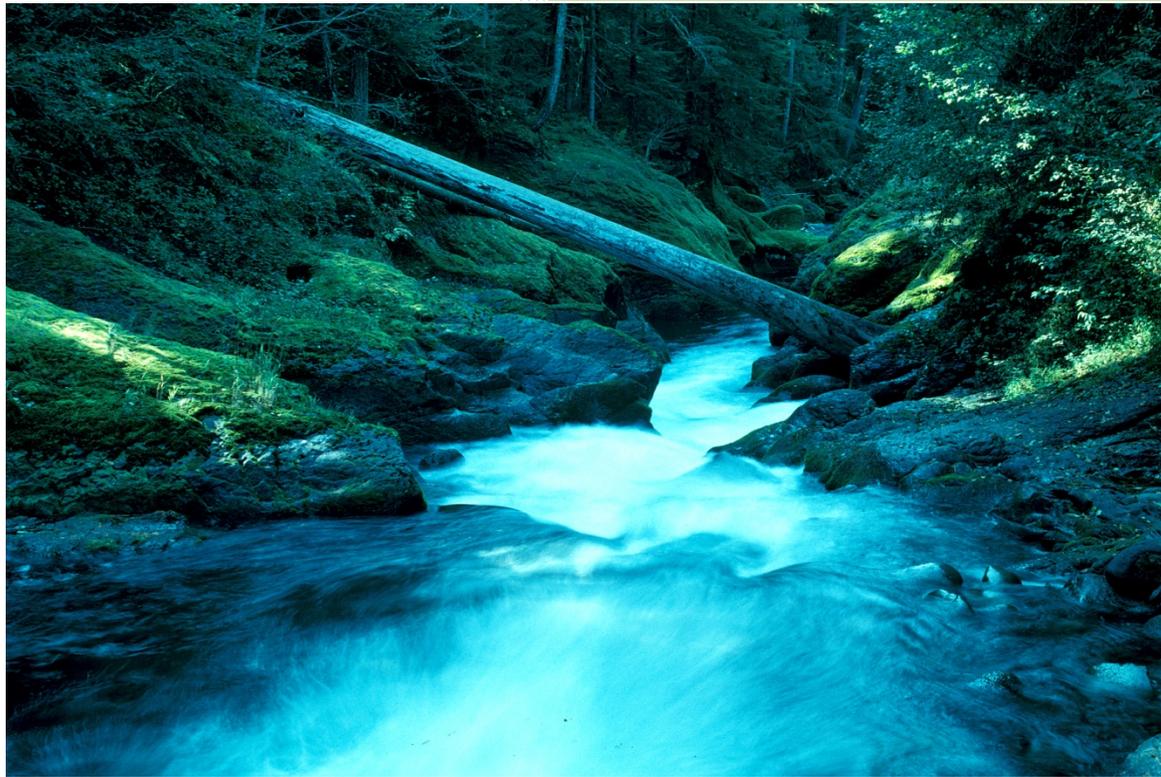


2014

Breitenbush Watershed Analysis Update



Willamette National Forest

Detroit Ranger District

2/13/2014

Breitenbush Watershed Analysis Update

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I. Why are we doing a watershed revision?

Introduction

The purpose of the Breitenbush Watershed Revision is to document changes to the watershed since the 1996 Watershed Analysis. These changes will lead to a project prioritization list for the watershed and help guide future planning efforts.

The Federal Guide for Watershed Analysis identified the need for “Federal agencies [to] conduct multiple analysis iterations of watersheds as new information becomes available or as ecological conditions, management needs, or social issues change. The time between iterations will depend on factors such as major disturbance events, monitoring or research results, new management objectives, and different regulatory requirements. Subsequent analysis iterations may be triggered when existing analyses do not adequately support informed decision making for particular issues or projects. Future iterations also may be necessary to fill critical data gaps identified during earlier analyses.”

The last watershed analysis for this area was completed in 1996. Since then a number of management activities have taken place and there have been some natural events that have altered the biological and physical processes in the watershed. These management activities and natural events have triggered a need for a watershed revision.

The Breitenbush Watershed is considered a “Tier 2” Watershed, however the District has been treating the Watershed as a “Tier 1” Watershed due to downstream community domestic water use, including the City of Salem. With the reintroduction of spring chinook salmon and eventually winter steelhead in the Breitenbush Watershed the District would like to have the Breitenbush reclassified as a “Tier 1” Watershed.

The District’s five-year timber plan identifies a series of projects in this watershed beginning in 2015. This revision will update the conditions in the watershed and help direct future planning efforts. Additionally, the District is working with the Breitenbush Collaborative to take a watershed-wide approach to identifying and prioritizing needed restoration projects in the watershed. This work will be incorporated into the Analysis Update as it is developed to reflect the public’s needs and desires in the watershed.

Watershed Revision Process

The watershed revision utilized an interdisciplinary process involving a number of resource specialists. Each resource area was reviewed and the current condition and desired future condition of each resource area has been updated. The Management Implications listed in the original watershed analysis has been verified and updated.

Organization of Document

The watershed revision is organized into six sections. Section I provides an introduction and background as to why the 1996 Watershed Analysis is being revised. Section II includes a general overview of the watershed. Section III contains the resource-specific updates to conditions in the watershed. This section has baseline updates, a list of projects completed in the watershed since 1996 and a summary of the desired future

condition/goals for each resource area. Management Implications and proposed projects are in Section IV. Section V and VI contains a list of specialists and citations.

II. Breitenbush Watershed Overview¹

Setting

The Breitenbush Watershed, located in Marion County, Oregon, is part of the North Santiam River Subbasin. The North Santiam River Subbasin is a part of the Willamette Basin within the Columbia River System. The watershed is located on the western slope of the Cascade mountain range, near Mt. Jefferson. It is the north-eastern most watershed on the Detroit Ranger District, Willamette National Forest and includes a small portion of the Mt. Hood National Forest.

It is important to note that in the 1996 watershed analysis “planning subdrainages” were utilized along with 5th and 6th field designations to frame the area. The planning subdrainage delineation was based on the 1990 Land and Resource Management Plan for the Willamette National Forest, while the 5th and 6th fields were based on the Northwest Forest Plan. Both are being used at the time of this writing; however, emphasis is being placed on the 5th and 6th field designation.

Characterization

The Breitenbush watershed falls within the Western Cascade and High Cascades physiographic province.

Within both provinces water has dominated the recent landscape. Historic landscapes are proposed to be formed as the result of a combination of volcanic, glacial, and block thrusts. These rough simple features were then refined by water to the complexity that is apparent today. Channels contain a variety of looks depending upon the material they have encountered.

The western Cascades steep "V" shaped nature of the channels are being altered by earthflow activity—historic and current. These areas contain a complex drainage pattern, dendritic in nature but altered as a result of the earthflows. Discontinuous channels are common in this landscape and small wetland areas are well distributed. These wetlands are generally riverine in nature or are associated to slump features.

The High Cascades portion of the watershed contains stepped shape as a result of the lava flow capping historic glacial geology. The channels associated to these areas are fairly stable even though the parent material is highly erodible. The "steps" occur from overly steepened headwall areas transitioning to gentle valley bottoms. These valley bottoms transition into steep sidewalls of the North Santiam River. The magnitude of the elevation changes is dependent upon the position and size of the tributary streams. Streams positioned lower in the watershed contain a steeper transition to the main river than streams located upstream.

¹ A full overview of the Breitenbush watershed is available in the 1996 Watershed Analysis.

Broad valley bottoms lend themselves to unique and complex stream channels. Multi-channel streams dominated and shaped these valleys. Resulting low gradients depended upon large woody material to sustain and control stream energy. The resulting streams were high in diversity. Utilization of the flood plain was extensive, and channels would adapt and create unique energy signatures across the landscape. High altitude wetlands and lakes provide additional diversity to the High Cascade province. Numerous small lakes and potholes are well distributed across the landscape. These have associated wetland areas that are distributed with comparable frequency.

Management Considerations

The Breitenbush Watershed contains approximately 69,400 acres; approximately 44 percent of which are either wilderness or in a late successional reserve. A large percentage of the watershed is National Forest System land (99%), one percent of the watershed is part of the Warm Springs Indian Reservation, a very small (<1%) of the watershed is privately owned. The watershed contains 14,747 acres of the 111,177 acre Mt. Jefferson Wilderness.

The watershed also contains portions of two roadless areas: Mt. Jefferson – North (2347 acres – total acreage for this roadless area is 4991) and Opal Creek (1432 acres – total acreage for this roadless area is 5417).

III. Update to Watershed Conditions

Summary of Major Changes in Watershed since 1996

Since 1996 there have been a number of natural and human induced events that have altered the physical, biological, and social character in the watershed. These alterations have changed the watershed's response to certain physical process and their effect. These changes include:

Revised Recovery Plan for the Northern Spotted Owl: In November 2012, the US Fish and Wildlife Service issued the final revised recovery plan for the Northern spotted owl designating areas as critical habitat. The Revised Recovery Plan recommends that “land managers conserve older forest, high-valued habitat, and areas occupied by northern spotted owls; and actively manage forests to restore ecosystem health in many part of the species’ range.” (USFWS 2011) This revision resulted in changes in the critical habitat designation within the watershed.

Redefinitions of Northwest Forest Plan direction: Numerous court cases have caused a shift in the ability to manage for aquatic species and riparian dependent species. This clarification of intent has affected the ability to implement stewardship type projects within riparian and LSR areas. In 2006 the amendment to clarify the wording in the ACSO was challenged and the court upheld the challenge requiring individual disclosure of all nine objectives for each action taken as opposed to the effect of the project and related actions on the 5th field watershed. Survey and manage has continued to be amended and is currently undergoing change.

Emphasis on Passive and Active Restoration: In 2005, Region 6 placed emphasis in their business plan for Watershed and Aquatic restoration. Passive restoration maintains healthy habitats and high quality water through prescriptive direction constraints. Active restoration complements passive restoration. Prevention of damage is the first priority. The strategy is to address whole watersheds and focus activities in priority areas.

Stratification and adjustment of watershed into 5th and 6th field watersheds: An agreement between various federal and state agencies that defines the watershed boundary lines and the size of the watershed (5th field) and sub watershed (6th field) is pending. Terminology was agreed upon to allow for consistency in reporting. This stratification allows for consistent disclosure of special characteristics for the Breitenbush Watershed.

While additional changes have occurred in various fashions the above mentioned are ones that could be discussed under the scope of this document. Other noteworthy changes include:

- Declining market values for wood and its effect on the ability to sell sales and generate funds for mitigation/restoration work
- Focused management on managed stands
- Forest Service emphasis on the four threats (Fire and Fuels, Invasive species, Loss of Open Space, and Unmanaged Recreation)

Resource-Specific Updates

For each resource area, the baseline conditions from the 1996 WA were reviewed and any updates or changes, including projects completed since 1996, are described in this section. Where applicable, the desired future condition and objectives for the resource is also included in this section.

Botany

Baseline Update

Sensitive and Survey and Manage Plants

There are several habitats throughout this watershed that carry several sensitive and survey and manage species. In the higher elevations on rocky outcrops populations of *Eucephalus gormanii*, *Pilophorus nigricaulis* and *Lobaria linita* can be found. In the highest elevations there is *Pinus albicaulis*, *Calamagrostis breweri*, *Gymnomitrium concinnatum* and very rare *Rivulariella gemmipara*. In the moist rock gardens there is *Romanzoffia thompsonii*. *Hydrothyria venosa*, *Peltigera pacifica* *Pseudocyphellaria rainierensis* *Albatrellus ellisii*, *Gomphus kauffmanii* and *Nephroma occultum* are all documented in the lower moist and well shaded forests with late successional stands and with some type of riparian nearby. Recently *Sisyrinchium sarmentosum* was documented in the southern portion of the watershed extending the population down from Mt Hood.

Weed Management

In 2007, the forest produced an Environmental Assessment (EA) for treatment and control of invasive weeds across the entire Willamette National Forest (WNF). The

proposed action is to contain established infestations and to eradicate new invader infestations on 9700 acres across the forest for the purpose of reversing the negative impacts caused by invasive plants and to restore ecological communities and function at impacted sites.

This WNF Integrated Weed Management EA provides weed direction to meet the design criteria's established within the EA to eradicate weeds throughout, including within the watershed. This also provides guidelines for treating, preventing, monitoring, and development of restoration goals for treatment of weeds. This Integrated Weed Management EA will be used as a guide for the eradication of weeds within the Breitenbush Watershed.

There are few major weed infestations. The most prominent high priority species are spotted knapweed at one large site along the powerline and several smaller sites along the Breitenbush Road and two sites of false brome. There is also one site of limbing nightshade. Well established species include scotch broom, Canada thistle, bull thistle, sweet pea, St. John's wort and reed canary grass.

Special Habitats

The occurrence of special habitats (non-forested communities) and their distribution across the landscape is important for biodiversity of plant and animal species. Hickman (1993) estimated that 85 percent of flowering plant species in the central western Cascades are found in non-forest areas such as rock outcrops and meadows, which comprises about 5 percent of the land base.

The forest land management plan standard and guideline FW-211 (WNF 1990) directs us to "maintain or enhance" these habitats and their ecotones. An updated Special Habitat Management Guide (Lippert and McCain, 2011) provides a list of habitats, plant associations and provides recommendations for managing sites.

The distribution of special habitats, other than the alder/shrub types, is concentrated toward higher elevations, mostly in the mountain hemlock zone. Rock, meadows, subalpine, and water habitats are particularly abundant. Harsher climate, undulating topography, and the multitude of soil types associated with the mountain hemlock zone and the High Cascade peaks provide varied habitats for a great diversity of plants and animals. The silver fir zone (mid-elevation) harbors the most alder/shrub types, and falls between mountain hemlock and western hemlock zones in the number and acres of meadows, rock, and subalpine types. The western hemlock zone (lower elevations) contains just a few more acres of water types than the silver fir zone. (See Figure 1)

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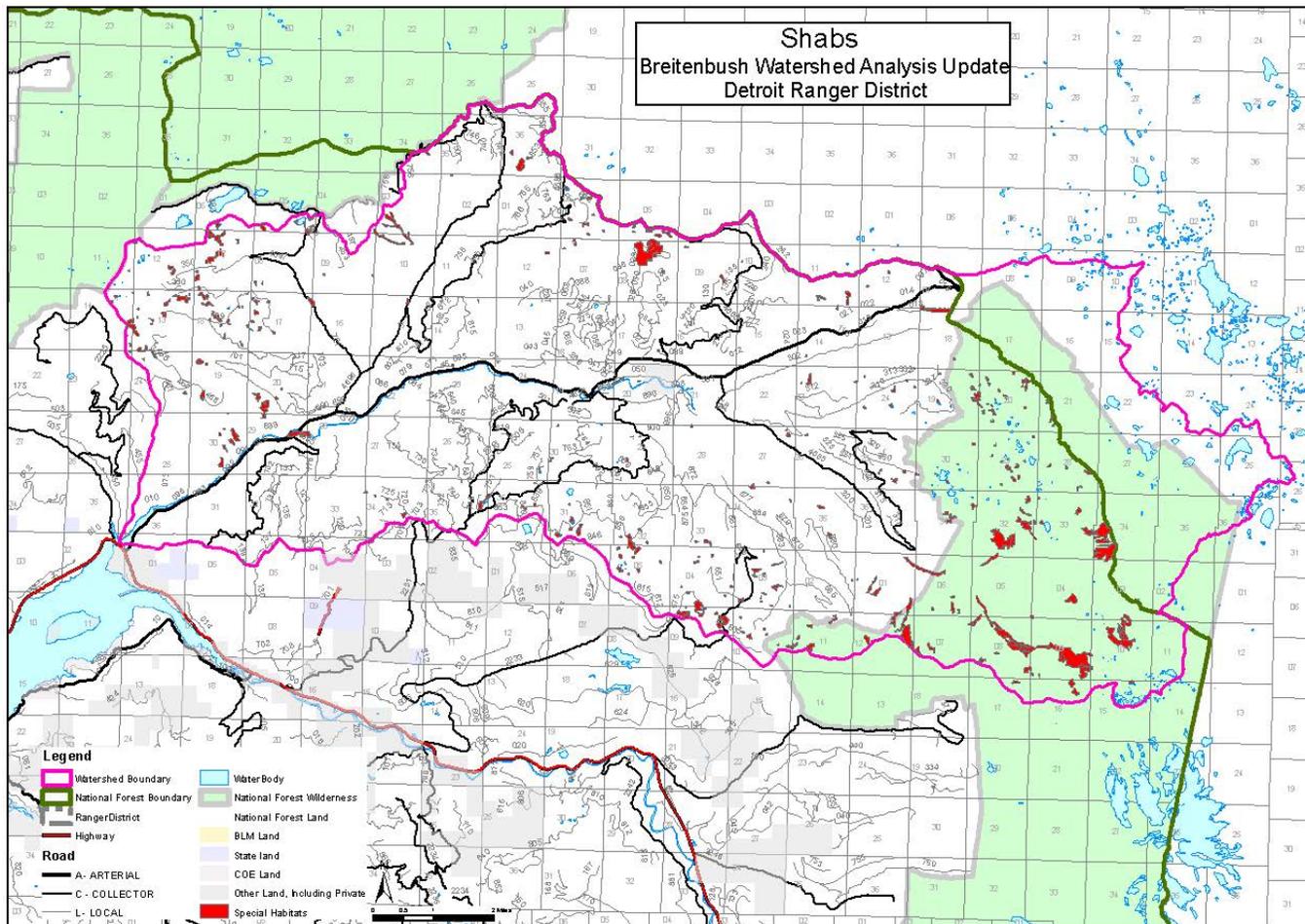


Figure 1 Map showing locations of Special Habitats (Shabs) in the Breitenbush Watershed

The major threats to special habitats appear to be harvest activities and adjacent roads. There are a number of wet meadows surrounded by previously harvested stands and adjacent to roads. This proximity to management activities often means these sites are invaded by nonnative plants that could cause a loss or change to desired native plant communities. Management adjacent to these meadows increases the exposure to fluctuating wind, sun, precipitation, and temperature conditions that can alter the microenvironment which in turn can alter species composition and distribution (Chen 1994).

In addition, the loss of fire, the major natural disturbance on the landscape, has allowed small tree encroachment into some mesic meadow habitats (e.g. Big Pigeon Prairie and Outerson/Triangulation Meadow complex). Tree removal and prescribed burning may be necessary to restore these sites.

A final human-caused disturbance in the watershed is Off Highway Vehicle (OHV) traffic that does not stay on the road system. Some meadows and rock outcrops are being degraded by off-roading. Some restoration of sites affected by OHV traffic is warranted.

Completed Projects

1. Weed Removal (throughout watershed)
2. Monitoring Sensitive species (ongoing)
3. Botanical surveys completed along the Pacific Crest Trail within the watershed
4. Botanical surveys completed along the Breitenbush trail

Desired Future Condition

Native plant diversity, which includes sensitive and survey and manage botanical species, is improved by the retention of intact communities and the promotion of habitat integrity and stability. Minimize disturbance and initiate restoration activities to maintain native plant diversity. Integrate weed prevention and control into all projects. Use native species for restoration projects.

Objectives

1. Identify impacted special habitats during project planning

An inventory of special habitats must be done in order to establish what sites are vulnerable and if there are any threats to rare plants. Since we have only surveyed approximately 15% of the watershed, proposed future projects will include more detailed surveys of not only rare plants but all special habitats as well. Once these inventories have been done, analysis of the effects of human impacts can be more thoroughly analyzed and restoration prescribed.

2. Restore heavily impacted special habitats

Each heavily impacted area will have to be analyzed on a case by case. Methods that may be used for rehabilitation of impacted areas are eradication of any non-native and/or noxious weeds, planting of trees and planting of native grass seed and/or native forbs and shrubs, small diameter tree removal, prescribed burning.

3. Control weed populations

Focus treatment efforts on new invader species. Secondarily target established weeds in high recreational use areas, weeds adjacent to or within the Wilderness and weeds in special habitats within the watershed.

4. Survey invasive weed populations

Monitor previously treated sites and map any new occurrences that need to be controlled in the watershed.

5. Use appropriate native plant species for re-vegetation

Re-vegetation should be conducted using only native plant species that are genetically local. Any seed or mulch material purchased for re-vegetation needs to be certified weed free.

6. Use minimally invasive restoration techniques where possible and appropriate

Reduce ground disturbance when eradicating non-natives or conducting prescribed fires. If ground disturbance is essential to the eradication process, then re-vegetate to ensure a healthy native landscape.

Geographic Priority Areas “Hotspots”

There are several geographic “hotspots” located within the Breitenbush Watershed. These sites are considered important because they either contain rare plant species and/or unique special habitats. Some of these sites experience high recreational use and may be in need of restoration or protective measures put into place. Other sites still need to be determined and analyzed for protective management. These sites are as follows:

- **Breitenbush Trail (Wilderness)** - this trail contains a newly discovered very rare bryophyte (*Rivulariella gemmipora*) in the upper portions to Jefferson Park. This trail is proposed for rehabilitation and rerouting. Full habitat surveys are needed for this liverwort. It will be necessary to work with trails personnel during rehabilitation to protect this rare bryophyte.
- **Jefferson Park**- Permanent transects to assess recreational impacts and population health of *Calamogrostis brewerii* populations. Some restoration of trails and campgrounds scheduled in the future.
- **Big Pigeon Prairie**- Remove small diameter trees in the southeastern portion of the meadow complex to restore *Sisyrinchium sarmentosum* habitat.
- **Outerson/Triangulation Meadows**- Place barriers/signs so ATVs cannot access meadows and rock habitat where *Eucephalus gormanii* populations occur. Remove small diameter trees in meadows (ongoing).
- **Bear Point**- is a low accessible and mostly secluded valley within the wilderness that contains several small lakes, ponds and springs. There are no records of surveys in this area. There is a high probability of finding unique species in this area.
- **Upper Arm Day Use Area**- this day use area including the kiosk has been invaded by scotch broom and reed canary grass. These weeds need to be controlled and the day use area rehabilitated with native species where needed.

