Idaho Panhandle National Forest
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Travel Analysis Report
For
Idaho Panhandle National Forest

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Background

The Idaho Panhandle National Forest (NF) expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The national forest road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems.

The Road Management Rule (Rule) was published in the *Federal Register* on January 12, 2001.[1] The Rule "removes the [prior rule's] emphasis on transportation development and adds a requirement for science-based transportation analysis." "The intended effect of this final rule is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and finally that unneeded roads are decommissioned and restoration of ecological processes are initiated" (Federal Register Vol. 66, No 9, pg. 3206).

Subpart A of the Rule pertains to Administration of the Forest Transportation System. In part, Subpart A requires each unit of the NFS to: 1) identify the minimum road system (MRS) needed for safe and efficient travel and for protection, management, and use of NFS lands (36 *Code of Federal Regulations* (CFR) 212.5(b)(1)); and 2) identify roads that are no longer needed to meet forest resource management objectives (36 CFR 212.5 (b)(2)). In determining the MRS, the responsible official must incorporate a science-based roads analysis at the appropriate scale. It is Forest Service policy (FSM 7710.3) that the travel analysis process defined at FSH 7709.55, Ch. 20 is to serve as the "science-based roads analysis" required by 36 CFR 212.5 (b)(1). Travel analysis is not a decision-making process. Rather, travel analysis informs decisions relating to administration of the forest transportation system and helps to identify proposals for change (FSM 7712).

Purpose

This travel analysis report documents the results of the Idaho Panhandle National Forest's unit-wide travel analysis. This broad-scale analysis encompasses all existing National Forest System (NFS) roads (NFSRs) on the Idaho Panhandle NF. The report provides an assessment of the road infrastructure and a set of findings and opportunities for change to the forest transportation system. This report will not change or modify any existing NEPA decisions, but should help to inform Forest managers as they identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands.

Process

In general, the purpose of a TAP is to provide the responsible official with appropriate information related to the existing road system. Travel analysis informs travel management decisions by examining key issues related to the portion of the forest transportation system under analysis, as well as management options and priorities. Travel analysis is not a decision-making process (FSH 7709.55 21).

[1] Administration of the Forest Development Transportation System: Prohibitions: Use of Motor Vehicles Off Forest Service Roads (*Federal Register* Vol. 66, No 9, pg. 3206)

The TAP has six steps that are outlined in Chapter 20 Travel Analysis, FSH 7709.55 – Travel Planning Handbook. The analysis is tailored to local situations and landscape conditions by Forest staff and considers public/partner agency input. Instructions from the Forest Supervisor for the analysis are contained in an initiation letter as part of the analysis record. The six-step process includes:

- Step 1. Setting up the Analysis
- Step 2. Describing the Situation
- Step 3. Identifying Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting.

The analysis is a science-based process, considering social and environmental risks and benefits of the road system, a financial review, and contribution of the road system to the land management objectives and desired condition. The amount of time and effort spent on each step differs by the complexity of the issues, specific situations and available information particular to the analysis area.

Products

The results of the TAP are documented in a TAP report (i.e., TAR). The TAP and TAR are important first steps towards the development of the MRS. The TAR documents the information and analysis used to identify opportunities and set priorities for future National Forest transportation systems. This report will include:

1. Information about the analysis as it related to the criteria found in 36 CFR 212.5(b)(1), and
2. A map displaying the roads that can be used to inform the proposed action for identifying the MRS and unneeded roads.

The report will help inform Forest managers as they identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. It may also provide useful information to help develop and prioritize future proposed actions that include travel management and/or transportation system changes. Actual project proposals are examined in the NEPA process that provides a project specific, detailed basis for making decisions. Site-specific environmental analysis should build on and incorporate relevant information developed during travel analysis.

Step 1—Setting Up the Analysis

Scale of the Analysis

The TAP analysis area includes the entire Idaho Panhandle NF. Regional Office and Forest resource specialist staff developed a framework in which information on all existing NFS roads on the Idaho Panhandle NF could be evaluated, documented and displayed in a TAR.

Scope of the Analysis

The scope of this travel analysis is to evaluate the existing NFSRs in order to provide information that can be used to inform proposed actions for identification of road system (36 CFR 212.5(b)(1)) and identification of unneeded roads (36 CFR 212.5 (b)(2)).

Available Data

The Idaho Panhandle NF utilizes two primary tools to maintain data about the existing NFSRs. One tool is a geographic information system (GIS), which is a geospatial data system. In addition to providing spatial data on roads, this system stores spatial data on other resources across the forest, including recreation, wildlife, water resources, vegetation, and fire history. The second tool is the infrastructure database (Natural Resource Manager) that contains geo-referenced road-specific infrastructure data (i.e., engineering data). This analysis utilized existing information in these two data systems to evaluate road segments. Road mileages in the GIS system represent the scaled arch distance in two dimensions. The road mileages in the infrastructure database represent three dimensional distances from road logs generally measured with distance measuring instruments. This results in a systematic difference in the GIS miles and database miles of approximately 0.3%. This is not considered significant in this analysis, but explains the slight differences in mileage totals.

Step 2—Describing the Situation

The transportation system for the Idaho Panhandle NF is defined as the system of NFSRs, NFS trails, and airfields on NFS lands (36 CFR 212.1). This section covers the existing condition of the NFSRs.

NFSRs are roads, under the jurisdiction of the Forest Service, wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources. Roads managed by public road agencies such as States, counties and municipalities that help provide for access to NFS lands are also part of the overall transportation system, though are not under the jurisdiction or direction of the National Forest.

NFSRs are designated by their intended use. The intended use helps define the design and maintenance standards for each road. Roads are generally constructed and maintained wide enough (>12 feet) for typical cars and trucks. Because many of the roads were initially designed and constructed for use in achieving vegetation management objectives, design-basis vehicles were lowboys or logging trucks. Roads are built to grades usually less that 12 percent to allow grade-ability for most highway vehicles. The Forest Service uses five maintenance levels (MLs) to define the general use and type of maintenance. A map of the NFSRs by ML is provided in Appendix A. In general, the five MLs can be described as:

- ML 1. These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Roads managed at this maintenance level are described as being in basic custodial care.
- ML 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are generally not provided. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or more of a combination of administrative, permitted, dispersed recreation, or other specialized uses. Roads managed at this ML are designed and/or maintained for high clearance vehicles.
- ML 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this ML are typically used at low speeds and have single lanes and turnouts.
- ML 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.
- ML 5. Assigned to roads that provide a high level of user comfort and convenience. The roads are normally double lane and paved. Some roads may be aggregate surfaced and dust abated.

ML 3-5 roads are collectively maintained assuming travel/use by prudent drivers in standard passenger vehicles. These roads fall under the requirements of the National Highway Safety Act and the Manual of Uniform Traffic Control Devices. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations.

The Idaho Panhandle NF has 8,375 miles of NFS roads.[2] Twenty five percent of the roads are managed for passenger vehicles. An additional 34 percent are managed for high clearance vehicles, but still open

[2] NRM Infra user view II_ROAD_CORE October 3, 2014

for the public. The remaining 41 percent of the NFSRs are in custodial care (ML- 1, closed to public motorized use). Most of the road miles lie within Shoshone County (3,709 miles), Kootenai County (1,628 miles), Bonner County (1,356 miles), Boundary County (1,060 miles), Pend Oreille County (398 miles), Benewah County (109 miles), Latah County (81 miles), with the remainder in Clearwater, Mineral, and Lincoln Counties (35 miles).

The total number of NFSRs on the Idaho Panhandle NF has steadily been decreasing since 1995. A total of about 1400 miles of NFSRs have been decommissioned during this time. (See Table 1 for a summary of the miles of system roads decommissioned over the last 20 years.) However, there have been additions to the NFS road system. These additions included new local roads constructed for vegetation management, acquisition of roads related to cooperative road right-of-way agreements, NRM database cleanup, and a few from the acquisition of previous timber company lands.

The Idaho Panhandle NF implements best management practices (BMPs) along with numerous other project design features and resource protection measures when implementing vegetation management projects. Use of BMPs ensures compliance with the Clean Water Act and is a proven means of protecting, soil and water resources during project implementation. The Forest conducts qualitative and formal BMP reviews on a number of projects in order to evaluate operational compliance and effectiveness. Implementation of forestry BMPs are also audited every two years across the entire state in cooperation with Idaho Department of Environmental Quality and Idaho Department of Lands (IDL). Summaries of these audits are available from IDL and show a high level of effective implementation by federal agencies, such as the Forest Service.

Table 1. Decommissioned roads from 1995 to 2014 on the Idaho Panhandle NF.

	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Roads Decommissioned (miles)	121.6	73.2	80.3	74.3	110.2	114.8	136.2	59.2	47.2	50.5
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
	48.7	50.2	12.5	35.3	78.9	41.0	37.8	35.4	65.2	126.2

Step 3—Identifying the Issues

The following list is a synopsis of the road-related issues identified in past decisions or brought forward in recent meetings regarding the Idaho Panhandle NF's Forest Plan revision. In addition to the list items, the Forest Service has obligations to maintain access to private property and other agency lands, as well as to maintain roads that provide access under long-term special use permit.

- Need increased opportunities for motorized recreation on the National Forest, including loop routes and high-elevation access
- Need less motorized recreation
- Should remove road mileage because the Forest Service cannot afford to maintain the existing road system
- Need to provide motorized access to high use, dispersed recreation areas

- Too many roads have been removed for the public to actively harvest game animals or obtain forest products
- Need to reduce the maintenance level on some roads to contain costs
- Need to actively manage the land for forest health—do not decommission more roads
- Need to decommission more roads to provide habitat security for wildlife and clean water for fish
- Need to improve maintenance on roads providing access to private homes and developed recreation areas
- Forest roads are a critical component of cooperative Forest Service, state and county wildland fire protection plans for the wildland urban interface (WUI)
- Adapting to climate change may drive a need for more or less road access.

Some of these issues are related to designation of roads for motor vehicle use (i.e., accepting or prohibiting public motorized traffic on a particular road). Designation of roads for motor vehicle use has been completed on four Ranger Districts through an extensive public process and travel opportunity decisions. Travel planning to designate routes on the remaining Ranger District is ongoing. The travel management decisions were not re-evaluated in this analysis. Additionally, management of unauthorized roads also was not evaluated in this analysis. It is generally assumed that unauthorized routes are not part of the managed transportation system. However, the management or reclamation of unauthorized roads will be addressed through project-level analysis. Reclamation of unauthorized roads may represent significantly more opportunity to decommission unneeded roads than the opportunities associated with NFS roads.

Public/Partner Collaboration Process

The public and partner agencies were invited to review the preliminary Opportunities for Change Map and provide feedback. The review and comment period for the Opportunities for Change Map began with the June 2, 2015, press release announcing the availability of the map on the Forest Service ArcGIS Online Mapping website and the electronic availability of the draft *Travel Analysis Report for Idaho Panhandle National Forest.*

As requested through the Forest Services' press release, "The Forest Service asks the public to view the analysis and provide input to help identify risks and benefits we may have missed as well as provide feedback on the process used to analyze the road system." As described on the ArcGIS Online website, "The TAP includes the opportunity for the public to participate by commenting on the Forest's preliminary identification of its existing NFSRs and opportunities for change, which are displayed on the map. The most helpful comments are those that 1) select specific roads and 2) provide specific reasons/purposes why these roads should or should not be needed or retained for future use."

A total of 36 comment transmittals from 31 different commenters were received. A transmittal was either a comment entry placed on the ArcGIS Online website, an email, a comment form, or a letter. Appendix B provides a summary of these submittals. All comments received during the comment period were read and considered.

In general, the road issues raised were consistent with those road-related issues identified in past decisions or brought forward in recent meetings regarding the Idaho Panhandle NF's Forest Plan revision. At the broad, forest-wide scale of this analysis, the 14 risk/ benefit questions developed by the interdisciplinary team adequately considers the range of issues.

Some commenters raised concerns related to the TAP methodology. At this broad, forest-wide scale, the methodology and opportunities identified in the report are general in nature. Forest Service Manual 7712 gives a great deal of discretion to the line officer to determine the scope and detail of the analysis needed. This approach utilizes a science based roads analysis to evaluate the relative environmental risk and beneficial access needs associated with every NFS road. Results of this analysis are objective. The road maintenance calculator developed by the Regional Office provides consistent estimates of road costs.

It is recognized that this analysis does not fully address issues only informed with fine-scale data and analysis. Efforts to provide finer scale information for identifying future opportunities will be an ongoing effort by the resource specialists, road managers, and line officers. Further analysis and refinement of the opportunities identified in the report will occur at a finer scale during project-level NEPA. Road specific comments provided during this analysis may inform the project level NEPA.

Step 4—Assessing Benefits and Risks of the Existing Road System

Development of Risk/Benefit Assessment Questions

Regional and forest subject-matter/category experts were asked to develop questions that are effective at making distinctions between risk and benefits of a forest road system, using available data and tools. They reviewed previous analysis questions for roads to see if they could be used as part of this analysis. The previous analysis questions reviewed by the Regional subject-matter/category experts were from the following sources:

- Road Analysis Process (FS-643)
- Watershed Condition Framework (FS-977)
- Previously completed Travel Analysis Processes by other forests
- Travel Analysis Questions developed by Forest Service Region 9.

The subject-matter/category experts were provided a set of selection criteria that were used as a guideline as they developed risk/benefit assessment questions. See Appendix H for an explanation of developing the Regional Analysis Questions. The selection criteria below were developed by the Regional technical team:

a. Overarching Selection Criteria:
    1) Questions reflect requirements of law, regulation, Forest Service policies or Forest land management plans.
    2) Questions use best available data sources.

3) Questions lend themselves to answers that are objective, quantifiable and repeatable (different investigators applying the same question to the same data would come up with the same answers).
4) Questions can be answered based on accepted science.
5) Questions are matched to an appropriate scale of analysis.
6) Questions are effective at making distinctions between necessary and unnecessary roads, making use of previous analysis work.
7) Questions are answered with existing geographic information system (GIS) layers to the maximum extent possible.

b. Risk Selection Criteria: (Addressed by specific questions)
   1) Does the road contribute to an adverse regulatory finding (e.g., Clean Water Act impairment)?
   2) Does the road violate Forest Service Manual or Handbook requirements?
   3) Does the road violate a Forest Plan standard or guideline?

c. Benefit Selection Criteria: (Addressed by specific questions)
   1) Is the road necessary to meet Forest Plan direction?
   2) Is the road necessary to maintain a capital investment?
   3) Is the road necessary to access a long-term special use?
   4) Is the road necessary to access a reserved or outstanding interest in land or resources?

The risk and benefit questions were used to determine numeric, consolidated assessment values of specific road segments across the forest. The initial risk/benefit assessment values are used in conjunction with the cost analysis, public/partner involvement, and previous commitments (such as road cost-share agreements or long-term special use permits) to identify opportunities to change the Forest or Grasslands road system. Some of the road-related issues identified by the public and other agencies can be addressed by risk/benefit questions relative to specific road segments, while others would be more appropriately addressed during forest plan revision or during implementation of site-specific projects.

The following analysis questions are designed to quantify the level of environmental risk and benefit for specific road segments. The interdisciplinary team eliminated questions that were duplicative and combined questions that had the same overall intent.

Benefit Analysis Questions

Access Category Questions

There are three questions related to required access benefits for non-Forest Service lands, Forest Service administrative facilities, and permit holders.

Benefit Question (Q)1

Does the road provide access to private or other non-NFS lands?

Background

By law (Alaska National Interest Lands Conservation Act [ANILCA]), the Forest Service cannot deny or eliminate reasonable legal access to private lands completely surrounded by NFS lands. Each inholding must have reasonable access by at least one route. A private road permit or easement may be granted to the private land owner, who then has the primary jurisdiction of the road and is responsible for its

maintenance. In cases where an easement is granted to a county or other public road agency, the road would no longer be an NFSR or subject to this assessment.

Tools/Data Resources

- GIS roads layer
- Lands layer (NFS and non-NFS lands within NFS boundary)

Available Values/Definitions

- 5 = Yes – the road provides access to private or non-NFS lands
- 0 = No – the road does not provide access to private or non-NFS lands

Benefit Q2

Does the road access Forest Service administrative facilities?

Background

Administrative sites represent an investment, either by the Forest Service or partners, such as other governmental entities. Eliminating access to these facilities may reduce or eliminate the value of the investment. It is important to know if roads or trails provide the only access to such investments. Consider sites such as administrative sites, fire lookouts, cabins, stream gages, communication sites, etc.

Tools/Data Resources

- GIS roads layer
- Administrative facilities site map and spatial data
- INFRA database

Available Values/Definitions

- 5 = Yes – the road accesses an administration site or non-recreation improvements.
- 0 = No – developed administration facilities or non-recreation improvements are accessed by the road.

Benefit Q3

Is the road the primary access to areas or sites under a long-term special use permit authorization?

Background

Access via system roads may be necessary to allow the customer and/or special use authorization holder to access areas authorized for long-term use including, but not limited to, ski hills, utility corridors, range allotments, mineral leases, and areas requiring recreation-related permits that do not include a developed site.

Tools/Data Resources

- GIS land status, Special Use Permit (SUP) locations and boundaries
- Special Uses Data System (SUDS) database
- GIS roads layer
- Local knowledge of recreation and lands SUP administrator

- INFRA database (cost share easements)
- Locatable minerals layer
- Quarries layer
- Range management units layer

Available Values/Definitions

If available, overlay locations of all designated areas currently under a special use authorization on the roads/trails layer using GIS. Examine the proposed routes to the designated sites and render a value rating according to the following scale:

- 5 = Road the only access to designated area under a special use authorization
- 0 = Road access not necessary to designated areas under special use authorization

Vegetation Management Questions

Benefit Q4

Does the road provide access for vegetation management treatments on suitable lands or on non-suitable lands that are within the WUI?

Background

The long-term need for continued access to lands for future vegetative treatments, including commercial or service contract treatments, must be recognized. Activities designed to reduce hazardous fuels, restore ecosystem function, and/or improve forest health occur on both suitable and non-suitable lands and often require multiple entries. Sufficient access to successfully implement these activities should be considered, as well as NFMA requirements following treatments. Such access could be reasonably managed as closed for public entry between management entries. (Some silvicultural entries may be >20 years apart.)

Tools/Data Resources

- GIS land status
- INFRA roads data
- Forest Plan Suitable Base Lands
- WUI delineations.

Available Values/Definitions

Examine the proposed routes against the suitable lands and WUIs and render a value rating according to the following scale:

- 5 = Veg management value high (road provides access to suitable lands or non-suitable WUI lands)
- 0 = Veg management value low (no suitable lands or non-suitable WUI lands accessed).

Benefit Q5

Does the road allow continuing access to conduct on-going research related to silviculture, forest health and climate change?

Background

There are a variety of ecological studies that exist on NFS land. Some have been in place for over 50 years and rely on periodic re-measurements. Access to these studies is critical in order to maintain their integrity. In some cases the road is actually a part of the study so eliminating it would have impacts as well. Future studies should be designed with travel management in mind or incorporate the possibility that long-term road access many not be realistic.

Tools/Data Resources

- GIS land status
- Forest Plan management areas (e.g., experimental forests or research natural areas [RNAs])
- GIS roads layer
- Local knowledge of silvicultural and field staff

Available Values/Definitions

- 5 = Yes – the road provides direct access to a long-term study area
- 0 = No – no known research plots are accessed.

Recreation Category Questions

There is one question specifically related to recreation access benefits. Questions related to other access benefits may also indirectly provide recreation benefits.

