CHAPTER 6 - MONITORING

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CHAPTER 6 - MONITORING

A. OVERVIEW

The Coquille Watershed Association will be coordinating their activities among individuals, organizations and agencies and will help these groups vie for grant monies (public and private) to address resource management issues. Any program that spends large sums of public money must be accountable to the public and to interest groups affected by the program. The best way to provide that accountability is through a coordinated monitoring program.

A monitoring program should:

- Identify what conditions need to be monitored;
- Summarize existing monitoring efforts;
- Identify overlaps and/or gaps;
- Have a strategy to address gaps, including coordination of priorities, funding, and staff from existing agency programs; and,
- Recommend ways to fund the monitoring strategy.

Monitoring is more than the systematic and periodic collection of data; it is the basis for effective adaptive management. Properly supported and implemented, the monitoring program will provide an unbiased data set for determining baseline condition, cause and effect relationships, and trends in conditions over time. Data will also be used to assess current water quality standards and management practices, determine the effectiveness of restoration activities, and suggest new actions.

In developing a monitoring program, a basic understanding must be reached on the kinds of monitoring. There are at least four different and distinct kinds of monitoring relevant to a watershed monitoring program:

B. AMBIENT MONITORING

This type of monitoring provides information on current and past conditions and trends over a broad area (sometimes called baseline or trend monitoring). This level of monitoring looks at indicators of watershed health as measured over space and time in a defined sub-basin or watershed. It involves collecting samples (to be analyzed for many parameters) from a specific location on a defined schedule usually for a period of many years.

Because of the need for an ongoing commitment of resources, this kind of monitoring is generally done by permanently funded agencies or large industrial forestland owners at a limited number of sites. For example, DEQ maintains an ambient monitoring network for water quality. This network provides for only a few sampling locations in a given watershed. It provides general information on the quality of water but it usually cannot provide detailed information on subtle changes caused by an individual program or project.

This kind of monitoring is outside the scope of a watershed association. The Coquille Watershed Association should, however, be aware of this monitoring, provide input on

sampling plan design, make use of acquired data, and provide a coordination role for information storage and distribution.

1. THE OREGON PLAN: MONITORING AT REGIONAL, WATERSHED, & SITE SCALES

The Oregon Plan's monitoring program is designed to detect distribution of populations and the patterns of habitat characteristics at the Evolutionarily Significant Unit (ESU). It will also provide equivalent resolution at the geographic scale of the region or river basin and the population level of the Gene Conservation Group (GCG).

The coho GCG has been chosen as the fundamental level of organization, becoming the basis for assessment. These GCGs delineate geographic and metapopulation regions and form realistic management units. There are five regional/basin level groups. The Coquille watershed falls into the Mid-South Coast group which includes the lake basins, Coos, and Coquille Rivers.

The assessment of coho populations, habitat conditions, and actions directed at restoration will start at this regional spatial scale. Within these GCG Regions, assessment will also occur at the river basin scale. Across all scales, the major monitoring activities are designed to be complementary.

The state is still working to provide a coarse level analysis of these regions and to identify appropriate subdivision of sub-basins, watershed, stream reaches and sites that comprise the sampling units. This is so regional characterizations are supported by more intensive monitoring activities in representative selections of small sub-basins and watersheds. Incorporation of monitoring activities at the stream reach or site scale will be aggregated and interpreted within the regional context. The same monitoring activities will be conducted in all regions. The exact number of sample sites and general appropriation of effort will vary in both region and by the particular task. Appendix P provides a summary of the major activities at each of these scales, gives a general idea of sampling intensity, and shows some of the relationships between tasks.

Individual state agency monitoring efforts are described in Appendix II and Chapter 17B of the Oregon Plan. More detailed information on state-level monitoring can be found in Chapter 16 of the Oregon Plan.

