

## CHAPTER 6 MONITORING

A monitoring strategy is outlined, and, where applicable, a time-frame or phase-in period to complete the action has been determined. Indicators and standards for measuring outcomes of the recommendations are presented in Table 6-1.

Critical to managing reservoir resources and making decisions toward the *desired future condition* of Potholes Reservoir, is the need for a continuing source of current information about the condition of resources, and an ongoing understanding of public desires and needs. The planning process initiated with this RMP is the beginning of long-term monitoring of reservoir resources that would provide decision-makers, planners, and managers with the data needed to make informed decisions to protect reservoir resources and provide recreation opportunities for the enjoyment of future generations. Further, long-term monitoring would provide planners and decision-makers with greater insight and understanding between the reservoir (and its resources) and the communities of which the reservoir is an integral part, and how these relationships can change over time.

The success or failure of any long-term monitoring effort is dependent as much on good program design as it is on precise and accurate field observations. Many monitoring programs have failed as a result of inadequate record keeping. It is essential that a well thought-out monitoring plan be in place before data collection begins. All indicators should be included in the plan even if funding is pending, or uncertain. It is much more difficult to incorporate new indicators into an existing plan than to simply delete the analysis of indicators never measured.

The person(s) initiating a long-term monitoring program must assume that they will not be available for consultation ten, five, or even two years in the future. Written methodologies for data collection must be developed in detail, in a clear and understandable manner (video taping the methodologies can be very useful). All forms, maps, and other records must document the time and precise sample location. Sampling locations should be assigned discrete names that cannot be confused with other locations. These locations should all be recorded on a master map, a copy of which is stored with the data records (preferably in a Geographic Information System).

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>Resource Condition</b>			
<b>WATER QUALITY</b>			
1) <u>Indicators</u> dissolved oxygen mercury lead phosphates nitrates arsenic coliform (total) pH range	<ul style="list-style-type: none"> <li>Should not exceed state or federal water quality standards for these indicators relative to wildlife/ aesthetic or recreational use</li> </ul>	<ul style="list-style-type: none"> <li>Washington Division of Water Quality</li> <li>Washington Department of Health</li> </ul>	a) collect water quality data from designated sites  b) tabulate data and compare to standards
2) Increases in algae blooms and fish kills	<ul style="list-style-type: none"> <li>State and Federal Water Quality Standards</li> </ul>	<ul style="list-style-type: none"> <li>field observation by park staff or other reliable sources</li> </ul>	a) document observed incidences
3) instream flows	<ul style="list-style-type: none"> <li>minimum instream flows for each stream based on current and ongoing assessments</li> </ul>	<ul style="list-style-type: none"> <li>U.S. Geological Survey</li> <li>USDI Bureau of Reclamation</li> </ul>	a) collect flow data from agencies b) tabulate data and compare to minimum flows c) evaluate trends of several years

