps. Since these maps are general, wetland boundaries must be identified more clearly through a review of soils, vegetation, and hydrology of the potentially impacted property. Some wetlands on the National Wetland Inventory maps may not be regulated under the Clean Water Act, and it is possible there are wetlands that are regulated, but not identified on the maps.

Construction and on-going operation of transportation facilities can result in groundwater effects, such as contamination from sediments and transportation-related chemicals, and loss of aquifer recharge as permeable surfaces are covered by concrete and asphalt.

Wildlife, Fish, and Sensitive Habitats

The likely transportation effects on wildlife include wildlife mortality from road construction activities, wildlife mortality from collisions with vehicles, and modification of animal behavior. Roads fragment animal populations and their habitats, reduce genetic interchange, and limit dispersal of young. The effect of road avoidance caused by traffic disturbance is much greater than just increased mortality.

Improperly designed and/or constructed stream crossings can also create barriers to fish and other aquatic species' movement.

Roads also influence human development patterns on the landscape, such as where development will likely occur in the future. Transportation projects and associated land uses can contribute to the increased human use and activities in formerly remote areas, spread of exotic and invasive species, and loss and fragmentation of wildlife habitat.

Another consideration is the likely effects on threatened and endangered species (Table 8-1). Issues of concern include:

- Direct effects from construction such as noise disturbance or other disruption of habitat
- Interference with essential wildlife functions such as wintering, foraging, migration, breeding, and/or rearing
- Degradation or loss of essential habitat
- Habitat fragmentation and edge effects
- Collisions between vehicles and animals
- Loss of animal or plant populations
- Impacts to wildlife food resources
- Water quality impacts
- Effects on migration or dispersal of organisms including mammals, reptiles, amphibians, fish, insects, and/or ground dwelling birds, where the project could create or exacerbate barriers to movement.

Table 8-1: Threatened and Endangered Species in Ada and Canyon Counties (April 2009)

Listed Species ¹	Comments	Ada County	Canyon County
Gray wolf (<i>Canis lupus</i>)	Experimental/Non-essential population	X	X
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Listed Threatened - Wintering/Nesting area	X	X
Bull trout (<i>Salvelinus confluentus</i>)	Listed Threatened	X	
Idaho springsnail (<i>Pyrgulopsis idahoensis</i>)	Listed Endangered - Mainstem Snake River Only	X	X
Proposed Species			
Slick Spot Peppergrass (<i>Lepidium papilliferum</i>)	Proposed Endangered ²	X	X
Candidate Species			
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)		X	X
Proposed Critical Habitat for Bull Trout		X	

Air Quality and Climate Change

Emissions from motor vehicles are one of the major sources of air pollution, especially in urban areas. Transportation projects affect air quality in the short-term during construction and in the long-term for those living next to busy streets and highways³. In the Treasure Valley, coarse particulate matter⁴ and carbon monoxide⁵ have historically been the most important air pollutants; ground-level ozone is an emerging problem. Ozone is not emitted directly into the air, but is created by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of heat and strong sunlight. The *Northern Ada County PM10 SIP Maintenance Plan and Redesignation Request* contains motor vehicle emissions budgets for three pollutants: coarse particulate matter, oxides of nitrogen, and volatile organic compounds.

¹ Source: Idaho Governor's Office of Species Conservation. Informational list on the Internet. Not intended for consultation purposes. Information found on Internet in April 2009 at http://species.idaho.gov/thr_endgr.html.

² Listed Threatened in October 2009 (Retrieved on 10/16/09): <http://www.fws.gov/news/NewsReleases/showNews.cfm?newsId=10C976CA-94AB-ED13-DF6945564CBAB05D3-DDDF6945564CBAB05D>. Retrieved on 10/16/09.

