

**Willamette National Forest 2012 Planning Rule Monitoring Program**  
*February 10, 2017*

Forest Plan Component	Monitoring Question	Indicator(s)	Potential Data Source
<b>(i) The status of select watershed conditions.</b>			
<u>Standards and Guidelines:</u> WR-1 to WR-3, ACS Objectives	<b>i.a.</b> Are Standards and Guidelines maintaining or improving watershed conditions?	Watershed Condition Framework (WCF) analysis of key indicators at the 5 <sup>th</sup> and 6 <sup>th</sup> field watershed scales.	Watershed Condition Framework (WCF) analysis results.  <b>Staff: Forest Hydrologist</b>
<u>Standards and Guidelines:</u> FW-087 to FW-102, TM-1, RF-1 to RF-7, RA-1 to RA-4, ACS Objectives	<b>i.b.</b> Have Best Management Practices (BMP's) been implemented and are they effective at managing water quality consistent with the Clean Water Act?	Temperature and turbidity	Stream temperature data, NorWest database, turbidity monitoring, USFS National BMP Monitoring protocols and results, travel analysis/roads management  <b>Staff: Forest Hydrologist</b>

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<b>(ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.</b>			
<u>Standards and Guidelines:</u> FW-119, FW-4, ACSO	<b>ii.a</b> Are Standards and Guidelines preventing the spread of aquatic invasive species?	Includes non-native fish species (brook trout, bass, crappie, etc.) as well as aquatic invasives (New Zealand mud snail, zebra mussel, whirling disease, and non-native plants), aquatic and riparian.	NRIS stream inventory Aquatic and Riparian Effectiveness Monitoring Program (AREMP) data  <b>Staff: Forest Fish Biologist</b>
<u>Standards and Guidelines:</u> FW-103 to FW-104, FW-114, FW-117 to FW-118, FW-119, TM-1, RF-1 to RF-7, RM-1 to RM-2, FM-1 to FM-5, RA-1 to RA-4, FW-1, ACSO	<b>ii.b</b> Are Standards and Guidelines maintaining or improving aquatic habitat (instream, lake, and riparian areas)?	1. core and integrated targets 2. habitat data (assessment of current condition) 3. management related impacts to aquatic systems	1. Watershed Improvement Tracking (WIT) accomplishment data 2. NRIS stream inventory; lake surveys, landslides/debris torrents 3. recreation, timber harvest, road management, etc.  <b>Staff: Forest Hydrologist</b>
<u>NWFP Standards and Guidelines:</u> Survey and Manage Species	<b>ii.c.</b> Are projects contributing to the persistence of botanical Survey and Manage species?	Number of survey and manage sites identified and protected during project planning.	Monitoring accomplished during planning phase using GIS and field visits to units of 80 yrs of age, per ISSSP monitoring protocol. Annual Species Review Process completed by the Regional Office.  <b>Staff: Forest Botanist</b>

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<b>(ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.</b>			
<u>Standards and Guidelines:</u> FW-375 to FW-377, FW-384, Forest Plan Amendments #13 and #15	<b>ii.d.</b> Are known populations of invasive plants continuing to spread? Are new infestations occurring?	Acres of surveyed lands with new and active invasive species infestations; Acres treated.	Information tracked in NRIS. Accomplished through the monitoring requirements associated with the Regional Invasive Plant Environmental Impact Statement (EIS) (2005) and Site-Specific Forest Invasive Plant EA (2007, 2014).  <b>Staff: Forest Botanist</b>

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<b>(iii) The status of focal species to assess the ecological conditions required under §219.9.</b>			
<u>Desired Condition:</u> Habitat is managed for marten.	<b>iii.a.</b> What is the trend for mature and late successional habitat above 4000' elevation needed for marten persistence on the Willamette?	Acres of montane mixed conifer (MMC/LP) forest by late successional forest index categories on the Forest tracked over time.  Changes in snag and dead log levels in MMC/LP relative to historic condition by 5th field watershed on the Forest tracked over time.	Derived from Gradient Nearest Neighbor (GNN) data  Derived from GNN data  <b>Staff: Forest Wildlife Biologist</b>
<u>Desired Condition:</u> Habitat is managed for pileated woodpecker.	<b>iii.b.</b> What is the trend for mature and late successional habitat needed for pileated woodpecker persistence on the Willamette?	Acres of lowland conifer/hardwood (WLCH) forest by late successional forest index categories on the Forest tracked over time.  Changes in snag and dead log levels relative to historic condition by 5th field watershed on the Forest tracked over time.  Occupancy rate of pileated woodpeckers in pileated woodpecker management areas tracked over time.	Derived from GNN data  Derived from GNN data  Forest survey data  <b>Staff: Forest Wildlife Biologist</b>