Benefit Q6

Does the road access a recreation site, either a developed recreation site or inventoried user created site?

Background

Certain recreation sites represent agency capital or labor investments. To maintain the value of these sites and for the public to receive value from these areas, access must be provided.

Tools/Data Resources

- GIS roads layer
- INFRA Database (Rec Core)
- Developed Recreation INFRA Database
- User-created Recreation Sites INFRA Database
- Land Management Plan Management Areas.

Available Values/Definitions

- 5 = Yes – road is necessary to access developed trailheads or recreation sites/areas
- 0 = No – no developed sites/areas are accessed by the road.

Wildfire Hazard Response Category Questions

There is one question related to access benefits for emergency response within the WUI.

Benefit Q7

Does the road provide access to WUI?

Background

Forest roads are often used for emergency evacuation routes or during fire suppression operations around WUI areas. Local communities are required to develop emergency fire response plans for WUI areas. The long-term need for continued access by all emergency response partners, including wildfire and structure fire response needs to be recognized. Responder and public safety, location, situation and access are considered. This question is intended to inform decisions with regard to existing roads in the context of emergency response, and be used in conjunction with professional knowledge, experience, and response needs relevant to the Idaho Panhandle NF.

Tools/Data Resources

- Fire management plans, pre-suppression attack plans (WUI layer)
- GIS roads layer

Available Values/Definitions

- 5 = Yes – road is specifically listed in a community fire plan or mapped WUI
- 0 = No – road is not used at all.

Risk Analysis Questions

Watershed and Aquatic Biota Category Questions

Forest transportation systems have the potential to impact water quality, aquatic habitat, and aquatic biota. Impacts can be highly variable and may include mass wasting, sediment delivery, loss of woody material, channel and riparian encroachment, and/or blockage of aquatic organism passage. The spatial and temporal magnitude of are strongly driven by the proximity of roads to stream networks and/or unstable soils. Therefore, the following four analysis questions are meant to focus on the location of roads in relation stream networks and other water bodies, unstable landforms or soils, and 303(d) waters.[3] The degree of aquatic organism blockage is also addressed.

Risk Q1

What is the road length within 150 feet of the stream[4] network and/or other water bodies?

Background

Roads in close proximity to water bodies can have a wide range of direct and indirect effects on riparian ecosystems, water quality, and aquatic habitat. Roads that parallel streams have the potential to effect floodplain function, riparian vegetation, stream temperature, and are a common source of sediment. Roads within 150 feet may have direct impacts on channel morphology which can lead to a variety of other impacts.

Tools/Data Resources

- GIS Road layer
- National Hydrography Dataset (NHD)
- Administrative boundary for land ownership.

[3] As defined by the 2012 303(d) list of sediment-impaired waters.
[4] Included perennial streams only.

Available Values/Definitions

- 5 = Road is among top 1/3 of greatest total distance within 150 feet of the stream[2] network or water bodies
- 0 = Road is among bottom 1/3 of total distance within 150 feet of the stream network or water bodies

High, moderate, and low values would be generated using Jenks Natural Breaks, as opposed to an arbitrary threshold number. It essentially minimizes variance within groups and maximizes variance among groups.

Risk Q2

What is the total number of stream crossings?

Background

Road-stream crossings have been shown to be major source of risk. Crossings are a common source of sediment, pose a potential for failure, and are potential barriers to aquatic organism passage. The number of intersections between the road and stream network were used to get a total number of stream crossings.

Tools/Data Resources

- GIS Road layer
- National Hydrography Dataset (NHD)
- Administrative boundary for land ownership.

Available Values/Definitions

- 5 = Road is among top 1/3 of greatest number of stream crossings
- 2 = the middle third
- 0 = Road is among bottom 1/3 of greatest number of stream crossings

High, moderate, and low values were generated using Jenks Natural Breaks, as opposed to an arbitrary threshold number. It essentially minimizes variance within groups and maximizes variance among groups.

Risk Q3

Does the road cross unstable soils?

Background

Roads crossing unstable soils are prone to mass failure, debris flows, and/or accelerated erosion.

Tools/Data Resources

- GIS road layer
- NFS lands inventory and land types designated as sensitive
- Administrative boundary for land ownership

Available Values/Definitions

- 5 = Top 1/3 of road distance across unstable soil types
- 0 = Bottom 1/3 of road distance across unstable soil types.

High, moderate, and low values were generated using Jenks Natural Breaks, as opposed to an arbitrary threshold number. It essentially minimizes variance within groups and maximizes variance among groups.

Risk Q4

Does the road create barriers to aquatic organism passage (i.e., habitat fragmentation)?

Background

Road-related structures, mostly in the form of culverts, can create barriers to fish passage. These structures may also inhibit the movement of amphibians.

Tools/Data Resources

- INFRA road data
- Administrative boundary and land ownership
- NHD
- Culvert inventory data from NRIS Aquatic Surveys, R1 Fish Barrier Database, Idaho Panhandle NF Access Database.

Available Values/Definitions

- 5 = Aquatic habitat fragmentation due to blockages – More than two inventoried unwanted barriers including both total and partial barriers
- 0 = Fragmentation of habitat is not a serious concern.

Terrestrial Ecology Category Questions

There are two questions related to access risks related to wildlife: Risk Q5 and Risk Q6.

There are several ways that transportation routes and their uses affect wildlife. They can include direct, indirect and cumulative impacts to habitat, individuals and populations including:

- Direct road mortality due to vehicle collision
- Indirect mortality through facilitated access for hunting and trapping.
- Habitat loss (directly or indirectly due to factors such as snag loss adjacent to a road, displacement due to human activity on the road, etc.).
- Reduced connectivity (because a road bisects grizzly bear security core habitat, elk security area, or large old growth block, for example).

Impacts of forest roads on wildlife are assessed using two basic frameworks: 1) analysis of road or open road density and 2) analysis of key habitats as affected by roads. The impact of highways on connectivity in linkage areas is a separate issue not addressed in this analysis.

Risk Q5

Does the road bisect larger blocks of habitat that can provide grizzly bear security core or elk security?

Background

When conducting travel management assessment, Forest Service staff is encouraged to first consider the wildlife species most vulnerable or sensitive to the effects of motorized roads or trails, particularly the most limiting species. The effects of roads and wildlife have been most thoroughly studied for species such as elk and grizzly bears, so Forest Plan direction is often related to these two species. However, road management that provides elk and grizzly bear security may also benefit many other wildlife species. On the Idaho Panhandle NF, grizzly bear security core habitat is defined as contiguous areas at least 2,500 acres in size more than 500 meters (about 0.3 miles) from an open or gated road. If applicable, grizzly bear security core habitat will be analyzed since it is more limiting than elk security. If an area does not have grizzly core habitat, elk security areas will be analyzed. Elk security areas are defined as areas more than 0.5 mile from an open road with a block of hiding cover at least 250 acres in size (Hillis et al. 2001).

Tools/Data Resources

- Roads GIS layer
- Bear Management Units
- Elk Management Units
- Lynx Analysis Units
- Caribou Recovery Zone

Available Values/Definitions

- 5 = Yes – route accesses grizzly core or elk security habitat.
- 0 = No – road does not access grizzly core or elk security habitat.

In determining the scale of the analysis area and wildlife species evaluated, consider use of 6th code hydrologic unit code (HUC, Watershed Condition Framework scale) and/or a specific analysis area defined by threatened and endangered species (TES) conservation strategies, Forest Plan direction, or the analysis area for wildlife species most vulnerable or sensitive to the effects of motorized roads and trails.

Risk Q6

Does road density in the area of evaluation exceed any obligatory standard/threshold?

Background

Conservation management for some wildlife species relates to open or total road density thresholds and many NF plans have direction or standards to mitigate for adverse impacts from roads based upon thresholds or metrics that are most relevant for the selected wildlife species (see wildlife literature section). On the Idaho Panhandle NF, for lands outside the grizzly bear recovery area, there are density standards. Three bear management units exceed the road density threshold: Bluegrass, Boulder, and Grouse BMUs.

Tools/Data Resources

- Roads GIS layer
- Bear Management Units – Bluegrass, Boulder, and Grouse

Available Values/Definitions

- 5 = Yes – Road densities in the area of evaluation exceed a forest plan standard, wildlife species conservation standard or any applicable obligatory threshold.
- 0 = No – Road densities in the area of evaluation do not exceed standards or road is not in a conservation management area.

The risk rating for all roads within a conservation management evaluation area is the same; either a 0 or 5. For example: a geographic analysis area is 43 square miles and the road density standard is 1.5 miles per square mile. It is calculated that the road density within this analysis area is 2.1 mi/mi^2, which is above the established conservation standard determined by a linear road density analysis. In this case, all roads within the analysis area received a risk rating of 5. Another example: an analysis area does not meet one of the two grizzly bear access density standards; open road density or total road density, as determined by a moving window analysis. All roads within the analysis area received a risk rating of 5.

Botany Questions

There are 2 questions related to access risks related to plants: Q7 and Q8.

Non-native invasive plant species (NNIS) are a significant threat to the Idaho Panhandle NF. NNIS management activities are conducted under the program elements: prevention; early detection and rapid response; control and management; restoration and rehabilitation as identified in the National Strategy and Implementation Plan for Invasive Species Management; 2004 National Strategy; and regional NNIS management frameworks, plans, and strategies. NNIS are managed to protect, restore, and improve the health and function of terrestrial and aquatic ecosystems; ecological functions and values; the production of forest and rangeland products and services; improve and protect public recreational opportunities and wilderness integrity. The framework for risk assessment includes two approaches; control of existing infestations and prevention of infestation in areas with key ecological significance.

Risk Q7

Does the road pass through high priority non-native invasive plants for control and management? (The RISK map was not used when it was determined that most forest roads pass through priority non-native invasive plant species.)

Risk Q8

Is the road providing access to an ecologically significant area such as wilderness, RNAs, experimental forests, and rare plant communities? (Prevention)

Background

NNIS spread is facilitated by vehicle and pedestrian passage. The presence of NNIS along roads leading to ecologically sensitive areas elevates the risk to such areas, which are often of more value to the continued survival of rare species than the general forest environment. Preventing the introduction of NNIS into such communities is usually more efficient than attempting to eliminate or control invasive plants that have become established.

Tools/Data Resources

- Administrative boundaries
- Wilderness, RNAs, experimental forests
- NRIS TES plants

Available Values/Definitions

- 5 – Road provides direct access to or lies within an area of ecological significance, of priority NNIS control
- 0 – Road does not provide access to areas of ecological significance

Summary of Risk/Benefit Questions

Each NFS road received a "raw" score for each of the analysis questions above. Risk and benefit ratings were plotted on maps by analysis question and review by the interdisciplinary team for reasonableness. Refer to Appendix C for risk and benefit ratings for each question.

Scores for risk and benefit were aggregated and the Jenks natural breaks classification method was used to differential the values into low, medium, and high classes. See Appendix D for the summary risk and benefit maps.

Step 5—Describing Opportunities and Setting Priorities

The science-based risk/benefit analysis must be integrated with three other components as the interdisciplinary team considers logical opportunities to change the existing road system. The next three components are:

- a financial analysis,
- public/partner involvement, and
- management area direction.

This integration process is intended to help Forest staff make informed recommendations for their forest transportation system.

Financial Analysis

The Idaho Panhandle NF receives annual roads funding (Construction and Maintenance of Roads, CMRD) for the operation and maintenance (O&M) of NFSRs. For fiscal years 2013 and 2014, the road O&M budget averaged $1,628,000. The 3 years prior averaged $1,729,000. This is a reduction of approximately 6 percent in O&M funding over the last 5 years. Approximately 55 percent of this amount is reserved for timber sale engineering support and planning, while the remaining 45 percent is available for all road inventory, monitoring, analysis, contract administration, construction, operations, and maintenance.

The Idaho Panhandle NF may also receive roads construction and maintenance funding for capital investment projects (e.g., campground road improvement, bridge rehabilitation/replacement, aquatic organism passage projects), or for other national priority initiatives (e.g., flood response, aquatic organism passage, road decommissioning). There are limited opportunities to make capital improvements to the road system through the Regional Capital Investment Program (CIP) or through the Federal Lands Transportation Program. Each of these programs is highly competitive for funding. Integrated restoration projects and commercial timber sales represent some of the better opportunities to implement changes to the road system. The total CMRD roads appropriation for the last five years is provided in Table 2.

Table 2. Summary of CMRD Roads Appropriations for Fiscal Years 2010–2014.

CMRD Roads Appropriation Fund Type	Year				
	2010	2011	2012	2013	2014
O&M ($)	$1,749,000	$1,337,000	$1,431,000	$1,381,000	$1,244,800
CIP ($)	$485,000	$180,000	$6,000	$524,600	$105,800
CMRD Road Appropriations Total ($)	$2,234,000	$1,517,000	$1,437,000	$1,905,600	$1,350,600

Timber sales and integrated resource projects conducted under stewardship authority also directly perform road maintenance and reconstruction on NFSRs. For example, stewardship retained receipts have been used for implementing road best management practices and providing aquatic organism passage. A majority of work on roads with ML 1 and 2 (i.e., receiving basic custodial care or maintenance for high clearance vehicles) are accomplished through these projects. Collections through timber sales related to road maintenance, aggregate surface replacement, and Knutson-Vandenberg (KV) funds also provide funding for road-related activities. Table 3 provides a summary of timber/stewardship road-related funding.

Table 3. Summary of Timber/Stewardship Sale Road-Related Maintenance, Reconstruction, and Collections for Fiscal Years 2010–2014.

Timber/Stewardship Sales Fund Type	Year				
	2010	2011	2012	2013	2014
Road Maintenance ($)	$141,108	$74,194	$186,572	$160,801	$189,218
Road Reconstruction ($)	$116,510	$175,118	$226,494	$463,598	$344,093
Road-Related Collections ($)	$92,272	$42,057	$74,927	$129,758	$108,177
Timber/Stewardship Sales Total ($)	$349,890	$291,369	$487,993	$754,157	$641,488

Other specialized funds may be available for road-related project work, such as:

- Legacy Roads and Trails funding for implementing road best management practices, providing aquatic organism passage, and replacing bridges
- American Recovery and Reinvestment Act (ARRA) funding
- Federal Highway Administration (FHWA) funding
- Rural Area County (RAC) funding
- Cooperator deferred maintenance funds
- The Emergency Response Federally Owned (ERFO) program (requires a match of funds and requires the Forest Service to repair eligible sites with our appropriated funds).

Table 4 provides a summary of funding to the roads program from these other funding sources over the last 5 years.

Table 4. Summary of Other Roads-Related Funding for Fiscal Years 2010–2014.

Other Road Fund Types	Year				
	2010	2011	2012	2013	2014
Other FS Appropriations ($)	--	--	--	--	--
ARRA ($)	$9,109,450	--	--	--	--
Stewardship Retained Receipts ($)	$75,000	$107,000	$266,560	$135,000	--
FHWA ($)	$313,000	$60,000	$131,450	--	$25,000
Other ($) (RAC)	$75,000	$75,000	$75,000	$75,000	$75,000
Other Roads Funding Total ($)	$9,572,450	$242,000	$473,010	$210,000	$100,000

Table 5 provides a summary of total road-related funding available from all funding sources for fiscal years 2010–2014.

Table 5. Total Available Road-Related Funding For Fiscal Years 2010–2014.

Fund Type	Year				
	2010	2011	2012	2013	2014
CMRD Roads Appropriation ($)	$2,234,000	$1,517,000	$1,437,000	$1,905,600	$1,350,600
Timber/Stewardship Sales Total ($)	$349,890	$291,369	$487,993	$754,157	$641,488
Other Roads Funding Total ($)	$9,572,450	$242,000	$473,010	$210,000	$100,000
Total Road-Related Funding ($)	$12,156,340	$2,050,369	$2,398,003	$2,869,757	$2,092,088

Much of the other roads funding (noted in Tables 3 and 4) has gone to high-expense projects, such as road resurfacing, bridge replacement, and road decommissioning. Of all the funding types shown in the tables, CMRD appropriations and road-related maintenance and collections from timber/stewardship sales are the primary sources for annual road maintenance. Over the past 3 years, approximately $1,100,000

of approximately $2,4500,000 in annual average road-related funds are annual maintenance (e.g., surface grading, roadside brushing, drainage structure cleaning and repair, and sign maintenance). The remaining funds go toward transportation planning, road management, road reconstruction and capital improvement projects (though these may also accomplish maintenance simultaneously).

In order to compare the need for road maintenance funds with funds actually obtained over the last 3 years, the Idaho Panhandle NF has used the Regional Average Road Maintenance Costs to estimate the annual cost of maintaining their road network (see within Appendix D, Financial Analysis: "Idaho Panhandle NF Annual Road Maintenance Financial Analysis" and "Average Annual Regional (R1) Cost for Road Maintenance by Maintenance Level"). These costs were derived by identifying road maintenance work items and frequencies appropriate for each maintenance level. These costs are intended to reflect the actual cost of maintaining a road to its designated standard and may not reflect common practices carried out within budget constraints. The estimated funding needed to maintain roads to standard is approximately $2,480,000 annually. The Idaho Panhandle NF currently receives approximately 88 percent of the funds needed to maintain the road system to standard. This includes resurfacing all surfaced roads (gravel and asphalt), replacing all culverts past their useful lives, eliminating fish barriers to meet objectives, brushing all roads to the edges of the clearing limits, ensuring all surface drainage is appropriately installed, and having all regulatory and warning signs replaced within their life cycle.

Because the Idaho Panhandle NF road maintenance has not been fully funded over the last 5 years, it has prioritized road work. Currently, road maintenance funds are focused on roads open to public travel that access administrative sites and high use recreation sites. The primary maintenance items are regulatory and warning signage, surface blading, and roadside brushing. Maintenance of closure devices is also a priority and occurs consistently across the forest. Table 6 provides a summary of the number of NFSRs that received some type of maintenance (i.e., surface blading, road side brushing, down tree removal, and sign maintenance); percentage of the passenger car miles that received maintenance; and the percentage of non-passenger car miles that received maintenance, over the previous 5 years.

Table 6. Miles of NFSR receiving maintenance, percentage of passenger car system and non-passenger car system receiving maintenance, on the Idaho Panhandle NF for the last 5 years.

Year	NFSR Receiving Maintenance (miles)	Passenger Car System Receiving Maintenance (%)	Non-Passenger Car System Receiving Maintenance (%)
2014	1602	59%	13%
2013	1114	46%	5%
2012	1588	56%	14%
2011	2005	70%	18%
2010	3883	100%	40%

There has been a great deal of discussion on how to reduce the funding burden created by the existing road system. Some people have proposed decommissioning of more roads to reduce the funding burden. While decommissioning roads may be a very good investment for environmental reasons, it is not a good investment for economic reasons. A simple financial analysis of the present net cost of decommissioning a mile of road, compared to the present net value of maintenance for a road in storage into perpetuity, shows that you will likely never recover the cost of decommissioning through reduced road maintenance. Appendix E provides these reference calculations in "Why We Decommission Roads – Economic Implications of Removing Forest Roads."

Reducing road maintenance levels has been widely considered as the primary method to reduce costs. However, putting roads in a lower maintenance class can actually reduce the road maintenance funding allocated to the Idaho Panhandle NF, because roads in the ML 1 or 2 categories no longer qualify for some funding sources. For example, high clearance or closed roads are not eligible for funds from the Federal Lands Transportation Program. The Idaho Panhandle NF maintains only 25 percent of its road system for passenger car use (ML 3 or greater).

