Confederated Tribes of the Umatilla Indian Reservation

Non-point Sources of Water Pollution Assessment and Management Program

TREATY JUNE 9, 1855 ✦ CAYUSE, UMATILLA AND WALLA WALLA TRIBES

NON-POINT SOURCES OF WATER POLLUTION ASSESSMENT AND MANAGEMENT PLAN

UMATILLA RIVER BASIN

submitted by

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

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Introduction

Land use on the Umatilla Indian Reservation and the surrounding Umatilla River watershed includes agriculture (both dryland and irrigated), range, forestry, residential, commercial and industrial development. These land uses yield a variety of nonpoint sources of water pollution related to erosion of agricultural, range, and forest lands. These sources include removal of riparian vegetation along the Umatilla River and its tributaries; runoff from fields (also irrigation return flows), roads, parking areas, and industrial sites; and infiltration and percolation (to ground water) of pollutant-laden water. Dysfunctional septic systems (a nonpoint source) and sewage treatment plant releases (technically a point source) also contribute to water quality parameters typically associated with soil erosion (sediment, nutrients, bacteria).

The water quality parameters most affected include sediment, temperature, dissolved oxygen, bacteria, nutrients, pH, and organic compounds in surface waters, and nitrates, organic compounds, and bacteria in subsurface waters. There are likely other, as yet unknown, water quality parameters of concern. The main area impacted is the Umatilla River and its valley as this is where most of the development has occurred, however the source area for many of the water quality problems is the surrounding agricultural, range, and forest lands.

The goal of the Assessment and Management Plan is to provide guidance for future efforts to effectively and efficiently address nonpoint sources of water pollution on the Umatilla Indian Reservation and throughout the Umatilla River watershed. The objectives of the Assessment and Management Plan are 1) to document water quality and watershed conditions, 2) to draw linkages between upstream-downstream and channel-upslope conditions, and 3) to elucidate a broad approach (technical, policy, and legal issues) to address currently degraded conditions.

These objectives were accomplished through the compilation of existing water quality information, identification of information gaps, identification of linkages between land use and nonpoint sources of water pollution, and the development of a broad-based management program to include regulatory and non-regulatory approaches to protecting and restoring high-quality waters in the Umatilla River Basin. The comprehensive, watershed-based management program will be implemented with the cooperation of tribal, local, state, and federal authorities, and the local public.

PURPOSE AND NEED FOR NONPOINT SOURCE ASSESSMENT AND MANAGEMENT PROGRAM

Purpose

The purpose of this Nonpoint Source Assessment and Management Program is to contribute toward the ability of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) to effectively and efficiently manage water quality on the Umatilla Indian Reservation. It is likewise expected to contribute toward the ability of the CTUIR to cooperatively manage water quality in the remainder of the Umatilla River Basin. Finally, the Nonpoint Source Assessment and Management Plan is prepared as implementation of several tasks of the Tribal Water Program. The Tribal Water Program and its Plan of Operations outline the Goals, Program Elements, Objectives and Tasks for management of water quality and quantity, as well as water rights, for the Confederated Tribes of the Umatilla Indian Reservation.

Need

The need for the current Nonpoint Source Assessment and Management Plan has been established by the long-term experience of the CTUIR with water, land use and fisheries management in the Umatilla River Basin. The deteriorated condition of water quality, watersheds, and habitat resultant from land use was documented in the 1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution and the 1991 Nonpoint Source Statewide Management Program. The Statewide Management Program identified the Umatilla River as Water Quality Limited under section 303(d) (1) of the federal Water Quality Act of 1987. Water Quality Limited status under section 303(d)(1) makes the Umatilla River Basin "subject to the establishment and enforcement of 'total maximum daily loads' (TMDLs)" which "may result in stringent regulation of all activities which cause water pollution-including forestry, agriculture, industrial manufacturing and urban development" (ODEQ, 1988).

There is a need for a comprehensive, integrated approach to address nonpoint source water quality concerns. The Oregon Statewide Management Program objectives include further assessment of water quality and pollution sources, the formation of a local advisory group, and a TMDL. The CTUIR proposes to supplement these efforts with a management program which includes long-term monitoring; a review of codes, laws and regulations, on-reservation, for consistency with management for high quality water and habitat; and a proposal for public information and education to increase the

awareness and knowledge of land users and other citizens of the Umatilla River Basin as to the need, methods and benefits of management for high quality water. On-the-ground projects and a review of Best Management Practices for effectiveness and water quality protection are common to both Programs.

APPROACH

The approach used in this Assessment and Management Plan consists of four parts. First, scope technical and other issues. Second, compile existing information. Third, assess the information to determine needed improvements. Fourth, develop a Management Program to address the needed improvements. The Management Plan will then be implemented in accordance with available resources.

Scoping Issues

Scoping of issues, concerns, and opportunities with tribal government and tribal members; staff from tribal departments and local, state, and federal agencies; and local publics occurred in January, July and August 1993, and January 1994. In connection with scoping, requests for information and data were made to tribal departments and state and federal agencies including the U.S. Environmental Protection Agency (EPA), the USDA-Forest Service, the USDI-Geological Survey, the USDA-Soil Conservation Service, the USDI-Bureau of Reclamation, the USDI-Bureau of Indian Affairs, and the Oregon state Departments of Forestry, Fish and Wildlife, and Environmental Quality (DEQ).

Compile Existing Data

Information on water quality parameters such as stream temperature, dissolved oxygen, biological oxygen demand, turbidity, suspended sediment, bedload sediment, nitrates, phosphates, pesticides (including herbicides), bacteria and other biological contaminants was gathered almost entirely from EPA's STORET water quality database.

Organize and Assess Information

A database format was developed for organization and analysis of the information collected in the Paradox (TM) relational database management system, on an IBM (TM)-compatible personal computer. Information was collected in electronic format (predominately from STORET) or input by hand. All sampling locations were entered into a geographic information system (GIS - ARC/INFO) resident at the CTUIR. Data were assessed by subwatershed to determine whether water quality is meeting state water quality standards or other published thresholds of concern and whether beneficial uses are being supported.

Develop and Implement Management Program

A management program to address technical and policy issues related to water quality and watershed management in Umatilla River Basin was developed. Strategies were developed in coordination with tribal staff and Board of Trustees, government agencies and other groups to address the problems discovered or confirmed through analysis of collected data. These strategies include administration and enforcement of existing land use and water codes, laws and regulations; review of land use and water codes, and lease agreements for possible recommendations for changes; recommendation of changes in land use and land management practices; baseline, project and site-specific monitoring of water quality; and public information and education. The program incorporating the above strategies will then be implemented on the Umatilla Indian Reservation and cooperatively implemented throughout the rest of the Umatilla River Basin as resources permit.

ASSESSMENT REQUIREMENTS

Waters Impaired or Threatened by Nonpoint Sources [section 319(a)(1)(A)]

Water Quality Data

Available information regarding the Umatilla River Basin's nonpoint source water pollution problems has been analyzed and summarized in the Assessment. This included information, primarily developed by DEQ, which is assumed to have been developed pursuant to sections 208, 303(e), 304(f), 305(b), 314, 319 and 320 of the Clean Water Act.

It should be noted that no data or other information was discovered regarding the water quality status of wetlands. The CTUIR does have National Wetland Inventory maps of existing wetlands in the Umatilla River Basin. Further work by the CTUIR on wetlands will include an assessment of wetlands "lost" through agricultural or other development, identification of opportunities for restoration or mitigation of lost wetlands, and development of management plans for wetlands where and in the manner appropriate, dependent on location. Oregon's Statewide Assessment of Nonpoint Sources of Water Pollution (1988) lays out a process or strategy for improving knowledge of wetland conditions, including "processes for prioritizing wetlands for monitoring," which was slated to be completed by 1992.

Sources of Data

Direct contacts to secure data were made with state and federal agencies. Data were primarily accessed through EPA Region X's STORET water quality database. Information obtained from STORET had as its primary source the USDI-Bureau of Reclamation (BR), USDA-Forest Service (FS), Oregon Department of Environmental Quality (DEQ), and the USDI-Geological Survey/Oregon Water Resources Department (WRD). Information (primarily stream temperature) was also obtained directly from the Pendleton office of the Oregon Department of Fish and Wildlife and the CTUIR Fisheries Program. Groundwater quality data from sporadic sampling (primarily 1987-1990) was obtained from CTUIR Water Resources Program. Summarized data on groundwater was also obtained from Oregon's Statewide Assessment of Nonpoint Sources of Water Pollution. Other potential sources which were contacted but from which no data were obtained were the Oregon Department of Forestry, the Columbia-Blue Mountain Resource Conservation and Development Council, the Umatilla County Soil and Water Conservation District, and the USDA-Agricultural Research Service.

Water quality information in STORET is geo-referenced by latitude and longitude and therefore we were able to create a geographic information system (GIS) layer of sampling/monitoring locations. This was overlaid on the 1:100,000 EPA River Reach file obtained from the Oregon State GIS Service Center located in the Oregon Department of Energy in Salem. An additional overlay was created by CTUIR staff of "subwatersheds" based on watershed boundaries, sampling/monitoring stations, and land use. The map of River Reaches, with sampling/monitoring locations and subwatershed boundary overlays was created from at the 1:250,000 scale and is in the rear map pocket.

Subwatersheds

Integral to improvements in nonpoint sources of water pollution is the recognition that pollution issues from watersheds, not just stream channels. Toward this end the CTUIR has analyzed water quality conditions based on subunits of the entire Umatilla River Basin. WRD subwatershed delineation and USDA-Soil Conservation Service Hydrologic Unit (1984) maps were consulted when creating the overlay of subwatersheds. Some, but not all, subwatershed boundaries are coincident with these maps. The Umatilla River Basin was divided into 14 subwatersheds using the following criteria:

1) area drained by one or more contiguous or tributary streams;

2) water quality sampling/monitoring station locations (advantage in having a station at outlet of subwatershed);

3) land use/concentrated irrigated agriculture.

The subwatersheds delineated are found on the Umatilla River Basin map found in the map pocket. A list of subwatersheds is found in Table 1.

Table 1. List of Umatilla River Basin subwatersheds

CTUIR Code	Name	Location
01UU	Upper Umatilla	above Corporation
02UU	Upper Umatilla	above Gibbon
03ME	Meacham Creek	Meacham Creek
04MU	Middle Umatilla	Gibbon to Highway 11 bridge
05WH	Wildhorse Creek	Wildhorse Creek
06TP	Tutuilla-Patawa	Tutuilla and Patawa Creeks
07MC	McKay Creek	McKay Creek
08PE	Pendleton	Pendleton (highway 11 bridge to Reith)
09BC	Birch Creek	Birch Creek
10BU	Butter Creek	Butter Creek
11CS	Cold Springs	Cold Springs subwatershed above dam outlet
12LU	Lower Umatilla	Reith downstream to Nolin plus tributaries
13SH	Sand Hollow	Sand Hollow
14LU	Lower Umatilla	Nolin downstream to mouth including canals, ditches, etc.

Spatial and Temporal Distribution of Sampling and Monitoring to Date

No concerted, consistent or spatially integrated water quality sampling has occurred in the Umatilla River Basin. Records at a station ranged from one (1) to more than 2700. The highest number of records are found for stream temperature due to the fact that many of these are collected by datalogger at hourly intervals. A more typical number of records at a station is ten (10) to twenty (20) records collected over a two (2) to six (6) year period.

To our knowledge no continuous, long-term, baseline sampling has occurred save for sampling done by DEQ at Pendleton (STORET station 402076) and Yoakum (STORET station 402074) from 1960 to the present, and at McKay (STORET station 402767) from 1971 to the present. The parameters sampled include Ph, conductivity, turbidity, total solids, suspended solids, nitrate, nitrite, TKN (Total Kjeldhal Nitrogen), ammonia, dissolved oxygen, BID, COD, total phosphorus, chlorophyll a, and bacteria. This monitoring is related to operation of the Pendleton Sewage Treatment Plant which discharges into the lowermost reach of McKay Creek at the west end of Pendleton.

Most other sampling seemed to be narrowly focused (specific parameters only) and of short duration. This is probably related to cyclic public/agency awareness and outcry and the consequent funding. Flurries of data collection occurred in the early to mid 1970's (DEQ) and again during the mid to late 1980's (BR). Most recently (since 1988), increased numbers of stream temperature data have been collected, primarily by ODFW and CTUIR, in connection with fish and wildlife enhancement projects funded by the USDE-Bonneville Power Administration (BPA).