- **Road 46 where powerline crosses at Mansfield Creek-** this site is heavily infested with scotch broom. The powerline companies have been controlling the spread of this invasive plant. This area will need rehabilitation and preventive measures for off road OHV use when the scotch broom is dead.

Cultural Resources

Completed Projects

1. Restoration of Gold Butte Lookout
2. Restriction of vehicle access to Lower Breitenbush hot springs area

Desired Future Condition

Gain an understanding of the historic and pre-contact heritage resources within the Upper North Santiam Watershed. All existing and undiscovered cultural resources are known, preserved and protected from human and natural disturbance processes.

Objectives

1. Gain knowledge of all historic property (pre-contact sites and historic structures, features, road, and trails) locations in the Watershed prior to ground disturbing projects
2. Ensure protection of all eligible historic properties from public and management related disturbances, depredation and natural destruction
3. Maintain the integrity of historic properties
4. Foster an understanding of local history, historic values and preservation
5. Evaluate inventoried sites for eligibility to the National Register of Historic Places

Economics and Local Communities

Baseline Update

In the 1996 WA, population, unemployment, per capita income and percent below poverty line numbers were given for the five main communities in the North Santiam Canyon (Idanha, Detroit, Gates, Mill City and Lyons). The largest community in the canyon was Mill City with a population of 1,572. Unemployment and percent of population below the poverty line were relatively high for the area. For example, Detroit had a 16.8% level of unemployment and Gates had nearly a quarter of the population below the poverty line. Information from the 2011 census indicates that population levels have remained fairly steady in Idanha and Mill City, increased slightly in Gates and Lyons, and declined in Detroit, from 322 in 1996 to 178 in 2011. In 2011 Mill City had a population of 1513. Detroit now has an unemployment rate of 11.2% (June 2013) and Gates has 25.4% of the population living below the poverty line (2011 census).

In 2006, the Oregon State University Extension Service completed an economic study for the Upper North Santiam Canyon (UNSC). The study found that the trends identified in the 1996 WA continue today. The study analyzed Census data between 1980 and 2003.

While over the last 10 years some areas of the state have experienced considerable population growth, the UNSC growth rate was minimal. For example,

Although its location between the Portland-Salem corridor on the west and the resort towns of Bend, Sisters, and other areas in central Oregon in the east provided high exposure for the UNSC as people traveled through the area on Highway 22, one of the better-maintained routes to central Oregon in all seasons, its communities struggled to retain population and maintain economic viability.

While Deschutes County had the highest population growth rate in Oregon over the past 10 years, the UNSC's growth rate was minimal. People passing through the UNSC might have preferred to recreate for a day, build a second home, or retire closer to the Willamette Valley to avoid crossing mountain passes to reach their destinations, yet the UNSC was not able to capitalize on its geographic proximity or relatively high amenities close to the Willamette Valley to maintain even modest population growth . . . (Oregon State University Extension Service, p.5)

In terms of employment growth and income, the UNSC has also not kept pace with other areas in the state. While employment across the country and in Oregon grew 82.8% and 127.9% respectively between 1970 and 2000, employment in the UNSC only grew by 50.6% during this time period. Likewise, UNSC household income while growing during this 1970-2000 time period grew by only 80% of Oregon and U.S. growth rates.

It appears, then, that economic and demographic trends identified in the 1996 WA have continued over the last 12 years. This is particularly noteworthy as other areas in the state have experienced significant population growth and economic viability.

Completed Projects

1. Designation of Detroit Lake as a Federal Lake with a mission to work collaboratively to maintain sustainable recreation and economic stability in the Detroit Lake area
2. Development of the Detroit/Idanha Tourism Strategic Plan
3. Development of the North Santiam Canyon Strategic Plan
4. Development of the North Santiam Tourism Assessment
5. Development of the Canyon Journeys North Santiam Canyon Alternative Transportation Link Feasibility Study
6. Providing technical assistance as part of the Northwest Forest Plan rural community assistance program for projects in the watershed including Wood Residual Study, Special Forest Products Inventory
7. West Cascade National Scenic Byway designation and development of the Scenic Byway Corridor Development Plan
8. Detroit Lake Recreation Area Brochure
9. State designation of the McCoy Motorized Recreation Area in cooperation with local user groups and the Detroit Lake Recreation Area Business Association

Desired Future Condition

Forest management activities, commodities and services including outdoor recreation will continue to support the goals and strategic plans of resource/tourism dependent North Santiam communities and contribute to their sustainability. Recreation and scenic resources are managed in an ecologically sustainable manner that enables local

communities to capitalize on the potential of these resources to contribute to the economic well-being. Tourism generated from recreation in the watershed and along Road 46 provides the economic base for the Cities of Detroit and Idanha, and supports the diversifying economies of the other North Santiam Canyon communities. The Breitenbush Community and resort center is also a large employer in the watershed. Communication, cooperation, and partnerships between the Forest and local citizens will be fostered and enhanced.

Objectives

1. Balance community needs for increased tourism and recreation opportunities within the capacity of ecological and social limits.
2. Diversify opportunities for year-round recreation and expand use season.
3. Increase public understanding of resource management.
4. Provide for a wide variety of forest products.
5. Provide for a sustainable timber supply.
6. Participate in the improvement of infrastructure to achieve economic diversification goals.
7. Reduce impacts to recreation and tourism economy as result of lake level fluctuations.

Fire and Fuels

Baseline Update

Introduction

Since 1996 there have been 116 fires in the watershed, totally 431 acres. (Figure 2) The largest fire was the Dinah-Mo fire in 2010 burning 344 acres in the Mt. Jefferson Wilderness. There were 55 lightning caused fires between 1996 and 2012, ranging in size from 0.1 acre to 344 acres. (Figure 3 and Figure 4) The most active year was 2008 with 21 lightning caused fires totally 34 acres; 2010 saw the most lightning caused acres burned with 345 acres burned. There have been 61 human caused fires reported from 1996-2012, ranging in size from 0.1 acre to 4.25 acres for a total of 10 acres burned. Other activities have included very limited acres of prescribed burning associated with timber sales.

In terms of past fires the area north of the main Breitenbush River and the east end of the watershed (roughly defined by the wilderness boundary) are considered the most active. These areas are characterized by south facing slopes and have the lowest precipitation in the watershed. The east end of the watershed is the most susceptible to fall east winds and has a considerable amount of western spruce budworm, and other insect and disease mortality. A combination of these issues has likely contributed to a higher fire occurrence.

Fire suppression activities have been very successful in reducing the number of fires since 1900. Public policy to minimize resource loss and threats to public and fire fighter safety led to increasing abilities to keep fires small.

Fire suppression has allowed forests to become denser since it prevents the natural thinning that would otherwise have occurred with more frequent fires. Overly dense forests are more vulnerable to drought, disease, insect attack, and other threats. Suppressing fires over time also means that the dead material in the forest is not regularly consumed, which contributes to the severity of a fire when it does occur. Accumulated material also ties up nutrients that would otherwise be recycled into the soil.

Completed Projects

All completed fire and fuels treatments coincide with the same treatment acres treated by timber sales. All timber sale (TS) acres should be considered treated for fuels.

1. Protect resource, social values, and infrastructure during fire suppression activities.
2. Devils Creek Summer Home Tract fuel reduction.
3. Bould Puppy TS
4. Canyon ATV
5. Canyon East ATV
6. Fly Salvage
7. Fox Devil Salvage
8. Full Moon Salvage
9. Horse Byars TS
10. Humstinger TS
11. Lemans Salvage
12. Lo Breit Revisited TS
13. Roaring Pot TS
14. Tumbug TS
15. Windy Canyon TS
16. Breit Thin TS
17. Sugar Pine TS

Desired Future Condition

Return ecosystems vegetation characteristics, fuel composition, fire frequency, fire severity and fire pattern to the natural range of variability. Reduce the potential for large, high intensity fires and increased rate of spread with vegetation manipulation in order to achieve ecosystem function and land allocation objectives. Improve fire tolerance through stand density management. Alter surface and ladder fuels to limit crown fire occurrence. Modify fuel profiles to lower the potential of fire ignition and rate of spread. Limit wood debris to levels recommended in the forest plan. Defend key ridge tops, waterways and existing roads along private land with well-maintained fuel breaks. Manipulate hazardous fuels to achieve long-term maintenance of natural fire regimes. Reintroduce fire across large areas over a period of time to create a mosaic of stand conditions. Use the timing of prescribed fire to manage seral stage diversity and develop fire resistant stand mosaics. Improve seedbeds, plant diversity, palatability, nutritional

value and animal movement by using fire to achieve nutrient cycling of dead vegetation. Use fire to reduce heavy slash and duff or competitive shrubs and grasses to provide optimum growing space and to control diseases. Fire use is especially important in ecosystems where vegetation is fire-dependent, or visual quality is a potential issue.

Objectives

1. Provide for firefighter and public safety.
2. Preserve the wilderness integrity during fire suppression.
3. Return ecosystems to fire intervals that maintain and enhance landscape functionality.
4. Prevent large scale stand replacement fires by decreasing fire hazard and risk.
5. Reduce high fuel loading in Matrix and LSR.
6. Protect resource, social and infrastructure values during fire suppression activities.
7. Reduce the number of human caused fires.
8. Utilize fire as a tool to enhance wildlife habitat.
9. Protect associated resource and social values, and infrastructure during fire suppression activities.

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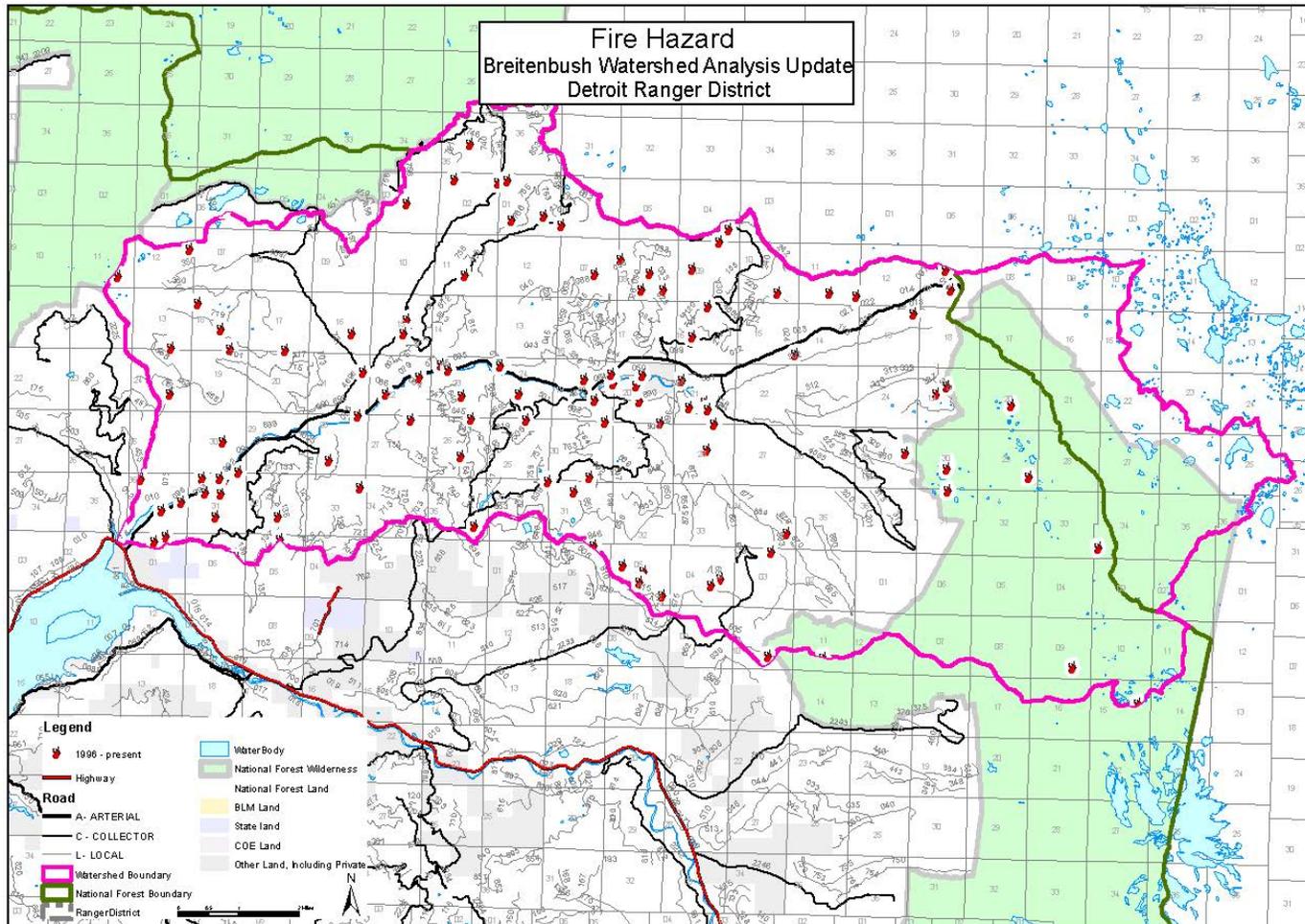


Figure 2 Fire starts in the Breitenbush Watershed since 1996

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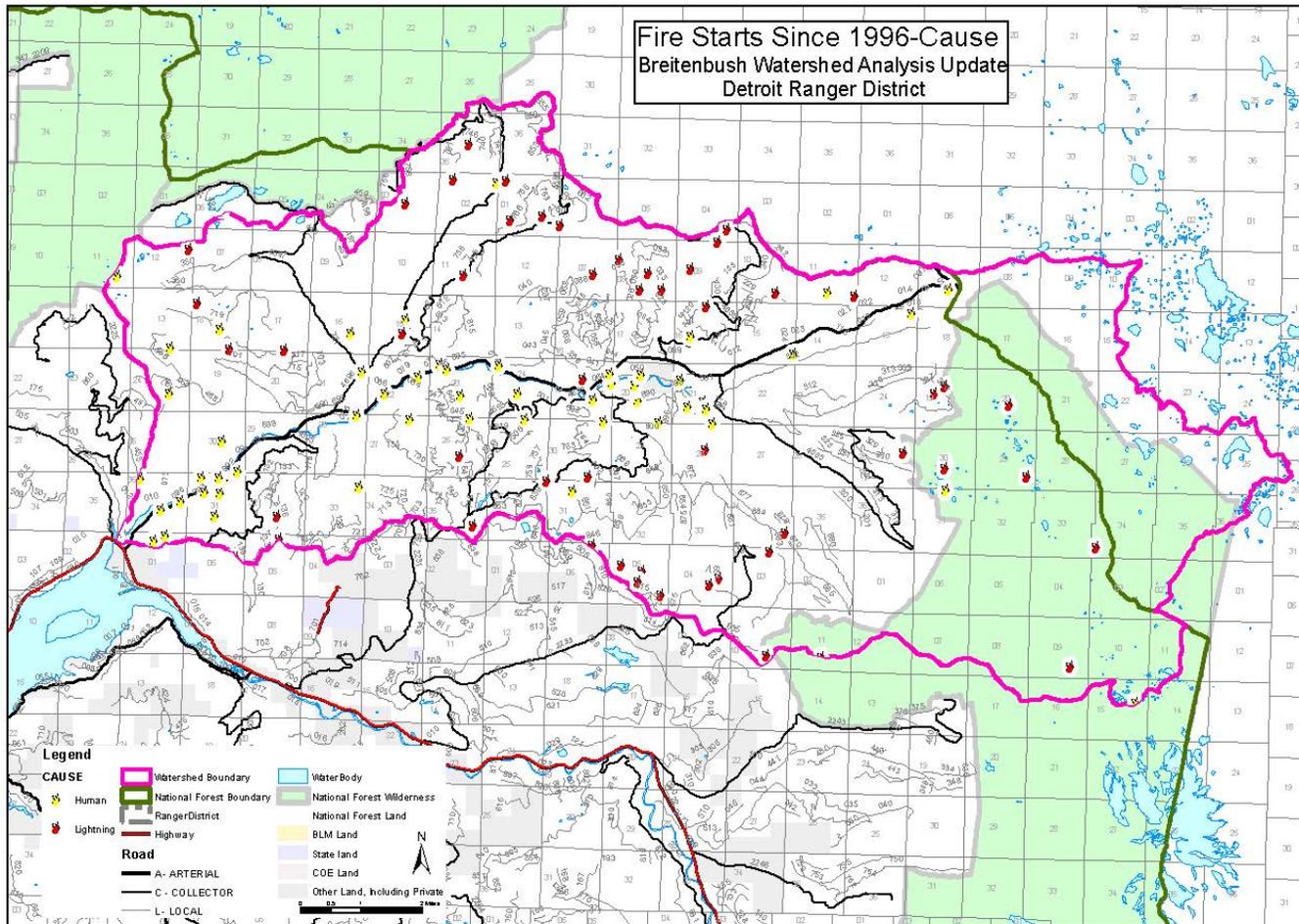


Figure 3 Fire causes in the Breitenbush Watershed since 1996

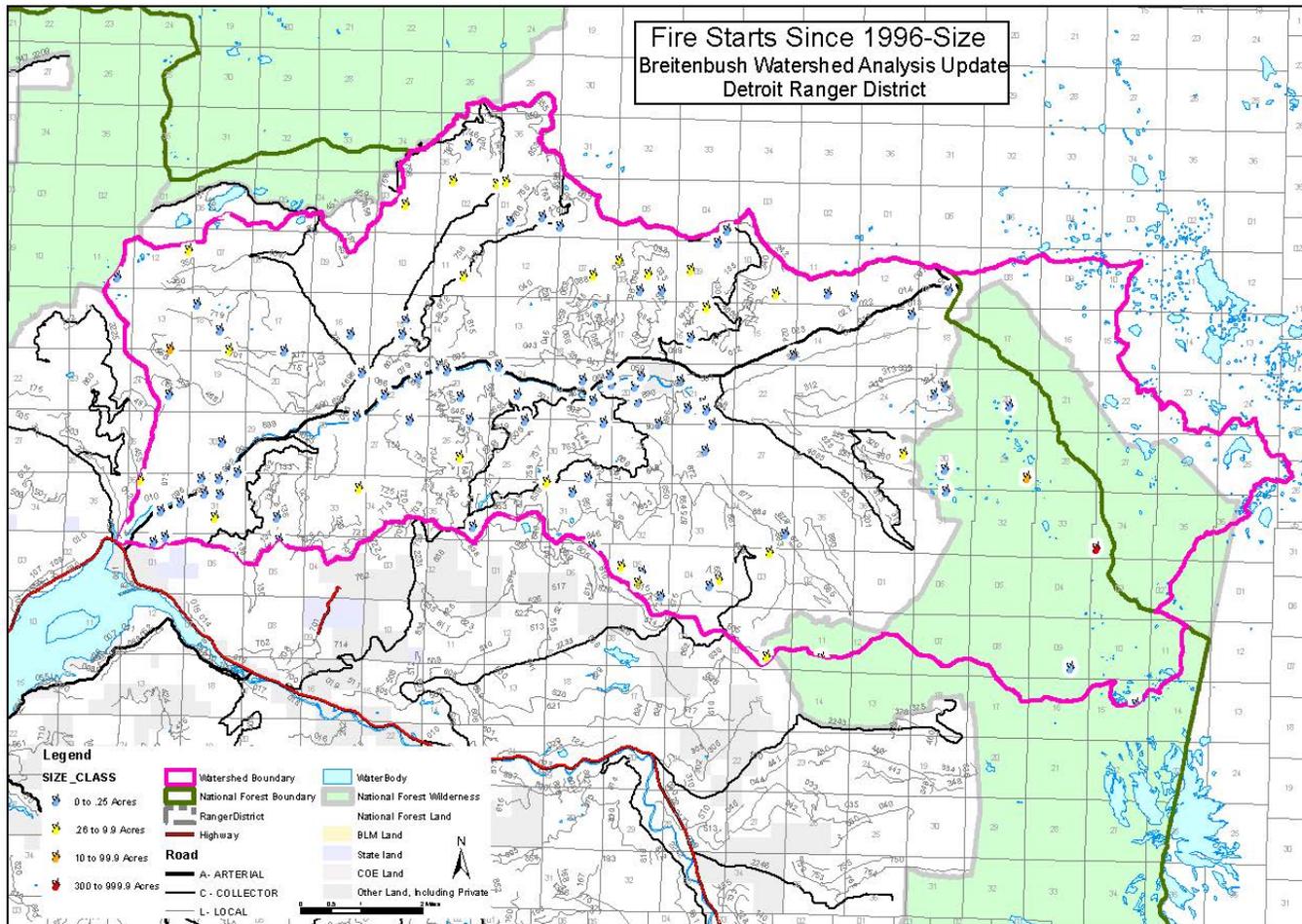


Figure 4 Fire sizes in the Breitenbush Watershed since 1996

Fisheries

The 1996 watershed analysis established the baseline for watershed condition, including fisheries biological and habitat characterization. Changes to this baseline include new and updated scientific information and survey data, different forest and riparian management objectives, Re-introduction of historically present fish species and natural events such as fires and floods.