Converting roads to other uses, such as trails, has been considered as a method to maintain some Idaho Panhandle NF access without the economic burden of road maintenance. Trail managers are concerned that this treatment simply shifts the cost from one program to another. Others feel it shifts the cost burden to the users of "roads in storage" that are primarily receiving trail use. In either case, both roads and trails programs are underfunded to maintain the respective systems to standard.

Transferring road jurisdiction to another agency has also been suggested as a method to reduce the cost burden. Forest Service Manual 7732.23 actually directs the agency to work with public road agencies to transfer jurisdiction when the road use and traffic mix is no longer predominantly forest-generated. Counties have a history of cooperating with the Idaho Panhandle NF and accepting the jurisdiction of numerous roads serving county residents. However, the counties have very limited capacity to accept additional road mileage from the Forest Service.

Management Direction

In addition to the 14 risk and benefit questions providing a scientifically-based analysis, the *Idaho Panhandle National Forest Land and Resource Management Plan* (2015, as revised) was utilized for management direction. This was accomplished by identifying management areas (MAs) that access suitable timberlands. If roads exist in these MAs, they were identified as likely needed for future vegetation management activities. This management direction filter tends to be conservative in identifying unneeded roads in the Forest Plan suitable timber base. Finer scale analysis is needed to identify roads providing redundant access for vegetation management.

This travel analysis was completed at a forest-wide, broad-scale. As such, finer scale/project-level travel analyses and subsequent NEPA decisions may differ for some road segments. Implementation of opportunities identified in this TAR will follow the appropriate public involvement/NEPA requirements. Where discrepancies between opportunities identified in this TAR and project-level travel analyses exist, the existing NEPA decisions will take precedent, or additional NEPA analysis will be completed at the project-level to evaluate appropriate road-related actions.

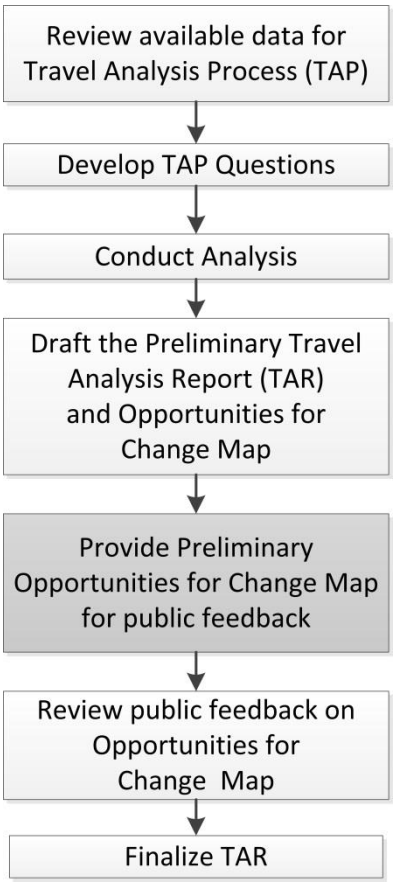


Figure 1. Overview of the TAP, highlighting the Public and Partner Agency Input stage.

Public Input

Figure 1 shows an overview of the TAP/TAR process, including where the public was asked to review the opportunity map and provide feedback. Public input is discussed in Step 3 and Appendix B.

Assessment Integration

The assessment integration is the process of blending the four sub-processes that make up the TAP. These are the Risk/Benefit Questions, the Financial Analysis, Management Direction, and the Public/Partner Involvement process. Together, they will provide the information the Idaho Panhandle NF leadership can use to identify the needed road system in subsequent analysis.

For the assessment integration, the risk and benefit scores for each road segment were summed to determine a total score. The analysis team felt it was useful to evaluate risks and benefits for all NFSRs within the Idaho Panhandle NF even if previous decisions limited the scope of reasonable recommendations.

This cumulative evaluation approach for the risks/benefits sets the context for recommended changes on those roads with greater management flexibility.

Not all risks and benefits are adequately addressed at a forest-scale using existing GIS data. Some assessments requiring fine-scale information, or social issues that are difficult to map, are better identified with more detailed analysis or through project-level NEPA analysis. Existing decisions and associated fine-scale/project-level travel analyses that differ from this TAR do not invalidate the possible opportunities identified herein. Similarly, risk and benefit ratings and opportunities identified in this TAR do not invalidate fine

scale/project level travel analyses. It is our intent to identify the more obvious opportunities that might be evaluated within the next 5 to 10 years.

A rule set was applied to each road segment based on the aggregate risk/benefit rating to determine preliminary opportunities. The preliminary opportunities would be modified as the other three components of the TAP are integrated. The preliminary rule set was based on a matrix of calculated road risk and benefit, ranging from high risk/high benefit roads to low risk/low benefit roads. The preliminary opportunity spectrum includes three scenarios: storage, reconstruction, or maintenance; removal, storage, or conversion; no change. Table 7 shows the preliminary rule set used.

Table 7. Preliminary rule set applied to road segments.

Risk/Benefit Rating	Preliminary Opportunity Spectrum
High Risk and High Benefit	Storage, Reconstruction, or Maintenance
High Risk and Medium Benefit	Storage, Reconstruction, or Maintenance
High Risk and Low Benefit	Removal, Storage, or Conversion/Storage, Reconstruction, or Maintenance
Medium Risk and High Benefit	Storage, Reconstruction, or Maintenance
Medium Risk and Medium Benefit	Storage, Reconstruction, or Maintenance
Medium Risk and Low Benefit	Removal, Storage, or Conversion/Storage, Reconstruction, or Maintenance
Low Risk and High Benefit	No change
Low Risk and Medium Benefit	No change
Low Risk and Low Benefit	Removal, Storage, or Conversion/Storage, Reconstruction, or Maintenance

Roads calculated as having medium and high benefit, with low risk, were initially identified as "likely needed for future use" with "no change" recommended. Appropriate maintenance and reconstruction would occur as needed. If any of these roads are in management areas (MAs) that generally discourage/prohibit roads on the landscape, the road will be analyzed in a future, project-level NEPA assessment for appropriate action (i.e., removal, storage, or conversion).

Roads calculated as having medium and high benefit, with medium or high risk, were initially identified as "likely needed for future use" with appropriate actions being to put the road into a stored condition, reconstructing the road, or to perform maintenance. The appropriate specific actions would fit ground conditions, address actual risks observed in the field, and leverage funding. If any of these roads were in management areas (MAs) that generally discourage/prohibit roads on the landscape, the roads will be analyzed in a future, project-level NEPA for appropriate action (i.e., removal, storage, or conversion).

Roads that are calculated to be low benefit, and low, medium, or high risk could be identified as either "likely not needed for future use" or "likely needed for future use," but with a single purpose. Specific actions would fit ground conditions, address actual risks observed in the field, and leverage funds. Roads in MAs that are suitable timberlands were identified as "likely needed for future use."

Displaying Existing Information

It's been recognized that this coarse filter approach to evaluating single purpose roads in the suitable timber base is not effective in identifying redundant access. Additional opportunities to eliminate redundant access have either been identified or will be identified in project-scale analysis. The Opportunity Map in Appendix F displays additional routes planned for decommissioning from several recent NEPA decisions in addition to opportunities identified in this analysis.

Working with Partners

Other government agencies as well as private landowners have an interest in the management of NFS roads. In some cases partners have rights-of-way or partial ownership on the road system. Some partner agencies rely on NFS roads to accomplish their mission while others may view roads as a threat to their mission.

The US Department of Homeland Security (Border Patrol) have expressed a keen interest in maintaining specific roads in support to their security mission. US Fish and Wildlife Service and the Environmental Protection Agency often view specific roads as contrary to their mission. Many other State, local agencies, and Tribes also have compelling interests. Continuing coordination with partners is vital as proposed actions are considered for NFS roads.

Future Road Needs

Access needs for the Idaho Panhandle NF are anticipated to change over time, requiring either more or less road access on a fluctuating basis. Changes may be driven by public demand, agency budget, Forest Plan revision (and resulting changes to management areas and timber suitability), and adaptation to climate change. Adaptation in fire suppression, vegetation management, and timber production, or watershed management, could drive a need for expanded road access. Restoration projects intended to move existing high-risk roads to lower impact locations would require some new road construction. The exact amount of new road, its location, and the environmental effects associated with each new road will be analyzed at the project level.

Opportunities for Change

Appendix F contains a list of road segments that have been preliminarily identified as having opportunities to change the road system. The opportunities identified consist of several road treatments including removal, storage, or conversion to other uses. These opportunities represent results for this broad-scale analysis supplemented with information from project level NEPA decisions. Refer to the "Opportunities for Change" map in Appendix E for a spatial display of opportunities.

The Idaho Panhandle NF has an estimated 8,375 miles of NFSRs. Approximately 160 miles were identified "not likely needed for future use" and may be considered candidates for conversion to another use, storage for future use, of removal through decommissioning. Other roads that were rated as "high risk" were identified as candidates for storage for future use, reconstruction or relocation of the road, or additional road maintenance.

Roads considered as "low risk" are the first to be considered for reduced road maintenance (i.e., change to a lower maintenance level).

Roads identified as "likely needed for future use" could become the proposed action in identifying the MRS as defined in 36 CFR 212.5(b). About 8,225 miles were identified in this group. However, it should be noted that this group of roads would likely change through finer scale analysis and as conditions change.

Integration with Watershed Condition Framework

The map of roads identified with "opportunities for change" has been overlain with a map showing watershed condition (see Appendix G). Forest managers used this information to identify specific watersheds where was the greatest benefit for application of road treatments. Additionally, this map is useful to assist in considering priorities for Watershed Restoration Action Plans. Once high-priority watersheds are selected, the specific road opportunities could be evaluated with finer scale information. There are 69 road segments, totaling 44 miles of road, identified as "likely not needed for future use," which are located in a "Watershed Condition Classes 2 and 3" watershed (Appendix G). It is recommended that these roads be the highest priority for consideration under a proposed action.

Step 6—Reporting

Key Findings of the Analysis

Roads "likely needed for future use" and "likely not needed for future use" were discussed in the previous step and are included in Appendices E and F. The tables in the appendices include roads recommended for decommissioning, storage, conversion, reconstruction, relocation, and changes in maintenance. Specific road treatments would be evaluated through analysis at a finer scale or during project level NEPA. Key findings of the analysis include the following:

- Approximately 8,225 miles of road identified as "likely needed for future use" could be considered as an approximation of the minimum road system.
- Approximately 160 miles of road were identified as "likely not needed for future use." Just over 44 mile of these roads lie in a watershed considered a high priority for restoration.
- Generally, the greatest opportunity to remove roads from the system is found at the extremities of the road network. Of the road segments considered for "remove, storage, or conversion," the highest priority for removal would be those segments that are considered high risk and located in a high priority watershed.
- Current and projected road budgets are far from fully funding road maintenance needs. Ongoing access requirements, public and private right-of-ways, and public demand leave limited options to scale the road system within the projected budget. This mismatch in funding and public expectations will likely result in declining user comfort and convenience. One possible result will be that more road miles placed in storage (ML 1). Road maintenance emphasis will be placed on promoting safety and protecting water quality.
- A road system that is not fully funded may increase the risk of impacts on water quality and aquatic ecosystems. Best Management Practices designed into projects will reduce much of this impact.
- Some new road construction for local access may be needed in the future to implement the Forest Plan direction. Road construction needs would likely arise in areas where there is a need to reestablish access for vegetation management, where existing roads need to be relocated to mitigate impacts, or where access is needed for fire fuels treatments in WUI areas.
- Three grizzly bear subunits appear to not meet Forest Plan direction related to road density standards. Additional opportunities may be identified to reduce road density in these subunits.
- Road decommissioning has been ongoing for nearly 20 years. It is believed that the bulk of the road decommissioning opportunities have been completed.

- Some unauthorized travel routes exist, but were not given detailed consideration in this assessment. These routes are not considered as part of the managed transportation system and are generally considered unneeded. Unauthorized routes represent additional opportunities for ecological restoration and should be evaluated at the project level.
- Adaption to evolving science, resource conditions, changing budgets, changes in public demand, and changes in agency land and resource management plans will affect the utility of this analysis. Efforts to provide appropriate information for identifying future opportunities will be an ongoing effort by the resource specialists, road managers, and line officers.

Definitions

Administrative Unit. A National Forest, a National Grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System. (36 CFR 212.1, 36 CFR 261.2, FSH 7705, FSM 7705)

Annual Maintenance. Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)

Area. A discrete, specifically delineated space that is smaller and in most cases much smaller, than a Ranger District. (36 CFR 212.1, 36 CFR 261.2, FSM 7705)

Cooperative Road Right-of-Way Agreement. A contractual document that defines the conditions under which the parties agree to do business and incur fiscal obligations in the construction, use, and maintenance of a shared road system. Within the terms of a Cost Share Agreement, easements are exchanged and a Road Maintenance Agreement is developed.

Deferred Maintenance. Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or non-critical at any point in time. Continued deferral of non-critical maintenance will normally result in an increase in critical deferred maintenance. Code compliance (e.g. life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations, other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)

Designated Road, Trail, or Area. A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map (MVUM). (36 CFR 212.1, FSM 7705)

Forest Transportation Atlas. A display of the system of roads, trails and airfields of an administrative unit. (36 CFR 212.1, FSM 7705)

Forest Transportation System. The system of National Forest System roads, National Forest System Trails, and airfields on National Forest System lands. (36 CFR 212.1, FSM 7705)

Maintenance. The upkeep of the entire forest transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization. (36 CFR 212.1)

Minimum Road System. The road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan, to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance (36 CFR 212.5(b)(1)).

Motor Vehicle Use Map. A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System. (36 CFR 212.1, FSM 7705)

National Environmental Policy Act (NEPA) procedures. The rules, policies, and procedures governing agency compliance with the National Environmental Policy Act set forth in 50 CFR parts 1500-1508, 7 CFR part 1b, Forest Service Manual Chapter 1950, and Forest Service Handbook 1909.15. (36 CFR 251.51)

National Forest System Road. A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority. (36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2, FSM 7705, FSH 7709.56.40.5)

National Forest System Trail. A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority. (36 CFR 212.1, 36 CFR 261.2, FSM 7705, FSM 2353.05, FSH 2309.18.05)

Public Road. A road under the jurisdiction of and maintained by a public road authority and open to public travel. (23 USC 101(a), 23 CFR 460.2, 23 CFR 660.103, FSM 7705)

Road. A motor vehicle route over 50 inches wide, unless identified and managed as a trail. (36 CFR 212.1, FSM 7705)

Road Construction or Reconstruction. Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road. (36 CFR 212.1, FSM 7705)

Road Decommissioning, Activities that result in stabilization and restoration of unneeded roads to a more natural state. (36 CFR 212.1)

Special Use Authorization. A permit, term permit, lease, or easement which allows occupancy, use, rights, or privileges of National Forest System land. (36 CFR 251.51, 36 CFR 261.2)

Suitable Timber Land. National Forest system land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be adequately restocked and for which there is management direction that indicates that timber production is an appropriate use of that area.

Unauthorized Road or Trail. A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas. (36 CFR 212.1, FSM 2353.05, FSM 7705)

Vehicle. Any device in, upon, or by which any person or property is or may be transported, including any frame, chassis, or body of any motor vehicle, except devices used exclusively upon stationary rails or tracks. (36 CFR 261.2)

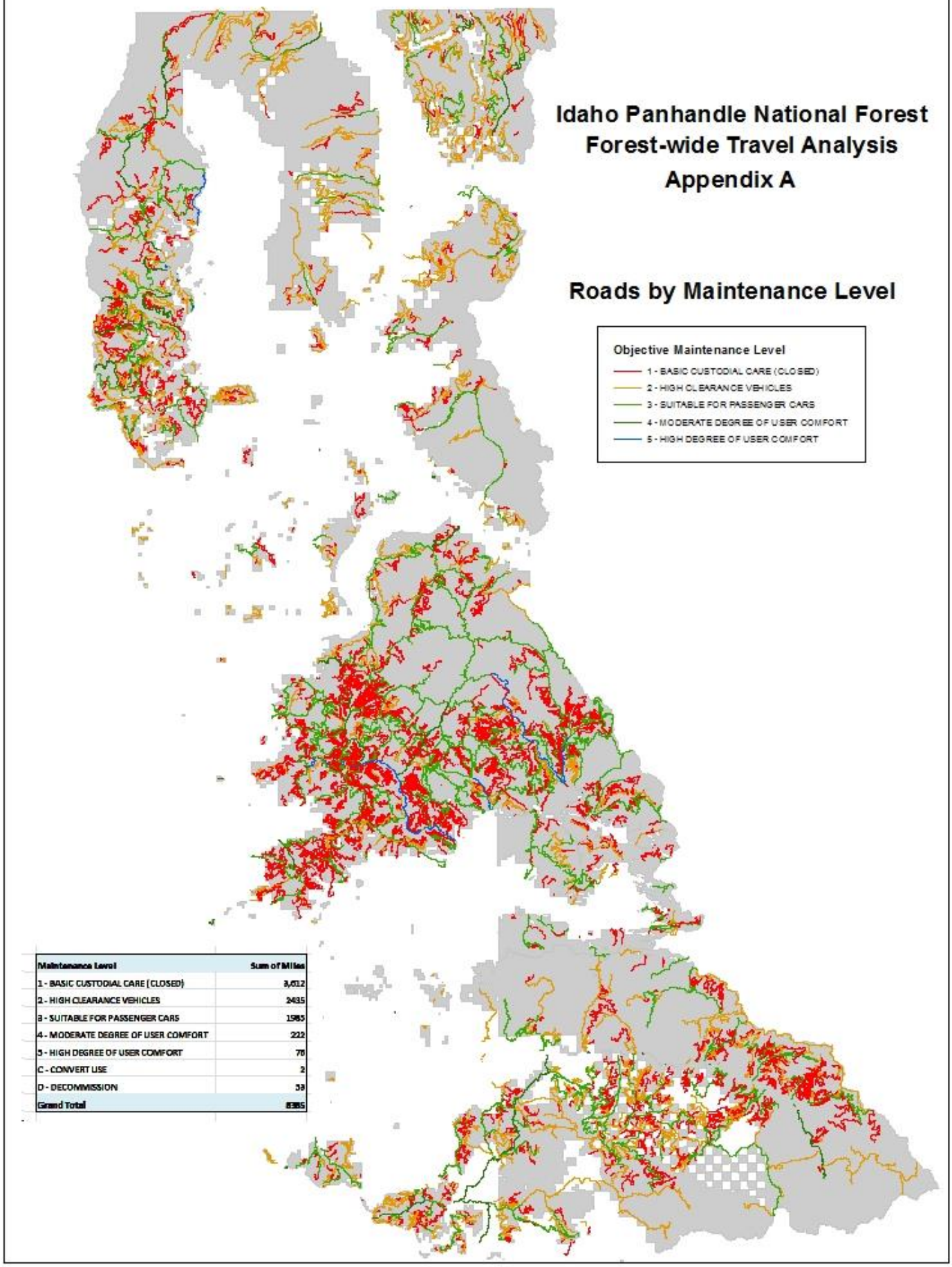
For additional definitions related to roads on the Idaho Panhandle National Forest, see Appendix TT of the Idaho Panhandle National Forest Plan (1986 as amended).

Appendix A

Roads by Maintenance Level

Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix A

Roads by Maintenance Level



Maintenance Level	Sum of Miles
1 - BASIC CUSTODIAL CARE (CLOSED)	3,612
2 - HIGH CLEARANCE VEHICLES	2435
3 - SUITABLE FOR PASSENGER CARS	1585
4 - MODERATE DEGREE OF USER COMFORT	222
5 - HIGH DEGREE OF USER COMFORT	78
C - CONVERT USE	2
D - DECOMMISSION	38
Grand Total	8385

Appendix B

Key Concerns Identified through Public Involvement

Key Concerns Identified Through Public Involvement

A total of 36 comment transmittals from 31 different commenters were received during the comment period. A transmittal was either a comment entry placed on the AGOL (ArcGIS Online) website, an email, a comment form, or a letter.