³ Brugge, 2007: <http://www.ehjournal.net/content/6/1/23>

⁴ Ada County/Boise Idaho PM-10 Maintenance Plan. <http://yosemite.epa.gov/r10/airpage.nsf/283d45bd5bb068e68825650f0064cdc2/a12c8ea43bfb9ef88256f3f0081c72c?OpenDocument>

⁵ N Ada County CO Limited Maintenance Plan. <http://yosemite.epa.gov/r10/airpage.nsf/283d45bd5bb068e68825650f0064cdc2/4a1b307c7a16621b88256f3f007fd7fc?OpenDocument>

The federal government mandates that any transportation projects using federal funds or deemed to be “regionally significant” in nonattainment and maintenance areas cannot contribute to a degradation of air quality (40CFR93). Thus, transportation plans, including this regional long-range transportation plan, must “conform” to State Implementation Plan⁶. Transportation conformity is demonstrated when a nonattainment or maintenance area can show, within the applicable guidelines and regulations, that planned transportation projects listed in a transportation program or plan will not cause or contribute to exceedances of EPA’s health based air quality standards for pollutants that are of concern in the nonattainment or maintenance area. A finding of nonconformance would prevent the implementation of some federally funded and/or regionally significant transportation projects.

Idaho Administrative Code (IDAPA 58.01.01.567) requires nonattainment and maintenance areas establish an interagency consultation committee (ICC) on transportation conformity. The ICC reviews and approves the assumptions and methodologies employed in the development of the regional emissions analysis for Northern Ada County. A complete listing of the ICC requirements can be found in Idaho Administrative Code (IDAPA 58.01.01.563-574).

Final conformity demonstration reports document and summarize the estimated air quality impacts associated with Regional Transportation Improvement Programs and long range- transportation plan (Appendix C). They also contain an emissions budget test for the purposes of demonstrating air quality conformity according to federal requirements.

For more information about air quality conformity, please visit: <http://www.compassidaho.org/prodserv/aq-demo.htm>.

There is heightened concern for human health from projects that result in air toxics emissions and particulate matter from mobile sources, particularly diesel exhaust. The *National Air Toxics Assessment*⁷ asserts that a large number of human epidemiology studies show increased lung cancer associated with diesel exhaust and significant potential for non-cancer health effects. Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule (66 FR 17230, March 29, 2001) lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects⁸.

⁶ http://www.deq.idaho.gov/air/data_reports/planning/sip.cfm

⁷ <http://www.epa.gov/ttn/atw/nata>.

⁸ Location of “sensitive receptors” such as schools, day care centers and nursing homes is sometimes used to approximate exposure to air pollutants by sensitive populations, i.e., the young and the old. For examples, please see:

<http://www.compassidaho.org/documents/prodserv/maps/15KSensitive.pdf>

<http://www.compassidaho.org/documents/prodserv/maps/HighVolSensitive.pdf>

Greenhouse gas emissions are a concern related to climate change. According to findings by the Intergovernmental Panel on Climate Change, the United States is responsible for 22 percent of the world's total greenhouse gas emissions⁹. According to EPA's *US Green House Gas Inventory 2010*¹⁰, the primary greenhouse gas emitted by human activities in the United States is carbon dioxide, representing approximately 85 percent of total greenhouse gas emissions. The largest source of carbon dioxide, and of overall greenhouse gas emissions, was fossil fuel combustion. The five major fuel consuming sectors contributing to carbon dioxide emissions from fossil fuel combustion are electricity generation, transportation, industrial, residential, and commercial.

Transportation is the source of more than 27% of the greenhouse gas emissions in Idaho, a close second to agriculture's contribution of 28% (statistics from the Center for Climate Strategies report *Idaho Greenhouse Gas Inventory and Reference Case Projections 1990-2020*, Spring 2008¹¹.)

Hazardous Waste and Contaminated Sites

Contamination can be a result of current or historic land uses, for example, leaking underground storage tanks, or activities such as dry cleaning plants, auto body shops, industrial facilities, or fuel/chemical storage facilities. For example, because of these concerns, an acquisition of the Union Pacific Boise Cutoff rail corridor would require negotiation and limitation of liability to the public agency that would purchase the corridor for public transportation use.

Soil and groundwater contamination from hazardous substances and petroleum products is often encountered on transportation projects. Also, some projects may generate hazardous materials. For example, projects with structures (enhancement or bridge projects) may involve asbestos-containing materials and/or lead-based paint requiring testing and analysis during project development. During project development, an initial site assessment can also uncover existing contamination via site visits and soil testing.

⁹ http://www.vta.org/inside/gov_affairs/PDF/board_memo_fed_climate_change_%20legislation.pdf.

¹⁰ http://www.epa.gov/climatechange/emissions/downloads10/US-GHG-Inventory-2010_ExecutiveSummary.pdf.