Baseline Update

Many of the changes to the fisheries resource in the North Santiam Watershed are a result of ongoing, active watershed restoration projects such as large wood placement, riparian planting, dispersed camping rehabilitation, road stabilization and maintenance, and trap and haul of Chinook salmon, or natural events such as fires and floods. The Northwest Forest Plan and its Aquatic Conservation Strategy set watershed changes in motion by establishing Riparian Reserves and providing guidelines for management.

Stream surveys have been completed for the Breitenbush, North Fork Breitenbush, and South Fork Breitenbush Rivers, Devils Creek, and Cliff Creek. Surveys are currently being done on Short, Mansfield, and Byars Creeks.

Spring Chinook salmon and winter steelhead originally spawned in the Upper North Santiam watershed. The habitat was blocked by Detroit Dam in 1953 and these anadromous species were extirpated from the watershed. Since 2000, ODFW has trapped and hauled adult spring Chinook salmon around the dams to the Breitenbush River and the Upper North Santiam River to naturally spawn. Future actions include the trapping and hauling of Upper Willamette Steelhead and the possible reintroduction of Bull Trout.

This trap and haul effort has changed management in the watershed in a couple of ways. First, it has substantially increased the number of Class 1 anadromous streams in the Watershed. It is assumed that the historically occupied habitat in the Breitenbush River is currently being utilized by both adult and juvenile spring Chinook salmon. Second, the National Marine Fisheries Service (NMFS) recently completed their final listing determinations for 16 Evolutionary Significant Units (ESUs) of West Coast Salmon (70 FR 37160; effective August 29, 2005). The Upper Willamette River Chinook salmon ESU is considered to be threatened under the Endangered Species Act (ESA), confirming their earlier determination (64 FR 14308; effective May 24, 1999). The Upper Willamette River Chinook ESU includes all naturally spawned populations of spring-run Chinook salmon in the Clackamas River and in the Willamette River, and its tributaries, above Willamette Falls, Oregon. Detroit Dam is the upper limit of critical habitat for listed Chinook salmon. The Magnuson-Stevens Fishery Conservation and Management Act led to the designation of Essential Fish Habitat (EFH) for commercially harvested fish, which includes Chinook salmon on the Willamette National Forest. The National Marine Fisheries Service (NMFS) designation of EFH did not include any streams above Big Cliff dam.

