

UMATILLA RIVER BASIN
TOTAL MAXIMUM DAILY LOAD (TMDL)
& WATER QUALITY MANAGEMENT PLAN (WQMP)

Response to Public Comment

Prepared by:
Oregon Department of Environmental Quality
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State of Oregon
Department of
Environmental
Quality



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Water Quality Management Plan (WQMP)**

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Introduction

This Response to Public Comment is to address comments received regarding the document entitled: *Umatilla River Basin Total Maximum Daily Load (TMDL) & Water Quality Management Plan (WQMP)*. Some of the comments received from different individuals or organizations overlap. This response report attempts to combine similar comments and provide a single response where appropriate, and to summarize lengthy comments. The full text of the original comments will be maintained in record. Grammatical, editorial, and formatting errors are not addressed here but corrections have been made in the document. The Department appreciates the time and effort that all the commentors put into reviewing the documents. All comments have been considered by the Department and, where appropriate, have been addressed in the final document that has been submitted to the Environmental Protection Agency (EPA) along with a copy of this response. EPA will then either approve or disapprove the TMDL.

Comments specific to the agricultural portion of the management plan have been separated and included as Attachment One. The Agricultural plan was approved by the Board of Agriculture in September 1999, and is subject to periodic review through the SB1010 process. The Department is requesting that the comments in this attachment be considered during the next periodic review of the *Umatilla River SubBasin Agricultural Water Quality Management Area Plan*.

Background

The public comment period on the proposed Umatilla Basin TMDL & WQMP opened on October 16, 2000. A sixty-day comment period was held, as agreed to by major basin stakeholders (Confederated Tribes of the Umatilla Indian Reservation, the Umatilla County Cattleman's Association, the Oregon Wheat Growers League and representatives of Forestry, industry, municipalities, farmers, ranchers and other citizens). Two public information open houses were held: one at the Pendleton Library Community Room on September 26 and one at the Hermiston Good Shepherd Community Hospital on October 24. Formal public hearings were held at the Tamastlikt Cultural Center near Mission and at the Hermiston Good Shepherd Community Hospital, December 7 and 11, 2000. The comment period was closed on December 15, 2000.

The public notice for the document public comment period was broadcast throughout the state of Oregon with concerted effort within the Umatilla Basin. The Department of Environmental Quality (DEQ) and the Umatilla Basin Watershed Council (UBWC) maintain lists of interested parties. Several hundred direct mailings were sent and the notice was placed on the Department's website. The public notice was advertised by major and local newspapers and by radio. Further outreach was conducted through the informational forums and public hearings. The Umatilla Basin TMDL process has been supported by over fifty citizens and agency personnel. Workshops have been conducted and widespread outreach has been an ongoing process conducted by the Umatilla Basin Watershed Council, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), DEQ and various agencies with support from Blue Mountain Community College, the East Oregonian Newspaper, Umatilla County Educational Services District and others.

The majority of comments received by the Department were submitted in written (paper and electronic) form. The TMDL document, appendices, and WQMP document were available for downloading from DEQ's website throughout the comment period. Hard copies of the documents were also available for viewing at Pendleton and Hermiston public libraries, at the Umatilla Basin Watershed Council, the CTUIR Department of Natural Resources and at DEQ's Offices in Pendleton and Portland. Copies of the documents were also provided to those individuals who requested copies.

List of Commentors

Code	Comments Received From (and length of comment text)	Date Received	Media
SWCD	Umatilla County Soil and Water Conservation District (suggested inclusion, 1/2 page)	10-18-00	Mail
EW	Eugene Wiglesworth (2 pages)	11-21-00 and 12/11 Hearing	Mail & Oral
UCCA	Karl Jensen and the Umatilla County Cattleman's Association (1 page)	12-11-00 Hearing	Oral & Hand
NEDC	Northwest Environmental Defense Center (15 pages)	12-14-00	Mail & E-Mail
CTUIR	Confederated Tribes of the Umatilla Indian Reservation (4 pages)	12-15-00	Hand
ODA	Oregon Department of Agriculture (2 pages)	12-15-00	FAX
USFS	Umatilla National Forest (3 pages)	12-15-00	E-Mail
EPA	US Environmental Protection Agency (12 pages)	12-15-00	FAX
NWEA	Northwest Environmental Advocates (19 pages)	12-15-00	Mail

General

The Draft Umatilla Basin TMDL and WQMP reviewed during the public comment period represented several years of data collection, data analysis, public participation, and document development. This included approximately 30 meetings of the Umatilla Basin TMDL Stakeholders Committee and five years of continuous activity on the part of the Umatilla Basin TMDL Technical Committee. All of this work led to the release of a draft TMDL and WQMP for the Umatilla Basin for public review and comment. The years of work and investment of time by numerous individuals is very much appreciated by the Department and led to the best document the Department could put forward for public review and comment. The comments received are thoughtful and led to changes that improved the TMDL and WQMP and will undoubtedly lead to clear implementation of the TMDL and, ultimately, attainment of water quality standards. Not all comments resulted in modifications to the document. Different land management and ownership, a mixture of point sources and non-point sources, several different parameters of concern, numerous beneficial uses of water, changing landscape and land use, and layers of local, state and federal authorities all create complexity when attempting to resolve water quality issues. Some comments are competing and represent different views of the Clean Water Act, State authority, the strength of the scientific knowledge, and the ability of designated management agencies to implement the TMDL. The Department has carefully considered all comments and thanks all commentors and reviewers. Prior to responding to specific comments, the following general statements are provided, reflecting the view of the Department and the TMDL process in Oregon:

- A. Water quality in the Umatilla Basin is seriously impaired. There is no question that water quality standards are not being met and beneficial uses are compromised. The TMDL and WQMP are the avenues and tools to start on a path of improving water quality – a requirement of the Clean Water Act and Oregon Law and a necessity if we are to protect this valuable resource and save imperiled salmon species.
- B. The scientific basis used to develop the TMDL is well established in the scientific literature. As with any analysis, there is some uncertainty. As time goes on, the Department and others will continue to understand this uncertainty and address it. While more data collection and analysis prior to finalizing the TMDL and WQMP might shed additional light on some of the issues, in the Department's opinion it would not significantly alter the conclusions and would only delay implementation of needed improvement in the Basin. In addition, it is the position of the EPA and the State of Oregon that uncertainty be accounted for through margins of safety rather than postponement of issuance, and that continuous and ongoing planning and evaluation is coupled to the TMDL process.

- C. On-the-ground management activities need to change in order to meet the goals of the Clean Water Act and water quality standards in the Umatilla Basin. This affects forest, agriculture, transportation, urban and rural residential land uses. This is a concern for those that live on and use the land in the Umatilla Basin especially those on or near surface water bodies. The Department recognizes that change can be difficult and expects the TMDL and WQMP will function as a tool that provides a foundation for reasonable and logical approaches to this change.
- D. Local, state and federal agencies responsible for implementing allocations in the TMDL need to be able to adjust their programs and implementing mechanisms over time. That is why the Department is using an adaptive management approach for this TMDL. We recognize there needs to be a mechanism for changing the TMDL and WQMP as more is learned, while at the same time moving forward with implementing measures that will forge the path of improving water quality. The adaptive management language in the TMDL and WQMP clarifies that there is a mechanism for change and periodic review of the TMDL and WQMP.
- E. Concerns have been raised regarding how system potential vegetation will be applied on the ground and whether it means there cannot be any human activity within riparian areas. The Department's analytical approach demonstrates the importance of shade in decreasing water temperatures. The Department recognizes that active management within riparian areas will continue. The Department is not advocating unmanaged vegetation growth in riparian areas and understands that non-management could result in the establishment of conditions that promote invasive species, create opportunities for disease, and may encourage unwanted fire. Riparian management, however, must target the production of healthy, long-term riparian vegetation consistent (as much as practicable) with the system potential effective shade.
- F. An important and frequently asked question is "who is responsible for establishing the WQMP?" This WQMP was prepared through a process facilitated by the Department and by CTUIR and UBWC and carried out in partnership with many agencies and individuals. The EPA does not formally approve the WQMP. The WQMP does however affect the implementation of the TMDL, and therefore gives reasonable assurance of implementation. Ultimately the Department and the EPA must decide whether the WQMP is sufficient to fulfill Section 303(e) of the Clean Water Act - the State's continuous planning process to implement TMDLs. Current DEQ policy is that the WQMP, with its development guided by the Department and land managers represents the best available planning at this time and scale, within the designated document preparation time-frame. The plan calls for and provides framework for incorporation of additional planning. Programs and policies to implement the WQMP will be improved over time. The Department publishes and maintains the WQMP.
- G. Several commentors have expressed concern regarding the level of detail and specificity of the WQMP. As stated above, the WQMP provides a framework for additional specificity and planning. The Department accepts that management planning is an ongoing process, time available to prepare WQMP is limited, and that many decisions must be either individually-based and therefore cannot be prescribed at the basin scale or require consensus and infrastructure that may take years to develop. That said, the plans do contain a wide array of specific commitments and recommendations that, if fully implemented, are expected to result in water quality standard attainment.
- H. Commentors have questioned whether the plan has the needed "reasonable assurance of implementation" and have recommended more measurable milestones, increased enforcement and specific time-frames for initiating implementation and attaining TMDLs. The Department advocates for assurance of implementation and accountable measures of progress, but also recognizes that communities, citizens and agencies have not completed the planning and budgeting that is vital to effective implementation and monitoring. A major goal of the plan is to provide the framework for ongoing development of mechanisms of assurance and implementation, and schedules. For example, the urban component of the WQMP calls for review of existing programs and development of rules, policies or plans for TMDL implementation, and does provide a schedule for this to occur, and names the responsible organizations. It is important to recognize that major aspects of TMDL attainment in the Umatilla Basin, for nonpoint sources, will require long-range planning, much of which occurs under the authority of state and local government entities. Processes for modification of implementing mechanisms (i.e., Forest Practices Act, SB 1010 plans) are defined by various interagency agreements. This is the heart of adaptive management process that ensures TMDL implementation over time.