¹¹ http://www.deq.idaho.gov/air/prog_issues/ghg/state_government.cfm

Noise

The level of noise, defined as unwanted sound, is governed by the Federal Highway Administration (FHWA) regulations, and Idaho Transportation Department (ITD) noise analysis guidelines,¹² as well as local ordinances. Transportation related noise typically depends on:

- Traffic volume
- Speed of traffic
- Percentage of trucks in the flow of traffic
- Distance to the highway
- Intervening topography and structures (including grades and intersections)
- Atmospheric conditions

New projects and alternatives within a corridor must analyze existing noise levels and predict future noise levels to determine noise impacts. Noise abatement will usually be necessary only in frequently used areas that would benefit from a lowered noise level, such as residential areas, parks, nursing homes, etc.

Social and Economic Conditions and Environmental Justice

Communities adjacent to or bisected by a transportation project usually will experience social and economic changes. Checklists prepared by ITD¹³ focus on three areas of impact:

- Social impacts cover community cohesion (neighborhood population characteristics and linkages with churches, schools, and other community facilities); parks and recreation activities and facilities; population characteristics and growth; government, religious and social facilities and services; pedestrian and bicycle facilities; and environmental justice.
- Economic impacts cover overall economic climate, farm and business activity, employment, property values, and local economic issues.
- Relocation impacts cover population characteristics (ethnicity and race, handicapped, elderly, family, income level, owner/tenant status); businesses (numbers and types of businesses and farms); employment; availability of replacement sites; and long term stability of the area.

The FHWA publication, *Community Impact Assessment: A Quick Reference for Transportation* [publication No. FHWA-PD-96-036, HEP-30/8-96(10M) P], and pertinent websites provide further information and guidance. For related information on environmental justice issues, see The Civil Rights Act of 1964, Title VI (§ 2000d et seq.) of Chapter 21 of Title 42, The Public Health and Welfare.

¹² Environmental Process Manual, Section 1300 Noise.

http://www.itd.idaho.gov/manuals/Online_Manuals/Environmental/Environmental.htm

¹³ http://itd.idaho.gov/manuals/Online_Manuals/Current_Manuals/Environmental/1900.pdf

According to the 1994 Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, federal agencies are required to identify and address disproportionate adverse human health and environmental effects, including the interrelated social and economic effects of their programs, policies, and activities on minority and low-income populations in the United States. This environmental justice analysis requires studies of communities affected by transportation projects and requires effective community outreach to correctly identify potential impacts. The analysis to identify areas with minority populations and low-income populations was conducted and mapped for Ada and Canyon Counties¹⁴. This process is intended to ensure that a project avoids disparate/disproportionate effects on minority and low-income populations.

Areas of Concern

The purpose of compiling the environmental and resource data and the use of maps to display the information is to help identify general “areas of concern” that could trigger relevant agencies to be invited into the transportation planning process as early as possible. The main areas of concern center around sensitive habitat: floodplains, wetlands, and the Boise Foothills. The map below depicts wetlands, wildlife zones, and deer and elk habitat (Figure 8-1).