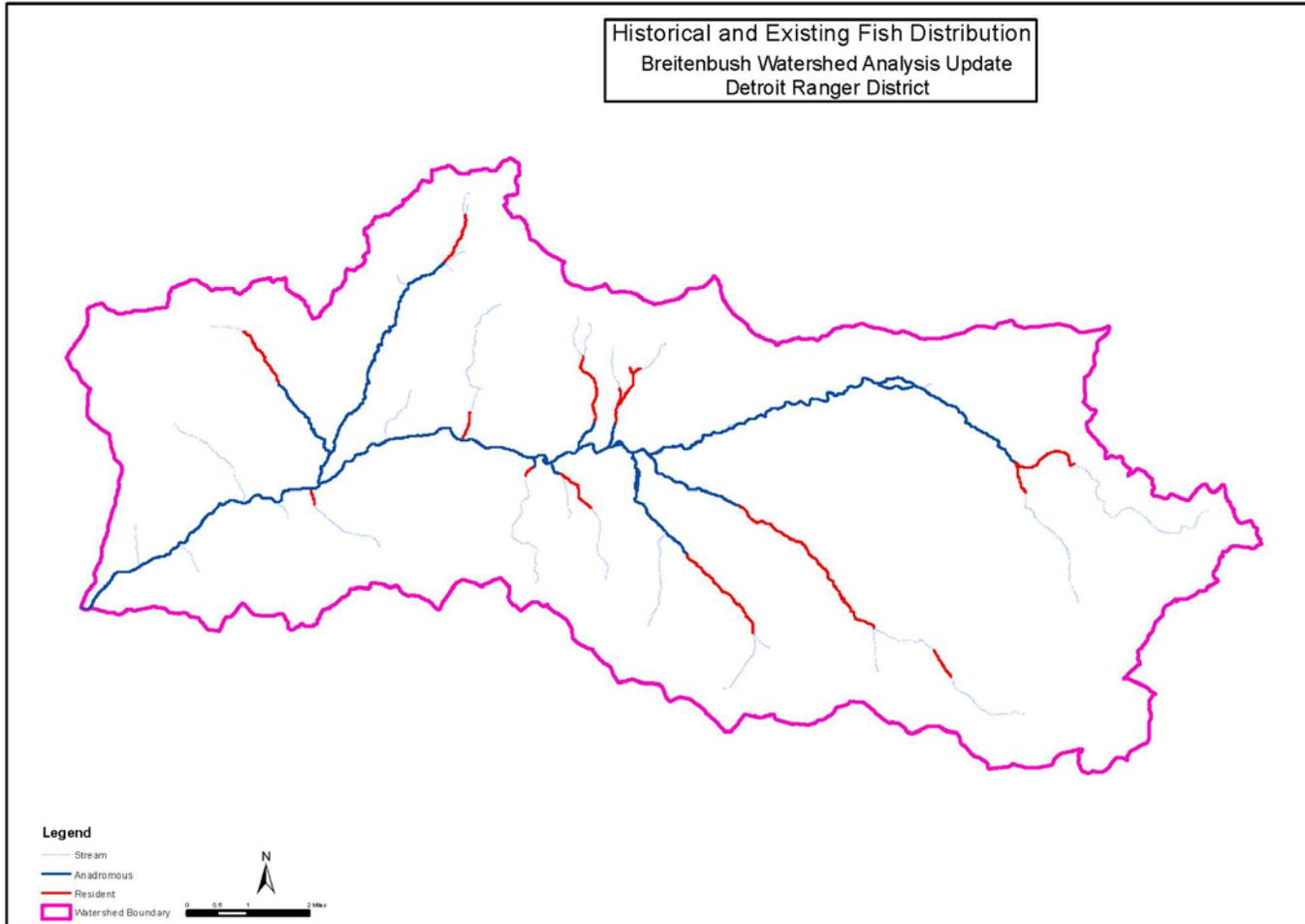


Figure 5 Historical Fish Distribution Map

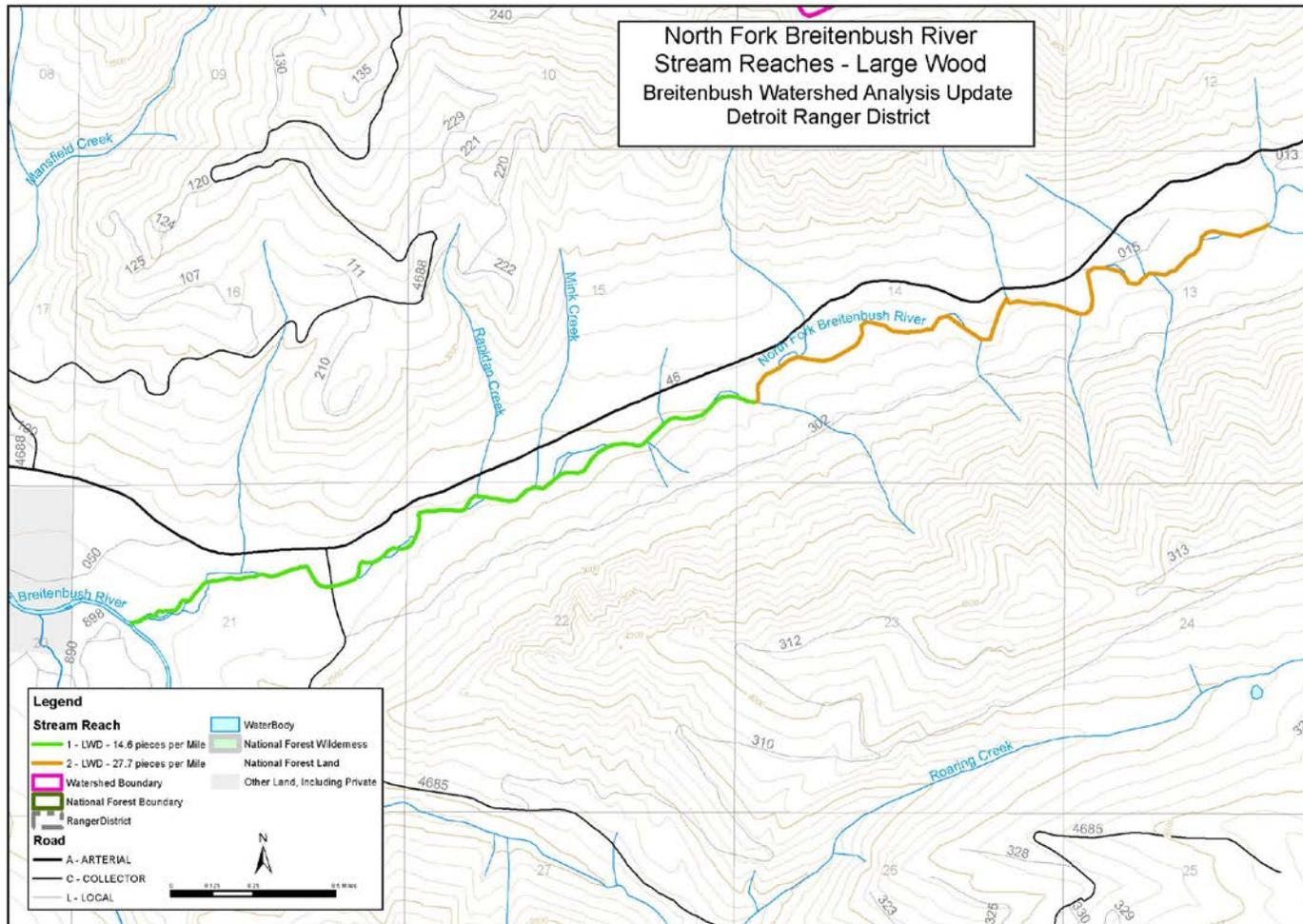


Figure 6 Large wood in the North Fork Breitenbush River

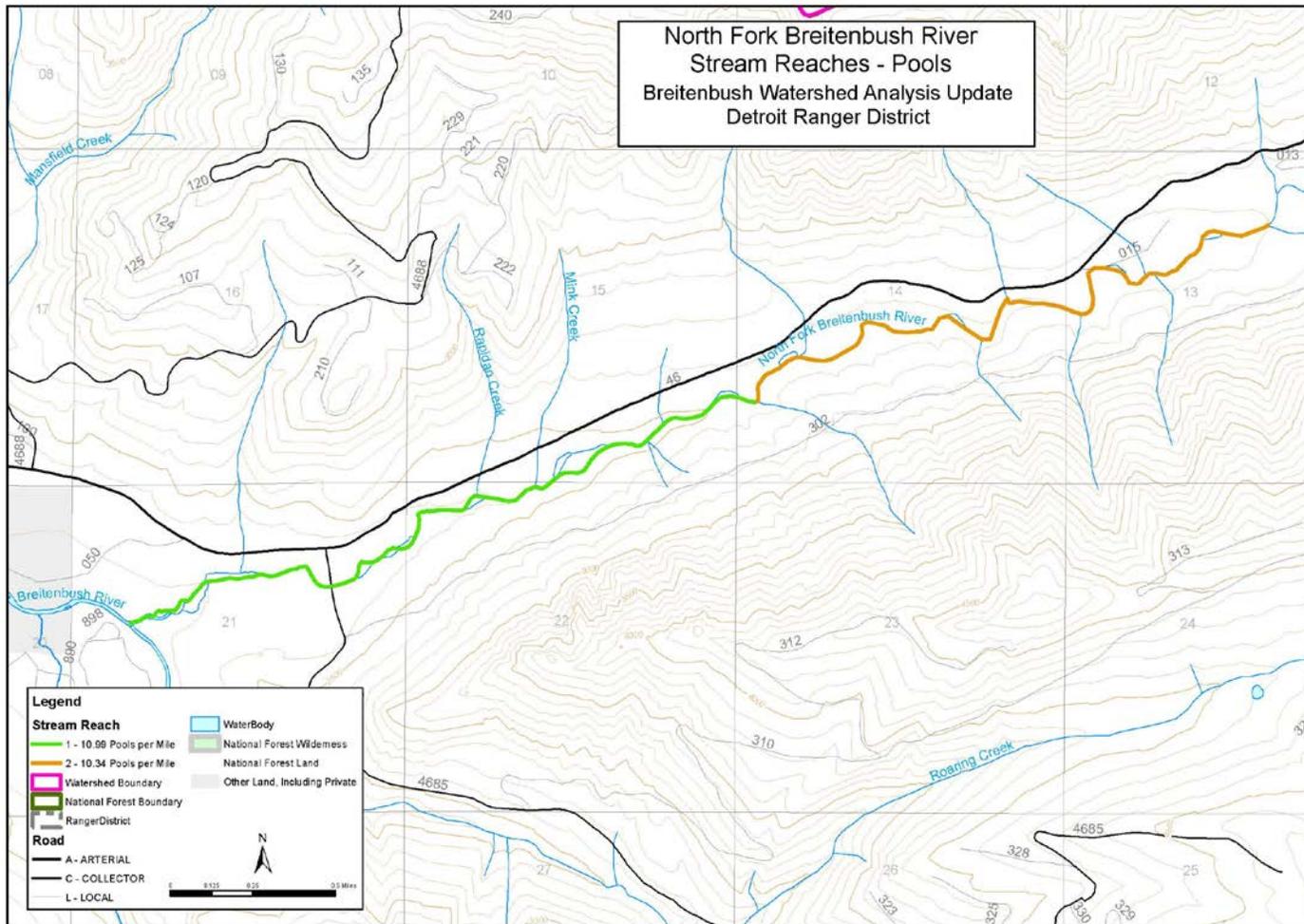


Figure 7 Pools in the North Fork Breitenbush River

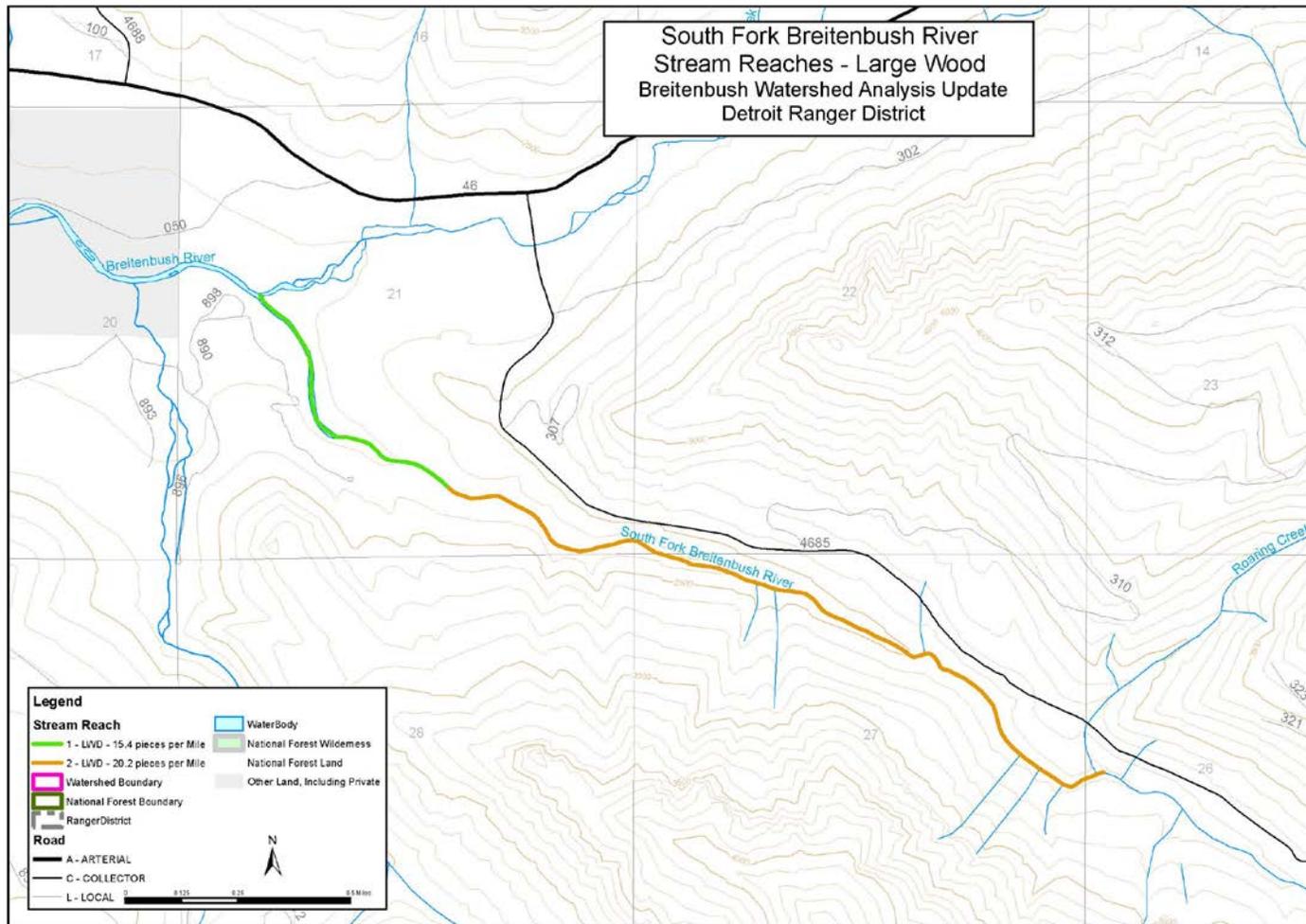


Figure 8 Large wood in the South Fork Breitenbush River

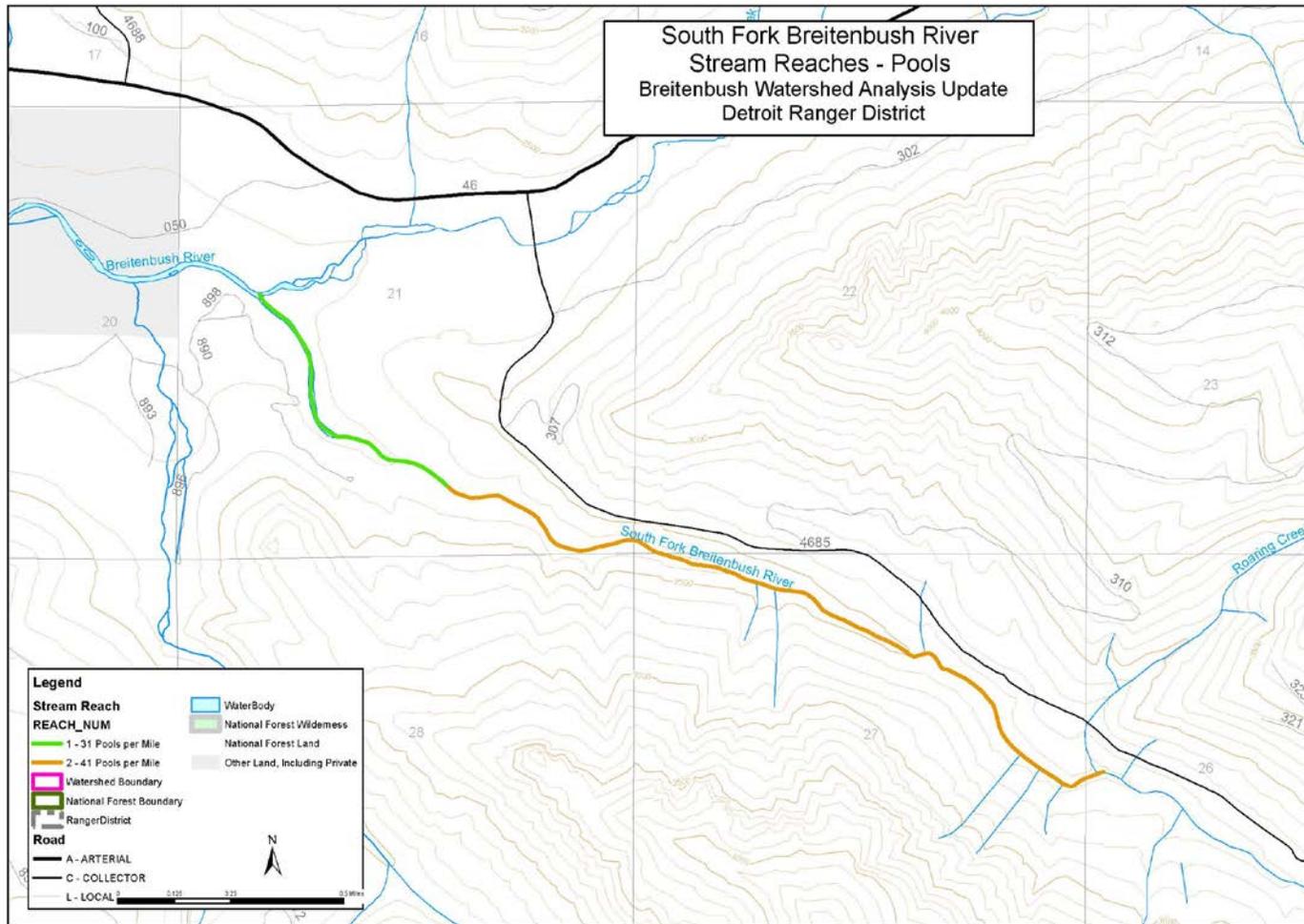


Figure 9 Pools in the South Fork Breitenbush River

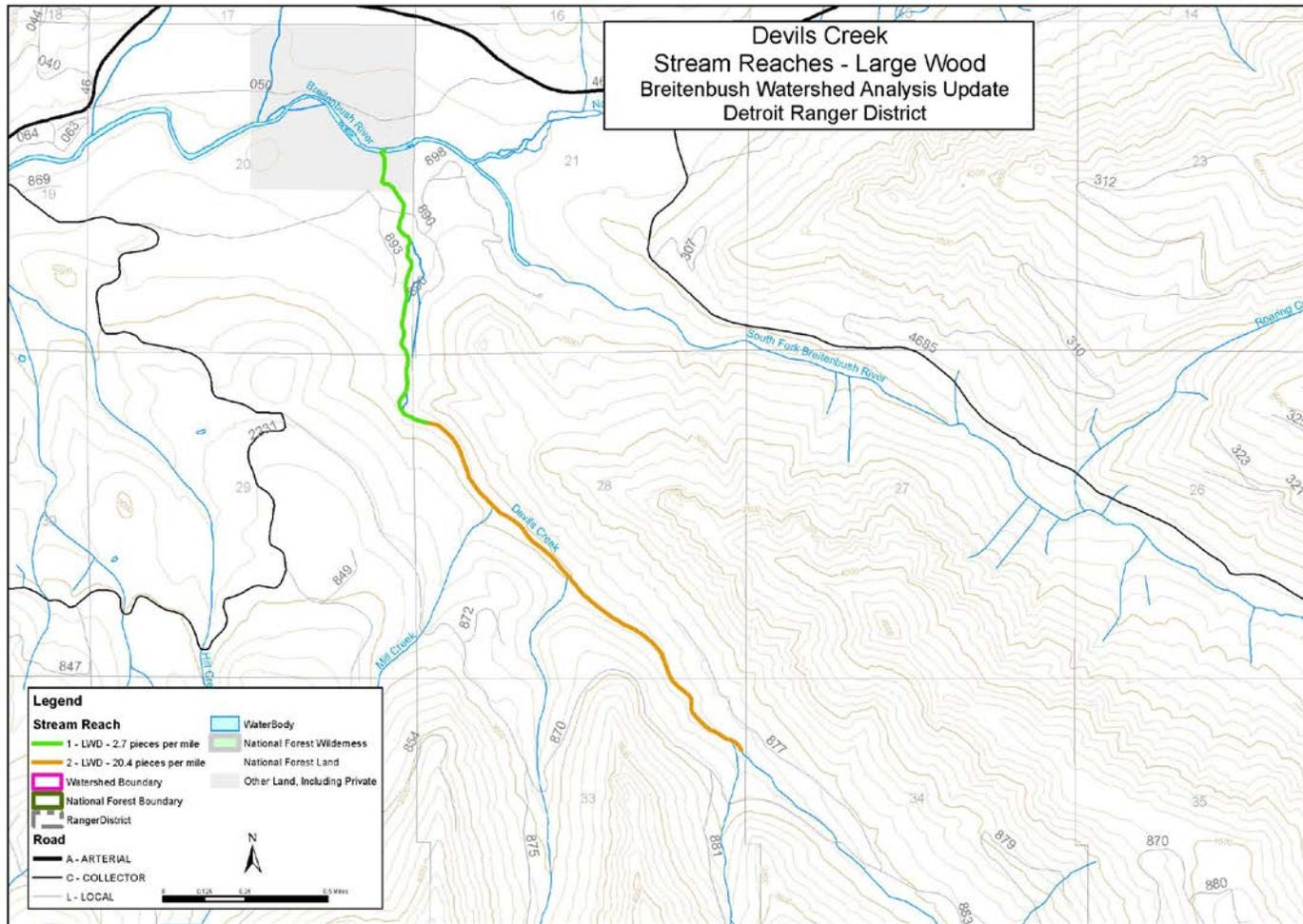


Figure 10 Large wood in Devils Creek

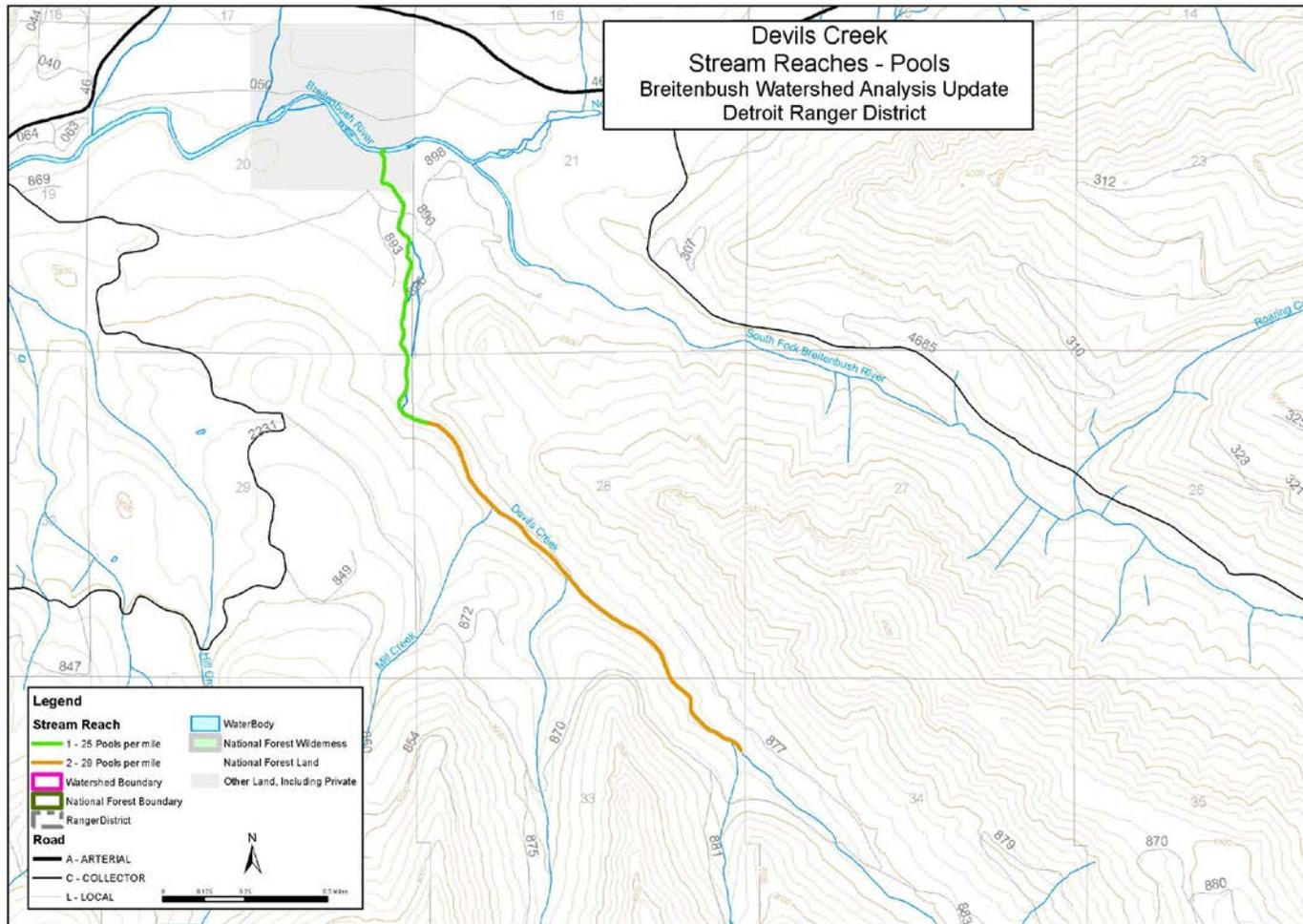


Figure 11 Pools in Devils Creek

Other active restoration projects completed in the watershed include:

1. Flood-damaged Roadside Revegetation Projects in the East Humbug, Devils and Byars Creek Watersheds (1996-1999)
2. Mansfield Creek Debris Torrent Deposit Excavation, Culvert Cleanout and Overflow Project at the Breitenbush Road 46 Culvert Crossing (1997)
3. Spur Road Obliterations and Re-contouring Projects in the East Humbug and Byars Creek Headwaters (1998)
4. Numerous ERFO (Emergency Repairs on Federally Owned) Flood-damaged Road Projects on the Breitenbush Road 46 along the Breitenbush River, in the North and South Fork Breitenbush River watersheds, and in the Humbug, East Humbug, Slide, Mansfield, Short and Devils Creek Watersheds. (1996-2000)
5. Road 4693 Obliteration and Re-contouring Project in the Leone Creek and Upper Breitenbush River Watershed (1999)
6. Breitenbush River Sill Logs Removal, Footbridge Hazard Elimination Project (2000)
7. Road Storm-proofing / Water barring in the Devils Creek Headwaters Project (2001)
8. Road Storm-proofing / Water barring in the Humbug and Roaring Creeks Headwaters Project (2002)
9. Landslide Terracing and Revegetation Project in an East Humbug Watershed Clearcut (2003)
10. Stream Diversion, Landslide Dewatering Project in an East Humbug Watershed Clearcut (2001)
11. North Fork Breitenbush River - Road 4685 Jefferson Bridge Replacement Project
12. Devils Creek Summer Homes Fish Structure Maintenance and Bank Stabilization Project (2001)
13. East Humbug Creek Stand Establishment and Landslide Risk Reduction Project (2002)
14. Humbug and East Humbug Creeks Arch Construction-Fish Passage Projects (2004)
15. Respect-The-River Dispersed Site Rehabilitation Project along the Breitenbush River (2007)
16. Cleator Bend Large Wood Installation in the Breitenbush River (2010)
17. Cleator Bend Tree Tipping Project in the Breitenbush River (2011)
18. Sub-soiling – Soil Productivity Improvement Project in Riparian Thinning Sale Units along lower Humbug Creek and central Breitenbush River (2013)
19. Humbug and East Humbug Creek Tree Tipping and Log Placement Project (2013)

Desired Future Condition

The Desired Future Condition (DFC) is a land or resource condition that is expected to result if goals and objectives are fully achieved. For the Breitenbush watershed, DFCs focus on restoration of Instream Habitat, Riparian Habitat, and Water Quality.

Restoration objectives from the watershed prioritization and recommendations from the 1996 watershed analysis set the framework for reaching the desired future condition.

Instream Habitat

The desired future condition for the fisheries resource includes

- Barrier-free instream habitat capable of supporting self-sustaining populations of resident and anadromous fish.
- Representation of all life stages including spawning, rearing, and migration habitat types in the watershed for all aquatic species.
- Reduction of fine-grained sediment and increased stream complexity with more instream large wood frequency, increased number and quality of pool habitat, increased numbers of side channels and backwater areas, and gravel-sized material in the stream channel for spawning habitat.
- Reduction of site specific impacts related to dispersed camping.
- Habitat needed for all fish life stages is abundant and fluctuation in habitat availability is within the natural range of variability.
- The habitat complexity in the watershed is restored with sufficient large woody material in the rivers and tributaries.
- Water flows sufficient to create and sustain riparian aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.
- Natural sediment transport and bed load movement is needed to prevent high levels of substrate embedment which may cause poor spawning conditions and decrease hyporheic function.
- Hyporheic processes are unencumbered and allow functional nutrient cycling to occur which provides nutrition for fish by promoting healthy populations of aquatic invertebrates.
- The watershed would have functioning floodplains and alluvial fans.

Riparian Habitat

Riparian zones are managed to promote LSR characteristics allowing for floodplain development, future recruitment of large woody material, increased riparian stand diversity, enhancement of primary shade zones and complex bank habitat. Year-round input of leaf, needle, wood and insect material from a variety of species provide a variety of food sources for salmonids and invertebrates. Stream complexity is increased due to increased frequency of instream and riparian Large Woody Debris.

Water Quality

- Water temperature satisfies state requirements (remains within the range that maintains the biological, physical and chemical integrity of the system, and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities).
- Thermal barriers do not limit access to quality fish habitat.
- Water flows sufficient to create and sustain riparian aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.

- Reduced summer water temperatures for fish and other aquatic organisms.

Objectives

Restoration objectives for the Breitenbush Watershed include:

1. Restore quality habitat for resident and anadromous fish.
2. Identify and correct all aquatic passage barriers.
3. Manage riparian areas to develop shade and stand species diversity.
4. Restore quality pools in all fish bearing streams.
5. Develop a robust fisheries conservation and education program.
6. Minimize soil erosion potential from management activities.
7. Promote channel bank stability.
8. Use Respect the River to support the Aquatic Conservation Strategy Objectives with recreation sites.
9. Focus recreational fishing in appropriate areas.
10. Implement projects that re-establish, restore and enhance hydrologic function and processes.

Fisheries and aquatic recommendations from the 1996 watershed analysis are still valid and are in agreement with desired future conditions and restoration objectives. Protection of good existing habitat and restoration of degraded habitat in the Breitenbush River and tributaries remains the priority for the watershed along with long-term reintroduction of anadromous fish. Riparian areas, including sidechannels and off-channel habitat, are important to protect for both aquatic and upland species. Protection and active restoration of riparian areas is important for attainment of riparian habitat desired future conditions.

Hydrology

Baseline Update

1996 Flood Event

In February 1996, a 30-to-40 year storm event influenced the areas stream channels by producing streamflows that altered channel bottoms, banks, and sideslopes. Millions of yards of material were redistributed within the watershed through the channel networks. As a result of the influx of material into the channels channel capacities were exceeded and channels changed. Examples included:

- Shallow rapid debris torrents destroyed numerous road segments.
- Overland flow was captured by portions of the road network causing excessive erosion.

Breitenbush Watershed Analysis Update

- Increased sediment from the upland created sediment wedges within the valley bottom of the stream channel and created flood plain terraces that are unstable.
- Vegetation was removed from preexisting floodplains due to volume of water trying to reoccupy historic channel cross sectional areas.
- Large wood accumulation along flood plain areas.
- Toes of large earthflows eroded and undercut opening up the channel cross-section.

The effects of the above stated examples vary with location and proximity to infrastructure. Other than the road related examples all the above are naturally occurring processes which result from a high water event. Vegetation components of the stream channel are reset with some vegetation being lost through scour, burying, and/or removal. The recovery clock has been set back as a result of this flow event, and vegetation is currently reoccupying open areas along channels disturbed by the flood.

Fire

Since 1996 there have been 116 fires in the watershed, totally 431 acres. The largest fire was the Dinah-Mo fire in 2010 burning 344 acres in the Mt. Jefferson Wilderness. There were 55 lightning caused fires between 1996 and 2012, ranging in size from 0.1 acre to 344 acres. The most active year was 2008 with 21 lightning caused fires totally 34 acres; 2010 saw the most lightning caused acres burned with 345 acres burned. There have been 61 human caused fires reported from 1996-2012, ranging in size from 0.1 acre to 4.25 acres for a total of 10 acres burned. Other activities have included very limited acres of prescribed burning associated with timber sales.

Short Creek

Two areas of relatively recent, natural instability are evident. The eastern most is a debris chute prone drainage that shows numerous debris chute scars that range in age from 1996 back to the early 1900s. The western most is a slump / debris chute complex that appears to have reactivated from the 1996 storm event. In between these two more active areas is another older debris chute complex where the scars would seem to indicate that failures range in age from the stand replacement fire that moved through much of this area in the 1850s to perhaps as late as 1964. The more recent storm events from 1996 to the present do not appear to have reactivated any younger debris chutes in this middle area.

The recent observations of muddy water in Short Creek are a natural phenomenon that results from slope instability in the upper watershed. There is every indication that this slope instability will continue into the future, and there is nothing that can be done to minimize or prevent these slope failures.

Redefinitions of Northwest Forest Plan direction

Numerous court cases have caused a shift in the ability to manage for aquatic species and riparian dependent species. This clarification of intent has affected the ability to implement stewardship type projects within riparian and LSR areas. Its effect on

aquatics, hydrology and watershed restoration is additional expense and time required to develop projects initially envisioned in the 1996 analysis.

Emphasis on Passive and Active Restoration

An agreement between various federal and state agencies that defines the watershed boundary lines and the size of the watershed (5th field) and sub watershed (6th field) is pending. Terminology was agreed upon to allow for consistency in reporting. This stratification allows for consistent disclosure of special characteristics for the North Santiam River Watershed.

Defining the restoration activities in a watershed under these definitions has placed an emphasis upon resource cooperation across the funding lines. Projects that have multiple benefits to numerous resource areas tend to gain momentum and become implemented. Passive restoration prescriptions incorporate the needs of other resource areas and consider preventing future degradation as a result of the project. This insures that the trend for the resources in question is positive towards the desired goal for the watershed and area.

Stratification and adjustment of watershed into 5th and 6th field watersheds

In 2007 agreement was reached by various federal and state agencies on the watershed boundary lines and the size of the watershed (5th field) and sub watershed (6th field). Terminology was agreed upon to allow for consistency in reporting. Only minor shift to the 6th field watershed lines were implemented. This change has no real effect on the hydrology or stream channels in the area.

Watershed Road Densities

Road densities in the area have dropped since the 1996 analysis. This is due to the lack of funds to maintain the roads and the roads being decommissioned and hydrologically stored.

Hydrology Completed Projects

1. Flood-damaged Roadside Revegetation Projects in the East Humbug, Devils and Byars Creek Watersheds (1996-1999)
2. Mansfield Creek Debris Torrent Deposit Excavation, Culvert Cleanout and Overflow Project at the Breitenbush Road 46 Culvert Crossing (1997)
3. Spur Road Obliterations and Recontouring Projects in the East Humbug and Byars Creek Headwaters (1998)
4. Numerous ERFO (Emergency Repairs on Federally Owned) Flood-damaged Road Projects on the Breitenbush Road 46 along the Breitenbush River, in the North & South Fork Breitenbush River watersheds, and in the Humbug, East Humbug, Slide, Mansfield, Short and Devils Creek Watersheds. (1996-2000)
5. Road 4693 Obliteration and Re-contouring Project in the Leone Creek and Upper Breitenbush River Watershed (1999)

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6. Breitenbush River Sill Logs Removal, Footbridge Hazard Elimination Project (2000)
7. Road Storm-proofing / Waterbarring in the Devils Creek Headwaters Project (2001)
8. Road Storm-proofing / Waterbarring in the Humbug and Roaring Creeks Headwaters Project (2002)
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16. Cleator Bend Large Wood Weaving in the Breitenbush River (2008)
17. Cleator Bend Tree Tipping Project in the Breitenbush River (2009)
18. Sub-soiling – Soil Productivity Improvement Project in Riparian Thinning Sale Units along lower Humbug Creek and central Breitenbush River (2013)
19. Humbug and East Humbug Creek Tree Tipping and Log Placement Project (2013)

Desired Future Condition

This area will provide a continuous and diverse habitat for riparian dependent species and high water quality in riverine, wetlands, and floodplain areas. The water bodies and associated riparian areas will contribute to the diversity and dispersion of fish, wildlife and plant species within sub-drainages and also the larger watershed level.

Stream channels will provide diverse, stable habitat for aquatic species as well as maintaining or enhancing water quality. Vegetation on adjacent lands will be managed to provide diverse stands of conifer and hardwood vegetation which provide habitat for riparian dependent species. The amount of large woody debris, both down and standing will be maintained at or above current levels providing for natural appearing and improved channel conditions.

Objectives

1. Restoration of erosion-prone areas
2. Minimize erosion potential from management activities.
3. Minimize effect from management on peak flows

Breitenbush Watershed Analysis Update

4. Maintain desired levels of minimum flows
5. Promote channel bank and channel bottom stability
6. Meet state water quality standards for temperature
7. Balance the social and biological needs within the watershed. (applies to many areas)
8. Manage developed and dispersed recreation sites to improve Aquatic Conservation Strategy Objectives (ACSO)
9. Implement projects that reestablish, restore and enhance hydrologic function and processes
10. Implement projects that reestablish, restore and enhance stream channel and riparian area function and processes

Lands and Minerals

Completed Projects

- PGE permit and Operation and Maintenance Plan developed.
- Detroit water systems upgrades.
- Breitenbush Retreat Center communications Site.
- Fuel reduction in the Breitenbush Residence tract.
- Planning for the Chinook outplant stations completed, construction planned for 2014.

Recreation

Baseline Update

The Breitenbush provides diverse, high quality, all-season recreation opportunities, ranging from developed and dispersed activities along Breitenbush Road and to pristine back country experiences within the Mt. Jefferson Wilderness. Detroit Lake is now the highest use boating lake in the State. The watershed is within a two hour drive of 80 percent of the State's population making it a growing backyard destination. The unique long and narrow configuration of the Mt. Jefferson Wilderness provides easy access to numerous attractive destinations.