In the following sections, responses to comment are organized in the order of occurrence in the document, beginning with the more general comments. An asterisk indicates that the revised document has been modified based on a comment. "The Department" means the Oregon Department of Environmental Quality, unless otherwise stated. Terms and abbreviations are defined in Attachment 3. Note that 'revised' document, or TMDL refers to the document that will be submitted to EPA pursuant to section 303(d) of the Clean Water Act. The prior version, addressed by the comments herein, is referred to as "public comment draft."

Comment & Response - General

(G-1) NEDC Comment - The goal of any TMDL must be attainment of water quality standards. Much of the proposed document does not provide sufficient analysis of what is needed and will be required to restore the integrity of streams to water quality standards. The TMDL and WQMP repeatedly list the desired conditions, time frames, and goals, but never really indicate how they will be achieved. Control actions should be identified in the TMDL. Schedules of implementation and attainment should be included.

Response - The Department agrees that the goal of any TMDL is attainment of water quality standards. The essential goals of the document are stated in Chapter 2. Chapter 3 (the WQMP) includes time-frames, objectives, methods and desired outcomes. Some of these elements are stated generally, some specifically, some have yet to be developed. The TMDL process includes an adaptive management process that provides for ongoing modification of the document, as needed and with periodic review, as discussed in the "maintenance of effort over time" Section 3.5.5 also. Refer to general statements #G and #H above.

(G-2) CTUIR Comments -

(a) The Department should not conclude that temperature standards are unattainable when flow is the limiting factor, regardless of the degree of riparian vegetation restoration. State law does not supersede the Clean Water Act and the Law of Prior Appropriations does not create a "gridlock" that prevents the Department from enforcing water quality standards.

Comment:

Response - The Department agrees that increased flow would increase the stream mileage with attainment of the water quality standard temperatures. The State has no intention of superseding the Clean Water Act. Note Section 101(g) of the Act: "It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State..." As such, the Department is clear that it does not have the authority to allocate flow in a TMDL. Because water quality is related to flow, the WQMP contains proposed measures for flow improvement (Section 3.4 of the document). The Department strongly advocates implementation of this section, which was prepared by representatives of OWRD, DEQ, USBOR, CTUIR and citizens, and includes a wide range of measures to increase stream flows in the Umatilla Basin. Chapter two of the document reflects (Figures 41-44) calculated predictions of attainable temperatures for a variety of flow levels, including natural flows, and allocates flow qualitatively as a temperature surrogate.

(b) This comment strongly disagrees with any alternatives that would result in the de-listing of fishery resources as a beneficial use in the basin because of an alleged inability to properly address water temperature problems. To do so would be to violate Federal Law and EPA's Trust Responsibility and Fiduciary duty to the Umatilla Tribes and conflicts directly with the TMDL concept and the intent and purpose of the Clean Water Act which mandates that water quality standards be achieved.

Response - The document contains no mention of de-listing beneficial uses and currently the Department has no intention of doing so.

(c) Commentor suggestions regarding 'A' & 'B':

i) Eliminate illegal water appropriations in the basin. While the vast majority of water users in the Umatilla Basin retain legitimate water rights which are legally exercised, as in other basins, there are several situations in which this may not be the case. State and Federal agencies should review water permits for any inconsistencies and eliminate water uses that are not in compliance with applicable law.

Response - Water right permit applications are subject to review and comment by the Department (and the public) and we will make appropriate comment and recommendations to Oregon Water Resources Department (OWRD) at the time they are submitted for review. Enforcement of water right is under the authority of OWRD. There is further discussion of water right regulation in Section 3.4.6. The Oregon Plan lists key priorities for OWRD in support of increased flow regulation and monitoring, reviewing and enforcing water right condition compliance, technical assistance and prioritization of areas for flow improvement (Oregon Plan for Salmon and Watershed Objectives WRD-6, WRD-8, WRD-9). DEQ and OWRD are in discussion currently, recognizing the importance of progress and resolution with regard to this issue.

ii) Limit issuance of new water rights permits. While the Oregon Department of Water Resources regulations currently limit the granting of new water rights permits in the basin, the temperature problem, as stated by the Department, is just the latest example that the Umatilla River is already substantially over appropriated. The State of Oregon should, therefore, issue a moratorium or otherwise substantially increase restrictions on new water rights permits in the basin in order to resolve the temperature problem.

Response – See response to ‘i’ above. Note from the Oregon Water Resources Department:

OWRD HAS THE UMATILLA RIVER SEVERLY RESTRICTED FOR NEW REQUESTS FOR WATER RIGHT PERMIT APPLICATIONS, AS REQUIRED BY THE UMATILLA BASIN PROGRAM RULE 690-507-050 (2)(b), DURING THE PERIOD OF JUNE 1 THROUGH OCTOBER 31. ADDITIONALLY, ANY NEW REQUEST FOR A WATER RIGHT PERMIT APPLICATIONS WOULD UNDERGO A WATER AVAILABILITY ANALYSIS AND THE RESTRICTIVE COLUMBIA RIVER RULES 690-33-115, THAT ARE ADDITIONAL PUBLIC INTEREST DETERMINATIONS MEANT TO AUGMENT FLOWS FOR ENDANGERED FISH. SINCE NOVEMBER 1983, THERE HAVE BEEN 15 WATER RIGHTS FROM THE UMATILLA RIVER APPROVED. OF THIS TOTAL, ALL BUT ONE OF THEM HAS BEEN FOR FISH, EITHER AS AN INSTREAM WATER RIGHT OR FISH ACCLIMATION PONDS. ONE WATER RIGHT PERMIT WAS ISSUED FOR GRAVEL WASHING FOR THE TIME PERIOD OF DECEMBER 1 TO FEBRUARY 28"

iii) Support the Umatilla Basin Project. The Umatilla Basin Project is ideally suited to deal with the difficult political and practical problems raised by the Umatilla Basin TMDL temperature standard. Phases I and II of the project have significantly increased stream flows while preserving economic interests in the Basin, by requiring several local irrigation districts to leave large flows in the Umatilla River in return for water rights to the Columbia.

Response - The Department agrees and appreciates the values, community cooperation, and water quality benefits that are manifest in the Umatilla Basin Project. It is our understanding that there is more than one proposal for a prospective Phase III of the Project. The Department advocates for restoration of natural flow levels in the Umatilla River, and commends the associated elements of proposals that also benefit water quality such as expansion of wetland and floodplain area.

(G-3) Related NEDC and NWEA Comment - The TMDL must quantify flow requirements.

Response - Refer to the response to comment #G2(a). The Department does not have the authority to allocate flow, but recognizes flow as a limiting factor. The Department will continue to work with OWRD and stakeholders on securing more flow in the Umatilla Basin during critical times. Flow is quantified in the document for each TMDL parameter.

(G-4) NEDC Comment - It is clear that the Department is taking its job seriously in attempting to identify the loading and measures for the Umatilla Basin, but there are still major areas that need to be addressed. A cooperative approach is preferred to an adversarial one, but the Department must ensure that it does not go too far in protecting the local interests of the stakeholders over the interests of Oregonians and the Basin. The cooperation that is apparent between the CTUIR and other stakeholders has yielded a much improved TMDL from those of other basins, yet the NEDC still urges the Department to revise the TMDL to include a more thorough assessment of all water quality impacts and revise the WQMP to provide for more concrete and enforceable implementation.

Response - The Department appreciates this acknowledgement and the thorough review. We disagree however that a more thorough assessment at this point is necessary. Enough evaluation and data collection have been done to determine loading capacities and allocate loads and wasteloads for 303(d)-listed parameters. As more information and data are collected the TMDL and WQMP may be modified. WQMP goals and planning are subject to revision pursuant to the adaptive management strategy described in Chapter One.