The 1988 Statewide Assessment of Nonpoint Sources of Water Pollution describes and displays groundwater quality conditions and the water quality issues raised. Data on groundwater quality is also found in STORET for wells in the Lower Umatilla Basin Groundwater Study area for the period beginning in 1989 to the present. One to seven samples had been taken at a site through early 1993. In the majority of cases a single sample was analyzed. A variety of parameters were analyzed, including pesticides. Finally, the CTUIR has some nitrate data collected predominately from domestic wells in 1984, 1988, 1990. Other parameters were analyzed also in the 1988 sampling.

Spatial coverage of the Umatilla River Basin has been concentrated in the mainstem Umatilla River as might be expected. Not only do the cumulative effects of nonpoint source pollution eventually end up in the Umatilla River,

but the three largest uses depend directly on the Umatilla River. These uses are the Pendleton city water intakes located near Gibbon, OR; dilution of the Pendleton Sewage Treatment Plant effluent into lowermost McKay Creek, and the irrigation canal system located primarily in the lowermost subwatershed below Nolin, OR.

Subwatersheds where sampling/monitoring has been most concentrated include subwatersheds 01UU (12 locations; above Corporation including South and North Forks Umatilla River and Thomas and Buck Creeks; by USDA-Forest Service), 04MU (8 locations; Gibbon downstream to Highway 11 bridge, all but one location on mainstem Umatilla River; various agencies), and 07MC (9 locations; McKay Creek and three tributary locations; mostly by BR and DEQ). All other subwatersheds have five (5) or less locations, and three (3) subwatersheds (06TP, Tutuilla/Patawa Creek subwatershed; 11CS, Cold Springs subwatershed; and 13SH, Sand Hollow subwatershed) have no sampling/monitoring stations at all.

Summary of Water Quality Data by Parameter

Existing data and observation of conditions where no or little data exists indicate that the lack of support of beneficial uses are primarily related to the water quality parameters stream temperature, sediment, pH, nitrogen (nitrate-nitrate and ammonia), phosphorus, and bacteria (fecal coliform and enterococcus). The below parameters are for surface waters. Groundwater quality is summarized in the section below.

Stream Temperature - This parameter has the best monitoring coverage, both in terms of geographic extent and period of record. The state water quality standard for stream temperature, 68° F. (20° Celsius)[1], is exceeded throughout the Umatilla River Basin for an extended period each year, usually mid-June through mid-September. The only exceptions are the North Fork

[1] The pertinent ORS reads "[n]o measurable increases shall be allowed outside of the assigned mixing zone, as measured relative to a control point immediately upstream from a discharge when stream temperatures are 68° F. or greater; or more than 0.5° F. increase due to a single source discharge when receiving water temperatures are 67.5° F. or less; or more than 2° F. increase due to all sources combined when stream temperatures are 66° F. or less, except for specifically limited duration activities which may be authorized by DEQ under such conditions as DEQ and the Department of Fish and Wildlife may prescribe and which are necessary to accommodate legitimate uses or activities where temperatures in excess of this standard are unavoidable and all practical preventive techniques have been applied to minimize temperature rises."

Umatilla River and Buck Creek, both of which are in the North Fork Umatilla Wilderness Area on the Umatilla National Forest; temperatures above 68° F. occur infrequently. The primary causes of high stream temperatures are removal of riparian vegetation (habitat alteration), water withdrawal (flow alteration), and irrigation return flow.

Sediment - Very little sediment data was found. Suspended sediment data was collected by CTUIR Fisheries Program in 1991 and 1992 for Umatilla River mile 81.7 (May through December and January through December respectively), Meacham Creek river miles 2 (January through December) and 4 (January through April 1991 only), and Umatilla River miles 78.5 (January through early May 1991 only) and 56 (May through December 1991 and January through December 1992). The USDA-Forest Service collected data at Thomas Creek (South Fork Umatilla River tributary), North Fork Umatilla River, and the mainstem Umatilla River at Corporation during 1977. Suspended sediment data is also in hand for the Umatilla River at Umatilla, Oregon for dates in 1964-70.

Suspended sediment concentration is generally measured along with discharge to yield a "tons/day" figure. As might be imagined, the values vary greatly with the peaks generally coming at the beginning of large discharge events (storms or snowmelt periods). The May 1991 storm (estimated by USDI-Geological Survey to be a 10-20 year return interval discharge event) shows clearly on the graphs of suspended sediment. The May 1991 peak suspended sediment transport rate was less than 3000 tons/day at river mile 56 (outlet of subwatershed 04MU; would include the sediment from Upper and Middle Umatilla, and Meacham Creek Subwatersheds). The baseflow suspended sediment transport rate is 10-20 tons/day for this same station, while a typical stormflow transport rate might be 200-300 tons/day.

For comparison, the data from the Umatilla River at Umatilla, Oregon station (river mile 2.1) shows a peak transport rate (during the time collected) of 128,000 tons/day on 1/24/70. This would include the upper watersheds noted above and the remainder, Wildhorse Creek, Tutuilla Creek, McKay Creek (truncated due to dam), Butter Creek, and the Lower Umatilla subwatersheds. Presuming that 1/24/70 was a typical stormflow event (1-2.3 year return interval) these six lower subwatersheds contributed almost all the suspended sediment in the river at Umatilla, Oregon. It is not prudent to draw any specific quantitative conclusions, but the indications are strong that the six watersheds named immediately above contribute the major portion of suspended sediment to the Umatilla River and thence to the Columbia River.

This is thought to be largely the result of soil left bare in local "grain"[2] farming operations or through overgrazing, streambanks denuded of vegetation for the purpose of agriculture or range management, and the lack of opportunity (due to channelization) for floodwater to spread over the floodplain and drop sediment.

pH - The Umatilla River Basin-specific state water quality standard of 6.5 - 8.5 is frequently exceeded throughout the basin and was one of the initial parameters of concern in the current TMDL study being performed by DEQ. Stream water pH data collected by DEQ in the summer of 1993 ranged from 6.9 to 8.9. Other data available showed pH values as high as 9.3. Part of the high values can be attributed to the natural system (i.e., basalt has naturally occurring basic minerals which drive the pH up). However, much of the high levels can also be attributed to erosion of soil, particularly those portions of the soil profile which, under the soil forming factors of this area, accumulate calcium and magnesium carbonate compounds. These compounds will increase the pH of water in which they are dissolved. Additional causes include nutrients and related algal activity.

Nitrogen - There is poor coverage of nitrates in the Umatilla River Basin. What data there is shows very low concentrations (>0.10 mg/L total nitrate) in the upper subwatersheds, slightly elevated levels (>0.40 mg/L) in the Middle Umatilla subwatershed, 0.20 to 1.50 mg/L in McKay Creek (downstream of dam), 0.20 to 4.10 mg/L (mostly 0.30 to 0.90 mg/L) in Lower Umatilla subwatershed (10LU), and 0.60 to 6.10 at Umatilla River mile 2.1 (most downstream station in the Umatilla River Basin). Other nitrogen parameters such as dissolved nitrate, Kjeldahl nitrogen, and total ammonia have also been measured with less geographic coverage.

It is difficult to evaluate the nitrate data due to lack of water quality criteria. Most of the above values appear to meet EPA drinking water standards. However, the Wyoming/South Dakota coldwater fisheries criterion is 0.02 mg/L un-ionized ammonia (as N). What is needed is a consistently measured parameter and a criterion for that parameter to get a better idea regarding nitrate and/or ammonia pollution in the Umatilla River Basin. Nitrate and/or ammonia pollution is thought to be largely the result of excessively applied nitrogen fertilizer leaching to groundwater and traveling subsurface to the creeks and the Umatilla River. In addition, DEQ's 1993

[2] Local "grain" includes soft white (predominately) and other winter wheats, spring wheat, barley, dry (and some fresh) peas and Canola.

sampling showed elevated levels of nitrate and ammonia (as N) at the sewage treatment plant outfalls (Pendleton and Hermiston).

Phosphorus - The State of Oregon has not specified a phosphorus criteria value[3]. Several other states have identified phosphorus criteria, numeric or otherwise, including Idaho, California, and Nevada. These criteria are expressed as total phosphates or total phosphorus, and range (dependent on location, whether the value is an annual average or single value, and beneficial use) from 0.03 mg/L to 2.0 mg/L. A "threshold" value of 0.1 mg/L total phosphorus (California cold freshwater habitat) is exceeded for the Umatilla River from below Gibbon to the mouth and in Wildhorse and McKay Creeks. Data for this parameter, which is related both to soil erosion and to organic matter inputs (e.g., dysfunctional septic systems, improperly treated municipal or commercial sewage[4], confined animal feedlots), is limited both geographically and temporally.

Bacteria - Either one or both of the state water quality criteria for fecal coliform bacteria and enterococcus are frequently exceeded for the Umatilla River below the Umatilla Indian Reservation, Butter Creek, Birch Creek, McKay Creek, and parts of Wildhorse Creek. Very high levels of coliform bacteria are recorded at the Umatilla River at Rieth station. As noted above only three stations have significant periods of record (McKay, Reith, and Pendleton stations). Sources are municipal wastewater treatment facilities, individual septic/drainfield systems, confined animal feeding areas, soil from surface or streambank/ bed erosion.

Others - Significant amounts of calcium, sodium, chloride, and dissolved silica are found in Umatilla River water. It is likely that these are background levels resultant from dissolution of soil and rock minerals (calcite, dolomite, plagioclase, silica) which form the watersheds of the Umatilla River Basin.

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[3] See, EPA, 1988, Phosphorus: Water Quality Standards Criteria Summaries: A Compilation of State/Federal Criteria, EPA 440/5-88/012. U.S. EPA, Office Water Regulations and Standards, Wash., D.C.

[4] "Because phosphorus is generally present in domestic wastewater in excess of biological needs, phosphorus is usually present in biological sewage treatment plant discharges unless tertiary treatment is utilized" (Alan T. Schroeder, P.E., DEQ, letter of February 11, 1994; emphasis added).

Summary of Groundwater Quality Data

The 1988 Statewide Assessment (section 4.4) identifies significant portions of the lower Umatilla River Basin (in subwatersheds 10LU Lower Umatilla, 12BU Butter Creek, 13SH Sand Hollow, and 14LU Lower Umatilla) as having **severe (with data)** and **moderate (with data)** groundwater quality problems in areas identified as Hermiston Road 32, State (sic) Gulch 46, Butter Creek 43, Ella Butte 45, and Boardman 13. The most common causes of beneficial use degradation of the groundwater were human waste disposal and chemicals leaching from land surface application. These causes are related to land uses of urban development (sanitary sewage leakage) and irrigated and non-irrigated agriculture.

The data collected as part of the Lower Umatilla Basin Groundwater Study is extremely limited as noted above. In most cases the concentration of potential pollutants is at or below the limit of detection. This is not true for the Hermiston Wells (2-5) which show concentrations up to and including 100 parts per billion for several pesticides and other synthetic organic constituents as well as elevated levels of nitrate and other inorganic constituents.

Summary of Existing Water Quality Data Compilations

1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution (Oregon Department of Environmental Quality)

The 1988 Oregon Statewide Assessment includes an analysis and summary of nonpoint source problems in the Umatilla River Basin. The waters impacted or threatened by nonpoint source pollution and the pollution categories or sources contributing to such impact have been integrated into Oregon's 305(b) report (discussed below). The assessment basis (i.e., monitored or evaluated; EPA, 1987) was identified as "with data" or "observed."

According to the 1988 Oregon Statewide Assessment for the Umatilla River Basin (Executive Summary p. 2, pp. 82-87), "[t]he most commonly cited causes of beneficial use degradation were vegetation removal along streambanks, removal of thermal cover over streams, and surface erosion. The land uses most commonly cited in connection with these problems were irrigated and non-irrigated agriculture, grazing, and associated vegetation management within grazing and agriculture" (p. 82, ODEQ, 1988).

The Oregon Statewide Assessment (Table 4.11; ODEQ, 1988) documents that recreation (162 miles moderate, 82 miles severe), drinking water supplies

(68 miles moderate), aquatic habitat (605 miles moderate, 223 miles severe) and water quality important to fish (488 miles moderate, 205 miles severe) are all affected. **Serious** water quality problems are shown to exist in Butter Creek and its North and South Forks, Wildhorse Creek, Meacham Creek and its North Fork, Squaw Creek and the Umatilla River. Finally, the Oregon Statewide Assessment shows that overall water quality conditions are **severe with data** in the Umatilla River from the mouth of Meacham Creek downstream to the Umatilla's confluence with the Columbia River, a distance of 79 miles (p. 83; ODEQ, 1988).