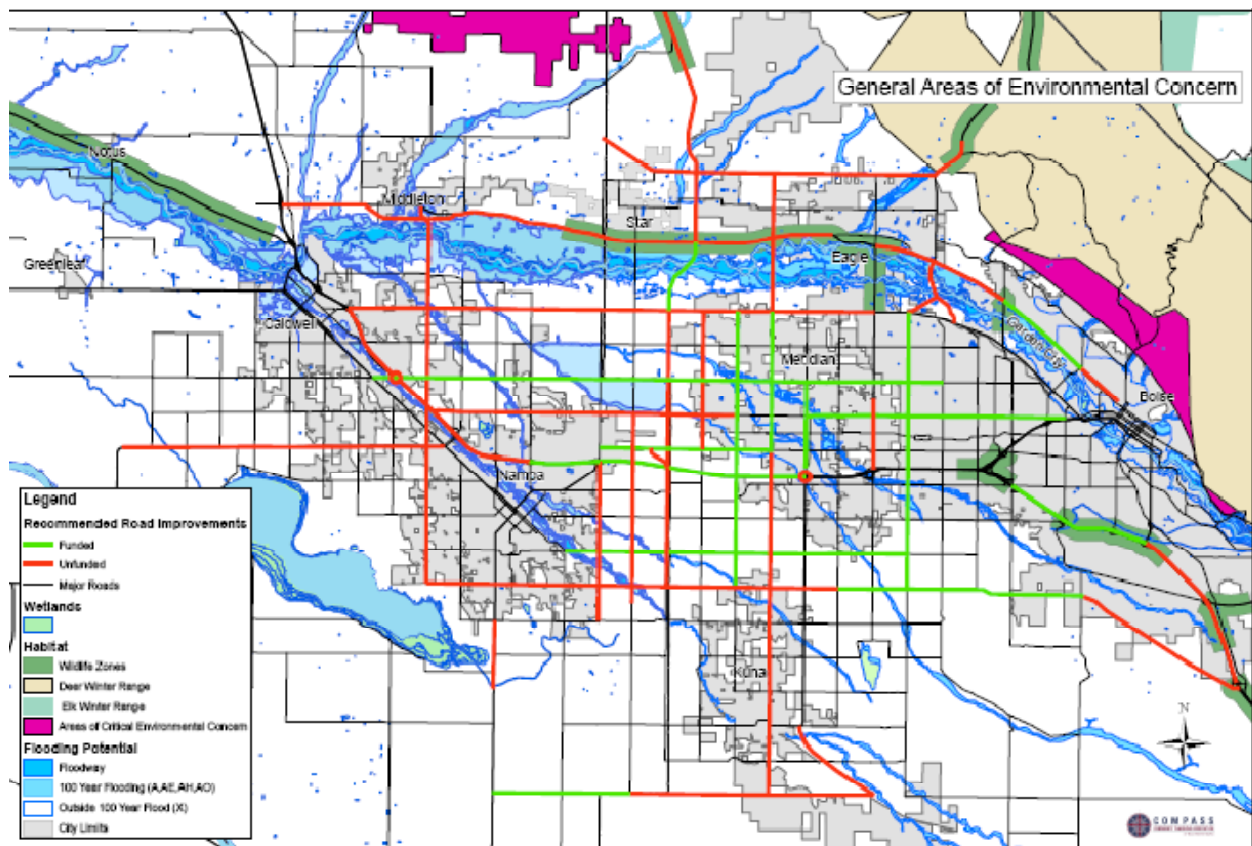


Figure 8-1: General Areas of Environmental Concern

¹⁴ http://www.compassidaho.org/documents/prodserv/AdaCan_EnvJust.pdf

Floodplains

Building transportation facilities across a river or stream (transverse) or along a river or stream (longitudinal) can trigger a National Environmental Policy Act (NEPA) process. The 100-year floodplain boundary is the trigger point in Idaho. (A 100 year floodplain means that in any year, there is a 1% chance of flooding—not that flooding would only occur once every 100 years.) For work in floodplains that requires permit approval, environmental documentation must explain the impacts the project will have on the areas and on the resources within the areas. Furthermore, Presidential Executive Order 11988 (May 24, 1977) directs federal agencies to avoid to the extent possible adverse impacts associated with floodplains and to avoid direct or indirect support of floodplain development. Longitudinal intrusions are of special concern.

Currently only one of the three recommended new river crossings along the Boise River in the long-range transportation plan is shown as funded:

- State Highway 16 extension from State Highway 44 to Interstate-84 (environmental work underway) – Funded, but construction funds still need approval in a future legislative session.
- Vicinity of Franklin Road in Canyon County (study only) - Unfunded
- Three Cities River Crossing connecting State Highway 20/26 to State Highway 44 between Cloverdale and Fairview (environmental work completed in 2006) – Unfunded

Widening of existing river crossings is recommended, but currently unfunded, at both Middleton Road and Linder Road.

In addition to the Boise River crossings, a number of flood zones along area streams would be affected by the recommended roadway projects in the plan.

Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater and support vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and similar areas and provide important amenities, including groundwater recharge, flood flow alteration, water quality improvements, erosion control and shoreline stabilization, and fish and wildlife food and habitat.

Impacts of transportation projects may harm wetlands and other aquatic resources due to increased sediment loads and deposition; toxic runoff; alteration of natural drainage patterns; water level increases or decreases; wetland filling or displacement; wetland draining due to channel straightening, deepening, or widening; and development in the wetland buffer areas that protect and shield the wetland from adverse impacts to water quality and habitat functions. When wetlands are adversely affected by a transportation project, compensation for the impacts are required by minimization and mitigation, such as restoring or enhancing existing wetlands and/or creating new wetlands, usually at a higher ratio than the area impacted by the project.