(G-5) NEDC Comment - The Department should use explicit margins of safety for all TMDLs.

Response – Both implicit and explicit margins of safety are allowed in TMDLs. Explicit margins of safety (MOS) were established for some parameters but not all. The temperature MOS is implicit because the temperature TMDL is expressed as surrogates such as percent effective shade and channel width that are based on system potential. More stringent goals are illogical, e.g., growing trees to a greater height or shade density than the literature indicates is viable. An implicit margin of safety based on conservative analysis, and not decreasing the goals due to assumed disturbance levels, is considered appropriate. Regarding sediment, the technology available to predict the needed erosion reduction is imprecise – hence the basis for quantifying uncertainty is lacking. As such, an implicit approach is considered best, and is reinforced by long-term monitoring. The adaptive management approach provides ongoing updates to interim goals – ongoing refinement will assist in defining potential, lessening uncertainty through time. During the decades to come, as more information regarding potential and capability emerges through progress and research, the TMDLs and margins of safety will be re-evaluated.

(G-6) NWEA Comment - Nowhere in the TMDL does it state the effect of temperatures, other pollutants, and instream flows on migration and spawning behaviors. The most sensitive indicator species are presumed. An array of potentially sensitive species is not included. Omitted is any reference to either the National Marine Fisheries Service and the US Fish and Wildlife Service, raising questions about whether those two agencies share the professional opinion of the State. Insufficient analysis of geographic area and timing of applicability is provided. The explanation of standards lacked legal definition. Related -NEDC Comment - because of the presence of threatened species within the Umatilla Basin and the likelihood that pollution control measures will not be timely enough to prevent further degradation of the species in question, the Department should consult with NMFS to get input on possible methods of protecting these beneficial uses.

Response - All designated beneficial uses in the Basin are listed in the document (Table 5) and are accounted for in Chapter Two. Analysis of the most sensitive uses is conducted in water quality standards *development (1992-1994 Water Quality Standards Review, June 1995, DEQ)*. The water quality standards are referenced in Section 1.3.2, linked to the most sensitive use in Table 6 and described in the beginning of Sections 2.1.1 through 2.1.6 and in Section 2.2. Most of the applicable standards apply throughout the year and throughout the Basin. The exception is the spawning and bull trout criteria of the temperature standard. Hence the spawning areas and times are specified in Figure 9. Figure 9 represent the areas where spawning is considered attainable (fish biologists from USFS, CTUIR, ODFW). This has been clarified in the text.* A figure has been added to similarly identify areas of Bull Trout criteria applicability.* Few studies characterizing beneficial uses in the Umatilla Basin have been produced. Both the NMFS and USFW were given a copy of the draft TMDL and WQMP for review.

(G-7) EW Comment - Construction of a dam and reservoir are recommended on upper Butter Creek, for temperature & sediment control.

Response - The TMDLs (Chapter 2) identify loading capacity and allocate loads and wasteloads. The water quantity plan (Section 3.4) does call for the evaluation of benefits and impacts of large reservoir(s), but does not specify or advocate for tributary-specific consideration. Further study is likely needed. Additional planning and evaluation to implement the WQMP is strongly encouraged. This comment has been forwarded to the OWRD.

(G-8) EW Comment - Bank armoring, channel straightening and gravel filters are recommended to control flooding and sediment on Butter Creek.

Response - Bank armoring and channel straightening and other "hard" engineering approaches are often, costly, unsustainable and can impair stream systems. For example, stream straightening may decrease heating time and flush sediment in the near-term, but within a few years the increased velocity associated with this measure generally increases erosion and ultimately degrades channel form and bank stability, causing prolonged solar stream heating

and excess sediment input. Bank armoring can be appropriate in certain instances, however, e.g., property protection. The TMDLs, sustainability and habitat impacts should be considered during project evaluation. Consideration of the proposed measure is outside of the scope of the WQMP document, but stream projects are within the scope of the processes described in the document (farm plans, remove & fill permits, consultation with ODFW, SWCD, Watershed Council, etc.).

(G-9) EW Comment - Landowners should not have to pay for actions such as reservoir construction or riparian land set-asides.

Response - Landowners, governments, resource groups and citizens generally share in causing degradation of water quality and stream habitat. In some cases financial assistance is available for correcting these problems, and in some cases not. To fulfill State and Federal law and to restore full beneficial use of streams and lakes, everyone will likely contribute.

(G-10) UCCA Comment - The comment period should be extended into July 2001. It is recommended that the TMDL issuance be deferred until the Hawes v. DEQ court case is settled. TMDLs should not be applied to nonpoint sources.

Response - Because the first part of this comment is in the form of a request regarding the public comment process, the Department responded in a letter to the UCCA on December 20, 2000. Briefly, the Department considers that the outreach in the Umatilla Basin has been exemplary, and that opportunities for involvement in the development of the TMDL and WQMP have been ample. It is important to note that the part of the document that most directly relates to agricultural activities is not subject to modification at this time - the Senate Bill 1010 plan is included, but is prepared and reviewed under separate authority. The Department is committed to meeting its schedule for TMDL completion and issuance. As such, the request to extend the public comment period was not granted.

Regarding the application of TMDLs to nonpoint sources, the Department believes TMDLs do apply to nonpoint sources.

(G-11) USFS Comment - BMPs and riparian science need further technical development.

Response - The Department agrees that further BMP and riparian science development would be beneficial. This is particularly true in defining system capability and the degree and type of restoration needed to achieve this capability. However, the Department believes that riparian science and technology are adequate for completion of this TMDL. The TMDL process encourages and accommodates ongoing refinement of BMPs and riparian science.

Comment & Response - Chapter One (Overview and Background)

(1-1) NWEA Comment - The introduction makes no reference to the massive irrigation withdrawals that obviously alter the ability of the Basin to meet standards, and relies almost exclusively on the undefined prospect of a Phase III of the Umatilla Basin Project.

Response - The first paragraph of Section 1.1.1 has been modified accordingly: after the 4th sentence: "Flow levels in the lower Basin are highly managed through irrigation withdrawal and reservoir management - summer flow improvement is key to the needed temperature reduction." * The TMDL calls for much-increased riparian vegetation and Section 3.4 recommends consideration of several measures in addition to the Basin project: wetlands, reservoir, water right transactions, increased flow regulation/distribution, increased implementation of the Conserved Water Program and Conservation Plans and improved irrigation systems.

(1-2) NWEA Comment - General NPDES permit discharges should have wasteload allocations (WLA).

Response - If point source effluent limitations through general permits are not sufficient to prevent violations of water quality standards, or if reductions were needed to offset cumulative impacts, then wasteload allocations would be issued and those point sources would be required to apply for individual facilities permits. This evaluation will be made during the basin permit review cycle, in 2001. Recent review of permit status indicates that two of the three mentioned facilities with individual discharge permits are no longer in operation and their permits are expired. The text has been modified to reflect this. *

(1-3) NWEA Comment - Section 1.3.1. The antidegradation policy requires protection of all uses dating back to 1975. Because the TMDL refers only to 'existing' uses, it does not address the antidegradation policy.

Response - The definition of the term 'existing' has been included.* Existing uses are defined in 40 CFR 131.3 as "...those uses actually attained in the water body on or after November 28, 1975..." The TMDLs are designed to protect all designated beneficial uses including those uses that have existed during and since this reference date. Note that designated beneficial uses are established in OAR 340-41 and are intended to include all sensitive existing beneficial uses. Also refer to response to comment #1-8.

(1-4) NWEA Comment - Section 1.3.1. There is no analysis to suggest whether salmonid spawning is supported by the temperature TMDL which focuses on the critical high temperature conditions of summer. Section 2.1.1.4 same comment. The fact that Figure 33 refers to 64 °F as the TMDL Target suggests the Department is wholly ignoring the spawning and Bull Trout Criteria of 55 °F and 50 °F.

Response - The salmonid spawning criteria of 55 °F, and other temperature criteria, are applicable at various times and locations in the basin, and act as triggers for planning and actions designed to achieve "no measurable surface water temperature increase resulting from anthropogenic activities" (OAR 340-41). The modeling described in the document indicates that reducing peak temperatures to 64 °F is not universally demonstrable, even with vegetation and channel morphology fully restored. Consequently, the TMDL establishes system potential surrogates, based on the riparian system functioning as naturally as possible. System potential (e.g., mature vegetative buffers, decreased channel widths) is considered to be protective of all designated beneficial uses and to represent 'no anthropogenic warming.' Figure 33 has been explained accordingly in the revised text. *

(1-5) NEDC Comment - Beneficial Uses. The department fails to adequately consider all relevant beneficial uses. There is insufficient identification of the relationship of the use to 303(d) parameters, for instance fishing is not listed as a temperature-dependant use and it is not clarified that aesthetic quality is temperature-dependant due to the relationship of temperature to algal abundance. Consider all uses - both existing and designated. List all uses, not just the most sensitive. Also, the TMDL should delineate the historic use of salmon and other aquatic uses. The TMDL should be expanded to account for all anthropogenic sources of pollutants and pollution that have diminished this range.