The CTUIR in general agrees with the information presented in the Statewide Assessment. If any errors exist in the document, they are errors of omission due to lack of data/resources. Where the State's Assessment and the Assessment of the CTUIR differ (Tutuilla, McKay, and Birch Creeks), Tribal staff has informally surveyed these areas and seen the same lack of riparian vegetation, lack of field runoff filtering, lack of adequate livestock control, high sediment loads, and high stream temperatures (documented by ODFW in the case of Birch Creek) that exist in other local creeks which are documented as not supporting beneficial uses (e.g., Wildhorse Creek).

For showing waters whose beneficial uses are impaired or threatened, the Oregon Statewide Assessment is a more than adequate public education tool, but it is rarely used for this purpose. In our experience, the CTUIR, the Confederated Tribes of the Warms Springs Reservation of Oregon, and the Columbia River Inter-Tribal Fish Commission are the only entities which use or present information from the Statewide Assessment at public or government/agency staff meetings, or refer to it in documents.

The 1991 Nonpoint Source Statewide Management Program for Oregon (Oregon Department of Environmental Quality)

The Nonpoint Source Statewide Management Program for Oregon summarizes water quality problems and the causes of beneficial uses not being fully supported in the Umatilla River Basin and generally throughout the state. Oregon's Management Program states that of the 1120 miles assessed in Umatilla/Walla Basin 456 miles (40.7%) had moderate water quality problems and **229 miles (20.4%) had severe water quality problems** (Table 1.1; ODEQ, 1991).

The causes of the beneficial uses not being fully supported (i.e. specific water quality problems) are:

- habitat alteration (18%),

- flow alteration (channel changes for land owner or municipal benefit plus irrigation diversions; 16.5%),
- temperature (16%),
- siltation (15.3%),
- bacteria (10.8%),
- nutrients (9.1%),
- dissolved oxygen (7.3%),
- pH (5.5%), and
- toxics (1.5%).

Of course, rarely is beneficial use impaired because of a single cause. Most often streams and other waterbodies suffer from multiple causes of water quality impairment which act synergistically to lead to further problems. For example, when vegetation is removed from riparian areas and streambanks, stream temperatures will increase and sediment delivery to the stream will increase. The increase in temperature will lead to problems with dissolved oxygen and algal growth which may also affect pH. Increased sediment delivery will directly increase siltation, habitat alteration, nutrients and, if livestock are involved, bacteria.

The Statewide Management Program contributes little to the knowledge of specific waterbodies which suffer from nonpoint source water pollution. The information that is presented is summarized on a basin or statewide basis. It could be greatly improved by using the information developed for the Statewide Assessment to form the basis for waterbody-specific management program components which specifically address parameters of concern, sources, and categories and subcategories of nonpoint source water pollution.

Adequacy of Data and Information Gaps

As noted above most water quality monitoring/sampling has been of limited geographic extant and rarely continues for longer than six years. The State of Oregon has not consistently monitored water quality to determine if beneficial uses are supported and has not acted even when the information has been available to determine that beneficial uses are not fully supported. In act, the State begun a TMDL in the Umatilla River Basin (Total Maximum Daily Load; allocation of pollution inputs) in 1993 as a result of litigation[5].

[5] The CTUIR was informed in April 1994 that no activity would occur on the Umatilla TMDL this year (1994).

The 1988 Oregon Statewide Assessment (see above) and the information from which it was developed are apparently not adequate to set preliminary load allocations in the case of the water quality limited-Umatilla River Basin. This was requested by the CTUIR from DEQ whereupon DEQ informed the CTUIR that three to five years of data collection were needed to set load allocations. In 1994 the CTUIR was informed by DEQ that no work would occur on the Umatilla River Basin TMDL in 1994 and that they "hoped to pick up the project" in 1995.

Overall, there is sufficient data to determine that severe water quality problems exist in the mainstem Umatilla River, but tributary water quality monitoring has been woefully deficient. In particular, Squaw Creek, Wildhorse Creek, Tutuilla Creek, upper McKay Creek, Birch Creek, Butter Creek, and the canals, ditches and streams of the Lower Umatilla subwatershed (14LU), are in need of consistent monitoring of nutrients (primarily nitrogen and phosphorus), stream temperature, bacteria, sediment and pesticides to improve the ability to locate and address sources of nonpoint source water pollution in the Umatilla River Basin.

The CTUIR will contribute to the monitoring of these parameters in these subwatersheds dependent on the availability of resources. Monitoring for regulatory, advisory, and educational purposes is a high priority for the CTUIR, however, additional activities by the CTUIR will largely be dependent on state and federal agency funding for monitoring.

Currently some resources are available, through monitoring portions of BPA-funded habitat enhancement projects in Meacham and Squaw Creeks, to monitor stream temperature in these creeks. The current plan is to initiate basin-wide baseline and project monitoring through implementation of watershed projects in Wildhorse and Middle Umatilla subwatersheds with Clean Water Act section 319 funding (begin 1994-5), undertake monitoring as a component of watershed planning and project implementation in McKay Creek subwatershed with Clean Water Act section 314 (Clean Lakes) funding (begin 1995), and cooperate with DEQ in future TMDL monitoring to establish important stations (restart 1995).

These stations may then be maintained through section 319 funding (in coordination with watershed plans/projects), section 106 funding (begin 1995), Bureau of Reclamation funds (for Lower Umatilla subwatersheds) (begin 1995-6), and Bureau of Indian Affairs Tribal Priority Allocation funds (current). Cooperative funding/monitoring from/by Oregon Department of Agriculture, USDA-Soil Conservation Service, USDA-Forest Service, Umatilla County Soil

and Water Conservation District, and local groups and citizens can add to the success of the CTUIR monitoring efforts. In addition, General Assistance funding will be used to incorporate data into a Geographic Information Systems format.

These activities can be coordinated with monitoring done by USDA-Forest Service, USDI-Bureau of Reclamation, USDI-Geological Survey, and Oregon Departments of Environmental Quality, Agriculture, and Fish and Wildlife. This information can then be summarized and maps developed and provided to USDA-Soil Conservation Service, U.S. Environmental Protection Agency, and the Umatilla County Soil and Water Conservation District.

List of Waters Impacted

Specific waterbodies impacted or threatened by nonpoint source water pollution are listed below in Table 2. The list of waters impaired or threatened by nonpoint source water pollution and the pollution categories or sources contributing to this impact has been compared with Oregon's 1992 Water Quality Status Assessment Report (DEQ, 1992), Oregon's 305(b) report. The State's Report summarizes water quality by listing the miles of river impacted in the Umatilla/Walla River Basins[6].

The only specific water quality information in the State's Report is found in the Water Quality Basin Status Summary where data is presented for McKay Creek (STORET # 402767; beneficial uses not supported due to high levels of enterococcus bacteria; also high exceedance of nutrients from agricultural sources) and the Umatilla River (STORET #s 404168, 402074, and 402076; beneficial uses not fully supported and identified as water quality limited due to nutrients [again agricultural sources], fecal coliform, enterococcus, pH, and algae). Information on stream temperature, for which there is a state water quality standard and for which there is a significant amount of data, is not presented. The current report of impacted waters should provide additional support to DEQ for upcoming assessments and the ongoing Total Maximum Daily Load (TMDL) project and also to Oregon Department of Agriculture as they specifically address nonpoint sources of water pollution from agricultural activities.

[6] Only that portion of the Walla Walla River Basin which is in Oregon is included in the summary; it is not possible to separate out the statistics for the Umatilla River Basin alone; the "Basin" is an administrative unit rather than a watershed.

Table 2: Waterbody Assessment Summary

Subwatershed/ Waterbody	Oregon Assessment	Basis	CTUIR Assessment	Basis
Upper Umatilla		E	S	M
NF Umatilla	S	M	PS	M
SF Umatilla	PS	M	PS	M
Upper Umatilla	PS	E	NS	M
Meacham Creek	NS	E		
NF Meacham	NS/PS	E		
Upper Meacham	NS(lower)	M		
Middle Umatilla	NS	E	NS	E
Squaw Creek	NS	E	NS	M
Wildhorse Creek	NS(main)	M/E	NS	E
Tutuilla-Patawa		E		
Tutuilla	PS	E	NS	E
Patawa	PS	E		
McKay Creek	PS	E	NS	E
NF McKay	NDNP	E		
SF McKay	NDNP	M		
Pendleton	NS	E	NS	E
Birch Creek	PS	E	NS	E
EF Birch	PS	E	NS	E
WF Birch	PS	E/M	NS	E
Butter Creek	NS	E	NS	E
SF Butter	NS	-		
NF Butter	NDNP	-		
Cold Springs	NDNP	M		
Lower Umatilla	NS(main) PS(tribs.)	E	NS	E
Sand Hollow	no mention	M		
Lower Umatilla	NS		NS	E

Oregon Assessment based on the 1988 Statewide Assessment. CTUIR Assessment based on the State's Assessment, additional data collected since 1988, field reconnaissance, professional judgement.

S=Beneficial uses fully supported; PS=Partially supported; NS=Not supported; NDNP=No data available and/or no problem.

M=Monitored; E=Evaluated using data, observation and best professional judgement.

Potential Nonpoint Sources Related to Geography, Land Use, and Water Quality

A relationship exists between geography, land use, and water quality in the Umatilla River Basin. Flat-lying land near water is generally sought for residential, commercial, industrial and agricultural uses dependent on transportation and other infra-structural systems. In the Umatilla River Basin, this land is along the major river valleys such as the Umatilla River, McKay Creek, and Birch Creek valleys. Potential pollutants derived from these land uses include petroleum products and their derivatives, industrial chemicals such as solvents; nutrients and sediment from soil erosion; agricultural fertilizers and pesticides; and bacteria from human and animal feces.

Provided sufficient soil depth exists on relatively flat-lying benches, terraces, and uplands, crop agriculture dominates with animal agriculture, and dispersed residential, commercial and industrial uses following in intensity. Crop agriculture, as currently practiced by the majority of growers, lends itself to production of nutrients and sediments from soil erosion and fertilizers, pesticides, and lesser amounts of petroleum derivatives.

In addition, it is common practice to remove much or all other vegetation from streamsides in order to increase total yields (of crop or forage) from cultivated and grazed lands. This results in further soil erosion from streambanks and increases in stream temperature with the consequent multiplier effects on dissolved oxygen, algal growth, pH, etc. During late spring to early fall, irrigation withdrawals can compound these water quality problems by reducing the stream discharge thereby relatively increasing the concentration of pollutants downstream compared the situation where no withdrawals are made. Animal agriculture has similar impacts to water quality with the addition of increased streambank erosion from trampling, and bacteria-laden animal waste in sometimes high concentrations.

Steeper uplands and mountains are given over to extensive range management and forestry, with recreation use dispersed throughout, although locally intensive. Under current conventional management, livestock concentrate in stream bottoms causing water quality impacts similar to those described above for animal agriculture. The practice of forestry in the Umatilla River Basin has led to increases in stream temperature and sediment through streamside timber cutting and roadbuilding, and upland forest practices and roads. These practices and developments lead to the capture of cool, clean

subsurface water where it is then routed down ditches where it picks up sediment and increases in temperature. Timber management also produces changes in the shape of the hydrograph and can lead to an increased annual peak flood. This increase in the annual peak flood can lead directly to increased streambank erosion, especially when coupled with banks denuded of vegetation from livestock grazing or timber cutting. Sediment parameters (e.g. suspended, turbidity, etc.) consequently increase.

Thus, in the Umatilla River Basin, in the main forks and tributaries throughout the basin, water quality impacts start with increased sediment delivery from upland sources and roads, streambank erosion, and increases in stream temperature with the other associated water quality problems. Range management and rural residential areas then contribute increased nutrient and bacteria levels in addition to worsening sediment and temperature impacts. Animal and crop agriculture contribute additional sediment, increases in temperature, nutrients, bacteria, and add agricultural chemicals to the mix flowing downstream. Finally, petroleum products, industrial chemicals, and sewage effluent
are added to the mix as the Umatilla River and tributaries pass through concentrations of residential, commercial and industrial development.

In the Umatilla River Basin, downstream of Pendleton, extensive and intensive agriculture continue to add pollutants derived from these uses and water is diverted from the river and several of its tributaries for irrigation. Impacts to the Umatilla River from synthetic organics (pesticides) are potentially most severe in the intensive agriculture lands in the lower Umatilla River floodplain, irrigation ditches, and lower Umatilla groundwater area.

Categories and subcategories of nonpoint source pollution [section 319(a)(1)(B)]

The Nonpoint Source Statewide Management Program for Oregon specifies the sources of water quality problems as 21.3% related to range use (management), 17.4% agriculture, and 17.4% forestry (Figure 1-1; ODEQ, 1991). Thus over 56% of the sources of water quality problems affecting beneficial uses of water in the State of Oregon are attributable to range, agriculture, and forestry.