Specific Roads

In response to the Forest Service's request for the public to identify specific roads and provide reasons/purposes why these roads should or should not be needed/retained for future use, a few roads were specifically identified:

- Cascade Picnic FSR 379 was noted for its poor road condition, washouts, erosion, and plugged culverts. Commenter suggested the road be ditched to prevent water from running down the road. (Was considerable discussion about this road at the Smelterville public review.)
- Gurley Saddle FSR 610 was mentioned by a couple of commenters that it needs maintenance and has a large washout below Gurley Saddle which if not addressed will prevent access to their property as well as other properties further up the road.
- Main road from Fernan Saddle to Windy Ridge FSRs 268 and 612 has huge chuck holes and the commenter considers them a driving hazard and immediate attention is needed to prevent serious injury to the forest user.
- Open the gate on Thiesen Creek FSR 1509.
- Fishhook Gold Center FSR 301has not been maintained properly for years. Mentioned keeping it open for public safety, search and rescue, and wildfire firefighting and access to the Grandmother Mountain trail system.
- Hayden Lake Watershed Association listed FSR 206 (remove and replace log culverts), FSR 625 (decommission), FSR 437 (regrade, apply gravel, replace culverts) as their priorities for the protection and improvement of Hayden Lake and its watershed.
- Concern over vandalism of gates on the roads south of the Fourth of July Pass area. The Panhandle Nordic Club has put considerable time into helping maintain the area and the gates. Roads identified were: 3097, 3097A, 614, 614C, 1575, and 905. Concern that motorized use (ATVs) is regularly evident on the non-motorized roads above FSR 614 with full-sized vehicle being observed more recently. The club suggests placing concrete barriers along FSR 614 at the dispersed camp site to discourage motorized use in the area. Would also like to have "No Shooting" signs posted on the first three miles of FSR 614 to improve safety of non-motorized users.
- Why has Bunco-High Drive FSR 332 become a goat trail?
- Several people expressed concern that there is no egress from the Upper Pack River drainage on Pack River FSR 231. A fire in the south end of the Valley would be a safety issue for residents in the Upper Pack River area without any egress.
- Boulder Creek FSR 396 is close to the creek and is likely keeping native fish populations from thriving. Commenter doesn't want the road to go away, though.

- Several commenters voiced similar themes on several roads that are in very poor condition and get considerable use: Lunch Peak FSR 1091 (accesses rental fire lookout), Coeur d'Alene River FSR 208, West Lakeshore FSR 237, Red Ives Creek FSR 320, Quartz Creek FSR 416, Quxor FSR 489. Specifically, FSR 208 has been "allowed to deteriorate to a dangerous level" with potholes, debris, encroaching brush and trees, full barrow pits, and partially blocked culverts. FSR 489 is "one of the worst roads I've driven on in the forest for the use it gets. Barely passable due to huge boulders, washouts, and rock on road. Only road access to this basin and middle of Beetop Trail".

Roads identified as being beneficial and commenters want them to remain on the system:

- Mason Creek FSR 236 (provides access to ATV trails)
- Trestle Creek FSR 275 (snowmobile trail)
- Milwaukee Grade FSR 300 (Hiawatha Trail)
- Fourth of July – Copper Creek FSR 3097 (provides access to ATV trails)
- Glidden Lake FSR 615 (snowmobile trail)
- Bugle Pass FSR 655 (snowmobile trail)
- W. Fk Eagle Creek FSR 805 (provides access for multiple uses; economically beneficial)
- Oregon Toboggan FSR 2349 (provides access for multiple uses; economically beneficial)

General comments referring to overall management of the forest road system:

- All IPNF roads need water runoff work. Roads are eroding badly and silt is washing into the streams. If nothing is done, roads will become impassable. Suggest diverting the water initially and then going back later to improve drainage.
- Stop shutting down roads. Ask for help from citizens groups to help keep roads open. Post signage as to why a road is closed.
- Help grizzly bear recovery efforts by expanding the amount of secure core habitat in the area.
- Roads should not be closed for elk security. Elk are becoming more adapted and comfortable calving close to human activity due to over-depredation from wolves. Access via the road system by human help to maintain the proper balance of wolves and ungulates.
- Why do roads just terminate? Roads should be connected to allow for safer means of entry and exit.
- Concerned about medical access by helicopters and other medical transport to improve response time.
- Too few roads are listed as low benefit.
- Suggest converting roads to trails to expand the trail experience.

TAP Methodology and Analysis

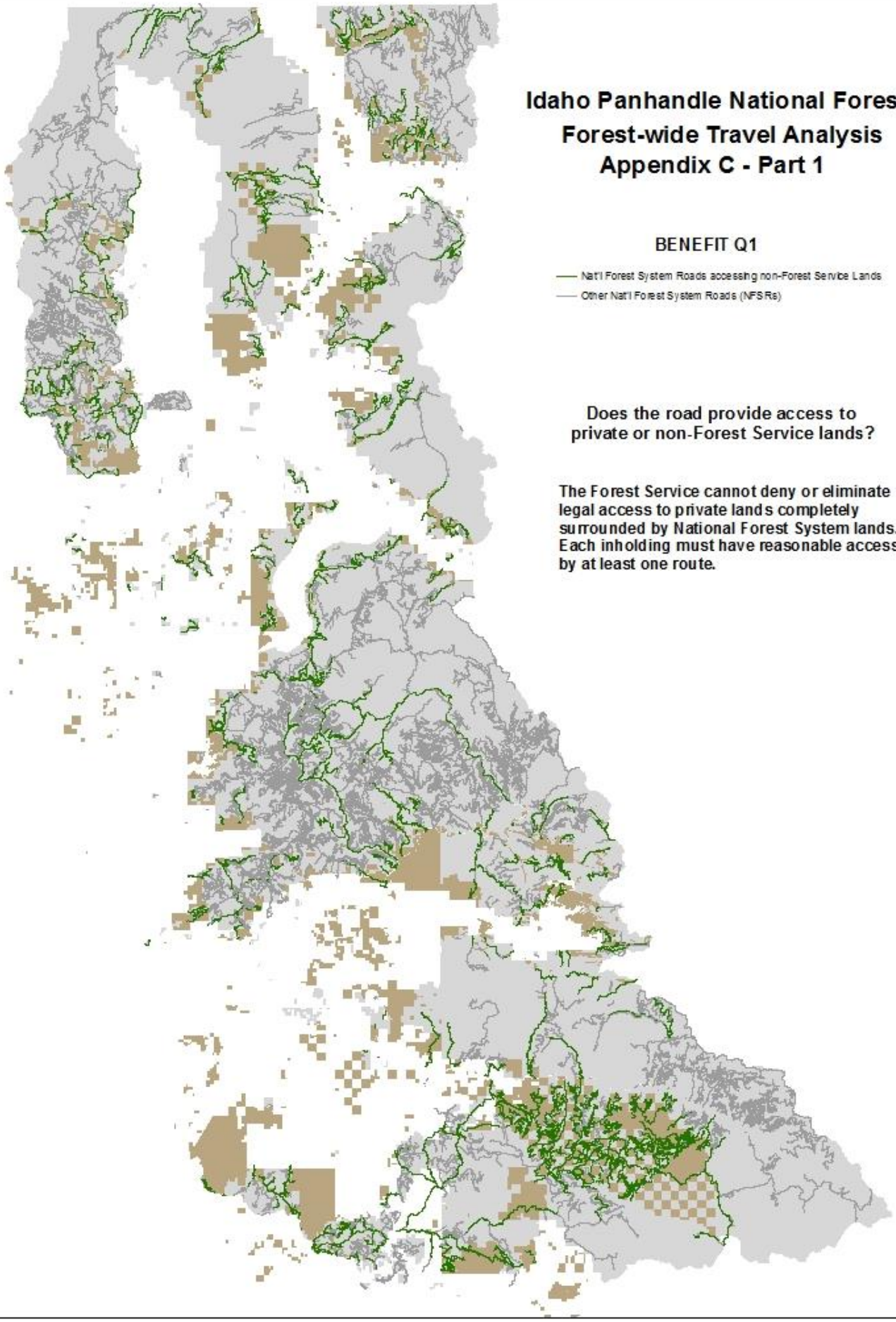
A number of concerns were raised about the purpose, methodology used, and factors/criteria considered, and completeness of information used for the TAP:

- Process should have addressed "redundant" roads. Roads that were constructed to support logging systems of the past and are located every 200 feet should have been addressed.

- The IPNF has thousands of roads it cannot maintain due to budgetary limitations. Process should have included this issue.
- Concern about roads being a vector for noxious and invasive species and that this process did not address this issue. (QNNIS was eliminated due to lack of data. The Forest also noted that all roads would have been identified as a risk.)
- Concern about the specific criteria for the TAP questions. Where does the 150 feet distance come from in question WAB1? Why not use a 300 foot buffer per INFISH? Did the TAP Report provide a clear justification explaining why the road is needed? Why use the 2 or 0 point system instead of something that is more relevant – 0 = no barriers, 2 points = 2 barriers, 5 points = more than 2 barriers?

Appendix C

Part 1: Benefits



Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix C - Part 1

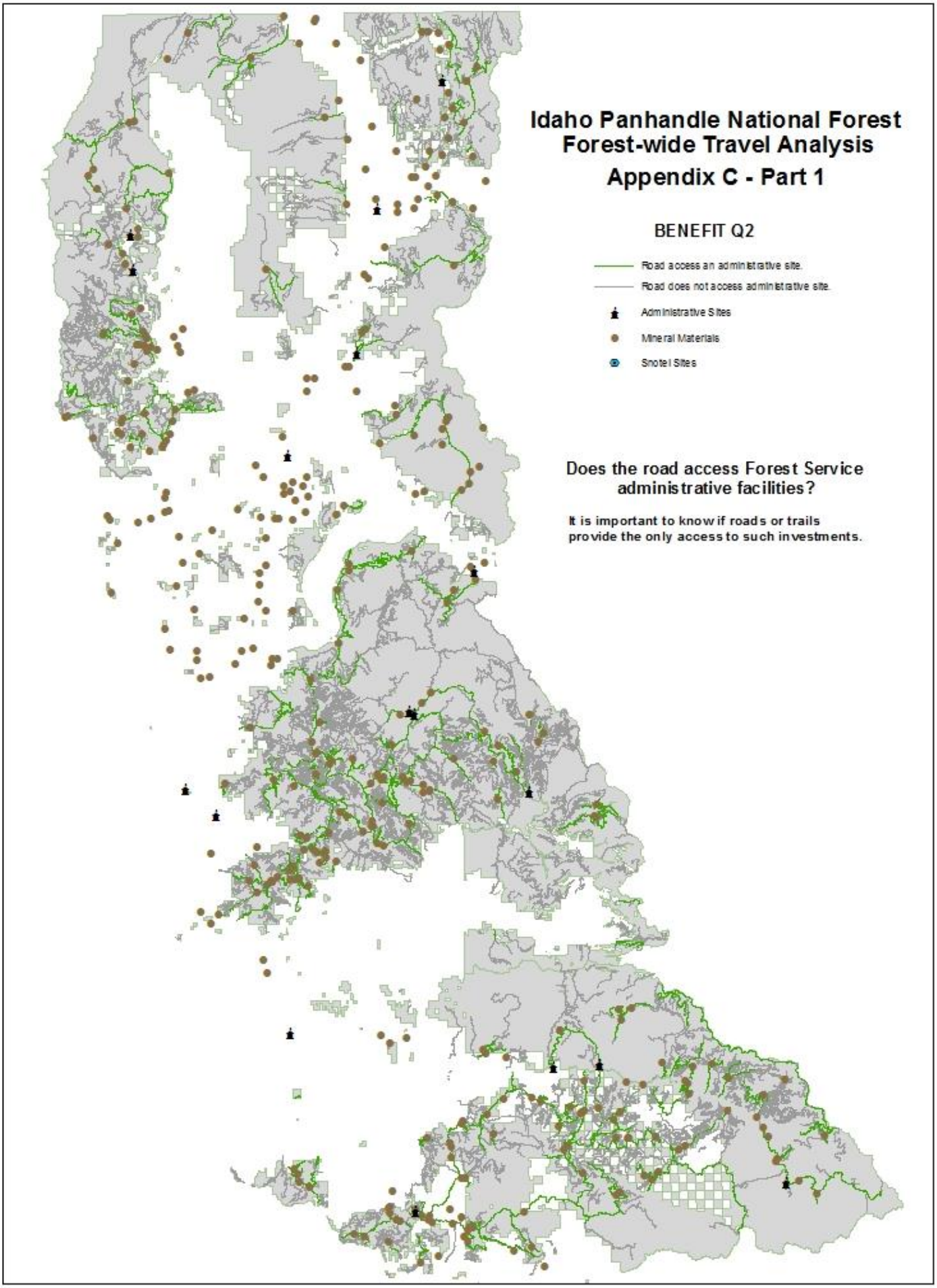
BENEFIT Q1

Nat'l Forest System Roads accessing non-Forest Service Lands

Other Nat'l Forest System Roads (NFSRs)

Does the road provide access to private or non-Forest Service lands?

The Forest Service cannot deny or eliminate legal access to private lands completely surrounded by National Forest System lands. Each inholding must have reasonable access by at least one route.


Idaho Panhandle National Forest
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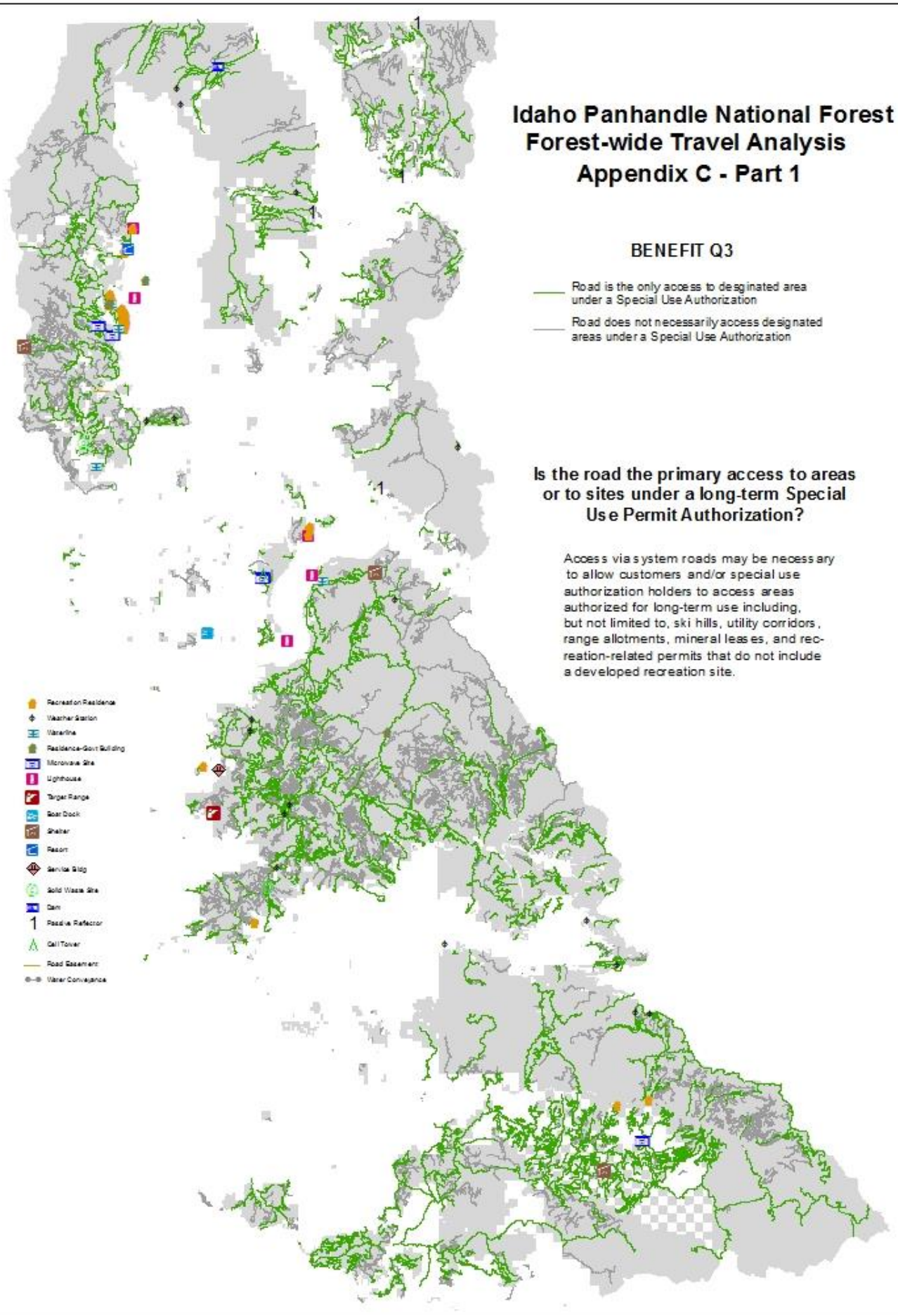
Appendix C - Part 1
BENEFIT Q2
Road access an administrative site.
Road does not access administrative site.
Administrative Sites
Mineral Materials
Snotel Sites
Does the road access Forest Service administrative facilities?
It is important to know if roads or trails provide the only access to such investments.