C. PROJECT IMPLEMENTATION MONITORING

This type of monitoring answers the question "Did we do what we said we would do?" Implementation monitoring documents whether or not the elements of a project (structures, practices, seminars, etc.) were actually installed or carried out on a previously agreed to schedule. This is a relatively inexpensive type of monitoring and usually involves site visits, taking photographs, and reviewing billings and reports. Implementation monitoring is the only way to document that grant agreements or contracts have been adhered to. If done properly, and if some assumptions are made, it can also provide some qualitative information about effectiveness.
Implementation monitoring forms will be filled out for every project carried out by the CWA. Forms will be kept in the project files and can be used to develop a yearly summary or annual

report.

D. PROJECT EFFECTIVENESS MONITORING

This type of monitoring answers the question "Did the project work?", i.e., did a specific type of project designed for a specific zone result in the environmental change it was intended to produce? This involves tailoring monitoring strategies to each project type and zone (see Chapter 4, page 4-2 for description of zones). The intent is to monitor localized project benefits such as the re-establishment of streamside vegetation. Site specific project benefits can often be detected within a few months to a few years. In contrast, cumulative program benefits such as a reduction in summer stream temperatures may take many years of decades to show improvement.

As a general rule the parameters of interest are easy to measure and only a representative sample of projects need be measured, as long as grant agreement requirements are met. If grant agreements require effectiveness monitoring the costs should be included in the project funding. Monitoring design will vary by project type and zone based upon the project goals and objectives.

The monitoring plan needs to be developed and presented to the CWA Executive Council and Technical Advisory Group (TAG) for review, approval, or modification at the time of project proposal (see Chapter 5 for project review process). Monitoring plans need not be elaborate but should answer the following questions:

- What are the monitoring objectives (Should be tied to project objectives)?
- Who is responsible? (What agencies/persons will conduct the monitoring? Specific responsibilities? Phone number or address? Who receives the data?
- What parameters or indicators will be monitored? Are they adequate to detect change?
- What is the frequency and for how long will monitoring continue?
- How many proposed monitoring sites and what are their locations?
- Where and in what form will the data be stored?
- What are the cost and labor requirements? Who will fund it?
- Will the monitoring data be defensible? Where data quality assurance measures are required, identify measures to be taken such as replicate sampling and instrument calibration. (Use widely accepted protocols)

1. MONITORING IMPLEMENTATION

Physical or "on-the-ground" restoration projects will be in place for years. Often, these kinds of projects require years or decades to fully achieve their goals. The CWA will need to keep this perspective when selecting monitoring parameters. The equipment needs of most monitoring methods are generally quite minimal (e.g. measuring tape and rod), but they require trained personnel and consistency in application. Numerous books have been written on how to monitor habitat restoration projects, some of these are referenced at the end of this Chapter. Below are examples of some restoration objectives and projects (taken from Chapter 4, Table 4-3), followed by the parameters and/or methods that could be considered for monitoring. All work will be approved by and in coordination with the landowner.

TABLE 6-1
SAMPLE RESTORATION OBJECTIVES AND PROJECTS

Sediment Reduction
Road Decommissioning
Road Erosion Control
Culverts Replaced/Modified/Opened
Bridge Installation
Walk-through Gates
Water Crossings

Off Channel Habitat
Side Channels
Side Channel Reconnect
Off-Channel Pools
Alcove Pools
Pool Repairs

Passage Barriers
Passage Structures
Debris Jams Opened
Fish Ladder Opened
Tidegate Retrofit