Response - Refer to response to comment #G-6.*

(1-6) NWEA Comment - Section 1.3.1. This section does not identify any cold water amphibians which may be more sensitive to the pollutants evaluated in the TMDL but merely mentions that frogs are present, and the temperature TMDL makes statements presuming that indicator species are the most sensitive.

Response - Refer to response to comment #G-6. Also note that while cold water amphibians are important, the purpose of a TMDL is not to evaluate beneficial uses and revise water quality standards. Such activity is outside the scope of a TMDL. The purpose of a TMDL is to determine loading capacity and set loads and wasteloads that will meet established standards.

(1-7) NWEA Comment - Section 1.3. There is no analysis of how the temperature TMDL relates to protection of the existing use by Bull Trout. There are no maps provided of Bull Trout ranges, none of what existed in 1975 and no analysis of the geographic area of applicable Bull Trout temperature criterion.

Response - Refer to response to comment #G-6. *

(1-8) NWEA Comment - Section 1.3.2. This section on water quality standards fails to provide a summary of the applicable numeric and narrative criteria and reference to the anti-degradation policy. The TMDL should contain a "gap analysis" to evaluate the role of antidegradation, beneficial use support, and narrative criteria. Consider that this would include items such as protection of cold water refugia and the additive and synergistic effects of pollutants on sensitive uses. Related comment on Section 2.1.1.8: There is no discussion in the temperature TMDL of protecting or creating cold water refugia, protecting wetlands, or other forms of restoring the natural regimes to the river system.

Response – We agree that Section 1.3.2 does not provide a summary of the applicable numeric and narrative criteria or discuss the antidegradation policy. We must point out that the section does refer the reader to Chapter 2 and Appendix A-7 for detailed discussion of the criteria. The TMDL is designed to set load and wasteload allocations in a way that will reduce current loading capacity to a level that will meet water quality standards. Antidegradation is an important component of the state's implementation of the Water Quality Act and will be utilized appropriately as we carry out this responsibility. Implementation of that requirement of the CWA will not affect load and wasteload allocations in the TMDL. Achieving riparian vegetation allocations and targets for temperature will not only protect areas of cold water refugia, wetlands and natural regimes, but should expand these areas beyond what exists in the basin.

(1-9) NEDC Comment - Section 1.3.6. This adaptive management section implies an excuse to abstain from developing comprehensive documentation and to adjust goals. Actually, it is the means by which goals should be achieved. When difficulty is encountered, focus should be directed toward revision of the means to attain the goals, not the goals themselves.

Response – The Department disagrees that there is such an implication as suggested by this comment. The Department does agree that adaptive management is a process to evaluate progress and, where necessary, to adjust the means for attaining the goals of the TMDL.

(1-10) NWEA Comment - Section 1.3.6. Rather than simply stating that natural events may limit or delay TMDL attainment, this section should emphasize that a more naturally functioning system is more resilient to disturbance.

Response – The Department believes it is important to recognize that natural events may interfere with TMDL attainment. A sentence has been added to indicate that a naturally functioning system is generally more resilient to disturbance. * Refer also to the response to comment #2-14.

(1-11) NWEA Comment - Section 1.3.6. The Department states that it intends to regularly review progress of WQMPs to meet TMDLs. A schedule and methodology should be identified.

Response - The Department agrees. Refer to schedule and method in Section 3.5.5.

(1-12) NWEA Comment - Section 1.3.6. The Department states that it intends to review the WQMP every 5 years. The WQMP is too vague to be used as a basis against which to measure progress.

Response – The Department disagrees. Through the adaptive management process, however, as new and better information is developed, it may be possible, in fact, likely that the WQMP can be enhanced.

Comment & Response - Chapter Two (Total Maximum Daily Load)

(2-0) Several questions are related to the TMDL application of the temperature standard. Below is a clarification the temperature standard and an explanation the temperature TMDL methodology.

Water quality standards are developed to protect the most sensitive beneficial use (salmonid populations). The temperature standard is designed to protect cold water fish (salmonids) and endangered species which are usually the most sensitive beneficial use.

The temperature standard consists of several targets or criteria which have been set to protect salmonid rearing, salmonid spawning, bull trout, cold water refugia, threatened and endangered species and habitat conditions where elevated temperatures might affect beneficial uses. When the temperature targets or criteria are exceeded, the standard specifically states that “**no measurable surface water temperature increase resulting from anthropogenic activities is allowed**” (OAR 340-041-645(2)(b)(A)). A TMDL is to be developed for 303(d) listed waterbodies. For all temperature 303(d) listed waterbodies in the Umatilla Basin the standard mandates a condition of no allowable anthropogenic related temperature increases.

The temperature TMDL is scaled to the Umatilla Basin. Since stream temperature results from cumulative interactions between upstream and local sources, the TMDL considers all surface waters that affect the temperatures of 303(d) listed waterbodies. For example, the Umatilla River is 303(d) listed for temperature. To address this listing in the TMDL, the Umatilla River and all major tributaries are included in the TMDL analysis and TMDL targets.

Because the temperature standard specifies that “**no measurable surface water temperature increase resulting from anthropogenic activities is allowed**,” an important step in the TMDL is to examine the anthropogenic contributions to stream heating. The pollutant is heat. The TMDL establishes that the anthropogenic contributions of nonpoint source solar radiation heat loading results from varying levels of decreased stream surface shade throughout the Basin. Decreased levels of stream shade are caused by near stream vegetation disturbance/removal and/or stream channel widening. Decreased instream flows often exacerbate stream warming induced from increased solar radiation heat loading.

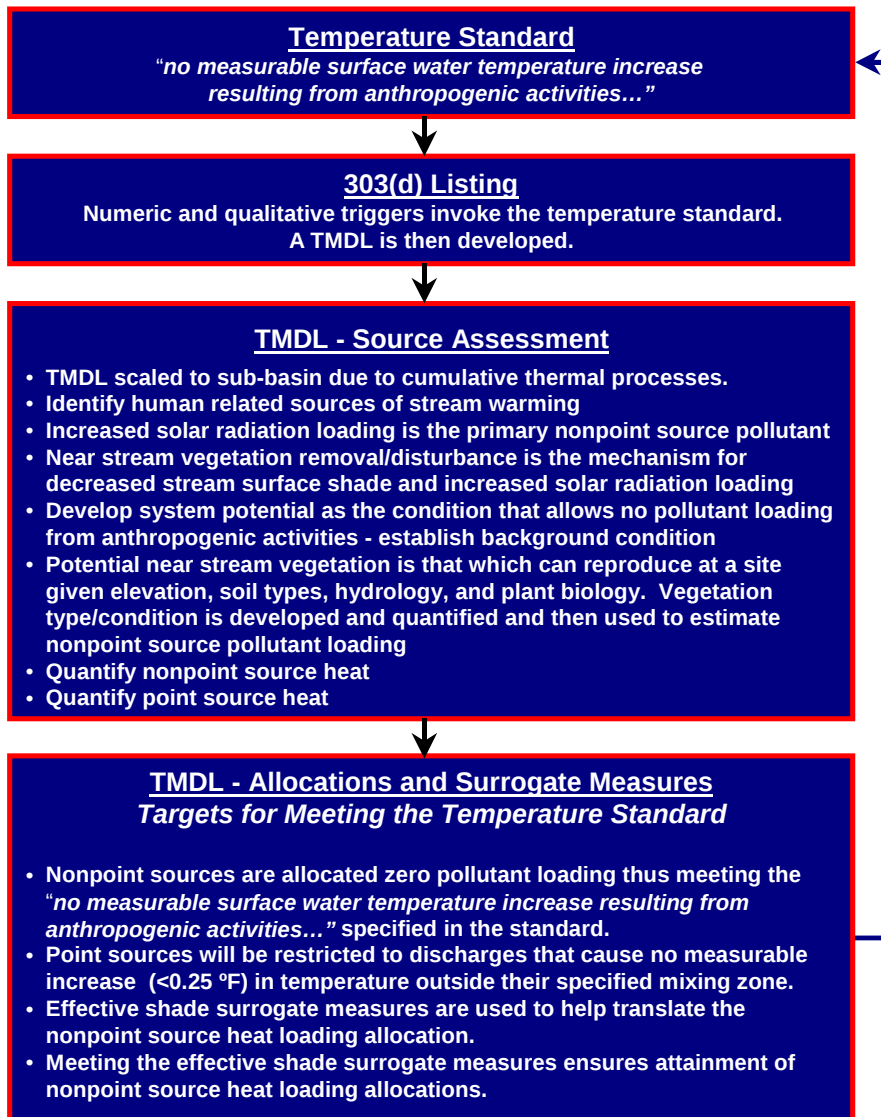
Systems potential near stream vegetation conditions were used to calculate effective shade surrogate measures. For clarity, system potential as defined in the TMDL is the near stream vegetation condition that can grow and reproduce on a site given elevation, soil properties, plant biology and hydrologic processes. System potential does not consider management or land use as limiting factors. In essence, system potential is the design condition used for TMDL analysis that meets the temperature standard:

- System potential is an estimate of a condition without anthropogenic activities that disturb/remove near stream vegetation.
- System potential is not an estimate of pre-settlement conditions. Although it is helpful to consider historic vegetation patterns, many areas have been altered to the point that the historic condition is no longer attainable given drastic changes in stream location and hydrology (channel armoring and wetland draining).

