

**Willamette National Forest 2012 Planning Rule Monitoring Program**

*August 20, 2015*

<b>Forest Plan Component</b>	<b>Monitoring Question</b>	<b>Indicator(s)</b>	<b>Potential Data Source</b>
<b>(i) The status of select watershed conditions.</b>			
<u>Standards and Guidelines:</u> WR-1 to WR-3, ACS Objectives	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.
<u>Standards and Guidelines:</u> FW-087 to FW-102, TM-1, RF-1 to RF-7, RA-1 to RA-4, ACS Objectives	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
<u>Standards and Guidelines:</u> FW-076 to FW-077, RM-3	Are Standards and Guidelines maintaining the outstanding remarkable values (ORV's) of designated, study, and potential Wild and Scenic Rivers and designated State scenic waterways?	Fish population, stream habitat	Fish population surveys, Natural Resource Information Systems (NRIS) stream inventory habitat data, lake data. Are we following existing Wild and Scenic River Management Plans?
<u>Aquatic Conservation Strategy (ACS) Objective:</u> Maintain and restore in-stream flows. The timing, magnitude, duration and spatial distribution of peak, high and low flows must be protected.	Are management practices causing changes in stream flows?	Aggregate Recovery Percentage (ARP) calculation	Calculate ARP to determine the effects of vegetation treatment on peak flows by planning sub-drainage

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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	Are Standards and Guidelines maintaining or decreasing 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
<u>Standards and Guidelines:</u> FW-086, FW-105 to FW-111, ACSO	Are Standards and Guidelines effective in meeting Forest goals for soil conditions, erosion, and nutrient cycling?	% of soils in disturbed condition	Monitoring of management activities such as timber harvest, road management, and recreation including site visits and transects.
<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	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.
<u>NWFP Standards and Guidelines:</u> Survey and Manage Species	Are projects contributing to the persistence of 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 selected units. Annual Species Review Process completed by the Regional Office.
<u>Standards and Guidelines:</u> FW-375 to FW-377, FW-384, Forest Plan Amendments #13 and #15	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 EIS (2008).

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

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		Big Game Emphasis Area tracked over time  Acres of early seral habitat relative to historic condition by 5th field watershed on the Forest tracked over time	data  GNN-need Ecologist/silviculture input to decide best query approach
<u>Standards and Guidelines:</u> RF-4, RF-6, FW-4, ACSO	Are Standards and Guidelines maintaining or improving focal fish species populations?	Population surveys of rainbow trout, cutthroat trout, Oregon chub, and Pacific lamprey.	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)

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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> FW-115 to FW-116, RF-4, RF-6, FW-1, ACSO	Are Standards and Guidelines maintaining or improving T&E fish populations?	Population of spring Chinook salmon, bull trout, and winter steelhead.	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)
<u>Standards and Guidelines:</u> FW-139 to FW-147  <u>NWFP Standards and Guidelines:</u> Riparian Reserves & Aquatic Conservation Strategy	Are Standards and Guidelines effective in maintaining or enhancing aquatic habitat complexity?	Number of stream miles currently occupied by Endangered Species Act (ESA) listed fish species (i.e., steelhead, spring chinook, bull trout). 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.
<u>NWFP Standards and Guidelines:</u> Late Successional Reserves	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.
<u>NWFP Standards and Guidelines:</u> Late Successional Reserves	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. Adrews study area in the Central Cascades tracked over time.
<u>Standards and Guidelines:</u> FW-154 to FW-161	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
<u>Standards and Guidelines</u> <u>FW-158-161</u>	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

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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	Are significant (National Register eligible) historic properties being maintained, stabilized, and repaired according to historic preservation standards?	Monitoring data/site condition assessments.	Infrastructure (INFRA) database
<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.	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>(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	How is climate change impacting aquatic habitat conditions and fish distribution?	Trend, increase or decrease, in the upper extent of habitat for fish or changes in the distribution of species.	NRIS stream inventory habitat data, lake data, Regional fish distribution database and fish Population surveys (redd surveys, screw trap data, electrofishing, snorkeling, etc.), aquatic invasive species distribution. Stream temperature data, NorWest data.
<u>Standard and Guideline:</u> FW-255 and FW-256	Is insect and disease below potentially damaging levels?	Acres affected by type and insect and disease	Annual aerial flight

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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	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 acres?	Tons/acre of activity-created dead woody material in activity units.	Brown's Transects or utilizing a photo series
<u>Standards and Guidelines:</u> FW-087 to FW-102, TM-1, RF-1 to RF-7, FM-3	Are Standards and Guideline maintaining water quality for municipal watersheds?	Temperature and turbidity.	Stream temperature data, NorWest data, and for turbidity USFS National BMP Monitoring protocols and results, travel analysis/roads management
<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	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.
<u>Goal:</u> Recognize and respond to the socio-economic effects of management strategies	What are the economic consequences of deviating from the estimated Forest Plan timber outputs?	What is the economic impact if the PSQ is not met or exceeded in terms of revenue to the Forest Service and private sector jobs?	Timber Sale Accounting records (TSA); TIM, IMPLAN (a model that estimates economic impacts).
<u>Goal:</u> Provide for plant and animal community diversity and ecological health as the foundation to sustain the long-term productivity of the forest.	How ecologically sustainable is the level of timber harvest on the forest?	What is the amount awarded timber each year compared to the amount of growth and mortality across the forest. How many acres of timber are harvested each year as a percentage of the total land base?	TIM database, Forest Inventory and Analysis (FIA) data, stand exam data, Forest Service ACTivity Tracking System (FACTS) database, and the Forest Plan.
<u>Desired Condition:</u> Regeneration harvests are adequately restocked	Are we meeting the recommended stocking levels and	Meeting stocking guidelines in Forest Plan as tiered to Forest	Information tracked through FACTS database and required for

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within recommended timeframes and levels (36 CFR 219.27).  <u>Standards and Guidelines:</u> FW-188, FW-189, FW-195	timeframes required by National Forest Management Act (NFMA)?	Service Handbook.	target accomplishment.

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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	Are management activities being implemented so that they do not substantially and permanently impair the productive capacity of the land?	Extent of detrimental soil disturbance in an activity unit.	Annual National BMP monitoring protocol and periodic soil quality sampling.

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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.

## 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.