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
4) evidence of erosion (e.g., gullies, rills) and stream bank condition	<ul style="list-style-type: none"> <li>• Should not exceed state or federal water quality standards</li> </ul>	<ul style="list-style-type: none"> <li>• field observation by park staff</li> <li>• Washington Division of Wildlife Resources</li> <li>• USDA Natural Resources Conservation Service</li> </ul>	<ul style="list-style-type: none"> <li>a) document observed occurrences</li> <li>b) evaluate vegetation trend study plots (see vegetation section)</li> </ul>
5) turbidity (level of sediment load)	<ul style="list-style-type: none"> <li>• State and Federal Water Quality Standards</li> </ul>	<ul style="list-style-type: none"> <li>• field observation by park staff</li> <li>• Washington Division of Water Quality</li> </ul>	<ul style="list-style-type: none"> <li>a) document any occurrences of turbid (cloudy) flows observed in stream or spring</li> <li>b) collect data for total suspended solids</li> <li>c) investigate source of turbidity if occurrences persist or are frequent</li> <li>d) report continuing problems to Washington Division of Water Quality</li> </ul>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>SOILS</b>			
1) evidence of slumping, slope failure, or landslide	<ul style="list-style-type: none"> <li>Based on regular visual observation</li> </ul>	<ul style="list-style-type: none"> <li>field observation by park staff</li> <li>USDA Natural Resource Conservation Service</li> </ul>	<ul style="list-style-type: none"> <li>a) document/map observed occurrences</li> <li>b) correlate with patterns of use</li> <li>c) evaluate hazard potential and notify Washington State Department of Ecology</li> </ul>
<b>WILDLIFE HABITAT</b>			
1) loss of designated habitat	<ul style="list-style-type: none"> <li>percentage of high value habitat per management unit loss. Not to exceed decisions from the ROD</li> </ul>	<ul style="list-style-type: none"> <li>Washington Division of Wildlife Resources</li> </ul>	<ul style="list-style-type: none"> <li>a) collect data on population trends and vegetation trends</li> </ul>
<b>VEGETATION</b>			
1) density of oak type	<ul style="list-style-type: none"> <li>percentage of habitat in oak-sage and oak-grass types determined by Washington Division of Wildlife Resources</li> </ul>	<ul style="list-style-type: none"> <li>Washington Division of Wildlife Resources</li> </ul>	<ul style="list-style-type: none"> <li>a) collect data from vegetation trend study plots</li> <li>b) tabulate data and compare with standard</li> </ul>
2) riparian condition	<ul style="list-style-type: none"> <li>no more than 25% classified as poor condition</li> </ul>	<ul style="list-style-type: none"> <li>field observation by park staff</li> </ul>	<ul style="list-style-type: none"> <li>a) document occurrences and trends</li> <li>b) correlate with patterns of use</li> </ul>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>RANGE</b>			
1) range condition and forage value	<ul style="list-style-type: none"> <li>Standards outlined in Chapter 4 of this RMP</li> </ul>	<ul style="list-style-type: none"> <li>USDA Natural Resource Conservation Service</li> <li>Washington Division of Wildlife Resources</li> </ul>	<ul style="list-style-type: none"> <li>collect range condition and forage value data (before and after livestock grazing)</li> <li>evaluate AUMs available and compare standard</li> <li>evaluate range management strategy</li> </ul>
<b>AIR QUALITY</b>			
1) complaints about dust on roads, trails and other recreation areas	<ul style="list-style-type: none"> <li>number of complaints per year</li> </ul>	<ul style="list-style-type: none"> <li>documented by park staff</li> <li>Washington Division of Air Quality</li> </ul>	<ul style="list-style-type: none"> <li>document complaints</li> <li>evaluate annually</li> <li>report problems to Washington State Department of WDOE</li> </ul>
<b>NOISE</b>			
1) complaints about noise caused by other visitors or from any source	<ul style="list-style-type: none"> <li>number of complaints per year</li> </ul>	<ul style="list-style-type: none"> <li>documented by park staff</li> </ul>	<ul style="list-style-type: none"> <li>document complaints</li> <li>evaluate annually</li> <li>report problems to WDOE</li> </ul>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>USER SATISFACTION</b>			
<b>RECREATION FACILITIES</b>			
1) number of times per season that campgrounds, day use areas, or other facilities are full	<ul style="list-style-type: none"> <li>no more than 75 percent full per year</li> </ul>	<ul style="list-style-type: none"> <li>field observation by park staff</li> <li>recreation user survey</li> </ul>	<ul style="list-style-type: none"> <li>a) document observed or reported occurrences</li> <li>b) report with park use information to SPRC</li> </ul>
2) adequacy of facilities 3) frequency of complaints	<ul style="list-style-type: none"> <li>no more than 20% increase over the preceding year or change in major type of complaint &lt;5% over preceding year</li> </ul>	<ul style="list-style-type: none"> <li>recreation user survey</li> <li>park records</li> </ul>	<ul style="list-style-type: none"> <li>a) evaluate survey response</li> <li>b) tabulate data and compare with standards</li> <li>c) report options to meet standards to SPRC</li> </ul>
<b>TRAILS</b>			
1) frequency of complaints regarding trail conditions	<ul style="list-style-type: none"> <li>adequacy of trails</li> </ul>	<ul style="list-style-type: none"> <li>recreation user survey</li> <li>trail user groups</li> </ul>	<ul style="list-style-type: none"> <li>a) evaluate survey response</li> <li>b) contact user groups to identify user issues</li> <li>c) tabulate data and compare with standard</li> <li>d) adjust trail designations and/or evaluate potential of new trails to meet public needs/desires</li> </ul>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>ACCESS</b>			
1) adequacy of road access to/from and in the park	<del>Adequate to safely meet park and user needs</del>	<ul style="list-style-type: none"> <li>• recreation user survey</li> <li>• recreation groups and organizations</li> <li>• agency personnel, Grant County Sheriff, and WA State Police</li> </ul>	<ul style="list-style-type: none"> <li>a) evaluate survey response</li> <li>b) coordinate with Washington Department of Transportation and Grant County on road planning</li> </ul>
<b>RECREATION OPPORTUNITIES</b>			
1) increase in frequency of requests --group use --camping --events	Diversity of recreation opportunities	<ul style="list-style-type: none"> <li>• recreation user survey</li> <li>• reservation system</li> <li>• trails user group and other recreation organizations</li> <li>• tourism information</li> <li>• park staff</li> </ul>	<ul style="list-style-type: none"> <li>a) contact recreation user groups to identify needs/desires</li> <li>b) evaluate survey response</li> <li>c) identify any desired opportunities that park could, but currently does not, provide</li> </ul>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>USER CONFLICTS</b>			
1) conflicts between users participating in same activity  2) conflicts between users participating in different activities	<ul style="list-style-type: none"> <li>frequency and severity of complaints in comparison to initial user survey data</li> </ul>	<ul style="list-style-type: none"> <li>incidents reported to managing agencies</li> <li>recreation user survey</li> </ul>	a) document occurrences b) tabulate total number of occurrences c) compare with standard d) determine if problem can be corrected with information (i.e., signs to promote user coordination/cooperation)
<b>SITE/FACILITY CONDITION</b>			
<b>RECREATION FACILITIES</b>			
1) percent of bare ground acceptable  2) photo or video comparison of structures	<ul style="list-style-type: none"> <li>no more than 10% increase in bare ground</li> </ul>	<ul style="list-style-type: none"> <li>field observation by managing agency personnel</li> <li>staff photos/video</li> </ul>	a) document and compare with standard b) investigate cause (e.g., overuse, lack of water) and evaluate potential solutions c) report options to meet standards