Idaho Panhandle National Forest
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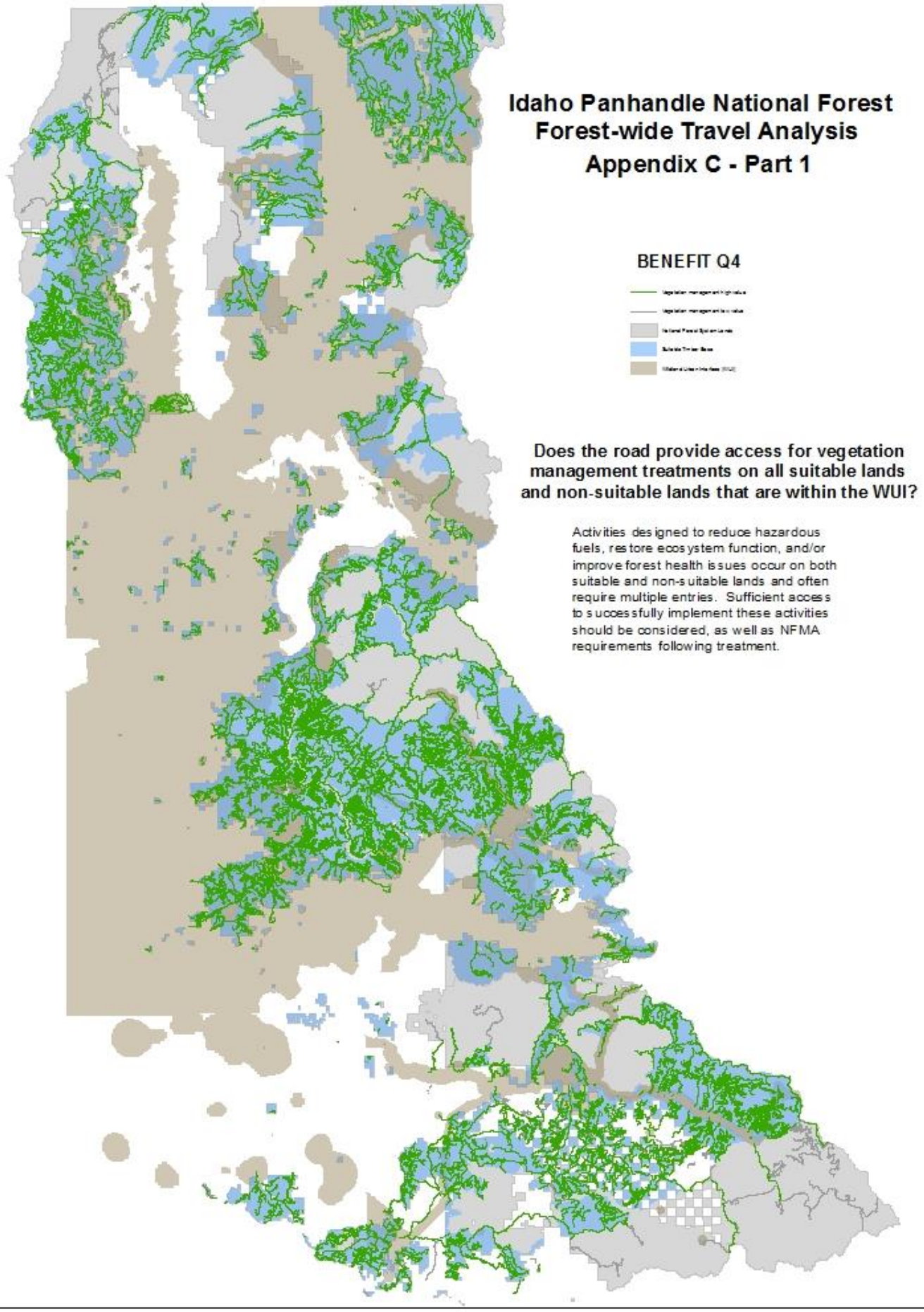
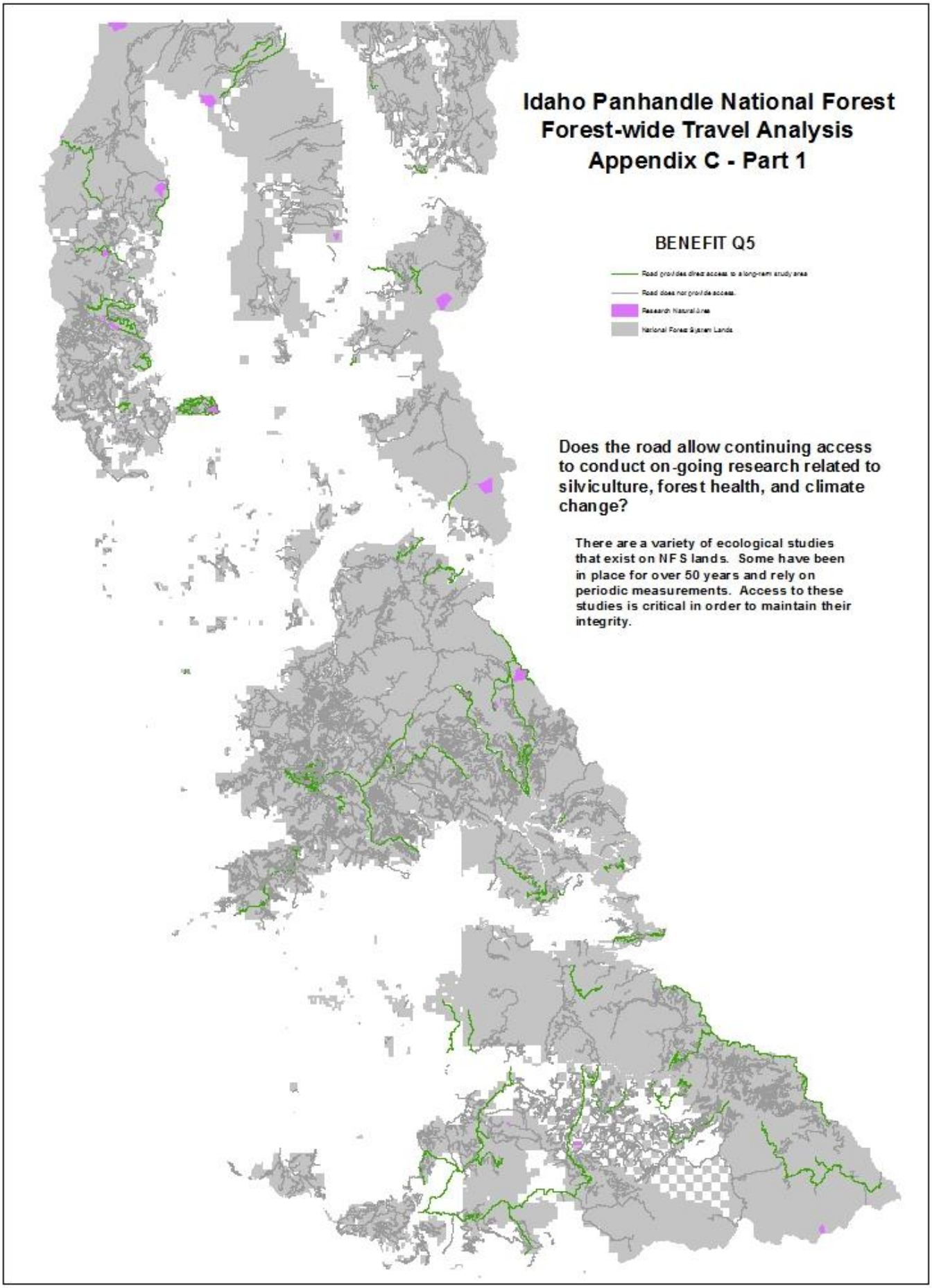
Appendix C - Part 1
BENEFIT Q3
Road is the only access to desginated area under a Special Use Authorization
Road does not necessarily access designated areas under a Special Use Authorization
Is the road the primary access to areas or to sites under a long-term Special Use Permit Authorization?
Access via system roads may be necessary to allow customers and/or special use authorization holders to access areas authorized for long-term use including, but not limited to, ski hills, utility corridors, range allotments, mineral leases, and recreation-related permits that do not include a developed recreation site.
Recreation Residence
Weather Station
Marina
Residence-Govt Building
Microwave Site
Lighthouse
Target Range
Boat Dock
Shelter
Resort
Service Bldg
Solid Waste Site
Dam
Passive Reflector
Cell Tower
Road Easement
Water Conveyance

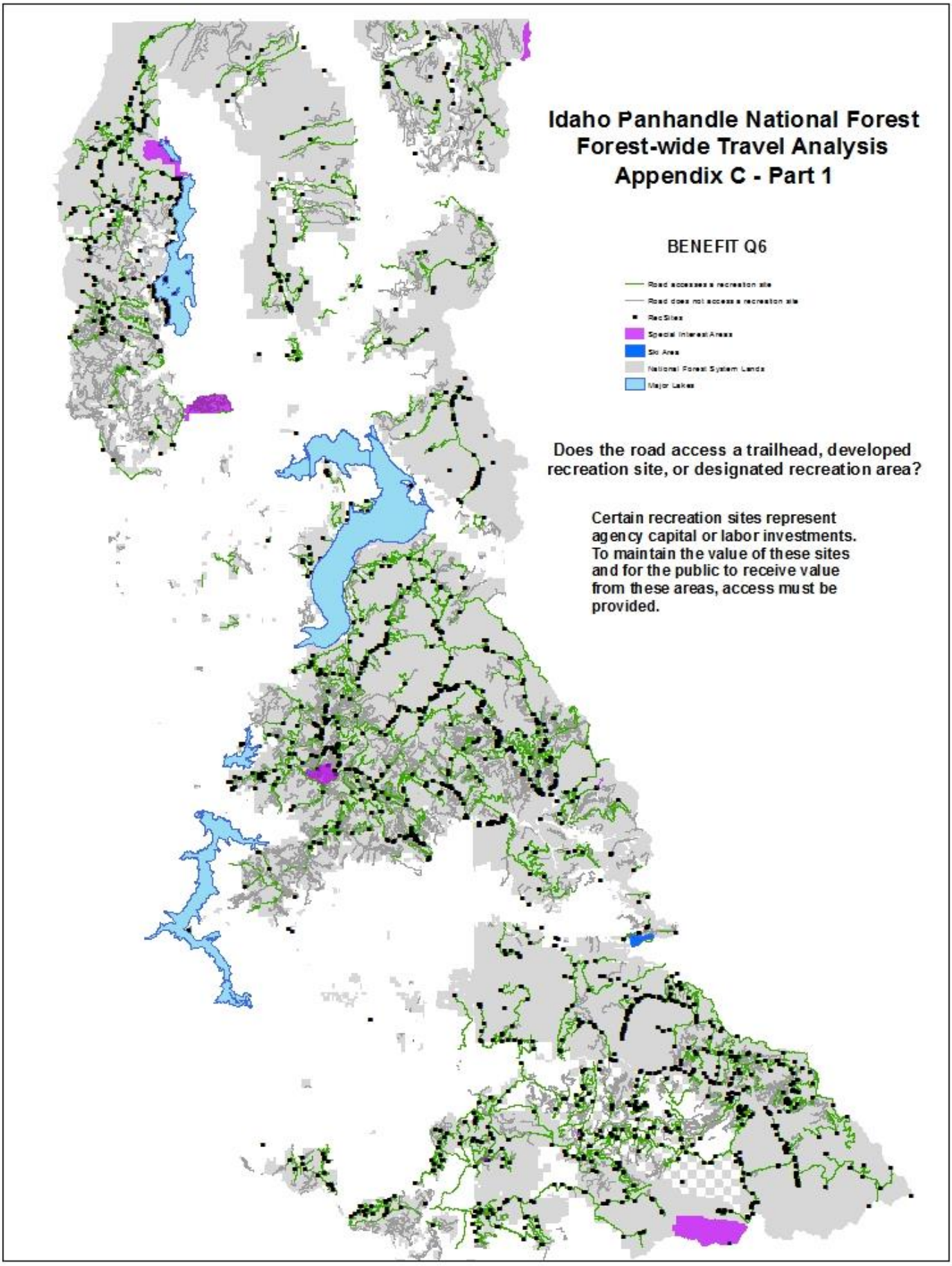
Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix C - Part 1



Does the road provide access for vegetation management treatments on all suitable lands and non-suitable lands that are within the WUI?

Activities designed to reduce hazardous fuels, restore ecosystem function, and/or improve forest health issues occur on both suitable and non-suitable lands and often require multiple entries. Sufficient access to successfully implement these activities should be considered, as well as NFMA requirements following treatment.


Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix C - Part 1
BENEFIT Q5
Road provides direct access to a long-term study area
Road does not provide access.
Research Natural Area
National Forest System Lands
Does the road allow continuing access to conduct on-going research related to silviculture, forest health, and climate change?
There are a variety of ecological studies that exist on NFS lands. Some have been in place for over 50 years and rely on periodic measurements. Access to these studies is critical in order to maintain their integrity.


Idaho Panhandle National Forest
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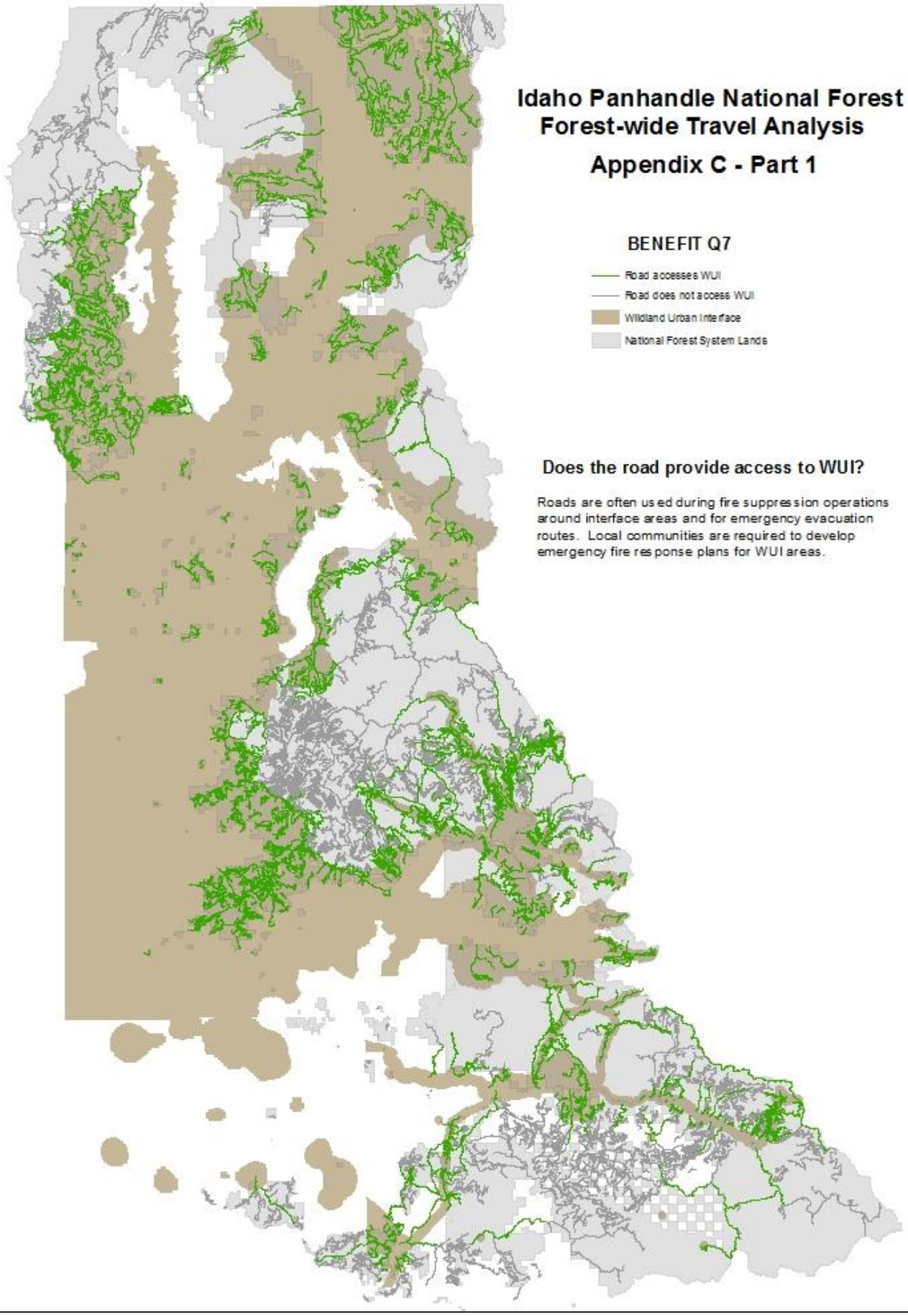
BENEFIT Q6
Road accesses a recreation site
Road does not access a recreation site
RecSites
Special InterestAreas
Ski Area
National Forest System Lands
Major Lakes
Does the road access a trailhead, developed recreation site, or designated recreation area?
Certain recreation sites represent agency capital or labor investments. To maintain the value of these sites and for the public to receive value from these areas, access must be provided.

Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix C - Part 1

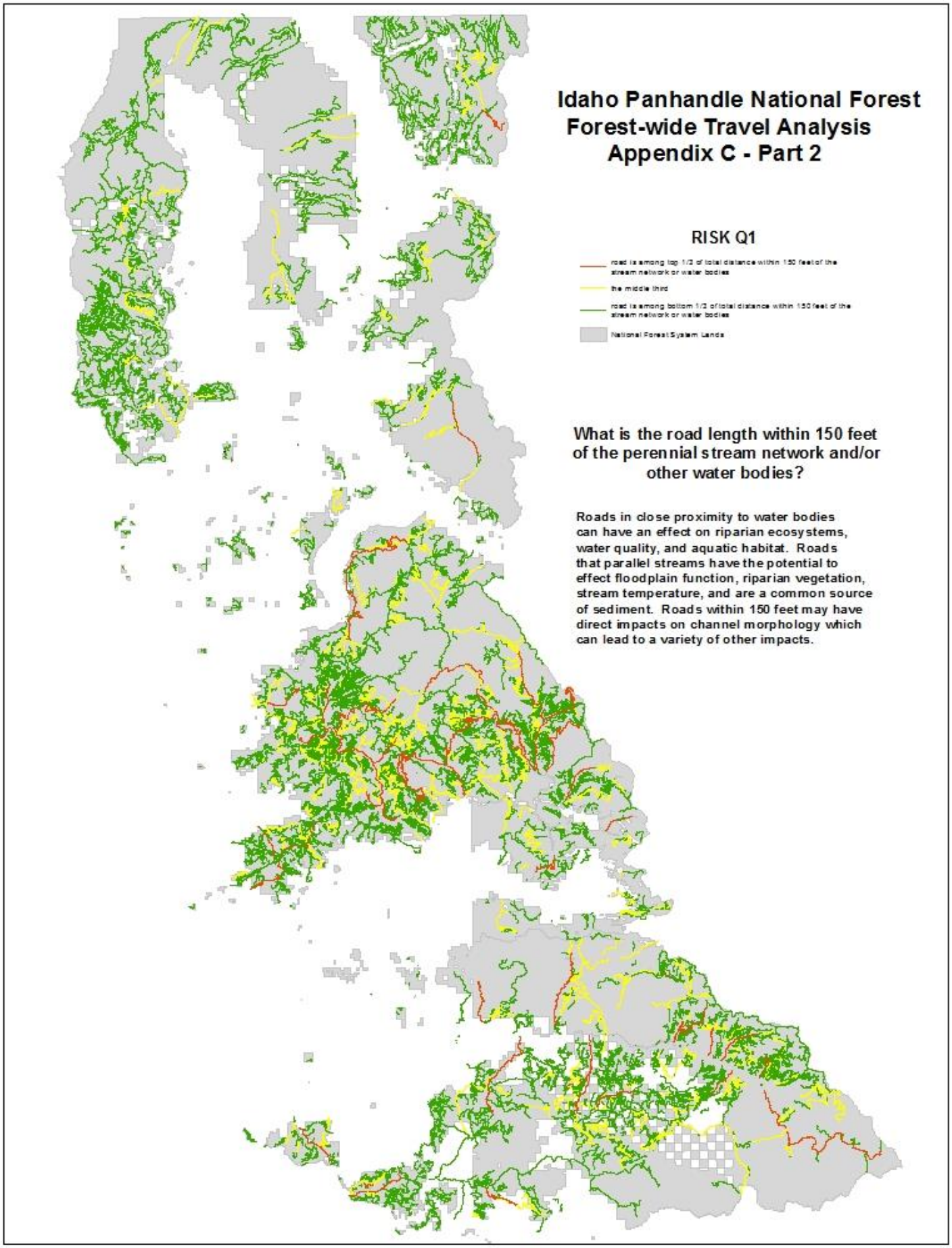


Does the road provide access to WUI?

Roads are often used during fire suppression operations around interface areas and for emergency evacuation routes. Local communities are required to develop emergency fire response plans for WUI areas.