The Umatilla River temperature TMDL allocates targets based on heat loading. Nonpoint sources are expected to eliminate anthropogenic solar radiation heat loading. Point sources would be restricted to no measurable increase in temperature (less than 0.25°F) outside a defined zone of dilution. Allocated nonpoint source targets are expressed as heat load per unit time (ly per day) and then translated to effective shade surrogate measures. Effective shade surrogate measures provide site-specific targets for land managers. Attainment of the surrogate measures ensures compliance with the nonpoint source allocations.

Comment: Matt: in discussing system potential, don't you think we ought to bring in other aspects such as stream morphology and not just concentrate on vegetation and shade?

Comment: I would like to change the wording relative to point sources to read as follows: Point source discharges are restricted to that which does not produce a measurable increase outside a mixing zone specified in their permit. Note: I would change it myself, but I don't know how to get into this darn box. Also, on the NPS, its not just the effective shade is it? Its all of the surrogates.



(2-1) NEDC Comment - First, the utility and application of surrogate measures for temperature in the TMDL is questionable. In general, the utilization of percent effective shade as a surrogate measure, rather than simple loading, is a commendable step in a more holistic approach to achieving water quality standards. However, this approach has its limitations, so it must be applied in a stringent manner.

Response - The temperature TMDL establishes that the nonpoint source pollutant is heat from solar radiation. Allocations for nonpoint sources are based on an estimate of the solar radiation heat that can be attributed to background conditions (derived from system potential conditions based on near stream vegetation and channel morphology). The Department has established numeric nonpoint source allocations that are stringent (all

anthropogenic nonpoint sources are allocated zero increases in solar radiation heat) and thorough (all assessed anthropogenic sources of heat are given allocations).

Surrogate measures are not a required component of TMDLs under the Clean Water Act. The Department has decided to include effective shade surrogate measures to translate the nonpoint source solar radiation heat allocations and provide site-specific TMDL targets for land managers. Attainment of the surrogate measures ensures compliance with the nonpoint source allocations. Simply stated, surrogate measures are included in the TMDL to convert solar radiation heat allocations to a parameter in which people are familiar and methods exist for accurate measurement. Since the surrogate measures are simply a translation of the nonpoint source load allocations (LA), it follows that the surrogate measures are "applied in a stringent manner."

(2-2) NEDC Comment - The TMDL must more thoroughly assess the sources of shade and relevant data. Specifically, the TMDL should point out what type of shade will be required in the WQMP. The TMDL should address shade provided by conifers versus shade provided by other water-consumptive or invasive species."

Response - The Umatilla temperature TMDL clearly defines the near stream vegetation that is used to develop the allocated conditions. Near stream vegetation types are presented in Section 2.1.1.3.1 (Non-Point Sources of Pollution) and include conifers, hardwoods and shrubs that can grow and reproduce throughout the Umatilla Basin given: soil properties, plant biology and hydrologic processes. System potential does not consider management or land use as limiting factors. Many sources of relevant data were used to develop near stream vegetation potential communities.

Near stream vegetation targets were largely developed using local expertise in the Umatilla Basin. The Department feels that "relevant data" was used in developing near stream vegetation targets.

(2-3) NEDC Comment. The temperature TMDL does not appear to account for the following activities: increased temperature from runoff (impervious surfaces), changes in groundwater withdrawal patterns, land-use or forestry practices, current impacts from permitted point sources, and others. Note that land uses that change the pattern and timing of groundwater flows may be viable options for achieving the goals of the TMDL.

Response - The temperature TMDL establishes, in Section 2.1.1.3, that the primary causes of stream heating result from nonpoint sources via near stream vegetation removal/disturbance, channel modifications and instream flow reductions, and point sources via warm water discharges. The amount of heat contributed from these sources is quantified in the TMDL.

As stated previously, stream temperature analytical techniques represent an evolving science. The TMDL is designed to include future scientifically valid information that can help address secondary sources of stream heating such as "increased temperature of runoff associated with overland flow over impervious surfaces, changes in groundwater withdrawal patterns, land-use or forestry practices, current impacts from permitted point sources, and other potential thermal impacts caused by humans." It is simply not practical to expand the analysis to include parameters where data or analytical techniques do not allow an established, accepted, quantifiable and defensible methodology.

The Department acknowledges that the impacts of humans on the landscape are far reaching. Further, stream temperature dynamics consist of numerous interrelated landscape parameters. Clearly, other human sources of heating exist in the Umatilla Basin. However, the Department has developed a temperature TMDL that addresses stream temperature 303(d) violations that capture known primary sources of heat that is both scientifically and legally consistent with definitions contained in the Clean Water Act.

(2-4) NEDC Comment. The temperature model uses a very simplistic approach that fails to take into account all relevant factors, such as groundwater inputs, intergravel flow and stagnation. Each of these factors plays an important role in the percent shade dynamic by influencing the morphology and amount of water in a stream. Related CTUIR, NEDC and NWEA Comment - The TMDL (and WQMP) does not

allocate groundwater and does not prescribe a process or timeframe for incorporating the role of groundwater in temperature regulation.

Response - The Department did account for primary factors of stream heating. These factors are near stream vegetation removal/disturbance, channel morphology modification, flow modifications and warm water discharge. Groundwater inflow was identified using FLIR imagery and was included in the analysis. Stream stratification was not identified as a significant factor in remotely sensed and ground level data.

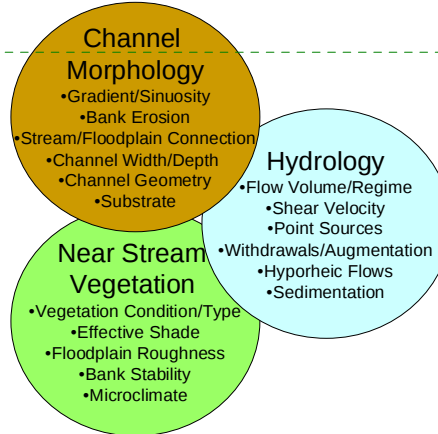
The overriding intent of the Oregon stream temperature standard is to minimize human related stream warming. An overview of the parameters that affect stream temperature should include near stream vegetation, channel morphology and hydrologic parameters. Many of these stream parameters are interrelated (i.e. the condition of one may impact one or more of the other parameters). These parameters affect the **stream thermal budget** and the **heat transfer mechanisms** to varying degrees. Stream temperature dynamics are further complicated when these parameters are evaluated on a watershed or subbasin scale. For example, near stream vegetation can have considerable variability in both the longitudinal and transverse directions relative to the stream. Other parameters such as the stream microclimate can have a diurnal and seasonal temporal component as well as spatial variability. The current analytical approaches developed for stream temperature consider all of these parameters and rely on ground level and remotely sensed spatial data. To understand temperature on a landscape scale is a difficult and often resource intensive task. Stream temperature analysis is an evolving science.

The Umatilla temperature TMDL analysis considered all quantifiable landscape, atmospheric and hydrologic data. The analysis used to develop the temperature TMDL targets is not "simplistic." Instead, the data and analysis employed is robust. Many of the parameters that affect stream temperature are considered in the analysis. Ground level and remote sensing are used to develop large data sets. These data sets are then used deterministic modeling of 90 miles the stream network.

The effect of hyporheic flow (intergravel flows) on stream temperature is difficult to quantify. The TMDL acknowledges that hyporheic flows occur in the Umatilla Basin, however the extent of the effect is not quantified. A scientifically accepted methodology that accurately simulates the thermal effect hyporheic flows has yet to be developed, though promising efforts are underway by CTUIR staff.

Thermal stratification occurs in limited areas within the Umatilla Basin. Large pools and reservoirs do become stratified during limited times during the summertime. The methodology used to develop the temperature TMDL simulated average water column temperatures. The Department considers the TMDL temperature simulations to be accurate due to the limited extent of thermal stratification identified in FLIR temperature analysis.