The categories and subcategories of nonpoint sources of water pollution have been specifically identified by CTUIR for each impaired or threatened navigable waters and are found below in Table 3.

Table 3: Categories and Subcategories of Nonpoint Sources of Water Pollution in the Umatilla River Basin

Subwatershed/ Waterbody	Nonpoint Source Category	Nonpoint Source Subcategories
Upper Umatilla		
SF Umatilla	Silviculture	road const./maint.
Upper Umatilla	Agriculture	animal holding/mgmt.
	Other	highway maint. and runoff
	Hydrologic flow Modification	regulation/modification
Meacham Creek	Agriculture	pasture land
	Hydrologic Modification	channelization, streambank modification
NF Meacham	Agriculture	pasture land
	Silviculture	forest management
Upper Meacham	Silviculture	forest management
Middle Umatilla	Hydrologic Modification	removal of riparian veg., streambank modification
	Other	highway maint. and runoff
	Agriculture	pasture land
Squaw Creek	Agriculture	pasture, animal holding
Wildhorse Creek	Agriculture	pasture, animal holding, non irrigated crop prod., ag. streambank erosion
	Urban Runoff	surface runoff
	Hydrologic Modification	removal of rip. veg., dredging, channelization
	Other	highway maint. and runoff
Tutuilla-Patawa	Agriculture	non-irrigated crop prod. pasture land
	Urban Runoff	surface runoff
	Hydrologic Modification	removal of rip. veg., ag. streambank erosion
	Other	highway maint. and runoff
McKay Creek	Urban Runoff	surface runoff
	Hydrologic Modification	channelization, flow regulation/modification, streambank modification

Subwatershed/ Waterbody	Nonpoint Source Categories	Nonpoint Source Subcategories
(McKay Cont'd)	Agriculture	pasture land
NF McKay	Silviculture	forest management
SF McKay	Agriculture	pasture and range lands
	Silviculture	forest management
Pendleton	Urban Runoff	combined sewers, surface runoff
	Hydrologic Modification	channelization
	Other	highway maint. and runoff
Birch Creek	Agriculture	pasture and rangeland, irrigated crop production
	Urban runoff	surface runoff
	Hydrologic Modification	channelization, removal of riparian vegetation, ag. streambank erosion
EF Birch	Agriculture	pasture and rangeland, irrigated and non-irrigated crop production channelization, removal of riparian vegetation, ag. streambank erosion
	Hydrologic Modification	
	Urban Runoff	surface runoff
	Silviculture	forest management, road construction/maintenance
WF Birch	Agriculture	pasture and range lands
Butter Creek	Agriculture	pasture and range lands, crop production, channelization, removal of rip. veg., ag. streambank erosion
	Hydrologic Modification	
SF Butter	Agriculture	pasture and range lands
	Hydrologic Modification	channelization, removal of rip. veg., ag. streambank erosion
NF Butter	Agriculture	pasture and range lands
	Hydrologic Modification	channelization, removal of rip. veg., ag. streambank erosion

Table 3 (continued): Categories and Subcategories of Nonpoint Sources of Water Pollution in the Umatilla River Basin

Subwatershed/ Waterbody	Nonpoint Source Categories	Nonpoint Source Subcategories
Cold Springs	Agriculture	pasture and range lands, crop production
	Hydrologic Modification	channelization, removal of rip. veg., ag. streambank erosion
Lower Umatilla	Agriculture	pasture and range lands, irrigated and non-irrigated crop production
	Hydrologic Modification	channelization, removal of rip. veg., ag. streambank erosion
	Other	highway maint. and runoff
Sand Hollow	Agriculture	pasture and range lands, crop production
Lower Umatilla	Agriculture	pasture and range lands, irrigated and non-irrigated crop production
	Hydrologic Modification	channelization, removal of rip. veg., ag. streambank erosion
	Urban Runoff	combined sewers, surface runoff
	Other	highway maint. and runoff

Intergovernmental Coordination and Public Participation for Identifying Best Management Practices (BMPs) [section 319(a)(1) (C)]

No new BMPs have been identified for the purposes of this Assessment and Management Program. The CTUIR implements BMPs through administration of the CTUIR Land Development Code (Appendix A) and the CTUIR Interim Water Code (Appendix B). The CTUIR also relies on the implementation of BMPs through the efforts of one or more local, state or federal agencies. These agencies include local soil and water conservation districts; the Oregon State Departments of Environmental Quality, Water Resources, Fish and Wildlife, Forestry, Agriculture, Transportation, and State Lands; and the U.S. Environmental Protection Agency, USDA-Forest Service, USDA-Soil Conservation Service, USDI-Bureau of Land Management, and U.S. Department of Transportation.

The BMPs developed for implementation by these agencies and private landowners are documented in a variety of formats where a variety of public participation processes were involved (or not). The public participation specifics are not explicitly known for these formats. Some BMPs are codified, such as the Oregon Forest Practices Act, and may be assumed were the result of intergovernmental coordination and public participation; while others such as the USDA-Forest Service's General Water Quality Best Management Practices and USDA-Soil Conservation Service's Field Office Technical Guide, are agency manuals which were likely developed internally with no public participation.

Oregon's Nonpoint Source Statewide Management Program explains that the Nonpoint Source Citizen's Advisory Committee helped define the basic elements of the state's NPS program including "...the identification and evaluation of BMPs..." (p. 2-22; ODEQ, 1991). It further explains that opportunities for public involvement will occur "...[d]uring BMP adoption and modification; as specified in MOAs or action plans with the DMA" (MOA = memorandum of agreement, DMA = designated management agency; p. 2-23; ODEQ, 1991).

The State further identified processes for identifying Best Management Practices in Chapter 6 of the Statewide Assessment. These processes include evaluation of technical observations, experience, and data; incorporation of knowledge into practical application; provision of opportunities for the public to present proposals and give testimony; establishment of mechanisms to control source activities; and the establishment of procedures for modification of existing BMPs and addition of new ones.

Existing Tribal, State and Local Nonpoint Source Control Programs [section 319(a)(1)(D)]

Existing programs include CTUIR Fisheries Program, the CTUIR Land Development and Interim Water Codes, Oregon's Nonpoint Source Program (including the development and allocation of Total Maximum Daily Loads), Oregon's water quality standards and criteria, the Governor's Watershed Enhancement Board program, and several programs (e.g., Agricultural Conservation Program) which are funded by the federal government, but are administered through local or statewide entities.

CTUIR Fisheries Program

The CTUIR Fisheries Program has taken a watershed protection approach in seeking to improve fish habitat in the Umatilla River Basin. The Program monitors stream temperature at five stations and implements fisheries habitat enhancement projects in the upper Umatilla River Basin. Additional projects are in the planning stages for Wildhorse Creek, Mission Creek (Middle Umatilla subwatershed), and upper Meacham Creek in conjunction with Union Pacific Railroad and Oregon Department of Fish and Wildlife. Projects are planned and implemented on a voluntary basis in cooperation with willing landowners. These projects are located on trust and fee lands on the Umatilla Indian Reservation and are funded by BPA.

The control mechanisms used by the Fisheries Program include riparian corridor fencing to restrict livestock access, planting of riparian vegetation, and habitat structure augmentation. More broadly, project results from 1988 projects are being used as an educational tool during public watershed meetings.

CTUIR Land Development Code

The Land Development Code (LDC; Appendix A) of the Umatilla Indian Reservation was adopted by Resolution 83-74 (8/24/83) of the Board of Trustees of the Confederated Tribes of the Umatilla Indian Reservation. The LDC provides regulatory control over land use activity and development on the Umatilla Indian Reservation and further details how certain goals, objectives and policies of the Comprehensive Plan will be met. Regulatory control includes the establishment of land use zones and specific criteria for development in each zone. It also provides for regulatory approval of land use requests through administrative and quasi-judicial proceedings. Regulatory

processes include: land use permits, conditional uses, variances, land partitions, subdivisions, zone changes, planned unit developments, and code amendments. Included in the LDC are provisions for enforcement of the LDC through Tribal Court.

Land use permits are evaluated to determine conformance with the comprehensive plan as well as the LDC. The LDC established a flood hazard subdistrict, which limits the use and development of the identified floodzone. The subdivision manual provides for the regulation and control over subdivisions and their development. Through the review process, a variety of factors, including flooding, runoff and water quality and quantity are addressed.

The Forest Practices Manual and the conditional use process in the LDC provide strict regulation over forest practices. The Forest Practices Manual and administrative review of each timber sale and cutting plan provide for restrictions on the removal of vegetation from stream zones and wetlands. It also limits the location of roads and skid trails as well as the method of construction in order to prevent or mitigate water quality degradation and soil movement through runoff.

The LDC further establishes the responsibility for the coordination of planning and regulatory aspects with the Natural Resources Commission. Some of the responsibilities include sewage disposal, range planning and development, agriculture, fish and wildlife, environmental protection, and mining activities. It is under the fish and wildlife section of the LDC that nonpoint source pollution is specifically addressed by the Commission.

CTUIR Interim Water Code

The CTUIR adopted the Interim Water Code by Resolution 81-61 (8/5/81) of the Board of Trustees (Appendix B). The Interim Water Code establishes "...an orderly system of the use of water within the Umatilla Indian Reservation.." and protects "...water resources of the Umatilla Indian Reservation from over-appropriation, pollution, contamination or other acts injurious to quantity or quality of water on the reservation."

The Interim Water Code contains policy, administrative rules, and regulations to provide for the effective management of water resources on the Umatilla Indian Reservation. A statement of policy gives the basic philosophy and guidelines which control the direction of water management for the CTUIR. Codified are a series of regulations which govern water management through a

permitting process that allows the appropriation of water for beneficial uses. Regulations cover the quantity of water that may be appropriated on the Umatilla Indian Reservation, the contamination or pollution of waters of the Umatilla Indian Reservation, and the regulation of well drillers and well drilling operations on the Reservation. The Code provides for the enforcement of the regulations, the procedure to be followed regarding violations of this Code, as well disposition of cases, assignment of penalties and fines, and procedures for appeals. The Interim Water Code also establishes the authority for the disposition of violations.

The Interim Water Code establishes the Tribal Water Committee. The Tribal Water Committee is a quasi-judicial body created to serve as a liaison between the Board of Trustees and those bodies or agencies within and without the Tribe which have functions relating to water use or regulation. The Technical Advisory Committee is established by the Interim Water Code to provide technical advice and assistance to the Department of Natural Resources and the Tribal Water Committee on matters that relate to this Code. TAC (Technical Advisory Committee) enacts administrative rules to provide for the efficient administration of this Code.

The Code provides for a permitting procedure for the appropriation of water on the Umatilla Indian Reservation. This includes the responsible parties for the issuance of permits, the procedures for the issuance of permits (administrative or public hearing), review criteria, action for grant or denial of permits, appeals to decisions, conditions for issuance of permits and renewal of permits. Procedures for the permitting process, including administrative as well as public hearing procedures are codified.

The Interim Water Code is the structural framework for the Tribal Water Code which is currently under authorship. The Tribal Water Code will expand and refine the provisions of the Interim Water Code including water budgeting and water quality standards. Completion of the Tribal Water Code is estimated by December 1994.

Oregon State Water Quality Standards and Criteria

An existing State program to control nonpoint sources of water pollution is water quality standards and criteria. Water quality standards for the state of Oregon are codified in the Oregon Administrative Rules, Chapter 340, Division 41. These include numerical standards for dissolved oxygen, stream temperature, turbidity, pH, radioisotopes (by reference), total dissolved gas, total

dissolved solids (for Columbia River only), toxic substances (by reference) and bacteria. These are reported in Table 4 below.

Narrative criteria are provided for overall bacterial pollution, dissolved gases, fungi growth, tastes and odors, formation of bottom or sludge deposits, "objectionable" discoloration, scum, oil, and "aesthetic" conditions. The goal is that "[n]otwithstanding the water quality standards contained below, the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacterial concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels" (OAR 340-41-645 (1)) in the Umatilla River Basin.

Since the State of Oregon has not specified water quality criteria for nitrate or phosphorus, Federal criteria, if any, apply. A Federal standard (10 milligrams per liter (mg/L) nitrate nitrogen) exists for drinking water. The U.S. Environmental Protection Agency recommends an ammonia criterion (un-ionized ammonia in mg/L) which is the one-hour average concentration which does not exceed, more often than once every 3 years on the average, 0.52/FT/FPH/2 where: FT=10-0.03(20-TCAP); TCAP < or = T < or = 30 or FT=10-0.03(20-T); 0 < or = T < or = TCAP (TCAP = 20 where salmonids or other cold water species are present and 25 where salmonids or other cold water species absent; FPH = 1; where 8 < pH < 9 (this is the typical case for Umatilla River Basin). Part two of the criterion is the four-day average concentration of un-ionized ammonia.