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<b>(iii) The status of focal species to assess the ecological conditions required under §219.9.</b>			
<u>Desired condition:</u> Habitat is managed in cooperation with Oregon Department of Fish and Wildlife (ODFW) to provide for deer and elk hunting opportunities.	<b>iii.c.</b> What is the trend in elk habitat condition and elk hunting levels and success?	<p>Changes in elk harvest, success rates, and ODFW elk populations estimates by State Game Management Unit.</p> <p>Changes in estimated elk forage quality and habitat suitability by Big Game Emphasis Area tracked over time 5th field watershed on the Forest tracked over time</p> <p>Acres of early seral habitat relative to historic condition by 5<sup>th</sup> field watershed on the Forest tracked overtime.</p>	<p>ODFW data</p> <p>Westside elk model run with GNN data</p> <p>GNN-need Ecologist/silviculture input to decide best query approach</p> <p><b>Staff: Forest Wildlife Biologist</b></p>
<u>Standards and Guidelines:</u> RF-4, RF-6, FW-4, ACSO	<b>iii.d</b> Are Standards and Guidelines maintaining or improving the ecological integrity of focal fish species' habitat?	Population surveys of rainbow trout, cutthroat trout, Oregon chub, and Pacific lamprey.	<p>Population surveys (redd surveys, screw trap, electrofishing, snorkeling, etc.). Regional fish distribution maps (new data or changes in distribution). Regional fish barrier database (showing habitat accessible due to barrier removal)</p> <p><b>Staff: Forest Fish Biologist</b></p>

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Forest Plan Component	Monitoring Question	Indicator(s)	Potential Data Source
<b>(iv) The status of a select set of the ecological conditions required under §219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.</b>			
<u>Standards and Guidelines:</u> FW-115 to FW-116, RF-4, RF-6, FW-1, ACSO	<b>iv.a</b> Are Standards and Guidelines maintaining or improving ecological conditions for T&E fish populations?	Trends in instream riparian habitat conditions.	Tracked by stream inventory program (data documented in NRIS AqS database) and fish distribution maps. Fish listings, critical habitat listings and project specific analysis.  <b>Staff: Forest Fish Biologist</b>
<u>NWFP Standards and Guidelines:</u> Late Successional Reserves	<b>iv.b</b> What is the trend for mature and late successional habitat needed for Northern spotted owl persistence?	Acres of dispersal habitat, suitable habitat, and by old growth site index categories on the Forest tracked over time.	Northern spotted owl five year review habitat model.  <b>Staff: Forest Wildlife Biologist</b>
<u>NWFP Standards and Guidelines:</u> Late Successional Reserves	<b>iv.c</b> What is the trend for the Northern spotted owl population?	Estimated number of territorial owls and annual rate of population change.	Demography of the Northern spotted owl on the H.J. Andrews study area in the Central Cascades tracked over time.  <b>Staff: Forest Wildlife Biologist</b>
<u>Standards and Guidelines:</u> FW-154 to FW-161	<b>iv.d.</b> What is the trend for Oregon spotted frog populations on the Forest?	Changes in numbers of breeding Oregon spotted frogs tracked over time	Oregon spotted frog surveys from U.S. Geological Survey (USGS) and FS data  <b>Staff: Forest Wildlife Biologist</b>

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<b>(iv) The status of a select set of the ecological conditions required under §219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.</b>			
<u>Standards and Guidelines</u> <u>FW-158-161</u>	<b>iv.e.</b> What are the trends for botanical Sensitive Species? Are any species we are monitoring in decline? If so, have management actions been taken to restore their habitats?	Changes in numbers of individuals monitored in selected populations over time.	Project specific analysis and Threatened, Endangered, and Sensitive (TES) Plant long-term monitoring data  <b>Staff: Forest Botanist</b>