Developed recreation sites within the watershed include Upper Arm Day Use Area on Detroit Lake, two group areas: Fox Creek and Cleator Bend, two campgrounds: Humbug and Breitenbush located along the Breitenbush River, one rental lookout: Gold Butte. There is also a special use permit that provides seasonal recreational occupancy in the area for 71 Breitenbush summer homes near the Breitenbush River and Devils Creek. In addition the private Breitenbush Hot Springs Retreat and Conference Center is located in the watershed.

Breitenbush Watershed Analysis Update

Table 1 Campsites within the Breitenbush Watershed (Inventoried Sites)

Type of Site	Number of sites
Dispersed Sites within the Mt. Jefferson Wilderness	214
Dispersed Sites outside the Mt. Jefferson Wilderness	321
Developed Campground Sites	51
Developed Group Sites	(2) capacity for 120 people
Detroit RV Park (private campground)	17

Portions of all of the Forest Services developed campgrounds, organization sites, summer homes, and over half of the dispersed campsites lie within Riparian Reserves.

A portion of the McCoy winter recreation area lies within the watershed. This is the closest winter recreation areas to a large percentage of the Mid-Willamette Valley population.

Much of the McCoy Motorized Recreation Area lies in the watershed. This is a collaborative project between the Forest Service and local OHV clubs to provide more motorized recreation opportunities in the forest. It provides a family friendly OHV experience on existing forest roads and offers great views from the high points.

New plans and strategies have been developed that give guidance and drive need for projects. The following are a list of plans, strategies and other guiding documents that apply in the watershed. (*New plans completed since Breitenbush WA in 1996.)

- Forest Plan

Recreation

- Willamette NF Niche (2006)*
- National Recreation Agenda*
- Regional Recreation Focus*
- Recreation Site Facility Master Plan and 5 Year Action Plan (2006)*
- Recreation Lodging Feasibility Study (2007)*
- West Cascades National Scenic Byway Corridor Management Plan (2007)*
- Winter Sports Management Plan
- Canyon Journeys North Santiam Canyon Alternative Transportation Link Feasibility Study (2006)*
- Travel Management Rule Implementation Environmental Assessment (2009) and subsequent Motor Vehicle Use Map*

Wilderness

- Mt. Jefferson Wilderness Plan (1992)

Breitenbush Watershed Analysis Update

- 10-Year Wilderness Stewardship Challenge*
- Wilderness Management Strategy and Wilderness Implementation Schedule

Scenery

- Scenery Management Systems Handbook*
- Built Environment Image Guide*

According to the 2005 Marine Board 'Boating in Oregon' Triennium Survey, Detroit Lake is now the highest use lake for boating activities. Population is increasing in the Willamette Valley and Portland Metro area, placing more demand for recreation and pressure on resources particularly in dispersed areas of the forest. Detroit Lake Composite Area Management Guide (DLCAMG) was completed in 1992 and is becoming outdated. The guide provided general direction for the orderly development of the area as they relate to the public recreation needs and desires, and environmental protection. Several developments, improvements, management actions including regulations have been implemented since the creation of the guide to enhance recreation and improve resource conditions. Many issues still remain the same. Some trends have shifted since the development of the DLCAMG. We are seeing a wider variety of boating types and bigger boats, different water sports, more RV camping, more family/group camping of which were not fully anticipated in the DLCAMG.

The 2001-year was extremely dry, and the water demands for endangered fish habitat, hydropower, irrigation, and downstream flows were great. To meet these demands, Detroit Lake was selected as the first priority of the 13 reservoirs within the Willamette Basin to draw water from to augment downstream demands. Recreation interests were not given equal weight in deliberations regarding how to manage the water levels in the North Santiam portion of the system. Given the situation, hydrologists and other biological specialists agree that the decision to draw first from Detroit was sound. However, the decision was not understood, and not accepted by the local communities that suffered severe economic losses from the lack of recreation or by the urban dwellers that were not able to enjoy their normal recreational pastimes. As a result of the drought of 2001 and affects to the economy, Detroit Lake was nominated as one of 32 nationally designated "Federal Recreation Lakes." An active Federal Recreation Lakes Committee consisting of many agencies, recreation providers, communities, individuals interested in the management of the lake recreation and its resources. Their main focus is on sustaining lake levels for recreation use while providing for downstream demands, and finding ways diversify recreation opportunities in the Detroit Lake area.

The number of dispersed campsites has increased and so has the area impacted by recreation use. Soil compaction caused by camping and vehicle and foot traffic in riparian areas has reduced or eliminated vegetation. Resource concerns associated with soil compaction and loss of vegetation include increased runoff, degraded water quality as sediment delivery increases and riparian shade decreases. Disposal of human waste in dispersed recreation sites is a public health and water quality issue as well as unsightly. Illegal dumping and litter left behind by campers is on the rise all throughout the watershed. Tree scarring, tree felling and mudding are illegal and destructive activities

occurring in and adjacent to dispersed recreation sites. Many green trees are damaged or cut down by forest visitors which reduces shade and creates a safety hazard as trees die.

Recreation Completed Projects

1. Developed recreation site improvements and restoration:

- **Upper Arm Day Use Area:** Converted the site from dispersed camping to formal day use area with designated swimming area. Installed picnic tables, CXT bathrooms, interpretive viewpoint, trails, barrier posts, fishing platform, picnic shelter, traffic control barriers and minor shoreline stabilization.
- **Cleator Bend Campground:** changed to a group site to meet changing demand. In addition, worked in collaboration with hydrology and fisheries to stabilize the banks (reduce erosion) and at the same time improve spawning habitat.
- **All Campgrounds:** Upgraded sanitary facilities by replacing vault toilets with CXT's. Established campground group size limits, and developed CFR's to protect resources and minimize social conflicts.
- **Fox Creek Group Area:** Converted the site from dispersed camping to a reservation group site. Installed CXT, picnic tables and barrier fencing.
- **Breitenbush Arm of Detroit Lake:** Added a floating toilet.
- **Breitenbush Corridor:** established a no camping corridor within the first mile of the Breitenbush road. Implemented Respect the River projects to limit size and impacts from dispersed camping.
- **Gold Butte Lookout:** was restored and now part of the recreation rental program.
- **Elk Lake Campground:** installed new tables, fire rings and toilets and added it to the fee program. Note - this area is outside the Breitenbush watershed, however management is tied closely to the Breitenbush Watershed due to road access.
- **Motor Vehicle Use Map (MVUM):** the MVUM is updated annually with updates from publics and internal knowledge.
- **McCoy Motorized Recreation Area:** This shared-use road system is comprised of approximately 70 miles of roads open to motorized Class I, II & III users and highway vehicles. It provides spectacular views of Mt. Jefferson and many peaks in the high cascades; it is a family-friendly OHV scenic riding area.

2. Law enforcement and education: Active Forest Protection Officer program with focus on recreation hotspots within the watershed.

4. Summer Home Improvements: two homes were rebuilt, roofs and windows have been replaced, storage sheds built.

5. Vegetation treatments near developed sites or along roads: thinning treatment to improve stand conditions and increase light on forest floor for understory vegetation growth and screening.
6. Removed hazard trees in all developed recreation sites, trailheads, permit areas, and high use roads.
7. Dispersed site maintenance: Marion County Corrections crew and Linn County youth crew does regular cleanup throughout the watershed.
8. Developed public education on minimum impact dispersed camping techniques “Respect the River” including a brochure, posters and website information.
9. Designated West Cascades as a National Scenic Byway, installed route identification signs, and developed the West Cascades National Scenic Byway corridor management and interpretive plan.
10. Implemented no target shooting corridor within a half mile from the Detroit Lake shoreline and along the Breitenbush road

Future Identified Projects

- **West Cascades National Scenic Byway (WCNSB) Corridor Development Plan:** byway plan includes enhancement/development projects identified for Cleator Bend wayside (fish watch, river access, interpretive trail), Lower Breitenbush Hot Springs (day use and interpretation), Mt. Jefferson viewpoint at the forest boundary (vegetation management, viewpoint and interpretation) and the Breitenbush portal (orientation).
- **Breitenbush Road (Road 46):** is nominated as part of the Cascading Rivers State Scenic Bikeway.
- **Expansion of the State designated McCoy Motorized Recreation Area:** add staging areas, facilities and new trails.
- **Upgrade aging water systems:** per state mandates, there is a need to convert aging surface water systems at Breitenbush Campground and Cleator Bend Group Site to well systems. This aligns with the need to upgrade facilities with changing demands in our developed sites and reduce deferred maintenance.

Desired Future Condition

Forest Niche Emphasis: The Willamette National Forest is a recreation connection for Oregon. From east to west and north to south, scenic travel corridors connect growing urban and rural communities to a landscape rich in biological diversity, natural resources, cultural history, and opportunity. Visitors find short-duration, year-round opportunities for renewal through recreation often associated with unique water features from reservoirs to waterfalls. Unique geologic, natural and cultural features provide a connection with visitors that fosters education, interpretation and respect for this incredible place. Day use is the predominate use but some overnight accommodations are provided. The recreation program accommodates changing demographics and visitor

preferences and provides opportunity for interpretation and education. Volunteers, partners, permittees and outfitter guides are a significant part of recreation program delivery.

The watershed fosters public use and enjoyment to the level that ensures protection of its scenic, recreational, cultural, natural, and ecological values. Recreational opportunities are provided consistent with the demand for a variety of activities and settings ranging from dispersed non-motorized primitive to highly developed motorized settings. The Highway 22 corridor and Detroit Lake area focus on developed recreation, interpretation and serve as a hub for summer and winter recreation activities. High cascades wilderness provides non-motorized dispersed recreation settings where minimal facilities are needed for resource protection, health and safety, and trail access. Interior mid-elevation forests provide rustic settings for managed OHV and dispersed use, where fewer facilities and amenities needed for resource protection and health and safety are provided.

Detroit Lake provides an important setting for lake-based recreation to the mid-Willamette Valley and Portland metro population and offers many amenities for visitor convenience and comfort. This area serves as a backyard destination to many visitors living within a few hours drive. Detroit Lake is a bustling place for all types of boating activity. The setting is developed in nature with new overnight facilities focused on the south side of the lake. A higher level of development including new overnight facilities on the south side of the lake is focused around the reservoir. New development is necessary to accommodate use and demand, while protecting resources and scenic integrity. Management, law enforcement presence, onsite visitor management and controls are obvious and emphasize visitor health and safety.

Use and occupancy within the watershed are managed to protect natural and cultural resources, minimize depreciative behavior, prevent use conflicts, and ensure healthy, safe and enjoyable recreational experiences. Managed dispersed camp areas retain the appearance of natural conditions, are compatible with other resource values, and managed to minimize user conflicts and wildfire risk.

Interpretation is focused on the scenic byway corridor to foster a land steward ethic, and the interconnectedness of land and people. Interpretation enhances the recreation experience, influencing visitor behavior and providing information to protect the resource.

Objectives

1. Reduce recreation impacts to resources and improve the aesthetic environment especially in riparian areas.
2. Reduce user conflicts caused by congestion, conflicting use, visitor behaviors and differing expectations.
3. Reduce law enforcement problems and encourage respectful user behavior that complies with laws and regulations and allows reasonable visitor security.
4. Provide for public health and safety including reducing exposure to hazards, potential of fire, and sanitation concerns.

5. Provide recreation facilities and opportunities consistent with the Forest niche that meets public demand, use levels, and user expectations while reducing resource impacts, social issues and health and safety concerns.
6. Recreation opportunities reflects changes in demand based on changing technology, visitor preferences, and needs of people with disabilities, minorities, low income and underserved populations.
7. Maintain and enhance recreation settings with vegetation management practices.
8. Maintain the condition of facilities and quality of services provided to meet visitor satisfaction (as reported through National Visitor Use Monitoring customer satisfaction surveys).
9. Foster and expand partnerships to enhance and sustain program delivery and goals.
10. Initiate projects by maximizing leveraging of funding grants, Payco funding, partners, volunteers, recreation fees and other various sources.
11. Apply sound business practices to recreation.
12. Reduce deferred maintenance backlog to 20% by 2015, 70% (2020), and 90% (2030).
13. Recreation facilities are financially sustainable and meet national and regional quality standards.
14. Meet maintenance standards required for trails program.

Scenery Resources

Baseline Update

From a scenic resource management perspective, the overall watershed landscape is in relatively good condition meeting Forest Plan standards and guidelines. The sizes, arrangements, and geometric character of timber harvest, particularly regeneration harvests of the past 50 years have had a lasting effect on the scenic quality of the area. Generally, most have trees over 10-15' tall and are considered recovered or no longer in a disturbed condition.

Vegetation along travelways has grown tall creating a screen or visual barrier. Many viewpoints no longer offer scenic vistas, and where vegetation is dense, views into the forest or other scenic attributes are limited. Recent commercial thinning treatments have emphasized retaining diverse species and variable density, and enhanced understory vegetation development including fall and spring colors.

There are a few localized places where the existing condition is inconsistent with visual quality objectives. The existing transmission line corridor and facilities impose an unnatural appearing form upon the landscape that is inconsistent with Forest Plan "Retention" VQO's. The maintenance of a transmission line with a clearing of low-growing vegetation surrounded by forest introduces a linear form of such a scale that dominates the scenic views of foreground and middleground views.

Garbage, exposed human waste, damage to vegetation and excessive soil compaction from dispersed camping, and user trails affects the aesthetics of a site and continues to be a growing problem.

Projects completed in the watershed in the last ten years

1. Scenic mitigation projects as a result of timber sale operations along Breitenbush Road and other important travel corridors and recreation sites.

Desired Future Condition

To the average visitor, the forest landscape appears:

- Moderately altered in matrix lands where management activities are obvious;
- Naturally appearing within the Breitenbush watershed corridor; and
- Naturally evolving and intact within the Mt. Jefferson and Opal Creek Wilderness areas.

The valued landscape character and sense of place is expressed at a high level within the Breitenbush watershed. Within the watershed, deviations may be present but repeat the form, line, color, texture and pattern common to the landscape character and at such a scale that they are not evident, with the exception of the powerline corridor. It reflects the diversity, beauty, and ecology of the west Cascades temperate forest. Management activities are conducted in such a way that they are subordinate to the character of the natural landscape and not evident to the casual Forest visitor. Sensitive forests foregrounds and along travel corridors maintain a natural setting. Developments harmonize with the natural environment. Disturbance by human activity and development is managed to mitigate and reverse impacts on scenic resources.

Objectives

1. Maintain the highest possible quality of landscape aesthetics and scenery commensurate with other appropriate uses, costs and benefits.
2. Implement management actions to minimize adverse impacts to scenic quality (e.g. project and facility design and placement on the landscape, harvest unit design).
3. Improve the image, aesthetics, sustainability, and overall quality of Forest Service facilities.

Roads

To accommodate public use and resource management and protection, the current transportation system within this watershed consists of about 249 miles of Forest Service system roads. Dominant roads in this watershed include Road 46. Forest Road 46 provides the primary access between the Willamette and Mount Hood National Forests. It also bisects the watershed and parallels the Breitenbush River for the majority of its 16.9 miles. Forest Road 46 is a double lane paved Forest Highway and is the only road on the district that is Maintenance Level 5. This road has been designated a National Forest Scenic Byway and is also under consideration to become an Oregon State Scenic

Bikeway. As part of the American Recovery Act in 2009, the Forest Road 46 went through a \$3.5 million reconstruction effort that resurfaced the majority of the road surface. The majority of the rest of the forest road system within the watershed has deteriorated over time as maintenance budgets have declined. The watershed area has many miles of degraded, brushy, and unmarked roads.

In 1996, large scale flooding within the watershed damaged and closed many roads, facilities, and recreational areas. From 1996 to present most or all of these areas damaged and/or closed due to this large scale flooding have been restored, reconstructed, or repaired. The majority of issues identified in the original watershed analysis that were based on the 1996 large scale flooding have been resolved and are no longer a threat to public safety.

Declining maintenance dollars are resulting in reduced access for all users in many areas of the watershed. Few of the local system roads actually receive reoccurring annual maintenance. Overall, less surface, drainage, and roadside maintenance is getting done yearly. At present, roads are closing themselves through cut or fill slope failures, stream cross failures, and/or brush encroachment. These “closures through neglect” do not provide protection against resource damage or protection of the large capital investments that were made when these roads were constructed. Over time, only the roads where maintenance is performed will remain open. Other roads may remain open dependent on: level of use that will discourage brush encroachment, vegetative types not prone to brush encroachment, soil stability or back and fill slope design that are not prone to sloughing of material that can block drainage or road prisms, and the condition and functionality of the drainage system.

Roads Completed Projects

1. Humbug Creek culvert replacements
2. Reconstruction of Forest Road 46
3. Ongoing annual maintenance
4. Spur road obliterations and re-contouring projects in the East Humbug and Byars Creek headwaters
5. Numerous ERFO (Emergency Repairs on Federally Owned) flood damaged road projects
6. Road 4693 obliteration and re-contouring

Desired Future Condition

The Road system provides the minimum necessary access to meet resource needs and manage existing stands. New construction, reconstruction and road maintenance are planned and implemented at the lowest mileage and standards required to provide for the efficient transportation of goods, safety of forest users, and minimize impacts to forest resource values.

Objectives

1. Manage road stability, erosion and mass movement.
2. Reduce open road densities.
3. Inventory and monitor the road system.
4. Evaluate and determine watershed access needs.
5. Develop road system to address resource needs including recreation, safety, resource protection, wildlife needs and costs.

Trails

There are approximately 38 miles of trails in the Breitenbush Watershed, some of those are on the Mt Hood National Forest. Some are infrequently used like Crag, Short Mountain, Mansfield, Leone Lake and short sections of the Rapidan, Beachie and French Creek Ridge which wander in and out of the watershed along the dividing ridgelines. Others are heavily used, like the Pacific Crest Trail, South Breitenbush, South Breitenbush Gorge National Recreation Trail (NRT), Crown Lake, Roaring Creek and Whitewater which also meanders in and out of the watershed along a ridgeline.

The South Breitenbush Gorge National Recreation Trail is a popular 4.6 miles route that parallels the South Fork of the Breitenbush River. The trail is in need of infrastructure improvements, installations, reconstruction and realignments to reduce impacts due to poor routing through wet areas, stream crossings and to address a substantial amount of deferred maintenance.

The South Breitenbush trail #3375 is a popular route to access Jefferson Park. Approximately 5 miles of this poorly aligned trail is in need of significant repair, reconstruction and relocation to reduce impacts to sensitive areas and water quality from erosion of the trail tread.

The Pacific Crest National Scenic Trail #2000 is also a popular route to access Jefferson Park. Approximately 6 miles of this poorly aligned trail is in need of significant repair, reconstruction and relocation to reduce impacts to sensitive areas and water quality from erosion of the trail tread.

There are approximately 6 miles of non-system trails in the area adjacent to the Breitenbush Community. There is a need to complete an inventory of the condition of this trail system in order to make a determination of how to properly manage it. If the decision is made to bring them into the trail system then coordination with volunteers and partners will need to occur to ensure the system is properly maintained.

The maintenance of the trails in this watershed had been funded, in large part, with Title II funding. With the possible discontinuation of Title II funding, the capacity to perform trail maintenance will be significantly reduced.

Trails Completed Projects

1. Jefferson Park user-created trail rehabilitation. Installation of trail signs to clarify intended paths for use to avoid damage to sensitive areas. Planting/transplanting of native vegetation in rehabilitated trails. Project ongoing. (2008-present)
2. Annual maintenance including logout, brushing and minor tread drainage maintenance of most popular trails in watershed (Trail #s 2000, 3373, 3375, 3366, 3361, 3362, 3349, 3342). Periodic maintenance including logout of and minor tread drainage maintenance of least popular trails in watershed (Trail #s 3336, 3360, 3367, 3363, 3341). (1996-present)
3. Breitenbush Gorge National Recreation Trail; Heavy drainage maintenance and structure installation to harden trail tread through wet areas, and address poor drainage. This has included the removal of non-standard trail bridges and the replacement of trail bridges with standard design bridges. Project ongoing. (2011, 2013)
4. Pacific Crest National Scenic Trail; Partial tread reconstruction, heavy drainage maintenance to address most substantial erosion and drainage issues. Project ongoing. (2012-2013)

Desired Future Condition

A sustainable trail system that provides adequate opportunities to a variety of user groups while working with volunteers and partners to maintain trails.

Objectives

1. Decrease damage to sensitive areas.
2. Reduce erosion by rerouting badly aligned trail sections out of meadows and off steep slopes.
3. Reduce long term trail maintenance needs by rerouting trails out of meadows and off steep slopes.
4. Provide adequate and diverse trail opportunities for different activities and user groups.
5. Increase partnerships and volunteer base to help maintain a sustainable system of trails.

Soils

Baseline Update

Seventeen years have passed since the Breitenbush WA was completed. The findings in the 1996 WA are still valid today.

Management direction in the past two decades has shifted to thinning. Thinning maintains an intact root mat across the unit and adds considerable organic matter to the soil. That coupled with more concern over compaction and a greater willingness to subsoil has improved the quality of the soil resource. From a soils standpoint, the greatest future concern is our lack of burning. We are accumulating massive amounts of

organic matter each and every year. It is not sustainable and will not last indefinitely. Future fires under dry weather conditions and low fuel moistures have the greatest potential to adversely affect soil productivity on the large scale.

One area of concern within the watershed has been the instability of Short Creek. There has been public concern that Short Creek flows extremely muddy during runoff events.