Appendix C

Part 2: Risks


Idaho Panhandle National Forest
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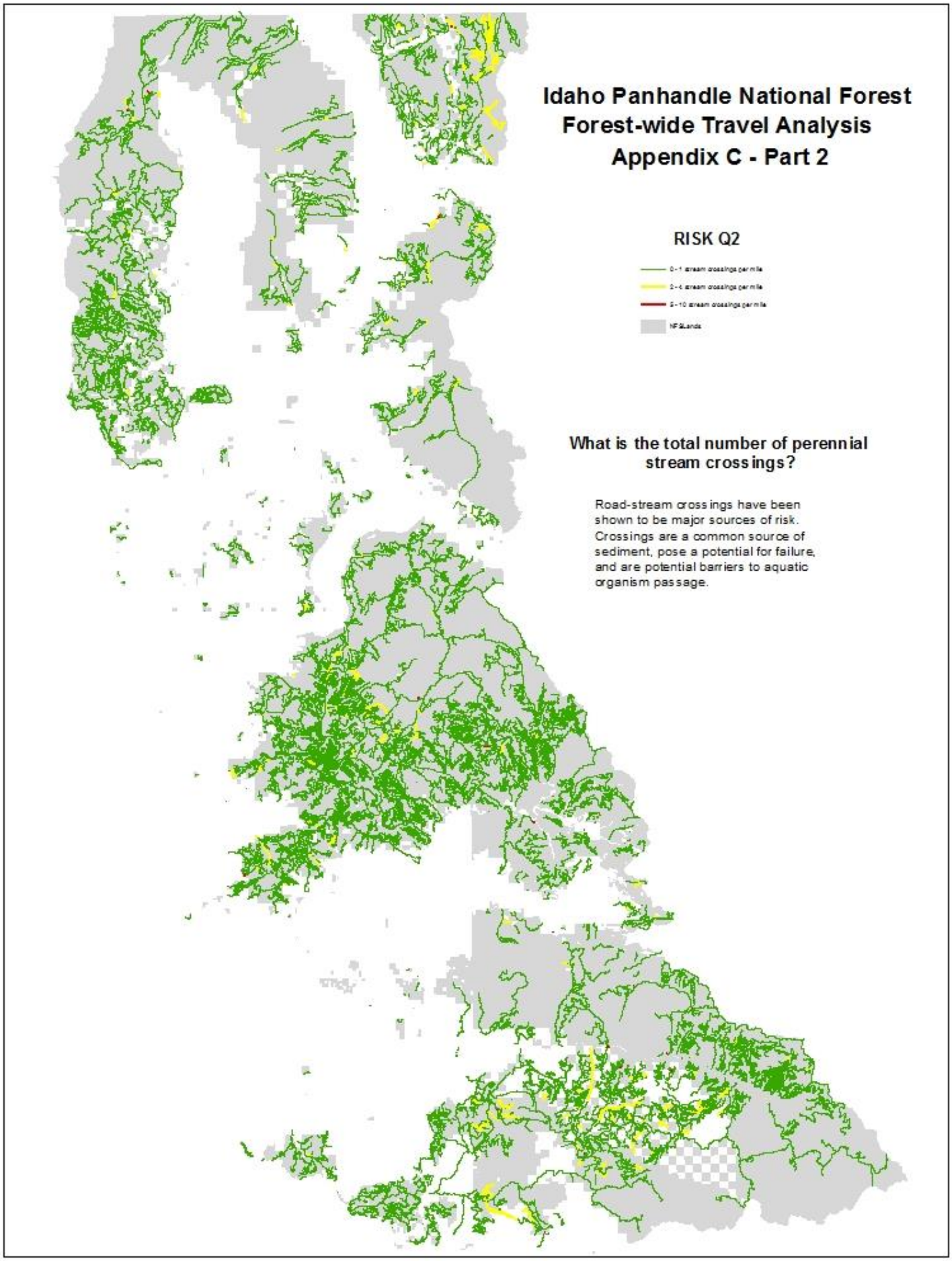
Appendix C - Part 2
RISK Q1
road is among top 1/3 of total distance within 150 feet of the stream network or water bodies
the middle third
road is among bottom 1/3 of total distance within 150 feet of the stream network or water bodies
National Forest System Lands
What is the road length within 150 feet of the perennial stream network and/or other water bodies?
Roads in close proximity to water bodies can have an effect on riparian ecosystems, water quality, and aquatic habitat. Roads that parallel streams have the potential to effect floodplain function, riparian vegetation, stream temperature, and are a common source of sediment. Roads within 150 feet may have direct impacts on channel morphology which can lead to a variety of other impacts.


Idaho Panhandle National Forest
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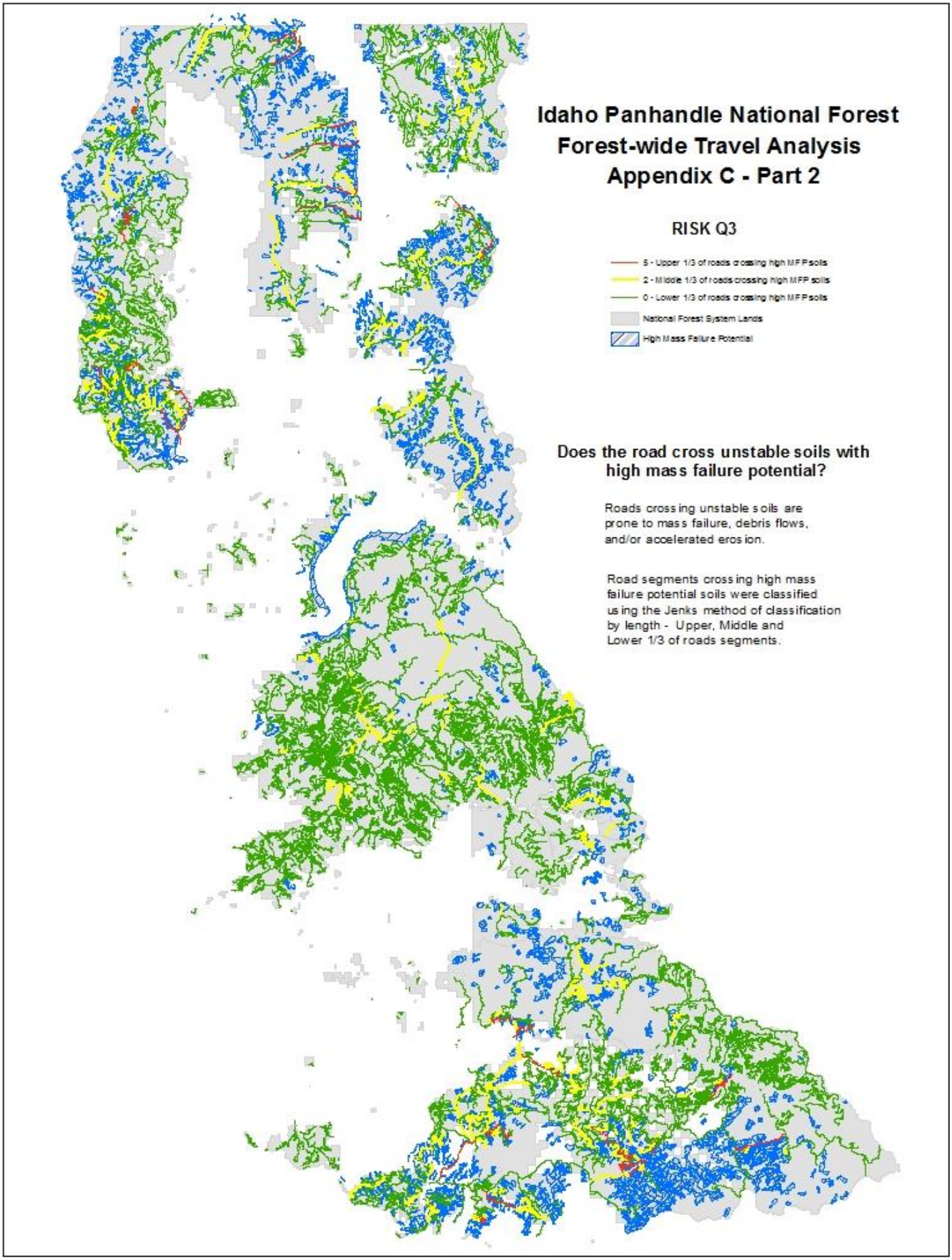
RISK Q2
0 - 1 stream crossings per mile
2 - 4 stream crossings per mile
5 - 10 stream crossings per mile
NFSLands
What is the total number of perennial stream crossings?
Road-stream crossings have been shown to be major sources of risk. Crossings are a common source of sediment, pose a potential for failure, and are potential barriers to aquatic organism passage.


Idaho Panhandle National Forest
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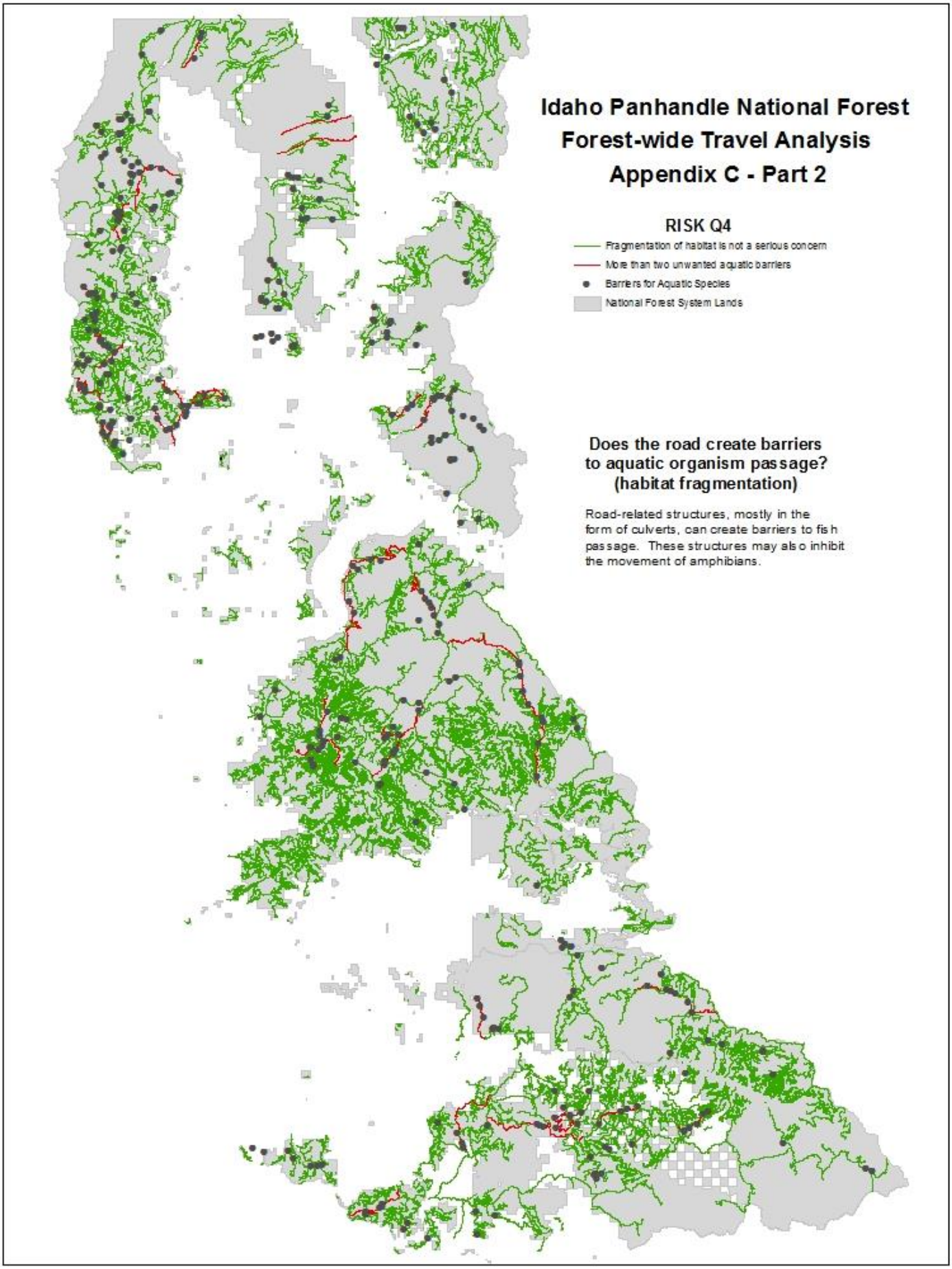
RISK Q3
5 - Upper 1/3 of roads crossing high MFP soils
2 - Middle 1/3 of roads crossing high MFP soils
0 - Lower 1/3 of roads crossing high MFP soils
National Forest System Lands
High Mass Failure Potential
Does the road cross unstable soils with high mass failure potential?
Roads crossing unstable soils are prone to mass failure, debris flows, and/or accelerated erosion.
Road segments crossing high mass failure potential soils were classified using the Jenks method of classification by length - Upper, Middle and Lower 1/3 of roads segments.


Idaho Panhandle National Forest
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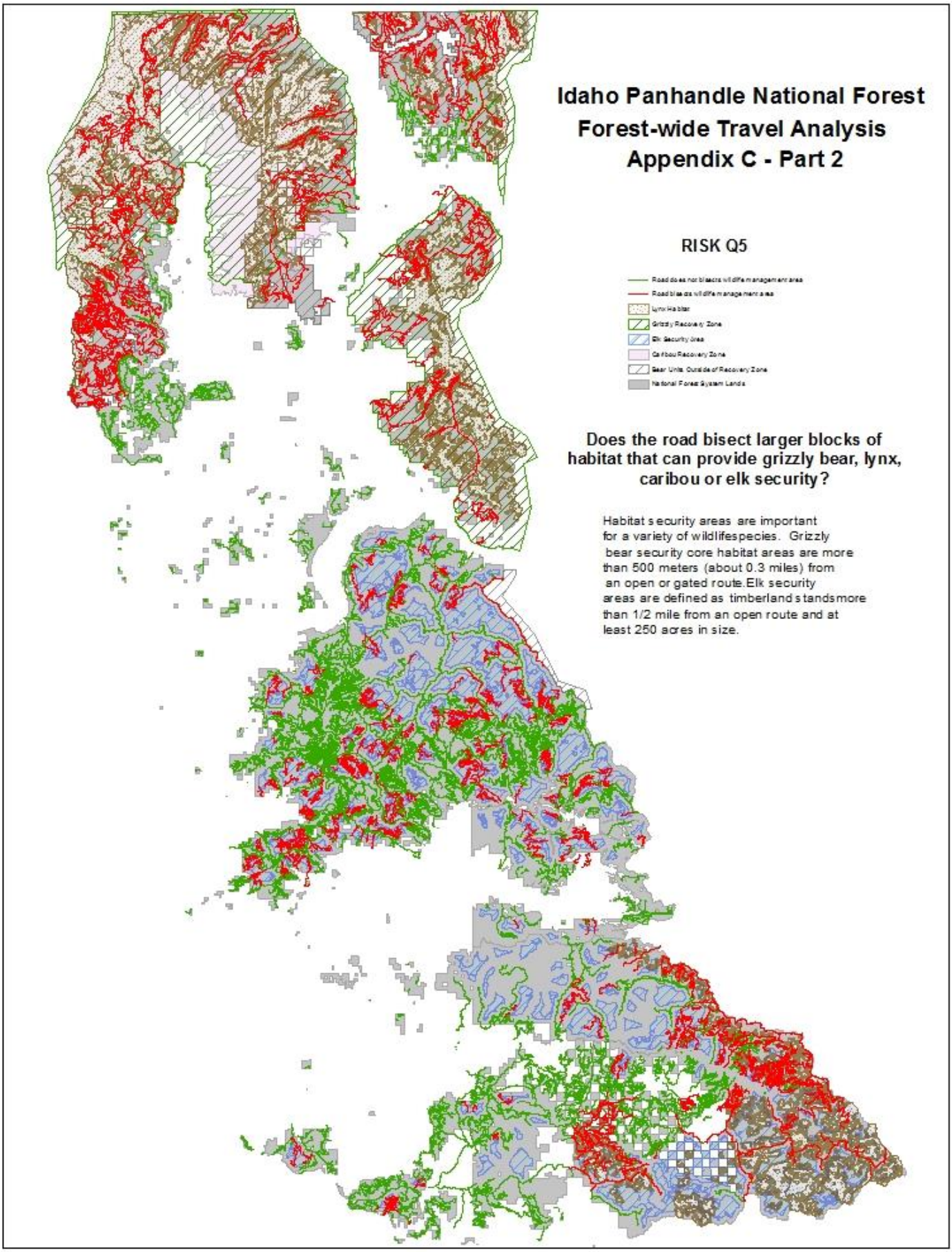
RISK Q4
Fragmentation of habitat is not a serious concern
More than two unwanted aquatic barriers
Barriers for Aquatic Species
National Forest System Lands
Does the road create barriers to aquatic organism passage? (habitat fragmentation)
Road-related structures, mostly in the form of culverts, can create barriers to fish passage. These structures may also inhibit the movement of amphibians.


Idaho Panhandle National Forest
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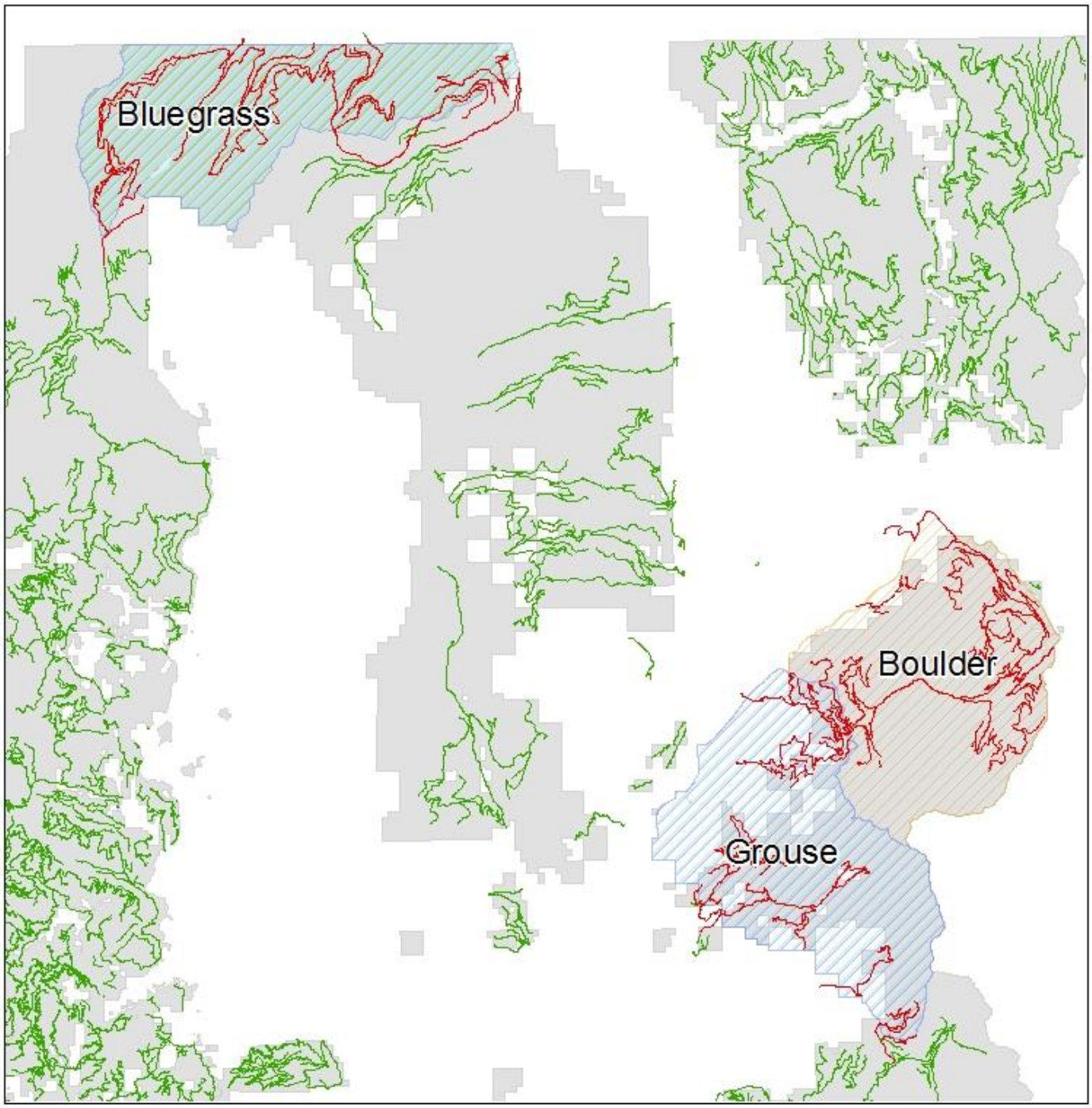
Appendix C - Part 2
RISK Q5
Road does not bisect wildlife management area
Road bisects wildlife management area
Lynx Habitat
Grizzly Recovery Zone
Elk Security Area
Caribou Recovery Zone
Bear Units Outside of Recovery Zone
National Forest System Lands
Does the road bisect larger blocks of habitat that can provide grizzly bear, lynx, caribou or elk security?
Habitat security areas are important for a variety of wildlife species. Grizzly bear security core habitat areas are more than 500 meters (about 0.3 miles) from an open or gated route. Elk security areas are defined as timberland stands more than 1/2 mile from an open route and at least 250 acres in size.