While Oregon has not specified criterion for nitrogen species, it is not because nitrogen, in its forms, is not a pollutant. High amounts of ammonia or nitrate can be directly toxic to aquatic organisms, can contribute to pH problems, and can contribute to nuisance algal growth. Several other states have specified standards for un-ionized ammonia, nitrite, and/or nitrate nitrogen. For the purposes of aquatic health (as opposed to drinking water), the state of Idaho has a criterion of 1.44 to less than 1.0 mg/L total ammonia as a weekly average concentration (dependent on temperature) for the range of pH found in the Umatilla River Basin. Utah adopted the national criterion for un-ionized ammonia (as N) for aquatic and wildlife use, and both South Dakota and Wyoming adopted a criterion of 0.02 mg/L un-ionized ammonia (as N) for cold water fisheries (Class I, II, and III waters in Wyoming). More information can be found in EPA (1988).

While the EPA has no recommended criterion for freshwater total or elemental phosphorus, several states have adopted criterion for total or elemental phosphorus in freshwater. For example, 0.1 mg/L total phosphorus is

the maximum concentration allowed for cold freshwater habitat and fish spawning under California's criteria; beneficial use designation of Water Contact Recreation or Non-contact Water Recreation, drops the maximum concentration criterion to 0.05 mg/L. New Mexico likewise has a criterion of 0.1 mg/L total phosphorus for coldwater fishery use.

Table 4: Oregon State Water Quality Standards (OAR 340-41-645 (2))

Water Quality Parameter	*Criteria*
Dissolved oxygen (DO)	*DO concentrations shall not be less than 75 percent of saturation at the seasonal low, or less than 95 percent of saturation in spawning areas during spawning, incubation, hatching, and fry stages of salmonid fishes.*
Temperature	*No measurable increases shall be allowed outside of the assigned mixing zone, as measured relative to a control point immediately upstream from a discharge when stream temperatures are 68° F. or greater; or more than 0.5° F. increase due to a single source discharge when receiving water temperatures are 67.5° F. or less; or more than 2° F. increase due to all sources combined when stream temperatures are 66° F. or less, except for specifically limited duration activities which may be authorized by DEQ under such conditions as DEQ and the Department of Fish and Wildlife may prescribe and which are necessary to accommodate legitimate uses or activities where temperatures in excess of this standard are unavoidable and all practical preventive techniques have been applied to minimize temperature rises.*

Table 4: Oregon State Water Quality Standards (continued)

Water Quality Parameter	*Criteria*
Turbidity (Nephelometric Turbidity Units, NTU)	*No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity (provisions for emergency, and essential dredging, construction or other legitimate activities).*
pH	*6.5 to 8.5*
Bacteria (Most Probable Number or equivalent Membrane Filtration)	*Freshwaters: A log mean of 200 fecal coliform per 100 milliliters (ml), minimum of five samples in a 30-day period with no more than ten percent of the samples in the 30-day period exceeding 400 per 100 ml (through June 30, 1995).* *Freshwaters: A geometric mean of 33 enterococci per 100 ml, same sampling restrictions, with no single sample exceed 61 enterococci per 100 ml (effective July 1, 1993).*

1991 Nonpoint Source Statewide Management Program (Oregon Department of Environmental Quality)

The Management Program for Oregon documents and plans for control of water quality conditions which frequently exceed water quality standards and other water quality problems in the Umatilla River Basin. To plan for control of these problems the State of Oregon detailed Problems and Causes, Status/Needs and Objectives in 1991. The schedule for Objectives (p.24-5, Nonpoint Source Control Action Plan contained as Appendix B in ODEQ, 1991) was for DEQ to:

1) begin intensive water quality assessment in Spring 1991;

2) establish a local advisory group in Spring 1991;

3) propose a final TMDL for adoption in Summer 1992;

4) revise Umatilla Basin Water Quality Management Plan to include final TMDLs and other strategies plus compliance schedule in 1992.

The USDA-Soil Conservation Service (SCS) and the USDA-Agricultural Stabilization and Conservation Service (ASCS) were "assigned" other objectives including:

5) provide assistance to install conservation practices in Upper Stage Gulch watershed (10LU subwatershed) in 1989-1991;

6) continue cost-share for implementation of Dryland Wheat 208 Water Quality Management Plan on an ongoing basis; and

7) provide ongoing technical assistance.

Total Maximum Daily Load (TMDL; Oregon Department of Environmental Quality)

Toward implementation of the above pollution control program objectives from the Nonpoint Source Statewide Management Program for Oregon for the Umatilla River Basin, DEQ initiated a TMDL in 1993 in the Umatilla River Basin. Unfortunately, the State will have no activity on this TMDL in 1994. Thus far the following activities have occurred (numbered to match above objectives).

1) In 1993 DEQ met with local technical staff to scope issues and tour basin. They also carried out reconnaissance sampling.

2) In 1993 DEQ identified potential participants in a local advisory group, although no such group was formed.

3) and 4) No activity on these objectives.

The ASCS and SCS, in cooperation with the Umatilla County Soil and Water Conservation District has also contributed to meeting the nonpoint source control objectives outlined above.

5) The Upper Stage Gulch Small Watershed Project (under the auspices of PL-566) is to involve 14,000 acres (approximately 75% of the Upper Stage Gulch Small Watershed Project area) of land treatment, including residue management, subsoiling compacted areas, and terrracing where needed and feasible. Through October 1993, 11 contracts had been signed with 2 more to be developed (B. Adelman, District Conservationist, pers. comm., 1993). Individual contracts are in various stages of implementation (id.). A past project, Little Greasewood (Wildhorse Creek subwatershed) had been "installed" in 1983 (same suite of land treatments), however little information is available as to whether the project was successful or not. Quantitative resource goals were not enumerated for this project (nor for Upper Stage Gulch) and numeric value monitoring has not occurred (id.).

6) The section 208 program is no longer active (B. Adelman, pers. comm., 1993).

7) Ongoing technical assistance, including Food Security Act compliance planning and monitoring, has been provided.

Agricultural Conservation Program

The Agricultural Conservation Program (ACP) is a joint effort by agricultural producers, Federal and State agencies, and other groups to restore and protect the Nations's land and water resources and preserve the environment. The ACP is administered by local ACP County Committees, the ASCS, and the USDA State Committee State Office locally to address agricultural nonpoint sources through the use of incentives.

SB 1010/Oregon Department of Agriculture

In 1993 the Oregon Legislature passed SB 1010 which gave the Oregon Department of Agriculture (ODA) responsibility for control of nonpoint source

pollution from agricultural sources. ODA has begun, Spring 1994, to give informational meetings sponsored by local soil and water conservation districts.

Other Programs

Other state and local nonpoint source pollution control programs include:

Oregon Agricultural Nonpoint Sources: administered by local soil and water conservation districts and the Oregon Department of Agriculture (ODA) statewide to address agricultural nonpoint sources in a voluntary manner;

Confined Animal Feeding Operations: administered by local soil and water conservation districts and ODA statewide to address agricultural nonpoint sources in a voluntary manner;

Oregon Forest Practices Act: administered by the Oregon Department of Forestry statewide to address forestry nonpoint sources in a regulatory manner;

Soil Conservation Programs: administered by local soil and water conservation districts with the assistance of the USDA-Soil Conservation Service statewide to address agricultural nonpoint sources in a voluntary manner;

Clean Lakes Program: administered by DEQ on a local basis to address all nonpoint sources affecting lakes through grants; and

Governor's Watershed Enhancement Board: administered by Oregon Department of Water Resources, through grants to various local designated management agencies to address all nonpoint sources statewide in a voluntary manner.

Public Notice and Opportunity for Public Comment [section 319(a) (1)]

Scoping of issues, concerns, and opportunities with tribal government and tribal members; staff from tribal departments, local, state, and federal agencies; and local publics occurred in January, July and August 1993, and January 1994. Two presentations were made to the Umatilla County Soil and Water Conservation District. In connection with scoping, requests for information and data were made to tribal departments and state and federal agencies including the U.S. Environmental Protection Agency (EPA), the USDA-Forest Service, the

USDI-Geological Survey, the USDA-Soil Conservation Service, the USDI-Bureau of Reclamation, the USDI-Bureau of Indian Affairs, and the Oregon state Departments of Forestry, Fish and Wildlife, and Environmental Quality (DEQ)

Public notice was provided in the Eastern Oregonian on December 11, 1993 to announce the availability of a public review draft of this Assessment and Management Program. The public was given 30 days to provide comment in conformance with 40 CFR 25. An additional 30 days were granted upon request from the Columbia-Blue Mountain Resource Conservation and Development Council. Comments were received from Oregon Department of Environmental Quality and the Umatilla County Soil and Water Conservation District. Comments were compiled and incorporated in the Assessment and Management Program where consistent with the goals and objectives of the Assessment and Management Program.

COMPREHENSIVE WATERSHED MANAGEMENT PROGRAM

A comprehensive program is needed to address the goals and objectives of the CTUIR Tribal Water Program and other resource management policies, goals and objectives of the CTUIR. The Nonpoint Source Assessment and Management Program, its implementation, and its annual review and update are major pieces of the comprehensive program. The comprehensive program also includes:

- continuing to work with landowners and Bonneville Power Administration to implement instream and riparian fisheries habitat enhancement projects on and off the reservation;

- incorporating existing CTUIR stream temperature monitoring into a watershed-wide water quality monitoring system;

- performing wetlands mapping, inventory, analysis and identification of protection and restoration opportunities under a current grant from the U.S. Environmental Protection Agency;

- addressing groundwater quality and quantity issues (contained in Tribal Water Program) in this and future work;

- incorporating the work done in this Assessment and Management Plan into a Umatilla River watershed restoration planning process which will also address water quantity issues;

- preparing and implementing an Integrated Natural Resource Management Plan for the CTUIR, the Umatilla Indian Reservation, ceded lands, and other zones of influence;

- continuing to upgrade skills, equipment, and software toward efficient and effective use of database and geographic information system (GIS) technologies.

The development of the comprehensive program requires further capability to collect, compile, organize, analyze, and display water quality and other resource management information. There is a need to obtain additional staff, equipment, and software to meet the needs of water quality and resource information management. The CTUIR has acquired local area network software to facilitate internal information transfer and communication and will soon have external networking capability for data transfer and communication as well.

WATERSHED PRIORITIZATION

Tribal members, Tribal government, and Tribal and local technical staff were consulted to prioritize watersheds for nonpoint source pollution control work. Project work will focus on one or more watersheds according to a prioritization process. The process considered existing condition from water quality and fish habitat perspectives, potential for projects to be accomplished, potential for significant improvements to occur, potential to support activities of CTUIR Fisheries Program. Using this process the subwatersheds were prioritized for nonpoint source pollution control work (descriptions include basis for prioritization):

1. Wildhorse Creek subwatershed (05WH); severe nonpoint source pollution observed and monitored; potential steelhead stream, adult salmonids observed in Wildhorse Creek 100 years ago; identified cooperators in watershed protection and restoration project; identified in Land Development Code as needing a cooperative effort by the CTUIR, the U.S. Department of Agriculture, and USDI-Bureau of Indian Affairs to identify needs and priorities in the areas of soil conservation and other management practices;

2. Middle Umatilla River subwatershed (04MU); these two subwatersheds (05WH and 04MU) contain most of the Umatilla Indian Reservation; important salmonid spawning and rearing habitat; need for wetland protection and restoration; high potential to work within CTUIR and USDI-Bureau of Indian Affairs to accomplish many tasks; identified in Land Development Code as needing a cooperative effort by the CTUIR, the U.S. Department of Agriculture, and USDI-Bureau of Indian Affairs to identify needs and priorities in the areas of soil conservation and other management practices;

3. Meacham Creek subwatershed (03ME); important salmonid spawning and rearing habitat; much previous and ongoing work performed under contract with USDE-Bonneville Power Administration; high potential for additional work in cooperation with Union Pacific Railroad and others;

4. McKay Creek subwatershed (07MC) and Pendleton subwatershed (08PE); important source of water for downstream habitat and other beneficial uses; effluent from Pendleton Sewage Treatment Plant; identified in Land Development Code as needing a cooperative effort by the CTUIR, the U.S. Department of Agriculture, and USDI-Bureau of Indian Affairs to identify

needs and priorities in the areas of soil conservation and other management practices;

5. Lower Umatilla subwatershed (14LU); important salmonid passage and rearing area; wetland protection and restoration needs; ongoing negotiations with USDI-Bureau of Reclamation and local irrigation districts re instream flow and fish passage (Umatilla Basin Project); ongoing Lower Umatilla Basin Groundwater Study under the auspices of the Oregon Department of Environmental Quality, the Umatilla County Soil and Water Conservation District, and Oregon State University Agricultural Experiment Station;

6. Tutuilla/Patawa Creeks subwatershed (06TP); mostly within the boundaries of the Umatilla Indian Reservation; identified in Land Development Code as needing a cooperative effort by the CTUIR, the U.S. Department of Agriculture, and USDI-Bureau of Indian Affairs to identify needs and priorities in the areas of soil conservation and other management practices;

7. Birch Creek subwatershed (09BC); steelhead stream where ODFW and the Umatilla County Soil and Water Conservation District have initiated work to improve water quality and fish habitat;

8. Lower Umatilla River subwatershed (12LU); important passage and rearing habitat for salmonids; wetland protection and restoration needs; Small Watershed project funded under PL-566 in Upper Stage Gulch being implemented by landowners with cooperation and assistance from the Conservation District and the USDA-Soil Conservation Service;

9. Upper Umatilla River subwatersheds (01UU and 02UU); major salmon and steelhead spawning area; identified stream temperature impacts from road and timber harvest; high potential to work with USDA-Forest Service on watershed protection and restoration; high potential for successful project to have significant positive impact to water quality and aquatic habitat;

10. Butter Creek subwatershed (10BU); documented water quality problems related to agricultural chemicals; potential salmonid, other fish habitat;

11. Cold Springs subwatershed (11CS); unknown water quality condition, but potential nutrient, temperature problems; upstream of Cold Springs Reservoir (impassable to fish); and

12. Sand Hollow subwatershed (13SH); no surface outlet to Umatilla River; potential source area of lower basin groundwater problems (nutrients and pesticides).