In June, 2013 a field reconnaissance to Short Creek was completed. Two areas of relatively recent, natural instability are evident. The eastern most is a debris chute prone drainage that shows numerous debris chute scars that range in age from 1996 back to the early 1900s. The western most is a slump / debris chute complex that appears to have reactivated from the 1996 storm event. In between these two more active areas is another older debris chute complex where the scars would seem to indicate that failures range in age from likely the stand replacement fire that moved through much of this area in the 1850s to perhaps as late as 1964. The more recent storm events from 1996 to the present do not appear to have reactivated any younger debris chutes in this middle area.

No attempt was made to map or tally the number of failures in this fairly large and complex area. Perhaps two dozen or more failures sites are evident in the last 150 years or so. The failure of the most immediate interest, which occurred only a couple years ago, was a small reactivation of only a small portion of one of the two main slides within the western block, mentioned above. These are natural failures in a remote area. They have been failing intermittently for many decades, related in part to major storm events. Slope instability will likely continue periodically, and there is essentially no means to assist with stabilization.

Special Management Areas – Late Successional Reserves

LSR Completed Projects

1. The Interagency Mid-Willamette LSR assessment was completed

Desired Future Condition

Connectivity to the Quartzville LSR (late successional reserve) will be maintained and enhanced. Interior forest will be intact and development of old growth characteristics of species diversity, horizontal and vertical structure, legacy trees, and patch size will be accelerated. Road density is reduced. Improve public health and safety as well as recreational opportunities where prudent. Prevent large scale disturbances from fire by working to restore fire dependent ecosystems. Develop sustainable, late-successional vegetative structures and species composition that correlates with the natural fire regime and reduces fuel loading. Protect down woody debris and snags at levels recommended in the LSR assessment.

Improve resiliency of forest conditions to fire with fuels treatment activities. Decrease stand density with mechanical vegetation management. Reduce natural and mechanically created surface and ladder fuels to minimize extreme fire behavior.

Objectives

1. Maintain and enhance connectivity between the Jefferson and Quartzville LSR's.
2. Maintain and enhance stand diversity.
3. Buffer commercial thinning boundaries adjacent to interior forest.
4. Reduce the risk of large scale fires.
5. Establish prescribed fire opportunities and fuel breaks.
6. Pre-Commercial Thin (PCT) stands <20 years old.
7. Commercial thin stands <80 years.
8. Create snags and Large Woody Debris in deficit areas.

Special Management Areas – Wilderness

Baseline Update

In 2005, the Chief of the Forest Service adopted the “10-Year Wilderness Stewardship Challenge” (10YWSC) recommended by the Chief’s Wilderness Advisory Group. The 10YWSC renews Forest Service commitment to bring all wildernesses to a minimum level of stewardship within 10 years. Currently, the Mt. Jefferson Wilderness meets the overall minimum stewardship level. There are, however, some elements which we are not meeting minimum stewardship. Those elements are as follows: non-native/invasive plants treatment, and baseline workforce or staffing to support the Wilderness program.

Wilderness visitation has been holding steady with little variation, a larger percentage is day use compared to years past. Jefferson Park remains a popular destination for wilderness visitors. The fire ban and designated site system is still in effect within Jefferson Park, as well as all standard wilderness regulations. The Crown Lake vicinity remains a popular destination as well due to the ease of access. Though use levels have been holding generally steady, impacts to areas popularly used in the watershed are experiencing increased degradation and impacts. A measure of these increased impacts is indicated by the proliferation of campsites within the areas from 122 in the 1996 analysis, to the current level of 214 sites, an increase of about 175%. Some of this variation may be due to higher precision of mapping and survey technologies. Field observation has shown a substantial increase to be true. Visitor use impacts related to user-created trail proliferation and human sanitation are among the most problematic in Jefferson Park. Impacts as measured in the Campsite Condition Inventory surveys show many conditions to be out of forest plan standard. Site barren core area and damage to trees are the conditions most out of standard.

Areas of the Wilderness within the watershed were impacted by multiple wildfires. Most of these fires were small in size and were suppressed immediately. The Dinah-mo Peak fire began as a lightning strike and was allowed to burn to accomplish resource benefits. Suppression occurred once the fire began to threaten resources outside the Wilderness.

The subalpine meadows are being invaded by trees, thereby decreasing the amount of open area or “park” in Jefferson Park. Over the last 50 years the proportion of meadow occupied by trees increased from 8% to 35%. (Zald, et.al, 2012)

Decreases in annual funding have resulted in a substantial decrease in field personnel and capacity to implement management, education, enforcement and maintenance actions, as well as restoration activities.

Wilderness Completed Projects

1. Annual maintenance including logout, brushing and minor tread drainage maintenance of most popular trails in watershed (Trail #s 2000, 3373, 3375, 3366, 3361, 3362, 3349, 3342). Periodic maintenance including logout of and minor tread drainage maintenance of least popular trails in watershed (Trail #s 3336, 3360, 3367, 3363, and 3341). Project ongoing. (1996-present)
2. Performed Wilderness Campsite Inventory surveys to inventory and evaluate campsite conditions. Project ongoing. (2010-present)
3. Performed backcountry wilderness patrols and education. Project ongoing. (1996-present)
4. Completed burn rehab on 2 miles of fire impacted trails. (2011)
5. Established Partnerships with Chemeketans, Oregon Equestrian Trails and The Backcountry Horsemen of America. Ongoing.
6. Survey and treatment of high likelihood sites for non-native, invasive plants. (1996-present)
7. Jefferson Park user-created trail rehabilitation. Installation of trail signs to clarify intended paths for use to avoid damage to sensitive areas. Planting and transplanting of native vegetation in rehabilitated trails. Project ongoing. (2008-present)
8. Use of Weed Free Feed is required by all Wilderness visitors.(36 CFR 261.50a) (2007)

Desired Future Condition

Visitors find exceptional natural scenic beauty and opportunities for primitive and unconfined recreation, closeness to nature, inspiration, independence and solitude. Visitors are challenged by a natural environment with a moderate to high degree of risk that requires self-reliance. To the extent practical, wilderness is protected and managed to preserve and improve its natural conditions, heritage, and allow natural processes to occur. Natural ignitions are allowed to burn within Wilderness boundary. Native vegetation thrives and non-native, invasive plants are eradicated or controlled. Highly impacted areas are protected from degradation or rehabilitated with site recovery projects, user education and user management.

Objectives

1. Educate the local public to understand why fires are important in this system, when considering fire use.
2. Provide for public health and safety to wilderness standards.
3. Keep natural ignitions within the wilderness.

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4. Manage fires for resource benefit when they are within prescription.
5. Educate visitors and the public on wilderness values and ecosystems that instills appreciation and protection.
6. Manage human impacts to resources especially in riparian areas and alpine meadows.
7. Reduce encounters per day to meet standards for wilderness resource spectrum.
8. Reduce conflicts between wilderness values and social expectations.
9. Reduce conflicts among user groups.
10. Meet the 10 year Wilderness Stewardship Challenge set forth by USFS Chief.
11. Minimize disturbance by fire and humans to cultural resources.
12. Maintain wilderness boundary.
13. Meet Forest Plan standards for solitude, social experience and resource impact measures.
14. Eliminate non-native, invasive plants.

Vegetation

Baseline Update

In 1996 the landscape vegetation patterns, composed of different forest structural classes, were assessed and compared to the conditions that existed in 1895. As described in the watershed analysis, four structural classes were identified: stand initiation, stem exclusion, understory reinitiation, and old growth. Historical structural stages were derived from stand data and based on historical maps. Currently we describe the structural stages in terms of seral stage: early seral, mid-seral with open canopy, mid-seral closed canopy, late seral open canopy, and late seral closed canopy. This coarse-scale comparison of current and historic landscape patterns provides some perspective on the vegetation changes that have occurred over time.

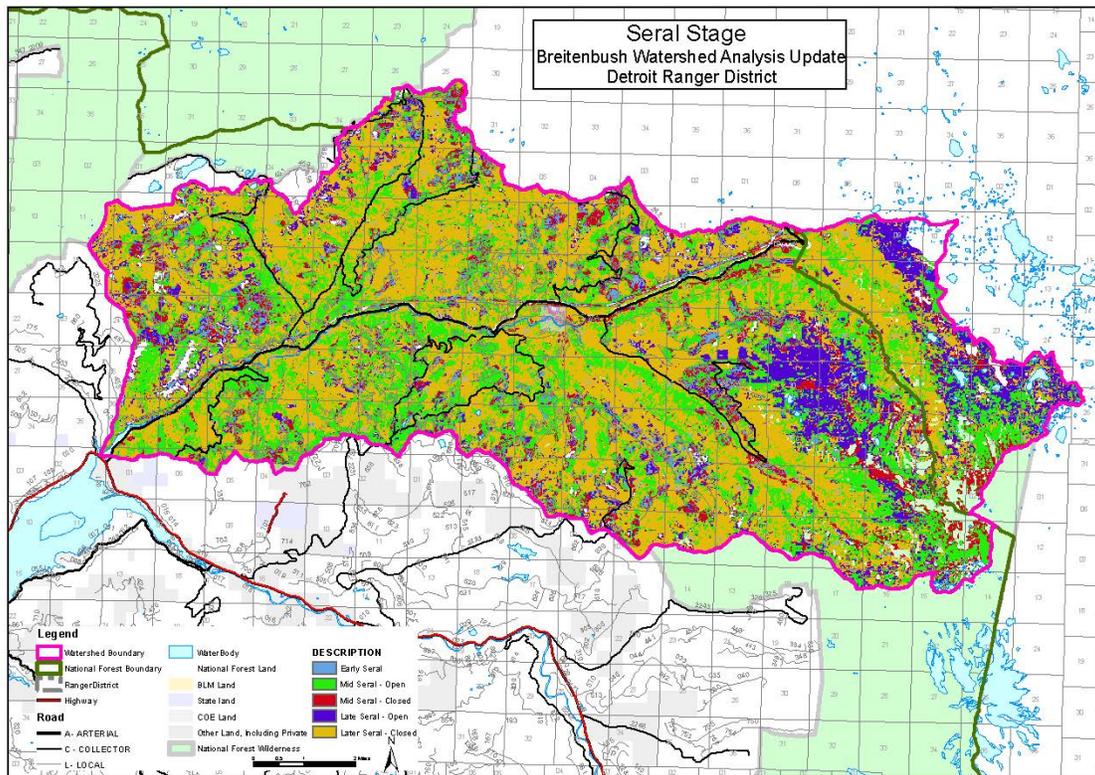


Figure 12 Map showing the Vegetation Seral Stages in the Breitenbush Watershed

Other important changes to current vegetation patterns since 1996 include:

- A reduction in the amount of clearcutting in the watershed since 1996 has resulted in a reduction in the rate and amount of new early seral stands being created
- Many of the stands identified in 1996 in the stand initiation stage have now reached crown closure and moved into the mid seral stage.

In the 1996 watershed analysis, the primary changes identified from historic conditions to current conditions included a reduction in early seral (stand initiation) stands, an increase in mid seral (stem exclusion stands), and a reduction in understory reinitiation and old growth stands. This still holds true today. The biggest change has been the distribution of the stand initiation stage across the landscape. (Figure 13)

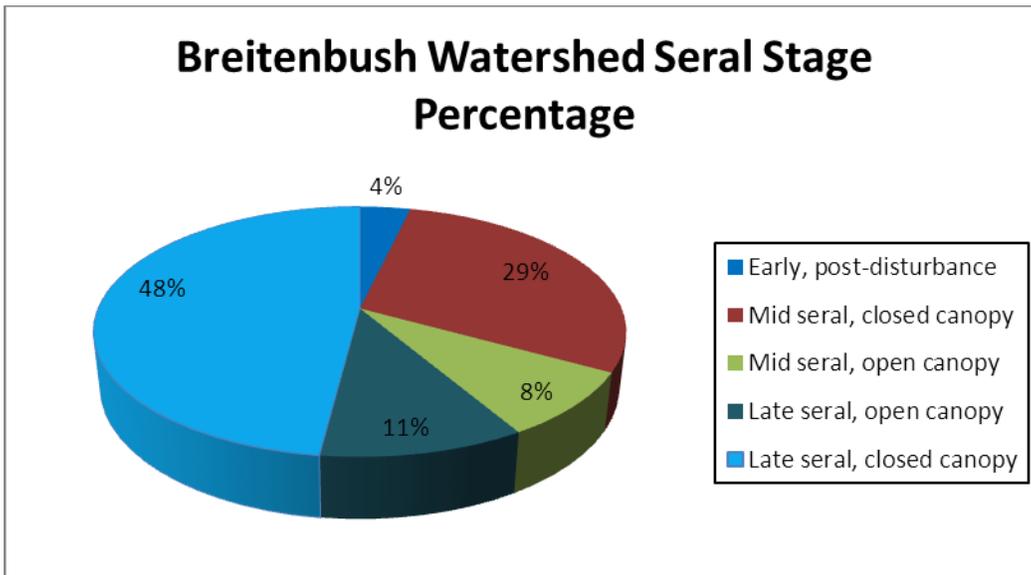
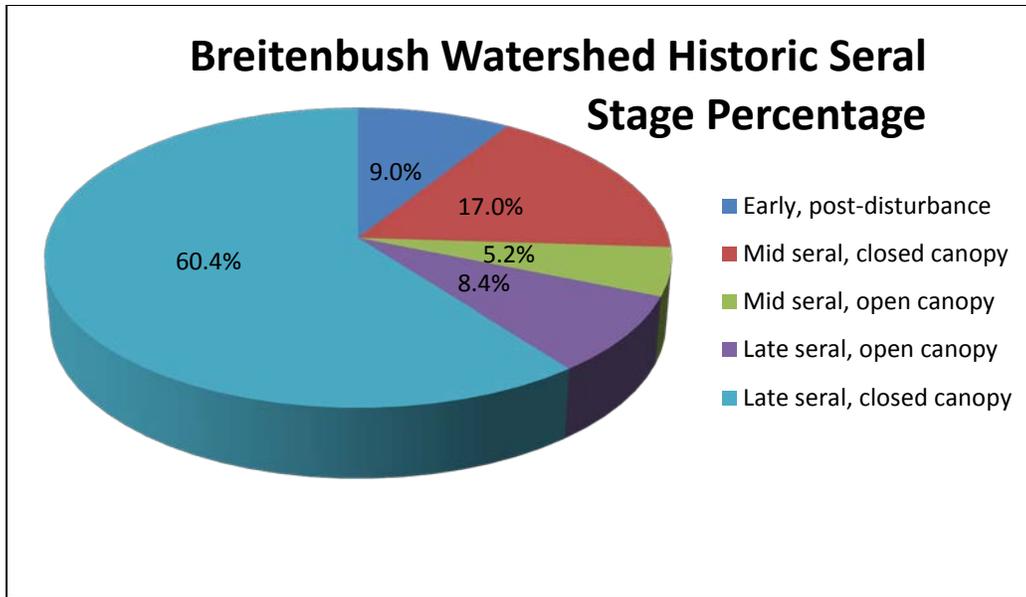


Figure 13 Percentage of Seral Stage in the watershed. The upper figure shows historical percentages. The lower figure indicates 2013 percentages.

The 1996 watershed analysis also identified a change in the pattern of structural stages across the landscape from historical conditions. Historically vegetation patches were larger than today due to past fire patterns that tended to create large blocks of early seral stands. Timber harvesting and fire suppression activities have resulted in a more fragmented pattern of conditions across the landscape than what existed in 1895. The overall landscape remains fragmented.

Vegetation Management Completed Projects

1. Breit Thin
2. Sugar Pine Timber Sale
3. Bould Puppy TS

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4. Canyon ATV
5. Canyon East ATV
6. Fly Salvage
7. Fox Devil Salvage
8. Full Moon Salvage
9. Horse Byars TS
10. Humstinger TS
11. Lemans Salvage
12. Lo Breit Revisited TS
13. Roaring Pot TS
14. Tumbug TS
15. Windy Canyon TS
16. Noxious weed removal throughout the watershed
17. Precommercial thinning completed on approximately 2219 acres
18. Planting of conifer seedlings completed on approximately 73 acres

Desired Future Condition

Vegetation is managed to conserve natural resources, promote vigorous long-term productivity, sustain yield, increase ecological diversity, and enhance environmental quality. Forest vegetation is distributed across the landscape in a variety of structural stages, emulating natural historic disturbance patterns. Early, mid, and late-seral stands exist in similar proportions to what they were pre-settlement. Snags and down wood are restored to the quantity and size class distribution more historically appropriate for the seral stage.

Objectives

1. Maintain and enhance growth and health of managed and natural stands.
2. Increase ecological diversity by increasing vegetation species richness, diversifying stand structure, and creating quality early-seral and late-seral habitat.
3. Maintain and restore meadow features.
4. Provide a variety of forest products.
5. Provide a sustainable timber supply.
6. Reduce the density of overstocked young stands.
7. Accelerate stands toward late-seral stand characteristics in the Late Successional Reserve.
8. Increase snag and down woody densities in the desired size class distributions in stands where appropriate.
9. Integrated program objectives are incorporated into silvicultural prescriptions.

Wildlife

Baseline Update

Since 1995 there have been a number of natural and human induced events that have altered the physical, biological, and social character in the watershed. These alterations have changed the wildlife habitat characteristics, legal requirements and habitat improvement needs. These changes include:

Delisting of the American Peregrine Falcon and the Bald Eagle: The American Peregrine Falcon and Bald Eagle were de-listed and are no longer federally Endangered or Threatened. These species are now managed by the U.S. Forest Service in Region 6 (Pacific Northwest) as sensitive species. Sixteen regionally sensitive wildlife species have habitat within the watershed.

Northern Spotted Owl management focus: Prior to 1996 surveys for spotted owls were conducted in project areas to determine activity center locations and effects to them. Since 1996 habitat is assumed to be occupied and activities seasonally restricted to protect pairs which may be nesting in the area. Surveys are rarely conducted and they are focused on clearing a specific activity. The USFWS has developed a revised recovery plan for the Northern Spotted Owl which focuses more on the number of acres needed to support the desired number of pairs. Documented activity centers increased from 20 to 35 since 1996.

Barred owls are present in the watershed and are contributing to the decline of Northern spotted owls range wide.

In November 2012, the US Fish and Wildlife Service issued the final revised recovery plan for the Northern spotted owl designating areas as critical habitat. The Revised Recovery Plan recommends that “land managers conserve older forest, high-valued habitat, and areas occupied by northern spotted owls; and actively manage forests to restore ecosystem health in many part of the species’ range.” (USFWS 2011).

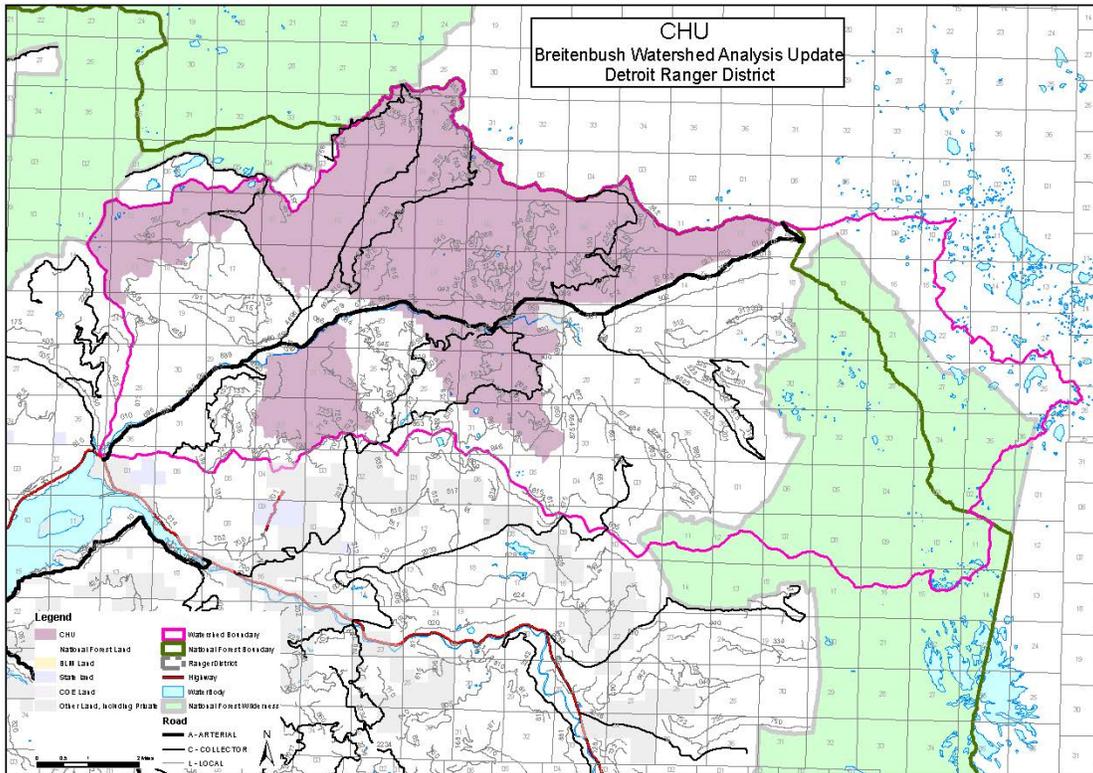


Figure 14 Map showing location of Northern Spotted Owl Critical Habitat (CHU) as per the Revised Recovery Plan

Red tree voles: Red tree vole survey protocol version 3.0 is the current survey protocol. Some surveys have been completed in recent years. No active nests have been located to date.