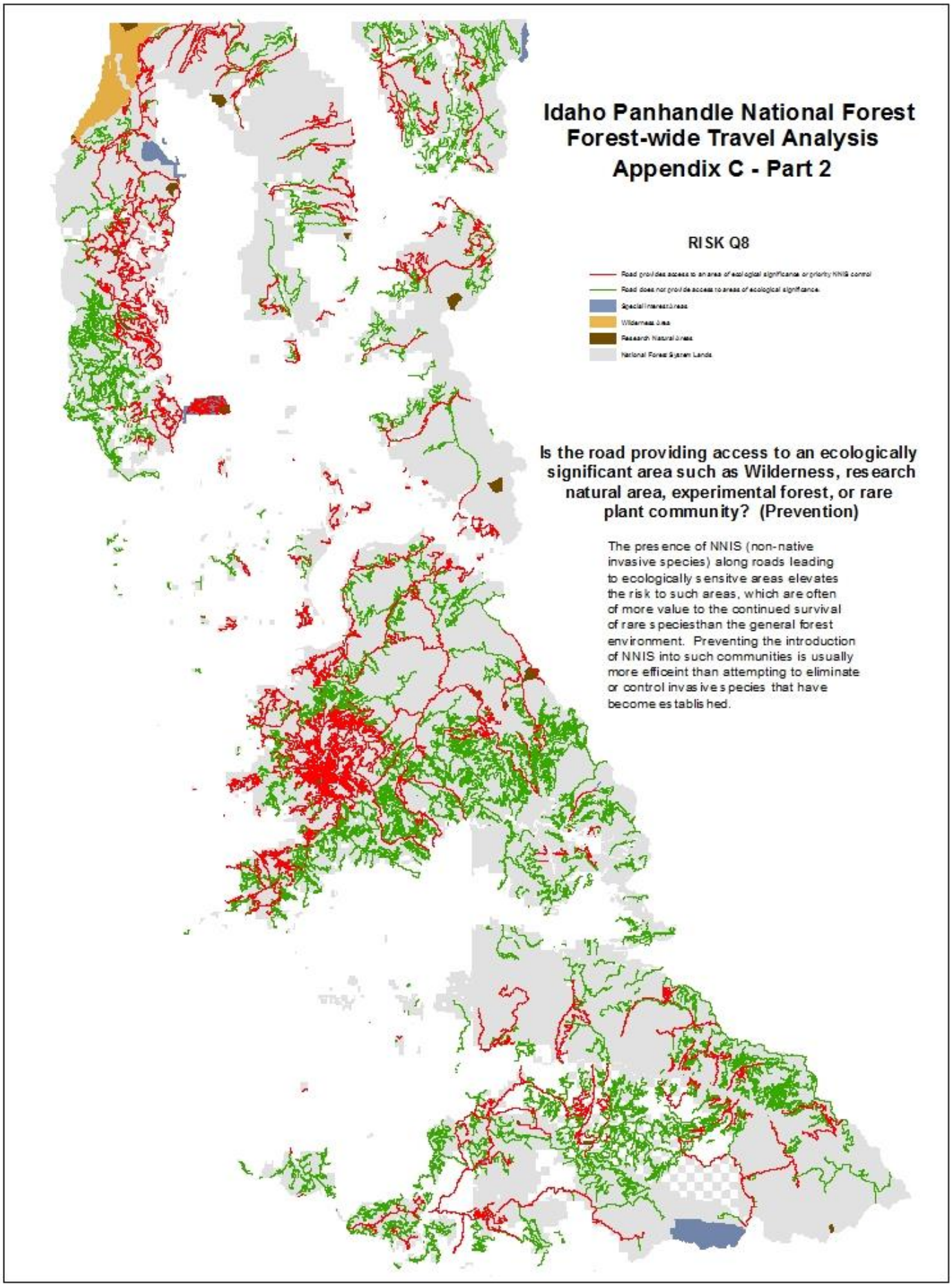
BMUs Exceeding Road Density
- Bluegrass
- Boulder
- Grouse

Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix C - Part 2

RISK Q6
- Roads exceed road density standards
- Roads do not exceed road density standards
- National Forest System Lands

Does road density in the area of evaluation exceed any obligatory standard/threshold?

Conservation management for some wildlife species relates to road density thresholds and many National Forest plans have open and/or total density direction or standards to mitigate for adverse impacts for roads.


Idaho Panhandle National Forest
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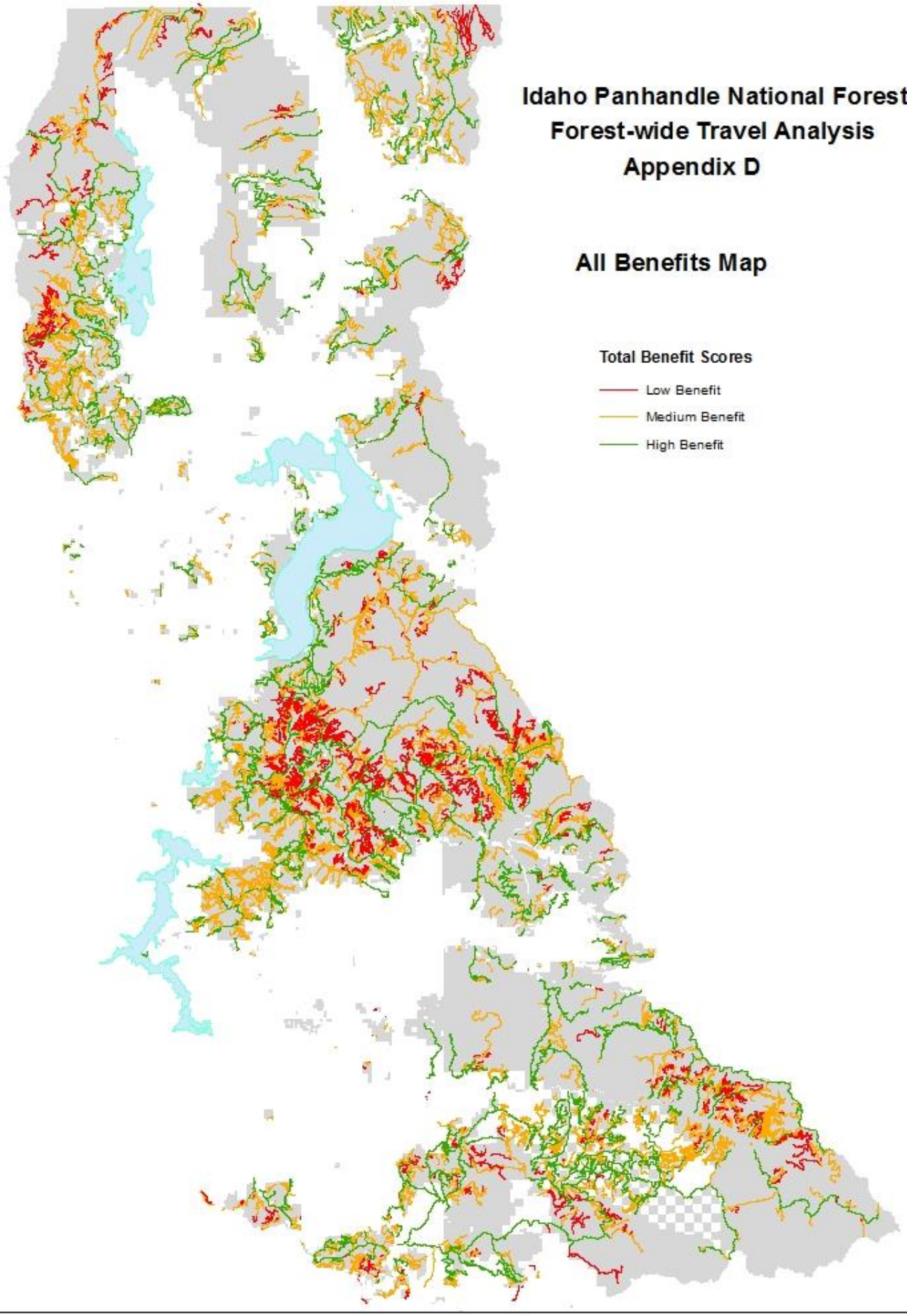
Appendix C - Part 2
RISK Q8
Road provides access to an area of ecological significance or priority NNIS control
Road does not provide access to areas of ecological significance.
Special Interest Areas
Wilderness Area
Research Natural Areas
National Forest System Lands
Is the road providing access to an ecologically significant area such as Wilderness, research natural area, experimental forest, or rare plant community? (Prevention)
The presence of NNIS (non-native invasive species) along roads leading to ecologically sensitve areas elevates the risk to such areas, which are often of more value to the continued survival of rare speciesthan the general forest environment. Preventing the introduction of NNIS into such communities is usually more efficeint than attempting to eliminate or control invasive species that have become established.

Appendix D

Summary Benefits and Risks

Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix D

All Benefits Map

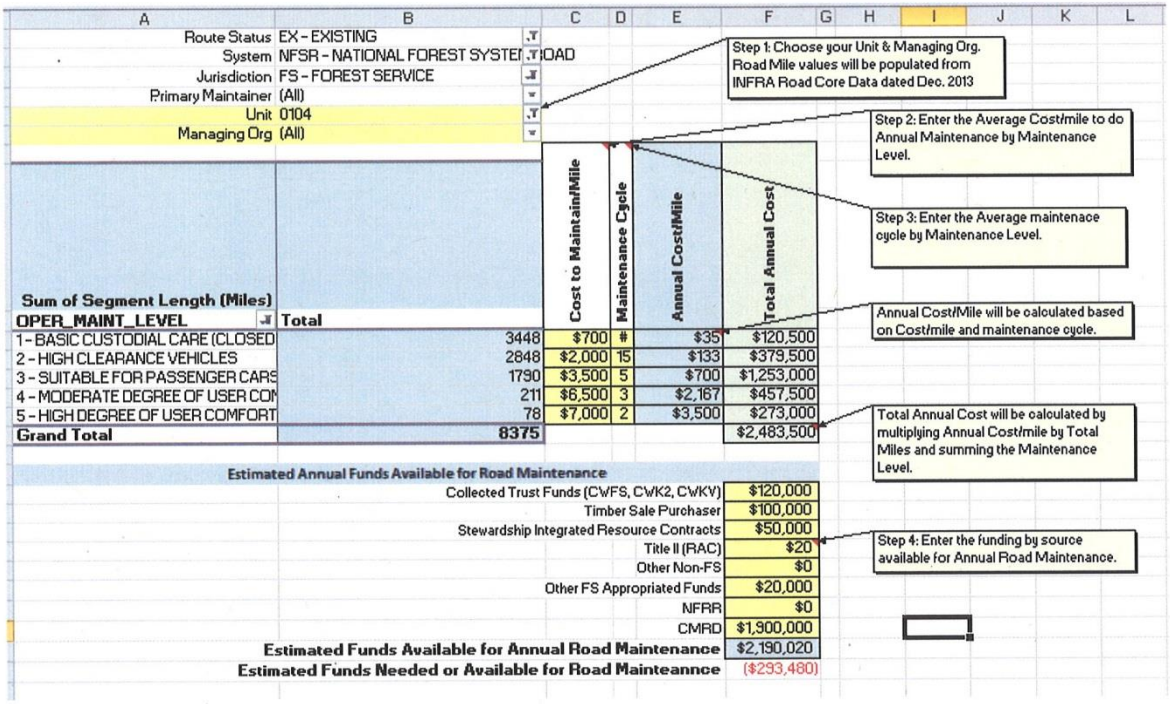


Appendix E

Financial Analysis

Appendix E – Financial Analysis

R-1 Road Maintenance Cost Estimator -



Route Status	EX - EXISTING
System	NFSR - NATIONAL FOREST SYSTEM ROAD
Jurisdiction	FS - FOREST SERVICE
Primary Maintainer	(All)
Unit	0104
Managing Org	(All)

Sum of Segment Length (Miles)		Cost to Maintain/Mile		Maintenance Cycle	Annual Cost/Mile	Total Annual Cost
OPER_MAINT_LEVEL	Total					
1 - BASIC CUSTODIAL CARE (CLOSED	3448	$700	#		$35	$120,500
2 - HIGH CLEARANCE VEHICLES	2848	$2,000	15		$133	$379,500
3 - SUITABLE FOR PASSENGER CARS	1790	$3,500	5		$700	$1,253,000
4 - MODERATE DEGREE OF USER COI	211	$6,500	3		$2,167	$457,500
5 - HIGH DEGREE OF USER COMFORT	78	$7,000	2		$3,500	$273,000
Grand Total	**8375**					$2,483,500

Estimated Annual Funds Available for Road Maintenance	
Collected Trust Funds (CWFS, CWK2, CWKV)	$120,000
Timber Sale Purchaser	$100,000
Stewardship Integrated Resource Contracts	$50,000
Title II (RAC)	$20
Other Non-FS	$0
Other FS Appropriated Funds	$20,000
NFRR	$0
CMRD	$1,900,000
Estimated Funds Available for Annual Road Maintenance	$2,190,020
Estimated Funds Needed or Available for Road Mainteannce	($293,480)

Step 1: Choose your Unit & Managing Org. Road Mile values will be populated from INFRA Road Core Data dated Dec. 2013

Step 2: Enter the Average Cost/mile to do Annual Maintenance by Maintenance Level.

Step 3: Enter the Average maintenace cycle by Maintenance Level.

Annual Cost/Mile will be calculated based on Cost/mile and maintenance cycle.

Total Annual Cost will be calculated by multiplying Annual Cost/mile by Total Miles and summing the Maintenance Level.

Step 4: Enter the funding by source available for Annual Road Maintenance.

Average Annual Regional (R1) Cost for Road Maintenance by Maintenance Level

by Brenda Christensen (3/2011)

Assumptions:

1. Include only annual maintenance activities. Deferred maintenance needed to bring the road up to standard is not included.
2. Drainage is the main consideration for maintenance.
3. As the maintenance level increases attention to user comfort and safety increases accordingly.
4. Forest Service Policy set forth in manuals and handbooks is followed.
5. Guidelines for Road maintenance Levels by SDTDC 2011 used as reference.
6. Planning and inspection for maintenance is not included.
7. Major structures such as Bridge and Retaining wall maintenance is not included.
8. Cost are based on the February 2011 Northern Region Cost Estimating Guide for Road Construction.
9. Mobilization is included. Equipment will be clean and weed free before it arrives on National Forest System lands.
10. Maintenance cycle was determined from a *Regional* average of roads receiving maintance reported on the Road Accomplishment Reports for FY2008 to 2010. Maitanenance cycle for the type of work was also factored in.
11. Average length of road by ML is a *Regional* average.
12. Maintenance activities by maintenance level included in the cost are as follows.

Description of Work	**ML 1: Road is in storage and is in a stable condition.** No potential exists for resource damage when vehicular traffic is eliminated. Maintain physical closure device (berm) and drainage and signs. Road Maintenance is done on a **10 year cycle**. Average length is 1 miles.	**ML 2: High clearance vehicle use.** Passenger car traffic, user comfort, and user convenience are not considered; low traffic volume and low speed; drainage structures are dips; surface smoothness is not considered; and very few signs. Outsloped single lane road without a ditch. Brush to maintain access and drainage. Spot blade to maintain drainage. Clean/Repair structures (cattleguard, gate) and signs. Road Maintenance is done on a **5 year cycle**. Average length	**ML 3: Passenger car use.** User comfort and convenience are not considered; single lane with turnouts; low speeds with low to moderate traffic volume; drainage structures include ditch, culverts and dips; and some surface roughness is acceptable. Surface blade to maintain template and drainage. Surface is compact, crowned or sloped to drain without segregation of surface materials; no ruts or rills; suitable material is recovered and incorported; unsuitable material is removed. Ditches and culverts function efficiently. Clean/Repair structures (cattleguard, gate) and signs. Spot Surface with government furnished aggregate. Road Maintenance is done on a **3 year cycle**. Average length	**ML 4: Passenger car use.** Provide moderate degree of user comfort and convenience; moderate speeds and traffic volume; drainage structures are culverts; and double lane aggregate surface with dust abatement with a ditch. Brush to maintain sight distance. Surface blade free of washboard, potholes, or other irregularities. Surface is smooth, compact, crowned or sloped to drain without segregation of surface materials; no ruts or rills; suitable material is recovered and incorported; unsuitable material is removed. Surface remains stable and dust does not become air borne for normal open season (July to October). Shoulders are shaped to provide a smooth transition to traveled way and drain efficiently. Ditches and culverts function efficiently. Clean/Repair structures (cattleguard, gate) and signs. Spot Surface with	**ML 5: Passenger car use.** Provide high degree of user comfort and convenience; highest traffic volume and speeds; drainage structures are culverts; and double lane paved surface. Brush to maintain access and drainage. Surface Repair include pothole patching, crack sealing, chip sealing and removal of unsuitable material. Shoulders are shaped to provide a smooth transition to traveled way and drain efficiently. Ditches and culverts function efficiently. Clean/Repair structures (cattleguard, gate) and signs. Paint pavement markings. Road Maintenance is done on a **2 year cycle**. Average length is 2 miles.
Blading	–	Spot: 500 ft/r/pat, 4 r/pat/r/mile/5 years	4 p.s/r/r/r with motor grader (2 p.s/r/r/r to clean ditch, 2 p.s/r/r/r to level road & final/shape)/ 3 years	8 p.s/r/r/r (2 p.s/r/r/r to clean ditch, 3 p.s/r/r/r to level the road, 3 p.s/r/r/r for final/shaping)/ 2 years	Shoulder: 4 p.s/r/r/r/s (2 p.s/r/r/r/s per side); Broom surface of road (4 p.s/r/r/r)/ 2 years
Brushing	–	medium/ 5 years	medium/ 3 years	medium/ 3 years	medium/ 3 year
Clean/Repair culverts	–	) dips @ 264 ft/r/p/acing/ 5 yea	20 culverts/r @ 264 ft/r/p/acing/ 3 years	20 culverts/r @ 264 ft/r/p/acing/ 2 years	20 culverts/r @ 264 ft/r/p/acing/ 2 years
Clean/Repair Structure	1 per road/ 10 years	1 per road/ 7 years	1 per road/ 7 years	1 per road/ 7 years	1 per road/ 7 years

A	B	C	D	E	F
Blading	–	Spot: 500 ft/spot, 4 spots/mile of 5 years	4 passes with motor grader (2 passes to clean ditch, 2 passes to level road & final shape) of 3 years	8 passes (2 passes to clean ditch, 3 passes to level the road, 3 passes for final shaping) of 2 years	Shoulder: 4 passes (2 passes per side); Broom surface of road (4 passes) of 2 years
Brushing	–	medium/5 years	medium/3 years	medium/3 years	medium/3 year
Clean/Repair culverts	–	0 dips @ 264 ft/spacing/5 years	20 culverts @ 264 ft/spacing/3 years	20 culverts @ 264 ft/spacing/2 years	20 culverts @ 264 ft/spacing/2 years
Clean/Repair Structure Include	1 per road/10 years	1 per road/7 years	1 per road/7 years	1 per road/7 years	1 per road/7 years
Dust Abatement	–	–	–	5280 gal/mile (14080 sq yd @ 0.375 gal/sq yd)/4 years	
Paint pavement	–	–			Edge Liner (10560 ft/mile)/4 years
Repair Asphalt - patching and chip seal	–				Patching 0.5%/mile/1 year Chip Seal/12 years
Sign Maintenance	Replace 2 per road/7 years	Replace 3 per road/7 years	Replace 6 per road/7 years	Replace 8 per road/7 years	Replace 8 per road/7 years
Spot Surfacing	–		20 cy/100 ft/spot 5 spots/mile of 6 years	20 cy/100 ft/spot 5 spots/mile of 4 years	
Cost to Maintain /Mile	$700	$2,000	$3,500	$6,500	$7,000
Miles	10	5	3	2	2
Annual Cost/Mile	$70	$400	$1,167	$3,250	$3,500

Why We Decommission Roads -

Economic Implications of Removing Forest Roads

The Forest Service has actively pursued reducing the total number of NFS roads through targeting unneeded roads for decommissioning or conversion to other uses. Federal regulation directs the agency to identify the road system needed for land management, that's environmentally responsible, and considers likely future funding. Adverse effects of roads on the natural environment are widely recognized. However, many individuals have cited economics as a motivation for decommissioning unneeded roads. This argument would hold more value if the economist could fully value the environment effects associated with a road in addition to the cost of keeping it or removing it.