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<b>(v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.</b>			
<u>Standards and Guidelines:</u> FW-622, FW-624	<b>v.a</b> Are significant (National Register eligible) historic properties being maintained, stabilized, and repaired according to historic	Monitoring data/site condition assessments.	Infrastructure (INFRA) database  <b>Staff: Recreation Staff</b>
<u>Desired condition:</u> Outdoor recreation opportunities on the Forest are available in a variety of settings. Opportunities for dispersed recreation in a roaded setting are plentiful. Activities such as hunting, sightseeing, ORV use, dispersed camping, cross-country skiing, and fishing are typical. Opportunities for dispersed recreation in unroaded areas are less plentiful.	<b>v.b.</b> Are people having a high level of satisfaction during their visit to Willamette National Forest?	Percent visitor satisfaction for (1) developed sites, (2) general forest areas, and (3) designated wilderness	National Visitor Use Monitoring Data  <b>Staff: Recreation Staff</b>



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<b>(vi) Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.</b>			
<u>Information Needs Identified:</u> page ii-10 of Willamette Forest Plan, <u>Standards and Guidelines:</u> FW-121	<b>vi.a.</b> Is the forest reporting and meeting expected adaptations as reported on the National Climate Scorecard?	Timely response to forest data calls.	Regional link to the scorecard.  <a href="https://www.fs.usda.gov/main/r6/climatechange">https://www.fs.usda.gov/main/r6/climatechange</a>  <b>Staff: Climate Change Coordinator</b>
<u>Standard and Guideline:</u> FW-255 and FW-256	<b>vi.b.</b> Is insect and disease below potentially damaging levels?	Acres affected by type and insect and disease	<a href="https://foresthealth.fs.usda.gov/portal/">https://foresthealth.fs.usda.gov/portal/</a>  <b>Staff: Forest Silviculturist</b>

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<b>(vii) Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.</b>			
<u>Standards and Guidelines:</u> FW-252	<b>vii.a.</b> Are management activity-created fuels at or below the maximum acceptable ranges for allowable downed woody material as indicated in Table IV-32 <sup>1</sup> , on 95% of the affected	Tons/acre of activity-created dead woody material in activity units.	Brown's Transects or utilizing a photo series  <b>Staff: Fire Planner</b>
<u>Goal:</u> The primary goal is to produce an optimum and sustainable yield of timber based on the growth potential of the land that is compatible with multiple use objectives and meets environmental requirements for soil, water, air and wildlife habitat quality	<b>vii.b.</b> How do the timber output estimates in the Forest Plan compare with actual production?	How does the volume of sold timber compare to the probable sale quantity (PSQ)?	Timber Information Manager (TIM) database and Forest Plan predicted outputs.  <b>Staff: Forest Products Manager</b>
<u>Desired Condition:</u> Regeneration harvests are adequately restocked within recommended timeframes and levels (36 CFR 219.27).  <u>Standards and Guidelines:</u> FW-188, FW-189, FW-195	<b>vii.c.</b> Are we meeting the recommended stocking levels and timeframes required by National Forest Management Act (NFMA)?	Meeting stocking guidelines in Forest Plan as tiered to Forest Service Handbook.	Information tracked through FACTS database and required for target accomplishment.  <b>Staff: Forest Silviculturist</b>
<u>Desired Condition:</u> Long term sustained yield capacity and timber growth since previous decade.	<b>vii.d.</b> How ecologically sustainable is the level of timber harvest on the forest?	What is the amount harvested timber each year compared to the amount of growth and mortality across the forest?	FIA and R6 Inventory Plots  <b>Staff: Forest Products Manager</b>

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<b>(viii) The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).</b>			
<u>Standards and Guidelines:</u> FW-079 to FW-081	<b>viii.a.</b> Are management activities being implemented so that they do not substantially and permanently affect soil conditions?	% of soils in disturbed condition at the unit and project scale.	Monitoring of management activities such as timber harvest, road management, and recreation including site visits and transects.  <b>Staff: Forest Hydrologist</b>

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<b>Is Forest Plan standards and guidelines (Forest-wide and by Management Area) being incorporated into project level planning and decisions?</b>			
<u>All Standards and Guidelines:</u> Willamette Forest Plan	Are Standards and Guidelines being adequately followed in project level planning?	Deviation from Standards and Guidelines. Deviation from desired results.	Annual monitoring trips and project review with staff and resource advisors.  <b>Staff: Forest Planner</b>

## References

- U.S. Department of Agriculture. Forest Service. 1990. Land and Resource Management Plan: Willamette National Forest. Oregon. As amended.
- U.S. Department of Agriculture. Forest Service and U.S. Department Interior. Bureau of Land Management. 1994b. Record of Decision on management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl (Northwest Forest Plan). Portland, Oregon.
- U.S. Department of Agriculture. Forest Service, Pacific Northwest Research Station. 3200 SW Jefferson Way. Corvallis, OR 97331.