Public and Outdoor Recreation Lands

A significant publicly owned park, recreation area, wildlife or waterfowl refuge, or historic site, as well as designated wild and scenic rivers are subject to federal requirements (Section 4(f) of the Department of Transportation Act of 1966 (DOT Act) [49 USC 303]; [23 CFR 771.135]) and need to be considered in any NEPA document. Section 4(f) of the DOT Act¹⁵ declares a national policy to preserve, where possible, “the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” However, a NEPA action does not always require a “4(f)” evaluation.

Transportation projects can cross those “special lands” only if there is no “feasible and prudent alternative” and the sponsoring agency demonstrates that all possible planning to minimize harm has been accomplished. Any time a new alignment or expansion of an existing alignment threaten to impact a Section 4(f) property, the proposed alternatives must include an avoidance alternative. The avoidance design will document the information needed to determine if avoidance is feasible and prudent, and if it may exhibit cost considerations of extraordinary magnitude.

In addition, before approving use of these lands for a transportation project, supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic and environmental impacts, or community disruption resulting from such alternatives are extraordinary. In addition to mandating protection of certain land uses, FHWA rules require that when the project’s impacts in the proximity of the protected area are so severe that the resources’ activities, features, or attributes are substantially impaired, then Section 4(f) is also called into effect even if the project does not actually intrude into the protected use. Impacts may include:

- Resources affected by noise levels.
- Aesthetic features of the resource compromised by the transportation facility.
- Access restricted or substantially diminishing the utility of the resource or special area.
- Vibrations impair use of the resource and diminish the value of wildlife habitat.

Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland includes land that possesses the above characteristics and may include land currently used as cropland, pastureland, rangeland, or forestland. It does not include land already in or committed to urban development or water storage.

Unique Farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include lentils, nuts, annual cropped white wheat, cranberries, fruits, and vegetables.

¹⁵ <http://www.environment.fhwa.dot.gov/4f/index.asp>

Agricultural and Farmland

The loss of productive farmland to highways, urban sprawl, and other types of development is a cause for concern. Highways may increase the pressure for conversion from farming to other uses. By making inaccessible areas more accessible, highways increase potential for development. In turn, development increases land values and property taxes, tending to make farming economically infeasible. Adjacent development is seen as incompatible with farming, and farming activities may be considered a “nuisance” by newcomers. Additional traffic moving at high speeds creates a safety hazard for slow moving farm machinery. Farmlands defined as “prime,” “unique,” or of state or local significance are protected by federal and state legislation.

Much of the prime farmland within the areas affected by the proposed transportation corridors are within areas of impact already identified for urban development.

Historical, Cultural, and Archaeological Resources

Areas of historic, cultural, or archeological resources are subject to several state and federal regulations, including the National Historic Preservation Act of 1966; the DOT Act, Section 4(f); the Archaeological Resources Act of 1979 which applies to archaeological resources on tribal lands and non-tribal lands under federal jurisdiction; the Idaho Graves Protection Act ; and the National Environmental Policy Act, 42 USC Section 4231, which requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that historic and cultural resources are given due weight in project decision-making.

Mitigation Strategies

The following sections discuss general mitigation strategies, as identified by the participating environmental and resource agencies, for the long-range regional transportation plan and its projects. According to NEPA, mitigation is defined as:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

The FHWA document called *Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects*¹⁶ encourages federal, state, tribal, and local partners in infrastructure planning, design, review, and construction to use flexibility in regulatory processes. Specifically, *Eco-Logical* puts forth the conceptual groundwork for integrating plans across agency boundaries and endorses ecosystem-based mitigation of infrastructure impacts that cannot be avoided.

Water Quality and Stream or Wetlands Disturbances

Avoiding activities that would harm wetlands during the design, construction, and maintenance of the transportation system is the preferred option. If this is not possible, general mitigation strategies encourage protection, restoration and enhancement of natural wetlands that are unavoidably and adversely affected. These strategies include wetland mitigation banking and advanced mitigation such as wetland preservation to prevent overall net loss of wetland functions.

General water quality/run-off mitigation strategies may include:

- Establishing procedures for control of runoff from construction projects.
- Designing storm sewers to catch sediment runoff and prevent it from reaching streams and rivers.
- Using basins to detain runoff and allow absorption.
- Reducing materials such as sand on icy roads.
- Increasing road/surface sweeping to pick up materials before they can enter the storm sewers.
- Using permeable surfaces where appropriate to reduce the loss of aquifer recharge.