Riparian Restoration
Riparian Planting/Release
Fencing
Fence Repair

Instream Structure
Tree Bundles
- Whole Trees
- Logs
- Tree Strings

Spawning Gravels
Rock Weirs
Boulder Weirs
- Boulders
- Log Structures

Root Wads
- Gabiens
- Debris Catchers

Structure Repairs

TABLE 6-2
SAMPLE MONITORING PARAMETERS AND/OR METHODS

- Permanently develop and mark photo points (2/site at opposite angles).
    - Take photos pre-, during and post- project, then 1X/Year for the first 5 years, then at years 7 and 10.
    - During photo documentation of riparian plantings, surveyor will note condition of CWA built fences (ie. is it still functioning as originally intended?)
- Transect surveys for plant growth/survival will be completed at the same intervals as photo documentation. (To be developed by Spring "98).
- Obvious complete passage barriers will be monitored (presence/absence, and/or spawning ground surveys) during and after project implementation.
- Other passage barriers (i.e. partial) will be surveyed pre-project (presence/absence and/or spawning ground surveys), during and post-project (presence/absence and spawning surveys).
- Habitat surveys pre- and post-project for instream projects.
- Presence/absence surveys for fish and aquatic invertebrates (instream projects).
- Stream morphology measurements.
- Sediment catch pools (Depth measured 1X/Year for 10 years).
- Tide gate function (hours open vs hours in tidal cycle).
- Pet door function [hours open vs hours in tidal cycle (still to be developed)].
- Continuous water quality monitoring will be done on Hydromodified system projects in cooperation with ODEQ (ie. pH, turbidity, DO, Temperature, conductivity, etc.).
- Water quality will also be spot-checked at discretion of CWA staff and TAG.
- CWA will work to fill information gaps in the following areas:
    - Spawning salmon surveys
    - Aquatic Inventory Surveys
    - Presence/Absence Surveys
    - Water Quality Monitoring
    - Seeding Levels
    - Various Aquatic Biota Population Studies.

E. PROGRAM EFFECTIVENESS MONITORING

The objective of this type of monitoring is to document the activities and results of the overall CWA program. This is the only way to measure effects of action plan implementation, including groups of projects on a cumulative basis. It does not necessarily require the establishment of many new, dedicated monitoring sites. The information gathered from both project implementation and project effectiveness monitoring, along with data being collected by a variety of agencies for similar purposes, may be used. The data will be gathered together, reviewed, and summarized in an annual accomplishment report and made available to the public. Monitoring information showing the need for adaptive management or an update of the *Action Plan* will be discussed with the TAG and the Executive Council.

Program effectiveness needs to be coordinated with the organizations and agencies presently doing ambient monitoring. The Coquille Watershed Association needs to become involved in

and provide input to their program of work for this reason.

F. ADAPTIVE MANAGEMENT

Tangible commitment to adaptive management is incorporated in the organization of the CWA, the TAG and *Action Plan*. No final solutions are intended. It is felt that watershed planning is a dynamic, continuing process requiring further cooperative work by all groups concerned.

The *Coquille Watershed Action Plan* provides for changes as new information is available and/or as the physical or economic situation changes. The current objectives, actions, and plans are only the beginning of our work in the Coquille watershed.

1. FUTURE ACTION PLAN UPDATES

This *Action Plan* is a "living" document. It will change and improve based on constructive suggestions from the public and partners. It will continue to change as we implement the plan and gather results from monitoring. New information on watershed conditions and project feasibility, reliability, and design can come from a variety of sources (e.g., inventory, monitoring, and assessments by: federal agencies, state natural resource agencies, private interest groups, large industrial landowners, etc.) and will accumulate continually.

As new information is generated, it will be analyzed by the TAG. This will be a fixed discussion item at TAG meetings. The TAG will determine the need for, and urgency of, incorporating this information into the *Action Plan* and will make recommendations to the Executive Council.

The Executive Council will review the recommendations of the TAG (or *Action Plan* Subcommittee) and propose approval. At a minimum, the full CWA will be informed of findings that may affect the activities of individual members. The watershed coordinator is responsible for accumulating information to be used for *Action Plan* updates.

Future updates of the *Action Plan* can include whole new chapters or simply new sections. Pages will be individually dated and distributed with a cover letter describing which previous pages are being replaced.

G. MONITORING REFERENCE MATERIALS

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