MANAGEMENT PROGRAM GOALS AND OBJECTIVES

Goals

The goal of the Nonpoint Source Water Pollution Management Program is to protect and restore water quality, watershed condition, and aquatic/riparian habitat on the Umatilla Indian Reservation and throughout the Umatilla River Basin. This will provide for the beneficial use of surface (and indirectly, subsurface) waters within the Basin. From the perspective of the CTUIR this can administratively be broken into use for specific beneficial and traditional uses, and the protection and restoration of treaty-reserved resources.

Beneficial and traditional uses: Develop Program to support 18 beneficial uses (Interim Water Code) on the Umatilla Indian Reservation under the administrative and regulatory control of the CTUIR. The Program will support beneficial uses and exercise of treaty rights throughout the rest of the Umatilla River Basin in accordance with state of Oregon and federal water laws, codes and regulations.

Treaty-reserved resources: Throughout the Umatilla River Basin the Tribes retain treaty rights related to fishing, hunting, pasturing of livestock, and gathering of traditional plants among other rights. Water quality, riparian and watershed condition must be managed to provide the opportunity for the Tribes to exercise those rights. Develop program to provide high quality water as a part of instream, riparian and upland habitat for fish, wildlife and plants.

Objectives

The primary objective of the Management Program is to protect high quality waters and improve substandard water quality conditions in the Umatilla River Basin through:

1) administration, improvement, and enforcement of water quality standards and federal, state, local, and tribal laws, codes, and regulations pertaining to land use and water quality;

2) design and installation of on-the-ground projects to assist water quality protection and restoration; implementation of Best Management Practices where found to support water quality improvements;

3) public involvement and education by various means;

4) monitoring of water quality conditions for detection of trends, determination of beneficial impacts due to projects or implementation of Best Management Practices, location of chronic and acute sources of nonpoint pollution, and compliance with standards and criteria; and

5. coordinate efforts in the Umatilla River Basin to ensure a holistic watershed ecosystem approach and reduce redundancy of efforts.

MANAGEMENT PROGRAM TASKS

The CTUIR has direct regulatory authority over management of land and water resources on the Umatilla Indian Reservation and thus there are special concerns related to that authority on the Reservation. The Management Program addresses these special concerns and will be accomplished through the cooperation of tribal members, tribal government, and the USDI-Bureau of Indian Affairs.

In order to gain full benefits, similar actions need to occur throughout the rest of the Umatilla River Basin. Therefore the CTUIR proposes tasks to be accomplished cooperatively between CTUIR, federal, state, and local agencies, nongovernmental organizations, and citizens on lands in the Umatilla River Basin outside the Umatilla Indian Reservation.

Best Management Practices and nonpoint source control projects installation, monitoring and information management, public information and education, and coordination between governments, agencies, and private citizens need to occur on a holistic level for the whole Umatilla River Basin. The following tasks will contribute to watershed-wide efforts to improve water quality, aquatic and riparian habitat, and watershed conditions. These tasks are expected to be accomplished through the cooperative efforts of landowners, commercial concerns, citizens, government agencies (Tribal, federal, state, and local), nongovernmental organizations, and others.

The Management Program tasks are organized according to the Program objectives.

1. Administer and enforce existing CTUIR Land Development Code and Interim Water Code.

   Revise Water Code to include tribal water quality standards and other water quality provisions.

   Review and recommend revisions to Land Development Code, incorporated "manuals," other programs, and practices (e.g., BMPs) to ensure consistency with goals and objectives of Tribal Water Program, Tribal Fisheries Program, and Tribal Nonpoint Source Management Program.

   Review land leases with USDI-Bureau of Indian Affairs (BIA) staff, tribal members, and lessees and propose revisions in lease provisions for CTUIR trust and tribal member allotment lands to protect and restore water

quality, watershed condition and habitat while providing for economic benefit to the CTUIR, tribal members, and lessees.

Encourage and assist the U.S. Environmental Protection Agency and the Oregon Department of Environmental Quality (or other designees) to administer and enforce existing water quality standards and other laws, codes and regulations such as those related to land use (e.g., Forest Practices Act); remove barriers to administration and enforcement.

Review, analyze, and recommend changes, if necessary, in those federal, state, local laws, codes, regulations, programs, and practices (e.g., BMPs) pertaining to land and water management. Determine risk to land and water resources from the current administration and enforcement of those laws, codes and regulations, and develop more effective means.

A critical component of any effort to control and improve nonpoint sources of water pollution is the administration and enforcement of land and water use codes, regulations and laws. Current staffing and other resources do not allow a consistent, timely, and comprehensive administration and enforcement of existing codes on the Umatilla Indian Reservation.

Water quality standards and criteria are an important component of an overall water quality management program. The State of Oregon has water quality standards and criteria to help ensure that surface and subsurface waters are supporting beneficial uses. Water quality standards are important as a quantitative measurement of minimum or desirable conditions. They further can determine or help determine the type and magnitude of land management practices that Tribal government, tribal members and non-Indian landowners on the Umatilla Indian Reservation can install to remain consistent with water quality management goals and objectives as defined in the Tribal Water Program. It is therefore proposed to develop water quality standards to protect and restore water quality to support beneficial uses on the Umatilla Indian Reservation, and to support the exercise of treaty rights.

Current laws, codes, and regulations may not be sufficient to protect water quality from degradation by nonpoint sources. The current administration and enforcement is known to be insufficient as outlined above. There also may be inconsistencies within the codes, laws, and regulations or inconsistencies between the codes, laws, and regulations and the Tribal Water Program elements, objectives, and tasks. Finally, proposed improvements in administration and enforcement need to be consistent with desired improvements in water quality and watershed conditions.

In order to ensure sufficiency and consistency amongst Tribal policies and Resolutions, codes, Tribal Water Program tasks, and needed improvements in water quality conditions it is proposed that an analysis be performed. This analysis would also include specific recommendations for changes, if necessary, in policy, codes, and other instruments to yield a consistent administrative and regulatory approach toward water quality and watershed management on the Umatilla Indian Reservation.

Administration of land leases for trust and tribal member allotments by the BIA is potentially inconsistent with achievement of Tribal Water Program and Nonpoint Source Management Program goals and objectives. The purpose of this task is to explore the opportunity to apply best management practices for protection and restoration of water quality and advise Tribal government and tribal members on the potential impacts to water quality and other resources which may result from the current lease and other management provisions. It is further important to recommend changes, if necessary, in policies and rules to improve water quality management on these lands. Finally, technical recommendations for improvement of practices for protection and restoration of aquatic and riparian conditions need to be made.

It is proposed that standard lease and land management provisions (e.g. best management practices) be reviewed for consistency with Tribal Water Program and Nonpoint Source Management Program goals and objectives. Further, monitoring of best management practice effectiveness is needed to ensure that the desired results are achieved. Finally, communication between the BIA, tribal members, tribal staff, and lessees needs to be facilitated to increase the understanding of water quality goals and objectives and to discuss how land management can help achieve water quality objectives while providing for economic benefit to the CTUIR, tribal members, and lessees. The form of economic benefit can be continued lease payments and crop sales, prevention of soil erosion, improved water quality for downstream beneficial uses, and potentially, improved subsistence hunting and fishing.

2. Develop and implement easement, lease, purchase and project agreements for protection and restoration of water quality, watershed condition and riparian habitat.

Develop and implement on-the-ground projects to address site-specific needs for nonpoint source pollution control.

Solutions to water quality and watershed condition problems need to explicitly recognize the economic and social aspects through appropriate land management agreements which are mutually beneficial. This will increase the potential pool of cooperators. The focus is on direct contacts with cooperators to develop the necessary basis for design and implementation of on-the-ground projects. Some initial work has been accomplished under funding from the BPA toward developing easement/lease/management agreements with potential cooperators in Wildhorse Creek subwatershed.

On-the-ground projects would be designed and implemented to help meet water quality and watershed condition standards, criteria, goals, and objectives. As an example of this ongoing activity, the CTUIR has identified cooperators in Wildhorse Creek subwatershed for a project that has been planned under funding from BPA. Contributors for implementation include the Columbia-Blue Mountain Resource Conservation and Development Council and the landowners thus far. In the Middle Umatilla subwatershed (04MU), tribal staff has identified the potential to use CTUIR grazing allotments as demonstration projects to include best management practices, fencing, upland water development, and water quality monitoring. Other contacts have already been made for additional projects over the next two years.

3. Develop where necessary and otherwise obtain and provide public information and education on land use and water quality.

Public awareness of water quality issues in the Umatilla Basin is vitally important to the success of the nonpoint source program. Attaining real improvements in water quality in the Umatilla Basin is dependent upon the public understanding, accepting, and implementing sound land stewardship and water conservation practices in the watershed. Achieving the goals of preventing and reducing nonpoint source pollution will require informing the public of the nature of the water quality problems and encouraging land and water users to alter use practices where those practices degrade water quality.

Several governmental entities in the local area, such as the CTUIR, Umatilla and Morrow County Soil and Water Conservation Districts, Columbia-Blue Mountain Resource Conservation and Development Council, ODEQ, OWRD, Oregon Department of Forestry, ODFW, OSU Extension Service, OSU Experiment Stations, USDA-Soil Conservation Service, USDA-Agricultural Research Service, USDA-Forest Service already provide some degree of environmental education and information to the public. This program proposes to coordinate educational activities among the various entities within the Umatilla River Basin. The resources and individual expertise in the agencies and members of the general public would be coordinated to develop and disseminate workable, effective environmental education projects, programs, and information to the local population.

Because of the diversity of the user and interest groups in the Umatilla River Basin, a multi-faceted approach to education is proposed to ensure an effective program. Groups on the Umatilla Indian Reservation that will be targeted to receive information and educational experiences under this component of the Management Plan include tribal youth groups, tribal government including General Council, lessees of trust lands, and local organizations whose members include people who live, work, lease land, or work land on the Umatilla Indian Reservation.

On the Umatilla Indian Reservation and elsewhere in the Umatilla River Basin other groups to target for public education and information dispersal may include county government, soil and water conservation district cooperators, civic organizations, student organizations and school classes, the Grange, wheat growers, irrigation districts, cattlemen's associations, FFA, 4H, and scouting organizations. Each group or segment of the local population would be provided with information and educational experiences commensurate with the age,

culture, technical preparation, and the resource use or specific interest of the group.

To promote participation in the education program, a wide variety of educational and public information experiences are proposed. The focus will be on outdoor, hands-on, try-it-at-home experiences. These may include hiking, rafting, riparian improvement projects, water quality monitoring, physical surveys (e.g., EPA Streamwalk), stream clean-up, fish restoration, and field demonstration projects (soil-conserving agronomic practices, stream enhancement, forest/woodlot management, livestock management, etc.). In addition, slide and video programs, classroom presentations, distribution of brochures and pamphlets, presenting awards for exemplary land use and water conservation practices, radio and television "spots", and informational mailings may be used to supplement the outdoor experiences.