Generally, all projects that may result in the placement of fill into wetlands or other waters of the United States must be evaluated to determine how to avoid the filling, and if unavoidable, how to minimize and mitigate for the loss. Furthermore, if federal funds are accepted for a project, the transportation agency will be subject to FHWA policies regarding wetland mitigation. Such project may also be subject to permit requirements, such as 401/404 “dredge and fill” permit applicability/certification process or potentially a “Short Term Activity Exemption” from the Idaho Department of Environmental Quality (DEQ) (streams only). The agencies to be involved are ITD, local highway districts, EPA, the Army Corps of Engineers, Idaho Department of Water Resources, and DEQ¹⁷.

¹⁶ http://www.environment.fhwa.dot.gov/ecological/eco_index.asp.

¹⁷ For additional information, see http://www.compassidaho.org/documents/prodserv/reports/EnvironmentalReviewProcessRPT_September%202009.pdf

The federal *Compensatory Mitigation for Losses of Aquatic Resources*, “Mitigation Rule” (40 CFR Part 230) explains the responsibilities of the permittee for ensuring the mitigation selected succeeds in replacing the lost waters. Traditionally, a mitigation site is located at or adjacent to the impact site (i.e., on-site compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., offsite compensatory mitigation). Participation in an in-lieu fee program to mitigate for losses may be possible in the near future. The Fish and Wildlife Foundation is developing such a program.

Run-Off (Stormwater)

Strategies to mitigate water quality impacts from run-off include meeting construction general permit requirements (if applicable) and developing and implementing a Stormwater Pollution Prevention Plan), or implementing stormwater best management practices¹⁸. If polluted stormwater runoff is transported through a “municipal separate storm sewer system,” an operator must obtain a National Pollution Discharge Elimination System permit and develop a stormwater management program¹⁹.

Recommended erosion and sediment control practices can be found in the *Idaho Construction Site Erosion and Sediment Control Field Guide*²⁰ published by the Idaho Small Business Development Center. Early involvement of ITD, EPA, Idaho Department of Water Resources (IDWR), U.S. Army Corps of Engineers, local canal or drainage district, health districts, local public works, and local highway district can assist with successful mitigation.

Groundwater

Evidence of decreasing aquifer levels, such as well test data, diminished stream base flows, or dry streambeds, indicates groundwater impacts. General mitigation strategies include establishing source water protection areas, preventing pollution, avoiding excessive drawdown of groundwater supplies, and implementing effective well head protection.

General strategies to mitigate excavation impacts on groundwater include avoiding areas of higher groundwater and developing a plan for de-watering in areas of expected groundwater intrusion. Mitigation activities should involve DEQ, IDWR, EPA, ITD, and local highway districts in mitigation activities.

Wildlife, Fish, and Sensitive Habitats

General mitigation strategies include identifying critical wildlife habitat areas and avoiding and minimizing impacts to those areas. The preferred mitigation strategy is to avoid such areas or habitat, followed by restoration on-site, replacement, and specific mitigation measures.

¹⁸ http://www.deq.idaho.gov/water/data_reports/storm_water/catalog/index.cfm.

¹⁹ <http://cfpub.epa.gov/npdes/stormwater/munic.cfm>

²⁰ <http://www.idahosbdc.org/index.cfm?fuseaction=content.fieldguide>

The following measures could be taken to mitigate impacts on wildlife when avoidance and minimization aren't feasible:

- To avoid mortality from road construction activities:
 - Locate future roadways away from important wildlife habitat
 - Conduct a survey of wildlife present prior to construction
 - Alter timing of construction to limit impacts to wildlife
- To avoid mortality from collision with vehicles:
 - Locate future roadways away from important wildlife habitat
 - Alter and enforce speed limits
 - Establish wildlife crossing areas, including underpasses, overpasses, etc.
 - Use wildlife-proof fencing in conjunction with wildlife crossing areas
 - Use de-icing chemicals that don't attract wildlife
 - Remove or alter vegetation composition along roadways so that vegetation doesn't attract wildlife
 - Properly design and construct stream crossings to keep wildlife off roadway
- To avoid disruption of landscape processes and loss of biodiversity:
 - Integrate transportation and land use decisions early on in both respective planning processes
 - Locate future roadways away from important wildlife habitat
 - Mitigate for the loss of habitats, and the disruption of ecological processes, in important wildlife habitat areas
 - Consider replacing, protecting, or restoring lost habitat
 - Look beyond the actual footprint of the roadway when determining the number of acres of habitat loss
 - Properly design and construct stream crossings
 - Use other best management practices
- To avoid spread of exotic or invasive species:
 - Monitor for exotic species and treat as necessary. Maintain this monitoring and treatment program for a specific number of years after construction is complete.
 - Use best management practices.
 - Ensure plantings used for projects do not include exotic or invasive species.