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<p>3) evidence of inadequate maintenance or overuse during the primary use period(s)</p> <ul style="list-style-type: none"> <li>• trash/litter present</li> <li>• damaged structures</li> <li>• erosion</li> <li>• presence of noxious weeds</li> </ul>	<ul style="list-style-type: none"> <li>• no more than 10 pieces of litter visible from any point on site</li> <li>• no more than one damaged structure per site</li> <li>• no noxious weeds</li> </ul>	<ul style="list-style-type: none"> <li>• field observations by park staff</li> <li>• recreation user survey</li> <li>• water records</li> </ul>	<ol style="list-style-type: none"> <li>a) conduct inventory of site/facility conditions</li> <li>b) evaluate survey response</li> <li>c) tabulate data and compare with standards and maintenance levels</li> <li>d) determine if increased maintenance would solve problem</li> </ol>
<b>TRAILS</b>			
<ol style="list-style-type: none"> <li>1) miles of trail by type (e.g., hiking, biking, ORV, equestrian, multi-use)</li> <li>2) evidence of severe deterioration</li> <li>3) evidence of hazards (e.g., rockfall or deadfall)</li> <li>4) frequency of accidents per season</li> <li>5) evidence of short-cutting or erosion</li> </ol>	<ul style="list-style-type: none"> <li>• <del>as outlined in this RMP for the particular resource</del></li> </ul>	<ul style="list-style-type: none"> <li>• field observations by park staff</li> <li>• GIS database</li> <li>• trail users groups</li> </ul>	<ol style="list-style-type: none"> <li>a) contact trail user groups and discuss needs/desires</li> <li>b) evaluate survey response</li> <li>c) evaluate trail use and designations</li> <li>d) adjust trail designations and/or evaluate potential of new trails to meet public needs/desires</li> <li>e) report option to the SPRC</li> </ol>

**Table 6-1  
Indicators and Standards**

<b>Indicators</b>	<b>Standards</b>	<b>Data Source</b>	<b>Instructions for Collecting/Monitoring</b>
<b>ACCESS</b>			
1) adequacy of road condition and level of maintenance 2) full parking at trailheads	<ul style="list-style-type: none"> <li>• standard should reflect and not exceed desired access &amp; recreation use opportunity setting (i.e., Recreation Opportunity Spectrum)</li> <li>• use road access as a recreation management tool</li> </ul>	<ul style="list-style-type: none"> <li>• field observed by park staff</li> <li>• Washington Department of Transportation</li> <li>• Grant County Highway Department</li> <li>• staff counts on random day 7 a.m. and 6 p.m.</li> </ul>	<ul style="list-style-type: none"> <li>a) evaluate survey response</li> <li>b) compare with current levels of maintenance (from highway departments)</li> <li>c) consider ROS in evaluating changes (i.e., upgrades) to roads</li> <li>d) coordinate with WDOT and Grant County on maintenance and road planning</li> <li>e) report potential changes in access to SPRC</li> </ul>