Finally, the public education program will include informational feedback to the public on the results of the overall nonpoint source program. The object is to keep the public informed and supportive of the program. The general public will be provided information on any changes to and the setbacks and successes of the program as measured by the progress made in achieving the goals of the nonpoint source management plan.

4. Establish a multi-objective program to comprehensively monitor water quality which will include baseline, project, and site-specific monitoring.

   Update water quality database with inputs from ongoing data collection (e.g., DEQ TMDL monitoring) and update GIS information. Apply adaptive management principles to management recommendations. Prepare updated Nonpoint Source Assessment and Management Plan.

   Develop a qualitative and quantitative description of pre-Euroamerican settlement conditions based on ethnohistory; historical surveys, pictures, and descriptions; and basic environmental factors. Incorporate into database and GIS. This description can then be used in public education, the development of Desired Future Conditions (DFCs) and the design of projects and practices necessary to attain DFCs.

Baseline monitoring: This component will tie together and supplement existing efforts by multiple agencies and other groups toward long-term monitoring (20-50 years). The purpose would be to create a Umatilla River Basin water quality monitoring network. The focus would be on water quality parameters found to be problematic on a broad geographic basis (e.g.

temperature, sediment, nitrates) as indicators of both water quality and watershed condition.

Project monitoring: The purpose of this component is to monitor site-specific conditions on a short-term basis (5-10 years) to measure changes which may occur as a result of on-the-ground water quality and riparian habitat improvement projects. These stations can be rotated on a priority basis.

Site-specific monitoring: As a supplement to Basin-wide baseline monitoring and project monitoring, this component will focus on specific geographic areas where limited or no data are available to substantiate changes in land management practices or on-the-ground projects. An example might be nitrates and bacteria monitoring in Squaw Creek. These might not be covered in a baseline program, but staff observation indicates the high potential for these problems. In advance of a potential project, "educational" monitoring could occur. This type of monitoring would also help locate problem sources which limited data indicate are not geographically widespread. For example, water quality problems related to urban stormdrain runoff are potentially most prominent in subwatershed 08PE (Highway 11 downstream through Pendleton) which may be addressed through short term, intensive monitoring.

Collection, compilation, analysis and display of tabular, graphical and GIS data can help people and groups understand what water quality and watershed management goals are and what they look like. Further, existing and desired future conditions can be displayed, and, through modeling, various combinations of land and resource management activities and projects can be assessed for the potential impacts. An updated Assessment and Management Plan will be prepared.

What is needed to guide a description of Desired Future Conditions is a better picture of what the potential natural and past conditions were. This can be determined by recording the descriptions and stories of long-time residents, particularly the tribal member population. Further assistance can come from searching for and interpreting historical accounts from surveys and pictures. Finally, an assessment of environmental conditions (e.g. climate, soils and geology, topography, existing vegetation) can help define potential natural vegetation, fish and wildlife populations and hydrologic patterns needed for a description of DFCs. This description can then be used in public information efforts, project development, and monitoring.

5. Coordinate federal, state, local, and tribal agencies efforts toward: collection, dissemination of water quality information; design, funding, and

implementation of site-specific and subwatershed-level projects; compilation, development, and dissemination of public information and education.

Multiple and sometimes repetitive efforts by federal, state, local, and tribal agencies can be made more effective and efficient by local coordination. The CTUIR is located in the Umatilla River Basin and has relationships with nearly all land and resource management agencies and groups. Additionally, the CTUIR has made significant progress in establishing a watershed-level database. Finally, the CTUIR has significant experience and expertise in design and implementation of projects. It is proposed that the CTUIR provide the above coordination in the matter of water quality and watershed management.

MANAGEMENT PROGRAM REQUIREMENTS

BMPs and Measures To Be Used to Reduce Pollutant Loadings [section 319(b)(2)(A)]

BMPs and other measures are used to reduce pollutant loadings resulting from each category, subcategory, or particular nonpoint source designated in the Assessment. BMPs and other measures must take into account the impact of the practice on groundwater quality. BMPs include specific on-the-ground land management practices, information and education programs, technical and financial assistance, technology transfer, demonstration projects, monitoring/evaluation systems, regulation and enforcement.

The CTUIR will make full use of all the above BMPs through implementation of the Management Program. Public education and information, technical and financial assistance, and technology transfer will be provided throughout the Umatilla River Basin in cooperation with appropriate parties. Demonstration projects and monitoring/evaluation systems will be developed on the Umatilla Indian Reservation and cooperatively on lands throughout the Umatilla River Basin.

The CTUIR will continue to implement the CTUIR Land Development Code and the Interim Water Code. The CTUIR Land Development Code also includes the Forest Practices Manual and Streamzone Alteration Regulations. The CTUIR Tribal Water Program and Plan of Operations also calls for the CTUIR to revise the Interim Water Code over the next year and to include water quality standards as a part of the new code.

Specific BMPs to be applied by landowners, found in the USDA-Soil Conservation Service's Field Office Technical Guide, will be reviewed in coordination with affected landowners and land managers, the Oregon Departments of Agriculture, Environmental Quality, and Fish and Wildlife, the USDI-Bureau of Indian Affairs, the USDA-Soil Conservation Service, Umatilla County Soil and Water Conservation District, the local District Conservationist, and the Umatilla County Public Works Department to ensure consistency with water quality goals and objectives. The basic process will follow that outlined by DEQ in the 1988 Statewide Assessment of Nonpoint Sources of Water Pollution, modified by local conditions. The process is outlined in the Assessment section above.

Further BMPs for grazing and range management are found in BMPs For Range and Grazing Activities on Federal Lands, used by both the USDA-Forest USDI-Bureau of Land Management, the Forest Service's General Water Quality Best Management Practices, the Forest Service Manual, and the National Forest Management Act. General guidelines for BMPs to address categories of nonpoint source water pollution identified in the Umatilla River Basin are found in Table 5.

Table 5. Guidelines for BMPs to Address NPS Categories.

NPS Categories	BMP Guidelines
Agriculture	*Use all available technologies to retain/conserve soil (e.g. cover crops, build/retain organic matter, contour strips, planting bare areas).* *Protect and restore riparian areas by installation of filter strips, reestablishment of riparian vegetation, restriction of livestock, and prohibition of feedlots and animal holding areas in riparian zones.*
Urban Runoff	*Separate storm and sanitary sewers where possible.* *Disperse surface runoff or retain for safe release and/or treatment.*
Silviculture	*Manage riparian zones for riparian-dependent species (i.e. fish and wildlife).* *Prohibit, remove or improve roads in riparian areas to provide soil conservation and thermal cover. Upland roads should be managed to disperse water and retain surface/slopes.*
Hydrologic Modification	*Channels should be managed for complexity, diversity, ability to disperse annual flood flows. Native riparian vegetation should be established and filter strips used to prevent streambank erosion.*
Other	*See silviculture.*

Programs to Achieve BMP Implementation [section 319(b)(2)(B)]

Nonregulatory and regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration of high-quality water management, have been identified and/or proposed to achieve implementation of the BMPs. The programs include those existing tribal, state, and federal programs outlined in the Assessment section above and additional programs to be developed as a part of the CTUIR NPS Management Program as outlined in the Management Program Tasks section. The process to be used for review, modification, and addition of BMPs is described in the section immediately above.

Program Implementation Schedule [section 319(b)(2)(C)]

Table 6, "Nonpoint Sources of Water Pollution Management Program Implementation Schedule," lists activities, proposed timeframes, and estimated funding needs identified as priorities over the next four years. Tables 7a and 7b list annual milestones to be accomplished through implementation of the Management Program. Additional activities will be performed, funding sought, and milestones accomplished in support of the Management Program through Wildlife/Wetlands, Integrated Natural Resource Management Plan, Fisheries, Water Resources, Environmental Planning/Rights Protection, Cultural Resources, Education, and Economic and Community Development programs and projects as noted in the Comprehensive Watershed Management Program above.

Tribal Attorney Certification [section 319(b)(2)(D)]

The certification by the Tribal Attorney that the CTUIR has the legal authority to implement the Nonpoint Sources of Water Pollution Management Program is contained in Appendix C.

Sources of Funding and Assistance [section 319(b)(2)(E)]

The CTUIR currently receives funding for implementation of the Management Program from the U.S. Environmental Protection Agency (Multi-Media, Wetlands), the USDE-Bonneville Power Administration (watershed planning. habitat enhancement project implementation), the USDI-Bureau of Indian Affairs (Tribal Priority Allocation), and the USDI-Bureau of Reclamation (BR; Umatilla Basin Project). Additional funding has been or will be sought from the EPA (General Assistance, Wetlands, CWA section 106, Wellhead Protection, Groundwater Strategies, Clean Lakes, etc.), and BR (Umatilla Basin Project).

Funding for cooperative projects has been or will be committed or sought from the Columbia-Blue Mountain Resource Conservation and Development Council, Umatilla County Soil and Water Conservation District, the USDA-Forest Service, and local groups and landowners. Further information on current and proposed funding sources can be found in Table 6.

Table 6. Management Program Implementation Schedule, 1994-1997.

Activity	1994	1995	1996	1997
Administer and enforce existing CTUIR Land Development Code, Interim Water Code, and, when adopted, CTUIR Water Code.	1[1] 300,000[2]	1 330,000[2]	1 330,000[2] 70,000[4]	1 360,000[2] 70,000[4]
Revise Water Code and Land Development Code to include tribal water quality standards, new BMPs, etc.	1 10,000[2]	1 50,000[3]	1 20,000[3]	3
Review reservation land lease provisions and Best Management Practices to protect and restore water quality, watershed condition and habitat. Revise if necessary.	3	1 10,000[4]	1 10,000[4]	3
Establish Wellhead Protection and Farm-Assist/Home-Assist Programs	2 10,000	1 20,000	1 20,000	1 20,000
Review off-reservation Best Management Practices for Water Quality with BIA, SCS, EPA, ODA, DEQ, and Soil and Water Conservation District. Revise if necessary.	3	2 10,000[4]	2 10,000[4]	3

1 Priority by year and activity
2 Bureau of Indian Affairs Tribal Priority Allocation (TPA)(estimate).
3 To be included as part of CTUIR CWA Section 106 request.
4 Some combination of TPA, Section 106, Clean Lakes, other funding.

Table 6. Management Program Implementation Schedule, 1994-1997.

Activity	1994	1995	1996	1997
Plan, develop and implement watershed protection plans, agreements, and projects.	1 250,000[5] 20,000[6] 10,000[7] 3,000[8] 50,000	1 250,000 20,000[6] 10,000[7] 50,000[10] 100,000	1 200,000[5] 40,000[10] 140,000	1 200,000[5] 40,000[10] 150,000
Develop or obtain and provide public information and education on land use and water quality in cooperation with EPA, USDA-Soil Conservation Service, Umatilla County SWCD.	2 10,000[5] 5,000	2 10,000[5] 30,000	2 10,000[5] 15,000	2 10,000[5] 15,000
Establish a multi-objective program to comprehensively monitor water quality.	1 5,000[5] 5,000	1 5,000[5] 25,000	1 5,000[5] 10,000[9] 5,000[10] 10,000	1 5,000[5] 10,000[9] 5,000[10] 10,000
Coordinate with EPA, DEQ, USDA-Forest Service and Bureau of Reclamation in the collection, analysis, and interpretation of monitoring results.	1 5,000	1 5,000	2 5,000	2 5,000
Update water quality database and GIS.	1 40,000[9] 15,000	1 30,000[9] 10,000	1 20,000[9] 5,000[10] 10,000	1 30,000[9] 5,000[10] 10,000
Develop watershed condition evaluation procedure and incorporate into GIS.	3	2 8,000[9]	2 8,000[9]	3

Table 6. Management Program Implementation Schedule

Activity	1994	1995	1996	1997
Prepare periodic reports and updated Nonpoint Source Assessment and Management Plan.	1 5,000	1 10,000	1 25,000[11]	1 10,000
Coordinate federal, state, local, and tribal agencies' efforts.	2 10,000[9] 5,000	2 10,000[9] 5,000	2 10,000[9] 5,000	2 10,000[9] 5,000
Total Funding Need	763,000	998,000	983,000	970,000
Current Funding (BIA TPA, BPA, General Assistance)	648,000	653,000	603,000	635,000
Total 319 Need	100,000	205,000	230,000	205,000
"On-the-Ground" % (Projects, Project and Educational Monitoring, Wellhead)	70 %	71 %	74 %	88 %

5 Bonneville Power Administration
6 Governor's Watershed Enhancement Board
7 U.S. Fish and Wildlife Service (potential)
8 Columbia-Blue Mountain Resource Conservation and Development Council
9 General Assistance Program
10 CWA Section 314 (Clean Lakes Program)
11 Updated Management Program, Implementation Schedule, Milestones

Table 7a. Management Program Milestones, 1994-1995.