For ecological processes, habitat fragmentation can be mitigated by providing bridges or other hydrological connectivity structures to span streams, wetlands, seepage areas, riparian areas, shorelines, open water, and so on. These structures are often designed to accommodate both wildlife and water movement.

The Idaho Department of Fish and Game, EPA, Idaho Department of Lands, U.S. Forest Service, U.S. Bureau of Land Management, other public land management agencies (if such lands are affected); U.S. Fish and Wildlife Service (if threatened, endangered, proposed, or candidate species habitat is involved); and ITD, FHWA, IDWR, DEQ, counties, and local highway districts can assist with mitigation, especially when the agencies get involved early in the process.

The *Idaho Comprehensive Wildlife Conservation Strategy*, 2005²¹, recommends ecosystem management to ensure species survival and biodiversity. It is critical that land use and transportation plans fully consider and incorporate the elements of this strategy to help preserve and conserve the region's species, habitats, and genetic diversity. The Owyhee Uplands section of the plan pertains to the Treasure Valley and provides lists of species found in the area. The Idaho Batholith section may be appropriate in reference to the upper elevations of the Boise Foothills. Other relevant sources of information include:

- *Idaho Wetland Conservation Strategy* (Idaho Wetlands Working Group)
- U.S. Fish and Wildlife Service recovery plans for bull trout (for above Lucky Peak dam, if applicable), and other plant and animal species
- The Boise River Total Maximum Daily Load for total suspended solids
- Idaho Conservation Data Center (formerly the Natural Heritage Program) data²²
- Existing local watershed protection/restoration plans
- *Idaho's Strategic Plan for Invasive Species*²³

Planning for permeability in developed and developing areas would mitigate stormwater effects in the Boise River. Both land use and transportation planning should emphasize/require redevelopment over new development; require low impact development and strongly encourage zero impact development; restore permeability, habitats, and ecosystems wherever possible; and avoid and/or fully accommodate sensitive ecological areas, such as streams, riparian areas, wetlands, buffers, groundwater recharge areas, etc.

The Transportation Enhancement Program (23 U.S.C. 101(g)-133(b)) offers broad opportunities and federal dollars for actions to integrate transportation into communities and the natural environment. Eligible activities include acquisition of scenic easements and scenic or historic sites, scenic or historic highway programs, landscaping and other scenic beautification, historic preservation, preservation of abandoned railway corridors (including the conversion and use for pedestrian or bicycle trails), and control and removal of outdoor advertising.

²¹ http://fishandgame.idaho.gov/cms/tech/CDC/cwcs_table_of_contents.cfm

²² <http://fishandgame.idaho.gov/cms/tech/CDC/>. See Jankovsky-Jones, M. 2001. Wetland conservation strategy for the middle and western Snake River and lower reaches of its major tributaries including the Boise River and Payette River. Conservation Data Center, Idaho Department of Fish and Game, Boise. 35 pp. plus appendices.

²³ (<http://www.agri.idaho.gov/Categories/Environment/InvasiveSpeciesCouncil/StrategicActPlan.php>).

Historical and Archeological Resources

As with many environment issues the first preferred mitigation strategy is to avoid adverse effects. If this is not possible, relocation, marking, and other appropriate measures should be pursued. Early consultation with the State Historic Preservation Officer and other interested persons and parties during the early stages of planning is key to successful identification and mitigation of potential adverse effects.

Agricultural and Farmland

As a general mitigation strategy, a more compact and walkable community design, and maintaining and maximizing the use of existing transportation infrastructure would help avoid or minimize prime farmland encroachment.

There is no mitigation for loss of prime farmland or a change in use to any non-agricultural use. Increased soil erosion can be mitigated by using accepted erosion control methods during construction and the design of adequate water removal systems for runoff.