Big game survival and habitat availability: Since 1996 big game survival and herd size appear to have decreased due to a number of factors including increases in predators, disease, harvest permit numbers, habitat quality and damage to road closure devices. Predator numbers have increased and hunting success has decreased in the cougar and black bears populations. A ban on using dogs to track cougars and bears in Oregon has limited hunter success for these species. Harvesting of female deer and elk has dramatically increased through gender-specific hunts. Forage quantity and quality have dropped as a result of clearcut areas returning to young forest conditions and excluding forage species. Damage to road closure devices has allowed more roads to be open than planned and reduced effectiveness of habitat.

Fires have recently increased forage quality and quantity in wilderness areas in the eastern portion of the watershed.

Special management areas and special interest areas: Management plans for special management areas and special interest areas in the watershed have not been completed as scheduled. Existing conditions and species use is unknown and as a result habitat restoration or improvement needs cannot be determined. Willamette Forest Plan

Management area types in the watershed are old growth groves, pileated woodpecker, pine marten, special wildlife habitat areas, and lakeside areas.

Changes related to Desired Future Condition

1. Target values for big game forage cannot be attained in many areas based on forest management guidelines changing since the Willamette Forest Plan was written. New science has altered what was assumed in the original plan and management direction is not reflecting the new science. Revisions to the Forest Plan have not happened to alter basic assumptions, revised the habitat effectiveness model, addressed changing conditions or integrated changing population management decisions of the Oregon Department of Fish and Wildlife.
2. Big game populations are no longer monitored to determine numbers or distribution. A connection should be made between habitat capability to support big game and the number of animals being maintained in the BGEA's by ODFW. Big game numbers appear to be much lower than the level existing habitat conditions could support. Without monitoring we cannot determine if our efforts to manage habitat are having a positive effect on big game populations. Predation on big game by cougars and black bear is occurring but is not being monitored for extent or impact on population levels. Determining what is limiting populations in the watershed is important as this would identify what factors need to be managed or what assumptions need to be changed.
3. Roads identified for closure in open road analysis EA's should be closed to reduce road densities to those desired in the watershed. Current open road numbers are above those recommended. Some roads have been closed due to flood damage and other factors. A road analysis should be conducted to determine current and desired values for all planning subdrainages or big game emphasis areas in the watershed to determine what needs are present.
4. Connecting habitat between late successional reserves needs to be revisited to determine if adequate habitat is being maintained. Two Pine Marten and two Pileated Woodpecker management areas were retained in areas where habitat connections are inadequate which were not mentioned in the original Watershed Analysis.

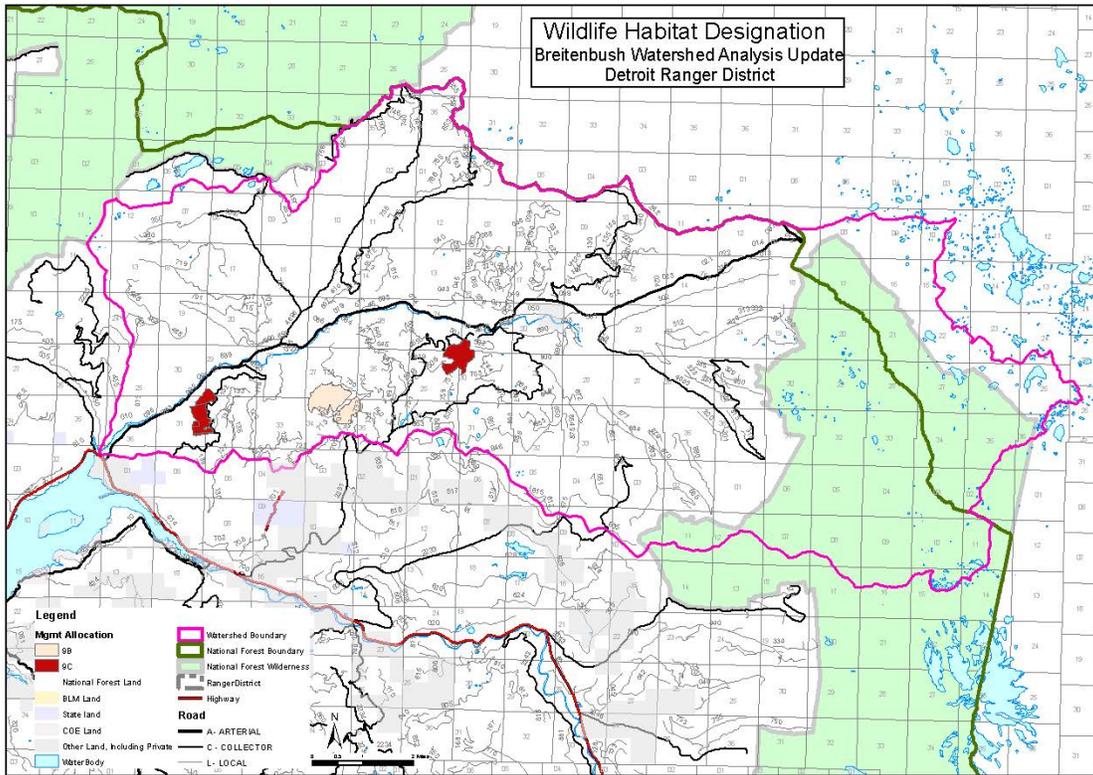


Figure 15 Map indicating location of Pileated Woodpecker Habitat Areas (9B) and Marten Habitat Areas (9C)

Wildlife Completed Projects

1. Powerline and food plot fertilization in partnership with Oregon Hunters Association.
2. Gates installed to provide seasonal closures in big game winter range, reducing disturbance and poaching.

Desired Future Condition

Habitat components for native terrestrial wildlife species are diverse and well distributed. Areas of connectivity among the Quartzville and Jefferson LSRs as well as the small LSRs are identified and protected to allow adequate dispersal and migration patterns by spotted owls and other wildlife. Habitat is managed to maintain viable populations of all native, existing and desired non-native animal species. Down woody material and standing snags are monitored and maintained at desired levels. Species of concern in critical areas are managed with plans that provide current and effective objectives for desired population levels. Sufficient habitat for neotropical migrants is provided by hardwoods such as willow and cottonwood in riparian zones. Disturbance of neotropical migrants is minimized during the breeding season. Corridors of late successional characteristics between LSRs are developed with strategically placed riparian treatments. Green tree retention patches are persistent over time and sustained through effective

management practices. Habitat enhancement projects focus on areas and species where a direct connection to population improvements can be made.

Objectives

1. Revise management objectives for all big game management areas.
2. Develop a strategy to determine the factors which are limiting big game population levels in each Big Game Emphasis Area and improve habitat where needed.
3. Develop a strategy to connect projects to improve big game habitat effectiveness with non-habitat related factors affecting recruitment/survival such as predation, population levels, disease, hunting season type and length which is controlled by ODFW.
4. Implement USFWS Northern Spotted Owl Revised Recovery Plan.
5. Maintain sufficient down woody material to meet levels specified in the Willamette Forest Plan, Northwest Forest Plan and Late Successional Reserve Assessment.
6. Increase average stand diameters.
7. Maintain sufficient snags to meet levels specified in the Willamette National Forest Management Plan, Northwest Forest Plan and Late Successional Reserve Assessment.
8. Develop management plans for species of concern in unique or limited habitat types such as wetlands.
9. Enhance habitat for neotropical migrants in riparian zones.
10. Manage green tree retention areas (GTRs) for maintenance and monitoring. Maintain GIS layer of GTRs.
11. Monitor the benefits of habitat improvement projects for wildlife populations.

IV. Recommendations

Potential Projects

Watershed-wide Projects (not tied to a specific resource area)

1. **Breitenbush Hot Springs:** Develop a restoration and enhancement plan for the Breitenbush hot springs.
2. **Short Lake:** Develop a plan to restore and enhance recreation opportunities and restore riparian habitat and improve water quality in the Short Lake area.

Botany

1. Meadow enhancement
2. Rare plant surveys
3. Huckleberry enhancement

Breitenbush Watershed Analysis Update

4. Continue treatment and move towards eradication of Early Detection, Rapid Response (EDRR) invasive species.
5. Control well established weeds in high priority areas
6. Restoration of highly disturbed areas
7. Survey for *Rivulariella gemmipara* habitat along Breitenbush trail and near Jefferson Park.
8. *Sisyrinchium sarmentosa* surveys in all meadows in the watershed.
9. Plant survey of the Bear Point area in the north part of Mt. Jefferson Wilderness
10. Continue to survey for and monitor *Calamagrostis breweri* in the Mt. Jefferson Wilderness.
11. Upper Arm Campground vegetation rehabilitation
12. Special habitats surveys
13. Mansfield area weed control and vegetation rehabilitation
14. Survey for aquatic fungi

Fire and Fuels

1. Manage stands in North part of watershed
2. Enhancement/ restoration/ fuel breaks throughout the watershed
3. Potential projects-WUI hazardous fuels reduction around summer homes/ resort, 2231 and 891 roads, City of Detroit/state land (South part of watershed) Mackey Creek area and developed recreation sites. Fuel breaks along wilderness 4685 Rd, 4697 Rd, 4696 Rd, and wilderness containment line
4. Prescribed fire for restoration in sugar pine and huckleberry areas.
5. Fire in the Wilderness planning
6. Hazardous fuels reduction in plantations

Fisheries

1. Large wood placement in creeks
2. Devils Creek Culvert Replacement
3. Short Creek Culvert Replacement (2 culverts)
4. Riparian Corridor Restoration
5. Road Decommissioning, storage, and drainage improvements
6. Complete Watershed Restoration Action Plan
7. Work with ODFW regarding fish in wilderness lakes. (Fish stocking)
8. Work with ODFW to change hatchery stocking affecting native cutthroat trout in the Breitenbush Watershed.
9. Work with ODFW to change fishing regulations.
10. Work with Breitenbush community regarding water discharge into systems. Avoid 303D listing (effect wild and scenic eligibility)
11. Survey for aquatic fungi

Hydrology and Soils

1. Short Creek culvert replacements
2. Devils Creek Culvert Replacement
3. Work with BPA and PGE to identify power line access roads needed for long term maintenance access

Breitenbush Watershed Analysis Update

4. Implement road decommissioning, storage, and drainage improvements throughout the Breitenbush Watershed
5. Work with Recreation to improve and/or relocated dispersed camping sites to protect water quality and riparian vegetation conditions
6. Improve channel complexity and floodplain connectivity on the Breitenbush River and tributaries throughout the watershed
7. Implement riparian area restoration projects to increase vegetative diversity and instream LWD and move Riparian Reserves toward achieving ACS objectives

Recreation

Trails:

1. South Breitenbush Gorge Trail: realignments and construction of trail structures across creeks and over wet areas
2. Non-system trails in Breitenbush/Devils Creek area: develop a management plan for these trails including identifying trail management objectives, formal designation, and reconstruction to meet trail standards or decommissioning
3. Humbug Flats Trail: Improve Road 46 trailhead, reconstruct/reroute portions of trail
4. Short Mountain Trail: assessment to determine future management
5. Mansfield Trail: assessment to determine future management
6. Rapidan Trail: assessment to determine future management
7. Crag Trail: assessment to determine future management
8. South Breitenbush Trail: major relocation of approx. 5 miles to reduce impacts
9. Leone Lake Trail: realignment of steep eroding trail
10. Beachie Trail: reconstruction to reestablish proper drainage
11. French Creek Ridge Trail: drainage structures installation, sections of reconstruction
12. Pacific Crest Trail: realign poorly designed trail sections to reduce erosion, reconstruct poorly drained trail sections, replace metal culverts with natural structures less prone to failure
13. Jefferson Park: rehabilitate or close user created trails
14. McCoy motorized Recreation Area: harden trails, install drainage structures in areas of concern and install traffic controls to prevent off road travel
15. Designation of Road 46 as the Cascading Rivers State Scenic Bikeway
16. Maintain, store or decommission roads and reconstruct, decommission and reroute poorly located system and user-created trails to reduce sediment input to improve water quality

Developed recreation:

1. Fox Creek Group Site restoration and improvements
2. Maintain and enhance vegetation in developed areas
3. Reduce river bank erosion within developed sites
4. Elk Lake Campground restoration: decompaction, meadow protection, stream crossing
5. Potential for new campground

Breitenbush Watershed Analysis Update

Special uses:

1. Potential outfitter and guide permits to promote local economy while protecting resources and promoting stewardship
2. Eliminate non-permitted temporary surface water systems. Help locate community water source for the Breitenbush-Devils Creek Summer Home Tract
3. Move outhouses away from creek at Breitenbush-Devil Creek Summer Home Tract. New or replaced toilets must comply with current county standards (approved vault or septic)
4. Maintain current permits such as Mansfield communication site, PGE/BPA transmission lines, City of Detroit Water System, etc.

Visuals:

Improve aesthetics within the watershed. Promote and enhance visual diversity and variety which is consistent with ecological and successional processes.

1. Create vegetation and restoration treatments that promote species diversity, variable densities and structure. Promote seasonal fall and spring colors along the scenic byway
2. Enhance views of scenic attributes and landscapes within the watershed along scenic byway and major travelways (e.g. open Mt. Jefferson view along Rd 46, create vistas along Boulder Ridge Road)
3. Reduce visual impacts along edges of old regeneration harvests and along the transmission line corridor by softening and/or screening (e.g. feathering, layering, scalloping, thinning, understory retention)
4. Restore impacts from recreation use and inappropriate behaviors to improve aesthetics (e.g. Respect the River treatments and education)

Dispersed recreation:

1. Restore riparian areas and reduce impacts within dispersed camping areas along the Breitenbush River, and Short, Elk and Dunlap Lakes: e.g. reducing size, defining access routes, decompaction, planting vegetation, and installing Respect the River signs
2. Develop a management plan for the Lower Breitenbush hot springs which includes restoration and/or potential development or improvements
3. Identify roads that are suitable for OHV use

Roads

1. Forest road 46 inter-visible turnouts
2. Devils Creek Culvert replacement
3. Short Creek Culvert replacement
4. Road decommissioning, storage, and drainage improvements
5. Short Lake road realignment/decommissioning
6. Elk Lake Road (4697) reconstruction
7. Identify roads that are suitable for OHV use
8. Transportation plan (collaborative with Power Companies)

Vegetation Management

1. Thin young, overstocked stands, that were not precommercially thinned
2. Commercial thinning in some 30-39 year old stands
3. Treatment in 81-120 year old stands to improve stand diversity and stand health
4. Firewood cutting in 3-5 acres of standing dead trees
5. Sugar pine restoration

Special Management Areas – Wilderness

1. Restore/obliterate social trails
2. Wilderness Leave No Trace education
3. Campsite restoration
4. Identify management strategies to reduce resource and social impacts within Jefferson Park such as limited entry
5. System trail reconstruction/stabilization
6. Work with ODFW to reduce or eliminate stocking of (non-native) fish in wilderness lakes

Wildlife

1. Create forage plots under the powerline
2. Improve habitat under powerlines
3. Sugar pine restoration
4. Meadow restoration in Scorpion Mountain area
5. Meadow restoration in Critical Habitat (CHU)
6. Wood in streams to benefit Harlequin ducks

Management Implications

The recommendations from Breitenbush Watershed Analysis (1996) have been reviewed and updated in the following tables

Italics indicate changes to the table since the original Watershed Analysis

Table 2 Management Implication Tables

Issue: Influence of Human Activities on Erosion Processes

Objective	Potential Treatment	Comments
Restoration of erosion-prone areas	Develop a road and traffic management plan which includes priorities for road decommissioning and storm proofing	
	Aggressively decommission and storm proof high- risk local roads, to reduce risk of catastrophic failure during storm events. Priorities are 1)central, 2)western, 3)eastern landform blocks.	

Breitenbush Watershed Analysis Update

Objective	Potential Treatment	Comments
	Sidecast pullback of unstable road fills on steep hillsides Priorities are 1)central, 2)western, 3)eastern landform blocks.	<i>Road segments were closed and fill areas stabilized. Continue as needs arise and funding is available</i>
Restoration of erosion-prone areas	Revegetate erosion-prone, denuded areas using native vegetation	
Minimize erosion potential from management activities	Avoid management activities such as timber harvest on areas of active slope instability or potentially highly unstable (not necessarily unsuited) terrain. Priority is in the central landform block	<i>Ongoing analysis with every timber sale planning area. Critical areas are mapped and avoided with unit layout.</i>
	Reintroduce large woody material into deficient stream channel reaches. This is one of the highest priorities from an upland standpoint. Priority is in the central landform block	
	Retain green trees on critical sites. Priorities are 1)central, 2)western, and 3)eastern landform blocks.	
	Retain duff and large woody material. Priority is in all landform blocks	<i>Ongoing analysis is completed with every timber sale planning area. Duff retention objectives are determined for every unit. Monitoring indicates objectives have been achieved.</i>
Minimize erosion potential from management activities	Reduce fuel loading, by low-intensity prescribed fire or other method such as hand piling, in identified hazard areas that threaten soil stability. Priorities are 1)central, 2)western, and 3)eastern landform blocks.	<i>Ongoing analysis completed with every timber sale planning area. Duff retention objectives are determined for every unit.</i>

Issue: Peak flows and minimum flows

Objective	Potential Treatment	Comments
Minimize effects of peak flows	Fire prevention and fuel treatment to minimize risk of vegetation loss, fire impacts of soil infiltration rates, etc. that	

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Objective	Potential Treatment	Comments
	contribute to peak flows	
	Spatially distribute timber harvest across the landscape, rather than concentrate it in small areas.	
	Maintain canopy closure to be below ARP thresholds.	
	Reduce drainage network through actively decommissioning and storm proofing roads	
	Reconnect stream channels to their floodplains to reduce energies from peak flows by allowing water to spread out over a larger area. This would be done through capturing sediment, reducing stream energy and increasing stream structure	
	Restore natural processes in specific stream reaches in the Breitenbush, stabilize the areas with large woody debris to reduce stream energies so sediments are deposited. This will reduce downcutting and the channels will begin to build up to the level of the floodplains	
Maintain desired level of minimum flows	Create additional water storage areas in the floodplain by reconnecting stream channels to the floodplains.	

Issue: Channelbank stability

Objective	Potential Treatment	Comments
Promote channelbank stability	Prior to management activities, evaluate resistance of channelbank to erosion and design projects to fit the channel conditions	
	Implement Best Management Practices during management activities such as timber harvest and road construction	
	Restore unstable channelbanks through introduction of channel structure such as large wood and	

Breitenbush Watershed Analysis Update

Objective	Potential Treatment	Comments
	boulders and mechanically reshape channels to increase stability. Priorities are in the central landform block	
	Facilitate vegetative growth on the channelbanks to promote stability	
	Within other resource constraints, manage identified headwater areas for future large woody material recruitment into stream system	
	Revegetate broad flood plains with conifers, concentrate on portions that are stable	
	Evaluate fuel loading and fire risk within riparian reserves. Where appropriate, manage fuels to minimize risk of stand replacing fires	
	Mitigate channelbank destabilization that occurs in areas of high recreation use	
	Apply Forest Plan riparian reserve widths during project implementation as this analysis did not identify any ecosystem process or species that would benefit from narrower widths	
	Monitor stream restoration work and stream dynamics for Breitenbush and Devils Creek	

Issue: Water Temperatures

Objective	Potential Treatment	Comments
Maintain year-round stream temperatures at 58 degrees F. or below	Maintain forest plan riparian reserves on springs, streams and also on seeps contributing significantly to temperature regulation , to provide thermal regulation of water	
	In selected areas where large conifers are not present in riparian areas, implement silvicultural practices to stimulate growth so trees will	

Breitenbush Watershed Analysis Update

Objective	Potential Treatment	Comments
	eventually shade streams. Evaluate locations based on various resource considerations such as biodiversity, etc.	
	Revegetate streamside areas where vegetation is not providing adequate shade	
Maintain year-round stream temperatures at 58 degrees F. or below	Maintain and enhance water storage areas in floodplains, so in times of low flow there is more water available to cool stream temperatures	
	Study geothermal influences on water temperatures	
	Evaluate fuel loading (hazard) and risk of fire starts, and manage fuels to minimize risk of stand replacing fire, in order to maintain vegetative cover, etc.	