There are Several Stream Physical Parameters that Influence Temperature



(Many of these parameters are interrelated)

Comment: Shouldn't we say something about the calibration of the model which confirms that it can reasonably accurately predict temperatures with the variables used.

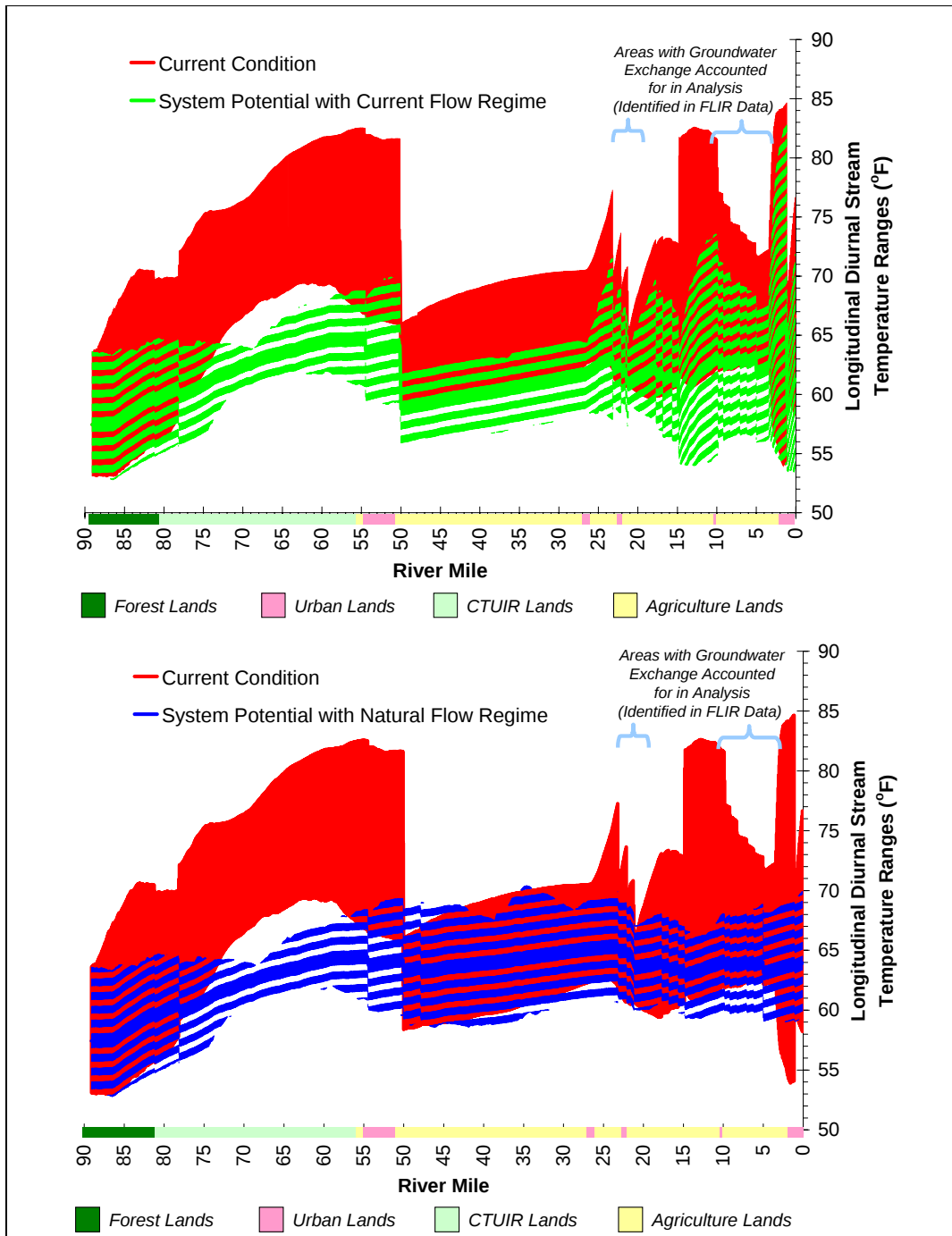
Groundwater effects were included in the Umatilla analysis. FLIR derived imagery captured groundwater inflow into the lower Umatilla River. Significant groundwater flows (approximately 16 cfs) enter the lower river and reduce stream temperatures. The thermal effects of groundwater inflow are captured in the TMDL analysis and presented in the graphs below.

The results of the TMDL source assessment demonstrate that the stream temperature regime is highly sensitive to the solar radiation portion of the energy budget and stream flow volume, both of which can be affected by human land use activities.

Primary Factors that Affect Stream Temperature in the Umatilla Basin

- Effective Shade (Controlled by near stream vegetation and channel width)
- Stream Flow (Controlled by withdrawals, augmentation and discharge from point sources)

Umatilla River Temperature Simulations (August 10, 1998)



(2-5) NEDC Comment - The TMDL lacks site-specific data. The TMDL should contain an analysis of bank condition, fluvial morphology and system resiliency, and current condition assessment such as "proper functioning condition." and based on this, revise the requirements needed to get to beneficial use attainment.

Response - The Department disagrees that the TMDL lacks site-specific data appropriate to a sub-basin scale TMDL. Site-specific data gathered by the Umatilla TMDL Technical Committee include: more than 50 data-logging thermistors - some in place for more than 10 years, 25 Rosgen Level II Inventories, vegetation descriptions from 50+ sites, shade measurements from 50+ sites, 14 automated water quality samplers with 2 years of daily winter/spring laboratory analyses of suspended solids, 4 sites with a wide range of quarterly water quality chemistry analyses collected over decades. In addition to ongoing gage records, flow data was collected at over 50 sites. Monthly nitrate and ammonia sampling and lab analyses were conducted through much of 1999. On this foundation of field and laboratory data, weather station climatological data was added, and state of the art remote sensing techniques were used, including 1 meter resolution Forward Looking Infrared Radiometry, and automated sampling of 1:5,000 digital orthophoto quadrangle maps (DOQs). The assessment and modeling employed existing physical and biologic characterization conducted by the USFS, CTUIR and ODFW. Many other types and sources of information and literature were utilized as well.

Morphology and vegetation were measured and characterized (Appendix A-3, A-4). Further "system resiliency" work is encouraged, but is not needed to establish loading capacities for the Basin.

(2-6) NWEA Comment - Section 2.1.1.1.3. The Department inaccurately refers to the temperature standard numeric criteria as "trigger temperatures." The numeric criteria are absolute statements of compliance or noncompliance with the State's water quality standards. The Department has inappropriately adopted a narrative approach, that of not allowing anthropogenic warming.

Department Response - The temperature standard includes both components, numeric temperature criteria and disallowance of anthropogenic warming. The criteria serve first as goals, and, if not met, "triggers" for minimization of anthropogenic warming. Further discussion is provided in the response to comment #2-0.

(2-7) NWEA Comment - Section 2.1.1.2. The TMDL lacks discussion of the timeframe of TMDL attainment; this section is an appropriate place to do so. Same comment for Section 2.1.1.8.

Response - NPDES permits will be reissued in (2001) and wasteload allocations (WLA) from this TMDL will be incorporated into the permits at that time. That schedule has been added to the TMDL and WQMP*. The Section 3.5.8 "Schedule for Implementation" discusses time frames for implementing various aspects of the TMDL for non-point sources.

(2-8) NWEA Comment - Section 2.1.1.2. It is not clear that the TMDL applies in areas without water quality standard violations or data to assess compliance.

Response - The reader is referred to Table 2, Section 1.3 under 'Geographic Area,' and the definitions of temperature surrogate measures on page 75-81. For further clarification, text from Section 2.1.2.5 (paragraph 2, 1st two sentences) has been included in Chapter One and in Section 2.1.1.6. *

(2-9) EPA & NWEA Comment - Page 42, Figure 14. This figure indicates that 2% of the stream segments are above the effective shade target. Is this the result of data error? If the waterbody is at site potential shade, how could current shade be above effective shade target?

Response - Roughly 2% of the Umatilla River mainstem currently meets, or exceeds, effective shade surrogate measures. This result is not caused by data error. Instead, these stream segments have near stream vegetation and channel morphology that combine to produce effective shade levels that meet surrogate measures prescribed in the TMDL. While 2% of the stream segments in the Umatilla River mainstem are at "potential" conditions, 98% of the Umatilla River mainstem is below effective shade surrogate measures presented in the TMDL.