When federal funds are used for transportation, loss of prime and important farmlands is monitored. Avoidance of prime farmland is always preferred. The process should involve local planning and zoning agencies and the Natural Resources Conservation Service.

Hazardous Waste and Contaminated Sites

Discovery of localized contamination or abandoned underground storage tanks could be mitigated by conducting a site assessment/prior use inventory for known or suspected contamination using DEQ's Waste Division Inventory²⁴.

There may be advantages to the use of Brownfield sites, or other sites contaminated with hazardous wastes, for transportation projects because the sites would be cleaned up and re-used, thereby avoiding impacts to uncontaminated sites and providing benefits to the community. Such projects should involve DEQ, EPA, ITD, local highway districts and cities and counties early in the process.

Air Quality and Climate Change

As a general mitigation strategy, a more compact and walkable community design, expanded public transportation and non-motorized transportation systems, and maintaining and maximizing the use of the existing transportation infrastructure would likely reduce transportation related air emissions.

Mitigation measures for fugitive dust and emissions during construction include developing a dust prevention and control plan prior to the project, according to local ordinances. Design and implementation of mitigation measures should include consultation of ITD, local highway district, cities, counties, and DEQ.

²⁴ <http://www.deq.idaho.gov/Applications/WDI>

Conclusion

The environmental review process is an on-going consultation with environmental and resource agencies to help identify potential transportation related environmental and resource concerns, based on available data (Table 8-2). As part of the process, COMPASS makes the data and associated maps available on its web site (see Appendix B in the *Environmental Review Process Report 2009*²⁵). With the continued participation of the pertinent agencies, this process can enhance the ability to foresee environmental and resource concerns and potential impacts, and to avoid or mitigate them more efficiently and effectively. The following maps are available at www.compassidaho.org/prodserv/mapgis-maps_cim_environmental.htm

1. Environmental Themes Overlay
2. Birds of Prey Area (Bureau of Land Management)
3. Bridges and Dams (Idaho Transportation Department-Idaho Department of Water Resources)
4. Storage Tanks (Department of Environmental Quality)
5. Environmental Justice Areas – Ada County (COMPASS)
6. Environmental Justice Areas – Canyon County (COMPASS)
7. Habitat for Elk Winter Range, Deer Winter Range, and Wildlife Zones (Idaho Department of Fish and Game)
8. Habitat for Slick Spot Pepper Grass (Idaho Department of Fish and Game)
9. Habitat for Sage Grouse (Bureau of Land Management)
10. Areas of Critical Environmental Concern (Bureau of Land Management)
11. Historical Trails and Buildings (Idaho State Historical Society)
12. Impaired Streams and Stream Monitoring Locations (Idaho Department of Environmental Quality)
13. Open Space and Grazing Lands (COMPASS; Bureau of Land Management)
14. Parks and Schools
15. Prime Farmland (irrigated, currently undeveloped)
16. Ridge-to-Rivers Trails
17. Environmental Wetlands (rivers, lakes and waterways)

²⁵ http://www.compassidaho.org/documents/prodserv/reports/EnvironmentalReviewProcessRPT_September%202009.pdf

Table 8-2: Matrix of Environmental and Resource Agency Consultation

	Air Quality	Water Quality	Flood-plains	Wetlands	Hazardous Waste	Contam-inated Sites	Wildlife, Fish, Habitat	Agriculture Farmland	Noise	Historic, Cult, Arch.	Social & Econ. Conditions
Idaho Transportation Department	x			x	x	x	x		x		x
Idaho Department of Fish and Game		x		x			x				
Idaho Department of Environmental Quality	x	x			x	x	x				
Idaho Department of Water Resources			x	x			x				
Idaho State Historical Society										x	
Idaho Office of Species Conservation							x				
Idaho Department of Lands							x				
Idaho Department of Agriculture								x			
Soil Conservation Commission								x			
Local Highway Technical Assistance Council	x			x	x	x	x				x
Ada County Development Services			x					x			x
Federal Highway Administration				x					x		x
U.S. Bureau of Reclamation			x	x							
U.S. Environmental Protection Agency	x	x		x	x	x	x				
U.S. Fish and Wildlife Service							x				
U.S. Forest Service							x	x			
U.S. Bureau of Land Management							x	x			
U.S.D.A. Natural Resources Conservation Service								x		x	