Activity	1994	1995
Administer and enforce existing CTUIR Land Development Code, Interim Water Code, and, when adopted, CTUIR Water Code.	Codes administered and enforced.	Codes administered and enforced.
Revise Water Code and Land Development Code to include tribal water quality standards, new BMPs, etc.		Revised Water Code.
Review reservation land lease provisions and Best Management Practices to protect and restore water quality, watershed condition and habitat. Revise if necessary.		Review lease provisions. Establish criteria for acceptance/revision. Hold public meetings.
Establish Wellhead Protection and Farm-Assist/Home-Assist Programs.	Establish program responsibilities. Hold informational meetings.	Hold public meetings on Programs. Establish database.
Review off-reservation Best Management Practices for Water Quality with BIA, SCS, EPA, ODA, DEQ, and Soil and Water Conservation District. Revise if necessary.		Review BMPs. Establish criteria for acceptance/revision. Hold public meetings.

Table 7a. Management Program Milestones, 1994-1995.

Activity	1994	1995
Plan, develop and implement watershed protection plans, agreements, and projects.	Begin Wildhorse and Middle Umatilla projects. Develop McKay proposal.	Continue Wildhorse, Middle Umatilla projects. Begin McKay project.
Develop or obtain and provide public information and education on land use and water quality in cooperation with EPA, USDA-Soil Conservation Service, ODA, ODEQ, Umatilla County SWCD.	Compile existing educational and informational materials. Establish project agreement with cooperators.	Identify gaps in educ. and info. materials. Propose, contract, or develop needed materials. Give presentations, public meetings, other.
Establish a multi-objective program to comprehensively monitor water quality.	Identify stations, parameters to monitor in phased approach.	Install additional monitoring stations.
Coordinate with EPA, DEQ, USDA-Forest Service and Bureau of Reclamation in the collection, analysis, and interpretation of monitoring results.	Organize basin technical team, establish objectives, reporting protocol.	Identify additional monitoring needs, analysis responsibilities, interpretation objectives and followup activities.
Update water quality database and GIS.	Secure latest water quality data and GIS layer.	Organize water quality data by subwatersheds, land use.
Develop watershed condition evaluation procedure and incorporate into GIS.		Propose criteria for evaluation. Distribute for review and revise as appropriate.

Table 7a. Management Program Milestones, 1994-1995.

Activity	1994	1995
Prepare periodic reports and updated Nonpoint Source Assessment and Management Plan.	Prepare Semi-annual project and annual program reports of activities. Recommend revisions to Management Program.	Prepare Semi-annual project and annual program reports of activities. Recommend revisions to Management Program.
Coordinate federal, state, local, and tribal agencies' efforts.	Organize, schedule, and facilitate quarterly meetings with EPA, SCS, DEQ, ODA, and Umatilla County SWCD.	Organize, schedule, and facilitate quarterly meetings with EPA, SCS, DEQ, ODA, and Umatilla County SWCD.

Table 7b. Management Program Milestones, 1996-1997.

Activity	1996	1997
Administer and enforce existing CTUIR Land Development Code, Interim Water Code, and, when adopted, CTUIR Water Code.	Codes administered and enforced.	Codes administered and enforced.
Revise Water Code and Land Development Code to include tribal water quality standards, new BMPs, etc.	Revised Land Development Code.	
Review reservation land lease provisions and Best Management Practices to protect and restore water quality, watershed condition and habitat. Revise if necessary.	Revised lease provisions and other mechanisms to protect on-reservation water quality.	Implement revised leases, practices, etc.
Establish Wellhead Protection and Farm-Assist/Home-Assist Programs	Compile program data developed from implementation. Continue to implement	Implement program, compile data, prepare report on implementation.
Review off-reservation Best Management Practices for Water Quality with BIA, SCS, EPA, ODA, DEQ, and Soil and Water Conservation District. Revise if necessary.	Recommend revisions to Best Management Practices used by off-reservation landowners and cooperate in their implementation.	Cooperate with local landowners, federal, state, and local agencies in the implementation of revised BMPs

Table 7b. Management Program Milestones, 1996-1997.

Activity	1996	1997
Plan, develop and implement watershed protection plans, agreements, and projects.	Continue Wildhorse, Middle Umatilla, McKay projects.	Identify barriers to further improvements in Wildhorse, Middle Umatilla. Continue McKay project.
Develop or obtain and provide public information and education on land use and water quality in cooperation with EPA, USDA-Soil Conservation Service, ODA, ODEQ, Umatilla County SWCD.	Continue to cooperatively present public information on land use and water quality.	Continue to cooperatively present public information on land use and water quality.
Establish a multi-objective program to comprehensively monitor water quality.	Review 1995 results. Recommend revisions in monitoring program.	Incorporate revisions in monitoring program.
Coordinate with EPA, DEQ, USDA-Forest Service and Bureau of Reclamation in the collection, analysis, and interpretation of monitoring results.	Cooperatively prepare updated Assessment in support of TMDL.	Identify future analysis and interpretation needs.
Update water quality database and GIS.	Incorporate 1995 results. Add land use layer to GIS.	Incorporate 1996 results. Provide water quality, land use support to Integrated Natural Resource Management Plan.
Develop watershed condition evaluation procedure and incorporate into GIS.	Complete evaluation procedure and incorporate into GIS.	

Table 7b. Management Program Milestones, 1996-1997.

Activity	1996	1997
Prepare periodic reports and updated Nonpoint Source Assessment and Management Plan.	Prepare quarterly reports. Prepare updated Assessment and Management Program. Identify barriers to implementation of Management Program.	Prepare quarterly reports of activities.
Coordinate federal, state, local, and tribal agencies' efforts.	Organize, schedule, and facilitate quarterly meetings with EPA, SCS, DEQ, ODA, and Umatilla County SWCD.	Organize, schedule, and facilitate quarterly meetings with EPA, SCS, DEQ, ODA, and Umatilla County SWCD.

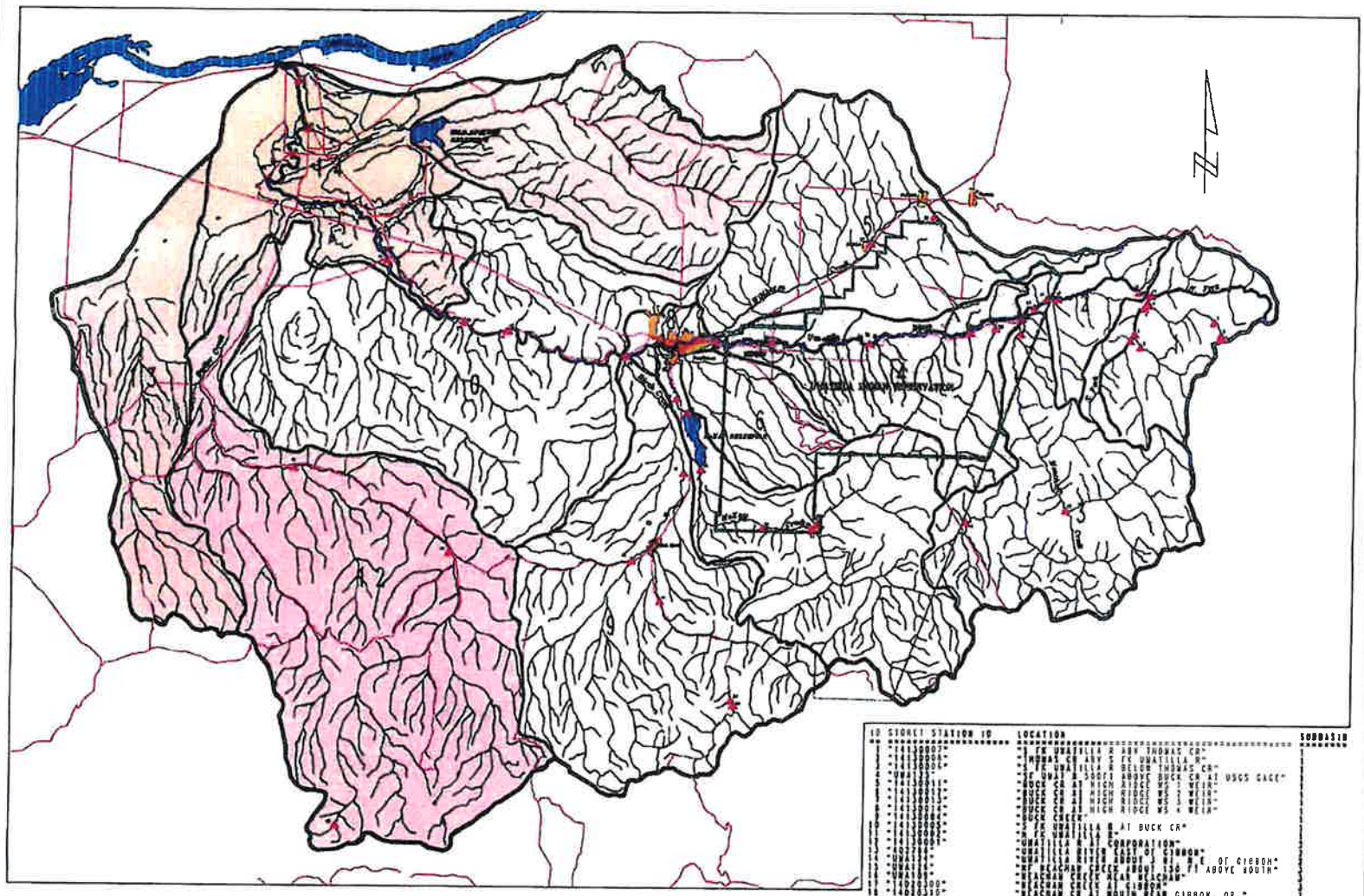
Federal assistance programs and development projects which will be reviewed for consistency with high-quality water management [section 319(b)(2)(F)]

The CTUIR needs to review all policy, program, and project proposals related to water quality, fish habitat, and watershed conditions, developed by or permitted by the USDA-Forest Service (e.g., PACFISH, Forest Plans, Columbia River Basin Anadromous Fish Habitat Policy and Implementation Guide, on-the-ground projects), USDD-Army Corps of Engineers (e.g., dredge and fill permits, dam operations [McNary, John Day pools]), USDI-Bureau of Reclamation (Umatilla Basin Project, water spreading policy), USDI-Bureau of Indian Affairs (e.g., management of trust resources, Best Management Practices, allotment management plans), USDI-Fish and Wildlife Service (recovery plans), and USDC-National Marine Fisheries Service (e.g., water quality provisions of recovery plans) for consistency with management for high-quality waters, watershed condition, and habitat in the Umatilla River Basin, and elsewhere in CTUIR ceded lands. Through implementation of the NPS Management Program this process will become more formalized and consistent.

Public involvement in Development and Review of this Document [section 319(b)(1)]

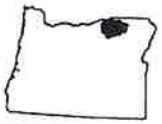
Scoping of issues, concerns, and opportunities with tribal government and tribal members; staff from tribal departments, local, state, and federal agencies; and local publics occurred in January, July and August 1993, and January 1994. In connection with scoping, requests for information and data were made to tribal departments and state and federal agencies including the U.S. Environmental Protection Agency (EPA), the USDA-Forest Service, the USDI-Geological Survey, the USDA-Soil Conservation Service, the USDI-Bureau of Reclamation, the USDI-Bureau of Indian Affairs, and the Oregon state Departments of Forestry, Fish and Wildlife, and Environmental Quality (DEQ)

Public notice was provided in the Eastern Oregonian on December 11, 1993 to announce the availability of a public review draft of this Assessment and Management Program. The public was given 30 days to provide comment in conformance with 40 CFR 25. An additional 30 days was provided upon request. Comments were compiled and incorporated in the Assessment and Management Program where consistent with the requirements, goals and objectives of the Assessment and Management Program.



UMATILLA DRAINAGE BASIN

OREGON



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MILES

LEGEND

- SURFACE WATER SAMPLE LOCATION
- WATER BODY
- UMATILLA RIVER
- STREAM/TRIBUTARY
- UMATILLA WATERSHED BOUNDARY
- SUBBASIN BOUNDARY
- UMATILLA INDIAN RESERVATION
- 1871 SURVEYED RESERVATION BOUNDARY
- PRIMARY ROAD
- URBAN*

*Only urban areas in the vicinity of the UIR are shown.

Map produced by CTUIR GIS staff September, 2004