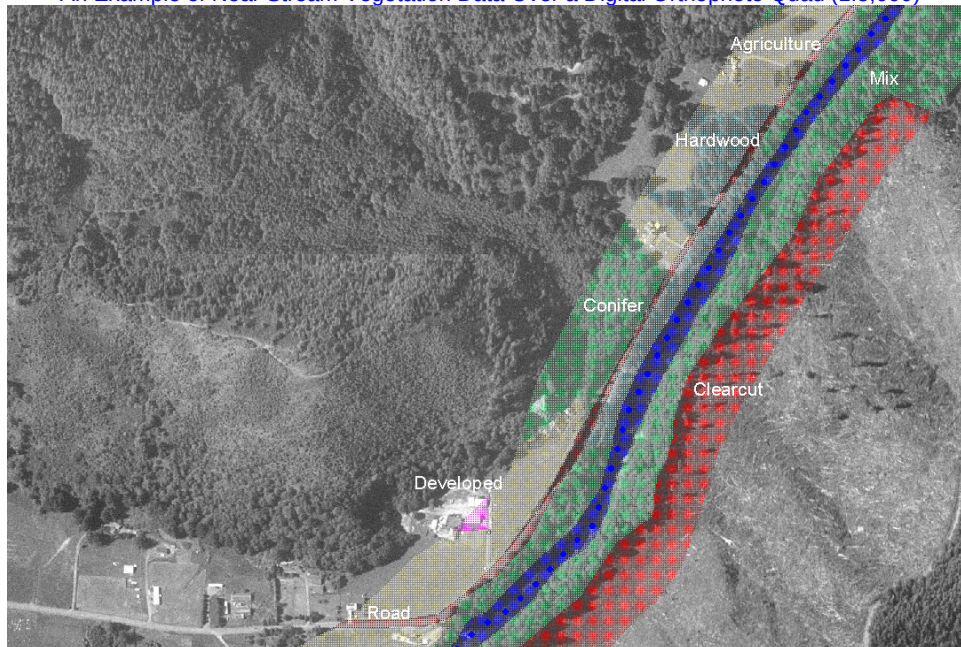
(2-10) USFS Comment - Page 43. Recognize the limitations of satellite data in classifying riparian vegetation. The TMDLs and management plans focus on restoration of riparian areas, yet riparian functions and processes are poorly understood, and we lack accurate maps and classification of Umatilla Basin riparian systems.

Response - The Department agrees that a high-resolution description of vegetation is needed to develop accurate riparian maps within the Umatilla Basin, and encourages further work. To bridge the gap for the purpose of analysis with existing data, DEQ increased the spatial resolution of available vegetation data sets used during TMDL efforts for the Umatilla Basin.

A detailed description of current vegetation, determined from infrared satellite data (LandSat), was available for the Umatilla Basin (Pacific Meridian, 1997). The LandSat vegetation data was comprised of 25-meter pixels, each coded for dominant species type, canopy density, and size/structure. Pacific Meridian used ground truthing and aerial photograph analysis during LandSat vegetation classification. It was determined by DEQ that additional GIS line work and field data verification was needed on this data layer in order to account for small-scale heterogeneity within this 25 spatial data set. Specifically, the following tasks were employed by DEQ:

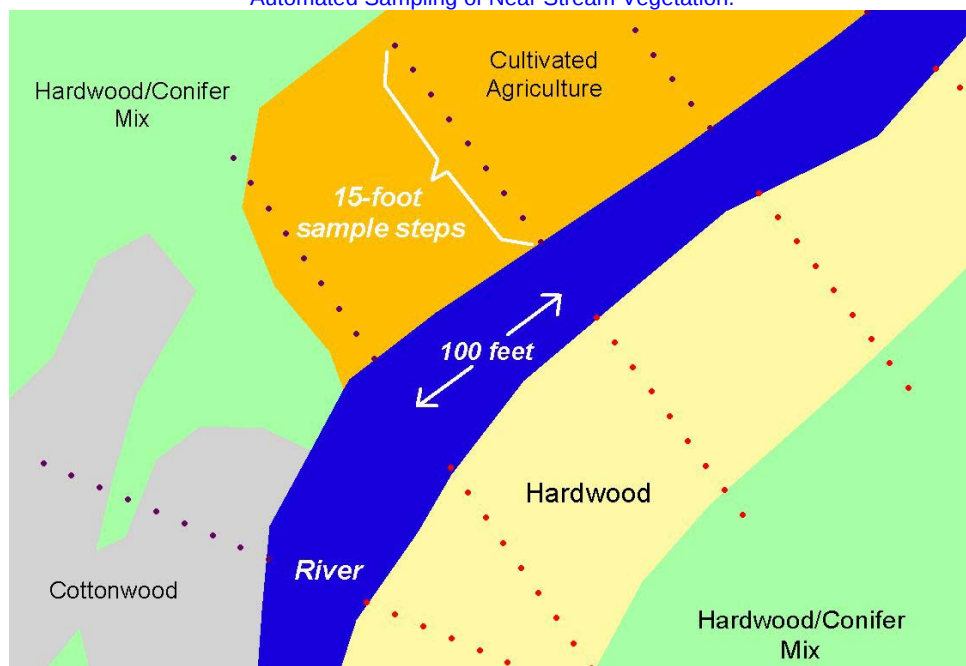
- A Pacific Meridian vegetation polygon layer was developed for 300 feet perpendicular from each bank. These data were corrected at a scale of less than 1:5000 using Digital Orthophoto Quadrangle projections (DOQs) in ArcView to increase the resolution and to add features not captured by the LandSat data source (i.e., roads, harvest, buildings, etc).

An Example of Near Stream Vegetation Data Over a Digital Orthophoto Quad (1:5,000)

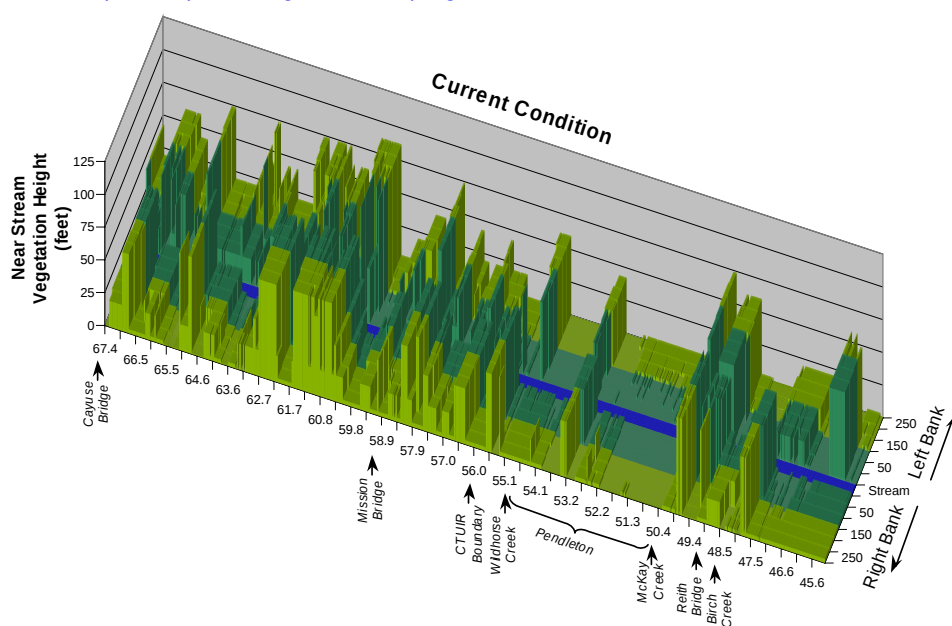


- Additional ground-level riparian data was collected by DEQ at numerous sites throughout the Basin and was used to help refine assigned attributes to the digitized riparian vegetation layer.
- Stream (thalwags) and the banks were digitized at a 1:5000 scale using DOQs in ArcView.
- The modified Pacific Meridian riparian vegetation data layer was sampled (for dominate species type, canopy density, and size/structure) at a hundred foot interval distance step. Specifically, riparian conditions were sampled at nine 15-foot intervals perpendicular to the stream's aspect at each 100-foot sampling node (see figures below).

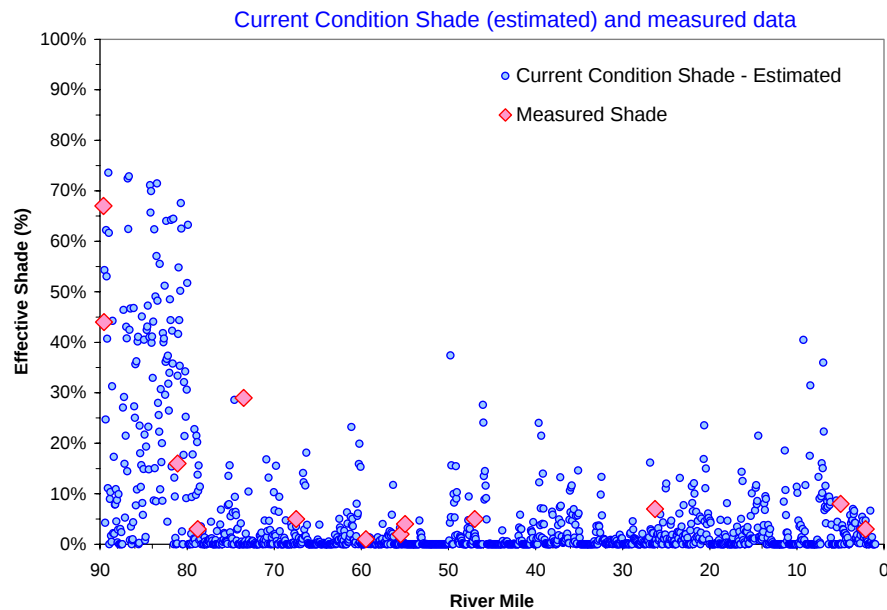
Automated Sampling of Near Stream Vegetation.