Issue: Turbidity

Objective	Treatments/Opportunities	Comments
Balance social and biological turbidity needs within the physical parameters of the watershed	As directed by Best Management Practices and standards and guidelines, minimize erosion by careful selection of harvest units and other management activities outside of erosion-prone areas	<i>Ongoing analysis with every timber sale planning area. Critical areas are mapped and avoided with unit layout.</i>
	Clean out culverts and complete access and travel management plan to allow for road decommissioning and/or storm proofing. Priorities are central, eastern, then western landform blocks	
	Recommend raising threshold ARP levels to 75% on Byars, Slide, Wind, and Cliffs planning subdrainages. Raising beneficial uses from low to moderate	

Breitenbush Watershed Analysis Update

Objective	Treatments/Opportunities	Comments
	Minimize potential risk of wildfire through active fuels management and fuel treatment. Priorities are eastern landform block first, then the central landform block	
	Implement standards and guidelines to retain large organic material (i.e. down logs) on the uplands	
	Evaluate and design large wood placement opportunities within streams. Priority is in the central landform block	
	Develop a Fire/fuels Management Plan. Evaluate and treat areas at high risk for stand replacing fire, where appropriate	
	Revegetate debris torrent prone headwall areas and other sites prone to erosion, where appropriate	
	Complete Access and Travel management plan for entire watershed	Road Management Objectives

Issue: Biological contaminants

Objective	Treatments/Opportunities	Comments
Monitor biological contaminants	Study sources of contamination to determine what contaminants there are, where and why they occur, how they affect the ecosystem and develop methods to mitigate impacts	
Mitigate impacts of biological contaminants	Implement recommended methods to decrease impacts of contaminants	
	Install sanitary facilities along the Breitenbush corridor and other concentrated dispersed areas, and replace existing old ones as needed	<i>Older facilities have been replaced with newer ones and new toilet facilities at Upper Arm help the watershed. The Respect the River program provides increased education to visitors to properly dispose of garbage and human waste. Many sites received</i>

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Objective	Treatments/Opportunities	Comments
		<i>restorative treatment and traffic control which affects selection of campsites (farther from river in some cases) which can reduce impacts to water. Closing a few dispersed camps has also helped deal with sanitation issues.</i>

Issue: Harvest of Old Growth

Objective	Treatments	Comments
Old growth protection	Implement standards and guidelines to protect late-successional characteristics in Late Successional Reserves, Riparian Reserves, and in required areas within the matrix, etc.	
Old growth harvest	Implement Forest Plan objectives <i>and NWFP objectives</i> in matrix lands	
Develop old growth characteristics in LSR	Planting multi-species.	
	Precommercial thinning	<i>Leave legacy trees</i>
	Commercial thinnings	<i>Leave legacy trees</i>
	Create snags	
	Large wood placement	
Prevent large scale disturbances in LSR	Treat existing slash by prescribed fire, fuel breaks, or prescribed natural fire	
	Prescribed fire, fuel breaks	
Maintain/restore structural diversity, provide adequate coarse woody debris, large trees in Riparian Reserves	Precommercial thinning	
Commercial timber sales in Matrix	Regeneration harvests	<i>Leave green tree retention, preserve special habitats</i>

Breitenbush Watershed Analysis Update

Objective	Treatments	Comments
	Commercial thins	<i>Leave green tree retention, preserve special habitats</i>
	Salvage	
	Other partial cuts	<i>Place Gap cuts – away from roads and buffers</i>
Maintain and enhance growth and health of managed stands, assure reforestation within 5 years of harvest	Precommercial thin	
	Planting/site preparation	
	Pruning	Thinned stands <30 years old on high site class lands, and white pine stands (for blister rust control)
	Release, animal control	

Issue: Noxious Weed Control

Objective	Treatments	Comments
Minimize the spread of noxious weeds	<i>Systematic control of Early Detection/ Rapid Response (EDRR) weeds</i>	
	<i>Well established weeds such as scotch broom will be controlled and contained in high priority areas such as special habitats and high traffic vectors.</i>	
	<i>Attempt to clear EDRR weeds and well established weeds from all road and other high traffic vectors within watershed.</i>	
	<i>Pretreatment of weeds sites should be done before all management activities that require vehicular traffic</i>	
	<i>Continue to work with powerline companies to control weeds from high traffic vectors and EDRR species.</i>	

Issue: Ecological Diveristy

Objective	Treatments	Comments
Create big game forage	Regeneration harvests, seeding in winter range	
	Regeneration harvests, site preparation, seeding on beargrass dominated sites	
Restore role of underburning	Understory removals, underburning	
Reduce stand replacing fire occurrence, restore fire dependent ecosystems in the wilderness	Prescribed fire or by a prescribed natural fire plan	

Issue: Habitat components necessary to sustain native fish populations

Objective	Treatments/opportunities	Comments
Maintain or restore habitat complexity	Evaluate current habitat condition following the Flood of 1996 and determine appropriate restoration projects (may include: large woody material placement, etc.)	
Maintain or reduce stream temperatures	Increase stream shade in areas deficient of shade	
	Fuels reduction in high hazard areas	
Manage amount and timing of sediment as a result of management activities	Follow recommendations for timing of instream work issued by the Oregon Department of Fish and Wildlife	
Maintain or enhance stream complexity	Introduce large woody material into deficient channels	

Issue: Reintroduction of Native Species

Objective	Treatments/opportunities	Comments
Provide adequate habitat to sustain populations once migration issue around dam is resolved	Evaluate current habitat condition and determine appropriate restoration projects (may include: large woody material placement, etc.)	

Issue: Introduction of Non-native species

Objective	Treatments/opportunities	Comments
Evaluate impacts of non-native populations on the ecosystem (i.e. stocking fishless lakes)	Study ecosystem effects	
	Work cooperatively with ODFW and public input to determine action to take regarding non-native species	
	Do not introduce non-native species into anymore new areas while evaluation is being done	

Issue: Habitat components necessary to sustain native species. Peregrine Flacon

Objective	Treatments/opportunities	Comments
Maintain/enhance area surrounding peregrine eyrie to attract a diversity of avian prey species	Maintain/enhance grass/forb, early successional stands, abundant snags and hardwood stands according to Peregrine Management Plan. This would be outside of the LSR	

Breitenbush Watershed Analysis Update

Objective	Treatments/opportunities	Comments
Monitor	Determine nesting chronology, reproductive success, disturbances, foraging behavior, etc. on an annual basis.	

Issue: Habitat components necessary to sustain native species. Northern Spotted Owl

Objective	Strategy/treatment	Comments
Increase nesting habitat in LSR	Implement silvicultural techniques to develop late successional characteristics in identified areas of the LSR. Target stands in LSR that have known spotted owl pairs or resident singles that are deficient of habitat; or large openings like Switchagain and portions of Devils Creek	
Maximize protection of owl habitat in LSR from fires	Administer fuels reduction in high hazard areas in the LSR, where there are large patches of intact mature forests and nesting habitat.	
	Reduce fuels in critical areas infected with spruce budworm and in areas of heavy wood accumulations from snow breakages and from recent wind storms. Do not go below standards and guidelines for down woody debris	
Minimize habitat gaps	Lake Creek, North and South Forks, and Roaring Creek have areas that are flanked by young plantations. These areas should be targeted within the LSR for future opportunities to enhance and promote late-successional characteristics	
<i>Critical Habitat</i>	<i>Manage designated spotted owl critical habitat as directed in the recovery plan</i>	

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Objective	Strategy/treatment	Comments
Provide adequate dispersal habitat	Enhance late-successional characteristics in riparian reserves using silvicultural techniques	
	Work with Breitenbush Community to address potential effects of hiking trail on known spotted owl pair	

Issue: Habitat components necessary to sustain native species: Red Tree Vole

Objective	Strategy/treatment	Comments
Determine status in watershed	Survey protocol has been developed and is used for all surveys	<i>Protocol developed</i>

Issue: Habitat components necessary to sustain native species: Late Successional Habitat

Objective	Strategy/treatment	Comments
Promote late-successional characteristics	Develop LSR Assessment	<i>Mid Willamette LSR assessment completed April 1998</i>
	Silviculturally manipulate stands to increase trend toward late successional characteristics	

Issue: Habitat components necessary to sustain native species: Riparian Reserves

Objective	Strategy/treatment	Comments
Promote late-successional characteristics	Silviculturally manipulate stands to increase trend toward late successional characteristics	Update to current management practices
Promote spotted owl dispersal characteristics	Silviculturally manipulate stands to increase dispersal characteristics in areas deficient of dispersal habitat	
	Minimize fragmentation	

Issue: Habitat components necessary to sustain native species: Snag and Down Wood Habitat

Objective	Strategy/treatment	Comments
Promote development of snags and down wood	Create snags in deficient areas.	

Issue: Habitat components necessary to sustain native species: Special Habitat

Objective	Strategy/treatment	Comments
Enhance/rehabilitate special habitats	In a Forest Plan Amendment, recommend removal of the Special Wildlife Habitat Area designation from the Dunlap Lake area and designate it around the Geibler Lake area. Develop a management plan for the Special Wildlife Habitat Area	<i>There are many SIAs needing implantation guides.</i>
	<i>Remove tree encroachment and other encroaching vegetation in meadows.</i>	
	<i>Control invasive species along roads that enter into special habitats.</i>	
	<i>Avoid special habitats during management activities using buffers or avoidance standards</i>	
	Survey and prioritize rehabilitation of identified special habitats that have been degraded by road construction, harvest, etc	

Big Game

Objective	Strategy/treatment	Comments
	Improve forage, especially in winter range for big game. Forage enhancement could be captured along closed roads.	
	Reduce number of road miles in both winter and summer range. Address snow plowing in winter range	
	In Short and Humbug MEA's initiate an upward trend for HEI to meet Standards and Guidelines.	
	Due to lack of forage in the watershed, special habitats should be monitored	

Breitenbush Watershed Analysis Update

Objective	Strategy/treatment	Comments
	To achieve a higher quality of forage, fertilization and seeding with a big game forage mix should be added to future activities	

Other

Objective	Strategy/treatment	Comments
	Reduce fragmentation of late and mid seral habitat for large home range guilds.	
	Enhance and maintain mid and late seral habitats for all guilds. Priorities are in Switchagain area, Eagle Rock, and areas between Leone and Hill Creeks. Concentrate on specific habitat requirements for species of concern	
	Create forage in the matrix.	
	Conduct surveys for species of concern in the watershed that have little or no known presence to determine abundance and distribution	
	Develop a wildlife interpretive plan to increase awareness of wildlife needs and habitat characteristics. This needs to be coordinated with overall interpretive plan	
	Coordinate activities within the Winter Recreation Plan to meet big game winter range objectives	

Timber Supply

Objective	Treatments/Opportunities	Comments
Provide for a sustainable timber supply	Set appropriate harvest level within the management allocation requirements and the ecological limits of the watershed.	
	Use commercial timber harvest as one method of achieving a variety of ecosystem objectives	

Breitenbush Watershed Analysis Update

Objective	Treatments/Opportunities	Comments
	such as thinning to increase growth and therefore development toward late-successional habitat	

Community Economic Stability

Objective	Treatments/Opportunities	Comments
Provide a variety of forest products	Provide post and poles, beargrass, boughs, rocks, Christmas trees, and other special forest products.	
Balance communities needs for increased tourism/recreational opportunities, especially in the spring and fall, with other resource objectives	Work with local communities to help determine ways to diversify their economies	<i>Increased pressure on the Corps to assure downstream water needs are supplied makes this even more important. The FS has worked with DLRABA, Federal Lakes, and the city to create off season opportunities such as new recreation events, outfitter and guides, new scenic byway developments (Upper Arm), McCoy Motorized Recreation Area designation and supporting a proposed state bikeway designation along Rd 46.</i>
	Develop a comprehensive Composite Recreation Management Plan for the watershed to guide orderly development of the area	<i>Considering staffing levels and priorities this seems unlikely to happen, although would be helpful. For some areas, a Byway Corridor Plan has been developed that identifies some enhancement development. In addition, an EA to look at dispersed recreation and restoration projects will aid with dispersed recreation management.</i>
	Work with local communities to analyze potential tourism opportunities	<i>Continue to be involved in federal lakes committee and DLRABA. Work to build more capacity with partners.</i>
	Implement fire prevention, fire protection and hazard reduction to a level commensurate with growth in tourism and populations	

Scenic Quality

Objective	Treatments/Opportunities	Comments
Maintain and enhance the inherent beauty and integrity of the watershed	Develop a Breitenbush Viewshed Implementation Guide. The plan would provide a method for implementing principals set forth in the FS scenic resource management guides, handbooks and Forest Plan standards and guidelines. Due to the commitment of portions of land base for LSR's and Riparian Reserves there is increased demand for timber production from visual corridors in matrix lands. This makes it essential to provide planners guidelines to optimize resource benefits as described in the Forest Plan.	<i>Many regeneration harvest stands have since recovered under the Forest Plan S&G's. The approach the district has been taking with each planning area, is to identify opportunity for scenic restoration and enhancements including vegetation treatments and to maintain, enhance and promote scenic stability</i>
	Implement recommended visual guidelines defined in the watershed analysis for regeneration harvests.	<i>Is only applicable for regeneration harvests</i>
	Mt. Hood Forest: Develop a Landscape and Design Analysis for the Olallie Lakes Scenic Area. The analysis would address visual considerations when treating fuel for forest health reasons.	<i>Uncertain what the Mt. Hood is planning. There have been several fires in the area.</i>
	Develop a Breitenbush Scenic Byway Corridor Management Plan.	<i>This was completed in April 2007, although not entirely adopted by the Forest. The enhancement sites and interpretive strategy has been adopted and so future development at those locations would happen as funding arises</i>
	Implement fire prevention, fire protection and hazard reduction to a level commensurate with growth in tourism and populations	

Facility Maintenance

Objective	Treatments/Opportunities	Comments
Maintain facility condition at or above acceptable standards	Replace and maintain facilities reported in the Recreation Facilities Condition Assessment	<i>Ongoing. Need to update the Recreation Facility Assessment.</i>
	Upgrade sanitary facilities at campgrounds, where needed	<i>Upgrades to existing facilities have been completed</i>
	Improve parking spaces in campgrounds to accommodate RV use	
	Upgrade road 46 to meet Highway Safety Standards Act	<i>Efforts are underway to designate this as a bikeway to bring more people to the area, upgrades would assist in this effort.</i>
	Develop Access and Travel Management Plan	<i>MVUM is in place. Need to continue to work on updating map with current information. Sustainable Roads effort is underway..</i>
	Minimize road failures by decommissioning and storm proofing roads that cannot otherwise be maintained	
	Rehabilitate and stabilize Gold Butte Lookout	<i>Restoration/stablization complete in 2001. Thanks to Sand Mtn Society, and ongoing maintenance provided by them with assistance of Recreation Fee dollars generated by the cabin rental.</i>
Inventory and monitor facilities	Survey facilities for repair and maintenance needs	

Public Safety

Objective	Treatments/Opportunities	Comments
Provide for public safety	Fall danger trees that pose a threat to people or property. Develop a method to fund this activity, when salvaging the trees is not an option	
	Prioritize hazard tree reduction based on facility development and use. Remove hazards within developed campgrounds, day use areas, summer homes, trailheads and parking areas, snowshelters, popular dispersed camp sites (especially those with minimal developments), and major access roads, etc.	
	Within 1 tree length of the main Breitenbush Road, manage to matrix standards and guidelines so that hazards, such as fuel build ups, and standing dead trees can be removed or reduced where risk of fire is high or scenic quality is adversely affected	<i>Some of this has occurred along the Breitenbush Road. Adhere to scenic allocations when performing work.</i>
	Post warning signs of dangerous situations or facilities	
	Fire prevention and fuels management to reduce risk.	
	Develop an evacuation plan in the Olallie Lake Scenic Area in the event of a fire	<i>We have had a few fires in which timely evacuation has occurred.</i>
	Provide road maintenance on roads used by the public	
	Develop a Scenic Byway Management Strategy that addresses public safety and other site specific objectives	
Remove barriers to dealing with public safety issues	Change the land allocation for administrative sites so that they do not include LSR or riparian reserve designations. Replace LSR acreage in another portion of the watershed.	

Powerline Corridor

Objective	Treatments/Opportunities	Comments
Provide direction for management of the powerline	Update agreements with BPA and PGE for the powerline corridor	<i>The management plan is complete for PGE. A permit has been issued to PGE. The WO is working with BPA to do a national permit rather than an outdated MOU</i>
	Develop a Management Plan for the powerline right-of-way corridor considering such items as noxious weed control, wildlife habitat/forage, recreational opportunities, heritage site protection, special forest products, roads etc.	<i>A operation and maintenance plan has been completed for PGE, however, annual review, and some updating</i>
	Monitor implementation of agreements with BPA and PGE	<i>Monitor MOU with BPR and permit with PGE</i>
	Inventory to determine condition of existing powerline right of way access	<i>There is a need to identify road management objectives for each road (whether private access or FS road), and identify improvements or decommissioning of roads to improve watershed condition.</i>
<i>Improve drainage</i>	<i>Reparing powerline roads</i>	

Recreational Supply and Demand

Objective	Treatments/Opportunities	Comments
Provide for a wide range of demanded recreational settings to achieve satisfactory user experiences	Develop a comprehensive composite recreation management plan for the Breitenbush watershed to guide orderly recreational development of the area. The guide would study public recreational demands, market analysis, visitor profiles, land suitability, and existing and desired future resource conditions, to make management decisions about recreational development within the ability of the natural and physical environment	

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Objective	Treatments/Opportunities	Comments
	<p>Within ability of natural and physical environment, provide for existing demands; e.g. improve parking near the Detroit Lake, Humbug trailhead, etc., provide day use facilities along the Breitenbush corridor, improve and create accessible recreation opportunities, provide new camping areas especially group areas, provide mountain bike and OHV trails, improve parking spaces within existing campgrounds to accommodate RV's, increase winter recreation opportunities, designate areas for special use events.</p>	<p><i>The trailhead to Humbug has been relocated and the parking and trail need to be improved. Cleator Bend has been converted to a group site, McCoy OHV area has been designated. Upper Arm Day Use Area has been developed. Identify areas where accessibility can be improved or created. Identify target areas that can really be made accessible as opposed to many areas that are somewhat accessible.</i></p>
	<p>Provide demanded semi-primitive opportunities within the LSR, where appropriate</p>	
	<p>Develop an interpretive plan for the watershed.</p>	<p><i>An interpretive strategy has been completed as part of the West Cascades national Scenic Byway Corridor Plan</i></p>
	<p><i>The Lower Breitenbush hot springs located on Forest Service management lands has a unique and demanded resource. Management of this site continues to be an ongoing challenge. Vandalism resulting from the site's remote location and high use levels has resulted in an overall poor facility condition. The current condition does not respect the historical and cultural significance of the site. Vehicle access at the site was blocked in 2012 and planning for a collaborative restoration effort began the summer of 2013.</i></p>	<p><i>Engage Tribes as key partners in the redevelopment of this area.</i></p>

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Objective	Treatments/Opportunities	Comments
	Develop a powerline corridor management plan that incorporated demanded recreational uses	<i>Many of these roads are closed to protect infrastructure. Dispersed camping and recreation use is still allowed</i>
Decrease resource impacts and improve aesthetics at recreational areas	Restore and rehabilitate resource damage surrounding lakes, streams and meadows in high use areas within the wilderness; revegetate denuded areas e.g. transplanting, reduce camp barren core size, replace down wood, discourage use at nondesignated or undesirable campsites by making them unattractive (rock placements), etc.	<i>Some of this has occurred through Respect the River work. Many places for work to be updated or more to happen.</i>
	Close and rehabilitate high impact user created trails in Jefferson Park and other sensitive meadow and lakeside areas.	<i>Work has begun and will continue as resources are available including volunteers. Install signs so visitors don't create new trails or reuse old ones</i>
	Outside of wilderness, rehabilitate resource damage, install traffic control barriers, and develop facilities in heavily impacted campsites and user developed access trails and roads, especially within Riparian Reserves.	<i>Some of this has occurred with partnership with aquatics, via the Respect the River Program</i>
	Implement items on the Wilderness Implementation Schedule which sets up baseline data collection to evaluate impacts humans have on wilderness resources, e.g. water quality, stock use on meadows, fish stocking program.	<i>10 year challenge action plan. An outfitter guide needs assessment has been complete for the Mt. Jefferson Wilderness</i>
Gather information that is currently lacking	Update all campsite inventories to monitor current campsite conditions.	<i>Completed campsite inventory in 2012 and are on a 5 year or 20% a year rotation</i>
	Implement water quality studies at high use lakes and streams	

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Objective	Treatments/Opportunities	Comments
Provide stable funding to achieve recreation goals	Find alternative funding sources and partnerships	
Increase solitude in wilderness by decreasing social encounters. Decrease resource impacts and improve aesthetics at recreational areas. Reduce user conflicts	Evaluate, identify and implement ways to reduce encounter rates such as; limited entry, quota system (limiting number of day, overnight users and groups), designating campsites, closing areas to overnight use, increasing education, banning campfires, reducing size of trailheads, moving or eliminating trailheads, as appropriate	<i>Jeff park had designated campsites and a fire ban, but not a quota system. Additional management is needed.</i>
Reduce user conflicts.	Increase administration, management, education, and law enforcement in areas where conflicts are occurring.	
	Identify areas for designation or development of specific or complementary activities to occur.	
Gather information that is currently lacking	Monitor encounters in wilderness areas, this information is lacking	
<i>Community trails</i>		
<i>Wild and Scenic suitability study</i>	Breitenbush River	

V. List of Specialists Involved with Watershed Revision

Jamie Statezny, Engineering

Darrin Neff, Fisheries Biologist

Nanci Curtis, Fire and Fuels Specialist

Mark Leis, Silviculturist

Lisa Helmig, Silviculturist

Douglass Fitting, Hydrologist

Lyn Medley, Watershed Revision Lead, Economics

Cara Kelly, Archaeologist

Dani Pavoni, Recreation, Economics and Local Communities

Brad Peterson, Wilderness

Doug Shank, Geologist and Soils

Chris Wagner, Botanist

Daryl Whitmore, Wildlife Biologist

Christina Ellis, GIS specialist

VI. Citations

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