Considering the global economics of a road system is typically beyond the ability of land managers. However, road managers are routinely faced with a straight forward financial decision. "What is the difference in cost between decommissioning a road or maintaining the road into the future?"

One of the simplest ways to approach this question is to determine the breakeven point between the present value of decommissioning and a uniform series of annual road maintenance costs. In other words, how long can you maintain a mile of road for the same price of decommissioning it? Using average costs and a discount rate of 4%, Exercise 1 shows that it is cheaper to store a road in Maintenance Level 1 forever than it is to decommission the road. This is done by comparing the present value of the decommissioning with the present value of a perpetual annual series of road maintenance. (See the attached calculations.)

If you're not going to consider the time value of money, the breakeven point would be only thirty years. (If you don't consider a discount rate for the time value of money, loan me $100 today and I will gladly repay you the $100 thirty years from now.)

What's the point? It takes a very long time to recover the investment in road decommissioning with reduced road maintenance spending. The sample calculation indicates that you will never recover to cost of decommissioning. If it turns out that you need access over that corridor again in the future, the economic difference is even greater.

Present Value of a perpetual series: $P_{mtce} = a/i = \$200/mi / 0.04 = \$5000/mi$

Present Value of decommissioning: $P_{decom} = \$6000/mi$ Note: $P_{mtce} < P_{decom}$

The sample calculations show that if you need to construct new road in 25 years as an option to storing the road and reconditioning the road when needed, it costs about three times as much. The shorter the time interval between entries, the greater the difference in cost. The longer the time between entries, the closer the options become. However, the present cost of decommissioning plus new construction will always be greater than the present cost of the uniform series of annual road maintenance plus the road reconditioning. This occurs because as the time interval increases, the present cost of future new construction and the present cost of future road reconditioning approach zero. The present cost of road decommissioning will always be greater than the present value of a perpetual uniform series for road maintenance. (See calculations – Case 3)

Decommissioning roads can affect the value of remaining timber stands. A fundamental principle of harvest area planning is to amortize the road cost over multiple entries. Decommissioning roads when there are future access needs results in greater road cost for those remaining timber stands. This reduces the value of the remaining commercial timber and limits forest restoration options due to increased transportation costs.

Decommissioning unauthorized (or non-system) roads represents a significant investment, but does not increase available funding for road maintenance. Decommissioning roads in Maintenance Level 1 (long-term storage) or Maintenance Level 2 (managed for high clearance vehicles) also does not increase road maintenance funding. Removing these roads from the system simply means there will be fewer miles of road receiving almost no maintenance.

The real benefits from road decommissioning are ecological, not financial.

What do we know for sure?

- All roads impact the natural environment. Some are much worse than others.
- You can keep forest roads for a long time at a low standard while preserving your access options. This is often much cheaper than decommissioning.
- Once you decommission a road, it's difficult to reestablish that access.
- Decommissioning a road that might be used for future timber access affects the value of those remaining stands. This cost is rarely accounted for in decisions to decommission roads.
- Fire behavior is becoming more extreme. We can predict the number of ignitions, but not the locations. Road access is handy for fire response. Loses due to limited fire access are not part of the breakeven analysis.

- Managers are not always very good at identifying ongoing road access needs. Few forests have a reliable 5-Year Vegetation Management Plan. No one has a thirty or forty year plan. It's not uncommon to see road built on the same location multiple times in the same decade.
- Forest restoration projects rarely generate enough value to pay for road development.

Suggestions:

- One of the primary goals of road decommissioning is for watershed restoration. Preliminary research is indicating that 90% of road related sediment is coming from 5% of the roads. Focus on finding those problem locations and spend our limited funding on mitigating the problems. (BMPs, Reconstruction, Relocation)
- Unneeded roads that fall in that problem 5% should be targeted for decommissioning. It's worth the investment.
- Spend the majority of your available road funds keeping the drainage working on the existing road system. Most roads should be as self-maintaining as possible.
- Provide a high level of maintenance for the handful of most important recreation roads.
- Local roads should only be reconditioned to highway vehicle standards when needed and funded by forest restoration projects. Return them to storage when you are finished.
- Chasing road decommissioning target puts the program focus on the easiest road miles, not the 5% causing the greatest impact to water quality.

Road Storage Vs. Decommissioning

Sample Calculations

Assume: Average Cost to Decommission in R1 = $6,000 per mile

Average Cost of New Construction = $50,000 per mile

Average Cost to Recondition a Stored Road = $10,000 mile

Average Annual Maintenance Cost to Store Roads (ML 1) = $200 per mile

Annual Discount Rate for Time Value = 4%

Case 1 – Decommission vs. Maintain Forever

Present Value of road decommissioning - $6000 / mile

Present value of a perpetual annual series maintenance - P = a/i = $200/mi / 0.04 = $5000 / mile

Note: $P_{mtce} < P_{decom}$ You can store the road forever cheaper than decommissioning.

Case 2 – Access Is Needed in 25 Years

Option 1 – Decommission the road and build a new road in 25 years.

$$P_{opt\,1} = \$6000/mi + \frac{\$50{,}000(1)}{(1+0.04)^{25}} = \$24{,}756/mile$$

Option 2 – Maintain the road for 25 years and recondition it when needed.

$$P_{opt\,2} = \frac{\$200/mi(1.04^{25}-1)}{0.04(1.04^{25})} + \frac{\$10{,}000/mi(1)}{1.04^{25}} = \$6{,}876/mile$$

Note: $P_{opt\,2} < P_{opt\,1}$ Storing the road is about one third of the cost.

Case 3 – Access is Needed a Long Time From Now

Option 1 – Decommission the road and build a new road in the future.

$$P_{opt\,1} = \$6000/mi + \frac{\$50{,}000/mi}{1.04^n}$$

Option 2 – Maintain the road in storage and recondition it when access is needed.

$$P_{opt\,2} = \frac{\$200/mi(1.04^n - 1)}{0.04(1.04^n)} + \frac{\$10{,}000/mi}{1.04^n}$$

If n=300 years, $P_{opt\,1}$ = \$6000/mile and P_{opt2} = \$5000/mile

As 'n' gets very large, the present value of new construction and reconditioning approaches zero.

Note: It will always be cheaper to store the road rather than rebuild a new one.

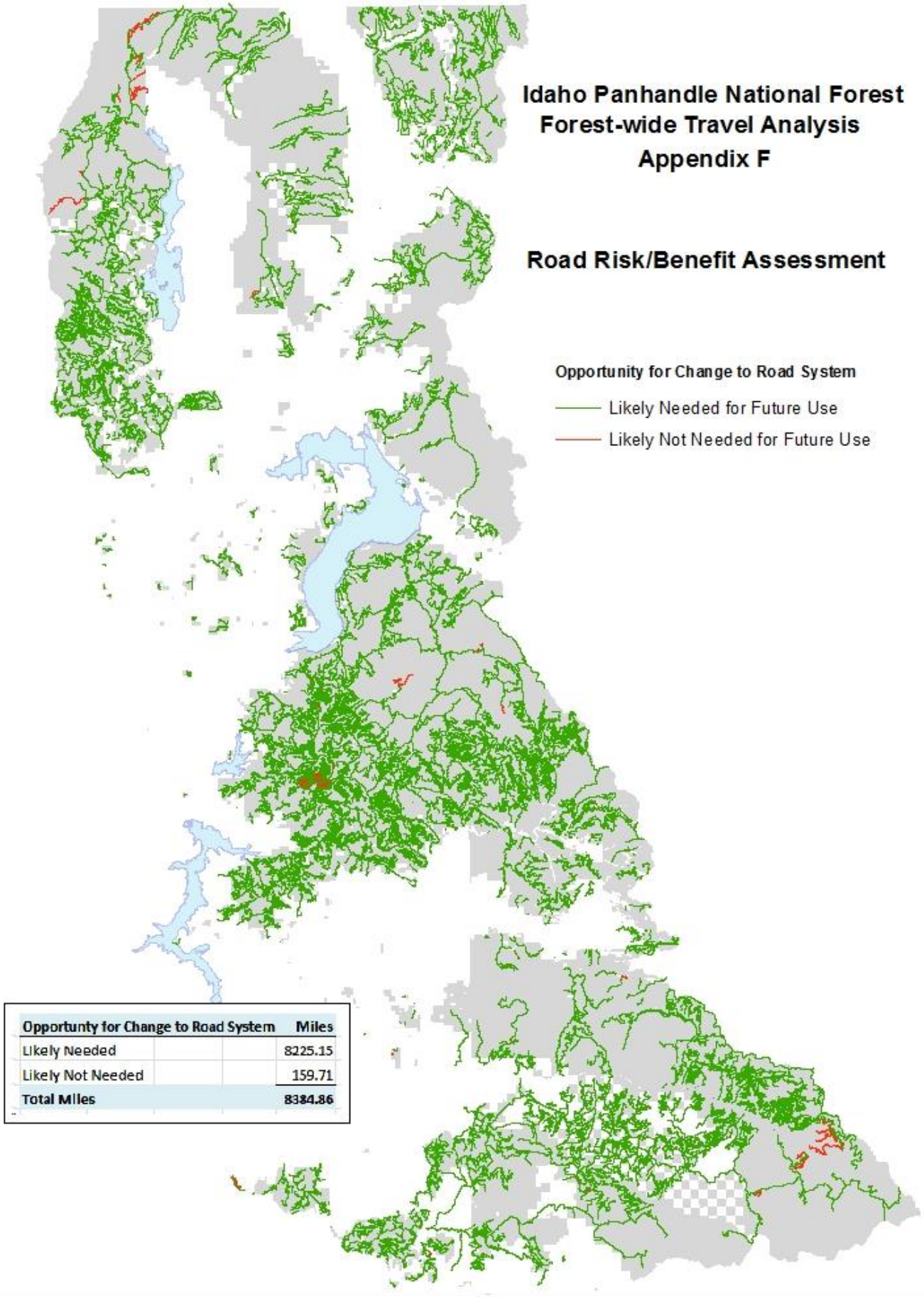
Appendix F

Opportunities for Change –

Opportunities from broad-scale assessment plus NEPA approved road decommissioning

Idaho Panhandle National Forest
Forest-wide Travel Analysis
Appendix F

Road Risk/Benefit Assessment

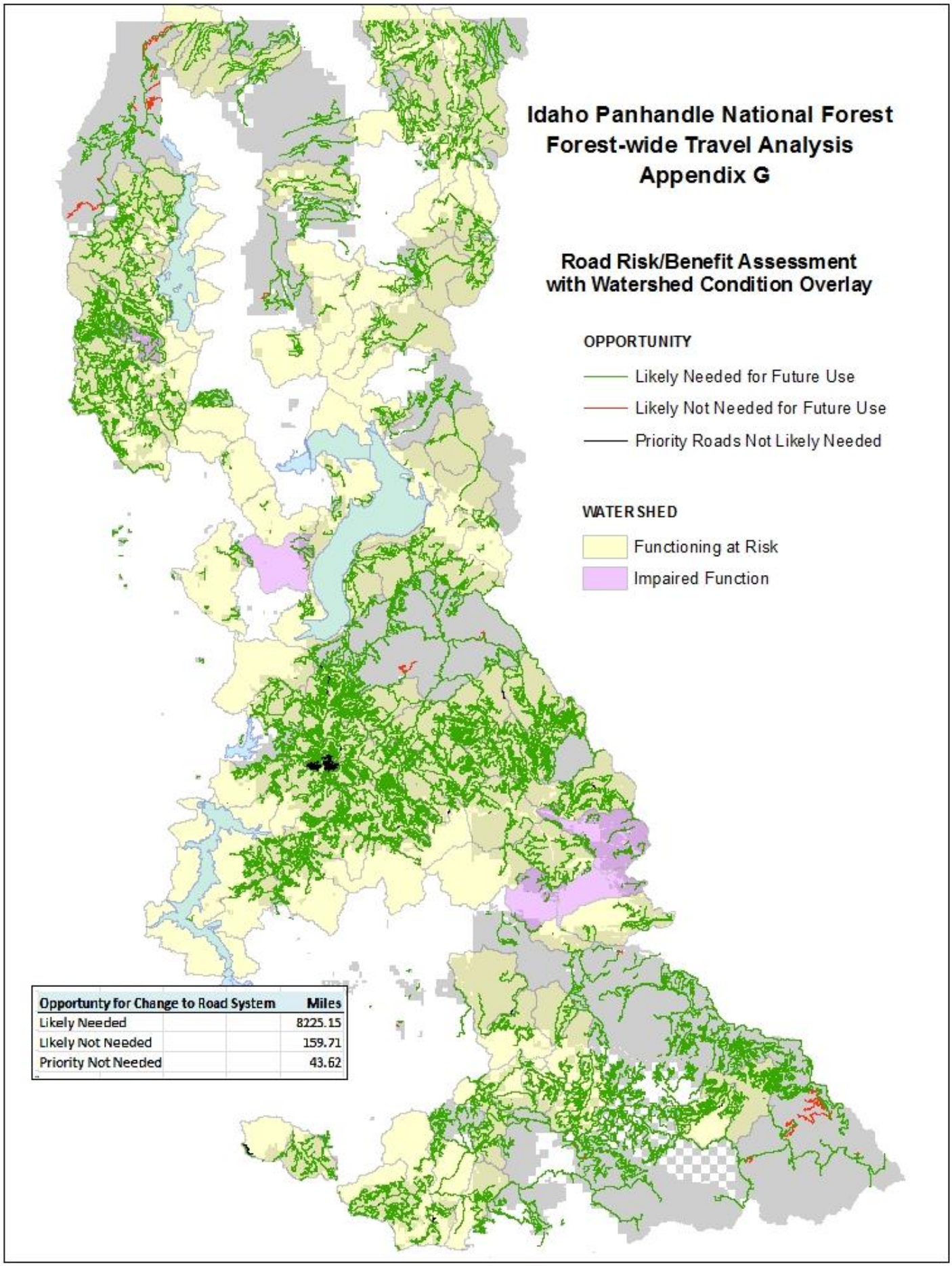


Opportunty for Change to Road System	Miles
Likely Needed	8225.15
Likely Not Needed	159.71
Total Miles	**8384.86**

Appendix G

Opportunities for Change and Watershed Condition

This map depicts the Idaho Panhandle National Forest Road System overlain with the output from the Watershed Condition Framework. The map depicts those roads highlighted in red that are likely not needed for future administration of the Forest's road system. Roads shown in green will also be evaluated during finer scale project level NEPA to determine if there are additional opportunities to change the Forest Transportation System. Those roads shown in black are roads that would be priority to affect change to the road system because of their proximity in the high risk watersheds.



Opportunty for Change to Road System	Miles
Likely Needed	8225.15
Likely Not Needed	159.71
Priority Not Needed	43.62

Appendix H

Development of Risk/Benefit Assessment Questions

Regional and forest subject-matter/category experts were asked to develop questions that are effective at making distinctions between risk and benefits of a forest road system, using available data and tools. The process started with Regional subject-matter/category experts reviewing analysis questions from other sources and developing a shorter list to consider if they could be used as part of this analysis. Previous sources included:

Road Analysis Process (FS-643)

Watershed Condition Framework (FS-977)

Previously completed Travel Analysis Processes by other forests

Travel Analysis Questions developed by Forest Service Region 9.

Then the shorter list of questions was modified to better reflect the environmental risks and road access benefits on the Flathead National Forest through a series of meetings using a blended interdisciplinary team. The subject-matter/category experts were provided a set of selection criteria that were used as guidance for refining risk/benefit assessment questions. The interdisciplinary team eliminated questions that were duplicative and combined questions that had the same overall intent. Members of the interdisciplinary team and other contributors are listed at the end of this document.

b. Overarching Selection Criteria:
    1) Questions reflect requirements of law, regulation, Forest Service policies or Forest land management plans.
    2) Questions use best available data sources.
    3) Questions lend themselves to answers that are objective, quantifiable and repeatable (different investigators applying the same question to the same data would come up with the same answers).
    4) Questions can be answered based on accepted science.
    5) Questions are matched to an appropriate scale of analysis.
    6) Questions are effective at making distinctions between necessary and unnecessary roads, making use of previous analysis work.
    7) Questions are answered with existing geographic information system (GIS) layers to the maximum extent possible.

c. Risk Selection Criteria: (Addressed by specific questions)
    1) Does the road contribute to an adverse regulatory finding (e.g., Clean Water Act impairment)?
    2) Does the road violate Forest Service Manual or Handbook requirements?
    3) Does the road violate a Forest Plan standard or guideline?

d. Benefit Selection Criteria: (Addressed by specific questions)
    1) Is the road necessary to meet Forest Plan direction?
    2) Is the road necessary to maintain a capital investment?
    3) Is the road necessary to access a long-term special use?
    4) Is the road necessary to access a reserved or outstanding interest in land or resources?

The risk and benefit questions were used to determine numeric, consolidated assessment values of specific road segments across the forest. The initial risk/benefit assessment values are used in conjunction with the cost analysis, public/partner involvement, and previous commitments (such as road cost-share agreements or long-term special use permits) to identify opportunities to change the Forest road system.

Some of the road-related issues identified by the public and other agencies can be addressed by risk/benefit questions relative to specific road segments, while others would be more appropriately addressed during forest plan revision or during implementation of site-specific projects.

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