An Example of Riparian Vegetation sampling for the Umatilla River mainstem near Pendleton.



- Collected ground-level effective shade data was used to assess the accuracy of estimated effective shade levels for the Umatilla River. As can be seen in the figure below, simulated effective shade measurements, using the modified Pacific Meridian vegetation data layer, match closely with measured shade conditions.



(2-11) USFS Comment - Page 43. Clarify or reconsider the statement "a vegetative buffer width equal to the floodprone is often a desired minimum." We know of no studies that have correlated floodprone width to potential riparian width.

Response - DEQ did not base TMDL targets on flood prone width as a "guide for potential riparian width." Instead, riparian targets used a 150' width from the channel edge. The Department acknowledges that riparian width can vary considerably. Riparian width is not a target in the TMDL. This has been clarified in the document. *

(2-12) NWEA Comment - Section 2.1.1.3.1. The temperature TMDL should assign responsibilities for establishing riparian buffers of specified width, state when stable reference reaches will be identified, and identify barriers to fish passage.

Response - The Department disagrees. The load allocation is a maximum amount of solar loading and is further translated to *percent effective shade* and a related variable *maximum channel widths*. Optimal buffer widths can be quite variable and the width needed to reduce solar loading is dependent on species, slope, and other factors. Effective shade is directly translatable to thermal loading, and will typically require substantial buffers. Attainment of water quality standards can be quantitatively related to shade.

Though encouraged, there is no requirement in the document to identify stable reference reaches. Fish passage has not been identified as a water quality limiting factor in the Basin, in part because of the dramatic improvements to fish passage in recent decades, through the work of ODFW, CTUIR, USBOR, USFS, OWRD, Irrigation Districts and others.

(2-13) ODA Comment - Page 45-46. It is problematic to characterize riparian vegetation with an inner point bar zone and an outer zone, because the zones change position through time and point bars do not necessarily support vegetation. These riparian widths are unnecessary and should not be designated.

Response - This characterization was provided by the Technical Committee, not as a prescription of buffers but rather as a best professional judgement characterization of system potential, in geometric terms. The 'point bar zone' was so termed to describe the area inside the meander bend and outside of the active (bankfull) channel. It is defined as stated in the document and is not intended to include the entire area of point bar deposition (i.e., it would not include the low-flow wetted part).

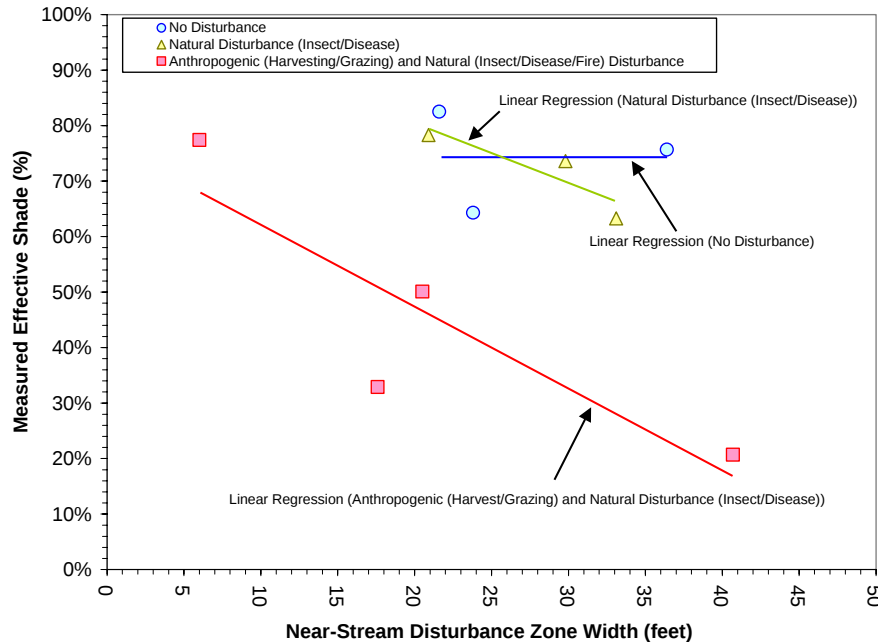
(2-14) USFS Comment - Page 44-55, 75. We recommend acknowledgement of the role of geoclimatic disturbance (e.g., floods, landslides, drought, disease, and fire) in estimates of system potential, and factoring in a reasonable estimate of percent under a disturbance regime.

Response – Geoclimatic disturbance is recognized in the adaptive management section of the TMDL. Also refer to response to comment #1-10. It is also recognized that the Technical Committee provided a partial accounting for disturbance by identifying a different vegetation-type potential along the inner bank of meanders where disturbance is greater, and in employing channel width/depth targets based on actual stream data from various regions (Rosgen 1996, *Applied Fluvial Geomorphology*). This system potential characterization is described in Appendix 3 of the document.

It is expected that natural disturbance will periodically occur in the Umatilla Basin. And, it is possible that local effective shade levels can be impacted by natural disturbances processes. However, such conditions are considered as natural processes, and therefore, are not considered to be anthropogenic heat pollutants. Similarly, the natural forest succession within the near stream areas is not an anthropogenic heat pollutant.

The Oregon Department of Forestry (ODF) collected ground level effective shade data during the summer of 1999 at several sites within forested areas in the Upper Umatilla Basin using hemispherical canopy photography (Fish Eyed Lens). Natural disturbance conditions (insect and disease) were reported at three of these locations, anthropogenic (harvest and grazing) and natural disturbance conditions were reported at four locations and three locations reported no disturbance (figure below). It should be noted that this data set is small, making conclusions about dynamic and complex disturbance processes inadvisable.

Measured Effective Shade in the Upper Umatilla Basin (ODF 1999)



However, simple observations of the data demonstrate that measured shade conditions at sites with both anthropogenic and natural disturbance conditions were much lower than levels measured at other sites. (It is important to note that potential shade conditions would be negatively correlated with near-stream disturbance zone width (i.e., the amount of shade response will increase as the stream width decreases)). Measured effective shade levels were very similar at sites with 1) no disturbance and 2) natural disturbance, but shade conditions at these sites are much greater than at sites with both anthropogenic and natural disturbance.

Additional data will be considered regarding natural disturbance (i.e. processes, thermal effects and recurrence intervals), as it becomes available.

(2-15) EPA Comment - Page 59. Loading Capacity for Non-Point Sources. As noted in the last paragraph on this page, Appendix A-4 presents the loading capacities for waterbodies modeled during the development of the TMDL. Please add a sentence referencing Figures 38 through 40 for obtaining the loading capacities for other waters.

Response - The document has been modified as requested. *

(2-16) EPA Comment - Page 69. A loading capacity addresses the amount of pollutant in a waterbody while the wasteload allocation addresses the effluent concentration or loading of a pollutant. It appears that the column labeled "loading capacity" in Table 17 addresses the allowable temperature of the effluent for each facility. If so, this would be the "wasteload allocation". The system potential temperature is a more accurate representation of what has been defined in the text as being the loading capacity.

Response - This has been corrected in the revised document. Table 17 and 18 usage of "loading capacity" has been changed to "critical condition wasteload allocation." It has been clarified in the revised text that the wasteload allocation throughout the warm season is a function of current background and simulated system potential temperatures. *

Changes have been made to the document so that the following definitions apply to terms used in the temperature TMDL:

- **Loading capacity (nonpoint sources)** - heat loading that represents from no measurable surface water temperature increase resulting from nonpoint source anthropogenic activities.
- **Loading capacity (point sources)** - in the receiving water body, the LC is the lesser of (1) system potential temperatures that represent no measurable surface water temperature increase resulting from nonpoint source anthropogenic activities, and (2) background temperatures.
- **Load Allocations** - portion of loading capacity heat allocated to nonpoint sources.
- **Wasteload Allocations** - portion of loading capacity heat allocated to point sources given an allowable 0.25°F temperature increase in the zone of dilution.

(2-17) NWEA and NEDC Comment - Section 2.1.1.6. The mixing zone concept does not apply in TMDL analysis. It is ridiculous to allow a 0.25 °F increase at the edge of the mixing zone, however, to the extent that this concept is applied, mixing zone dimensions should be provided. Measured, not assumed, flows and temperatures should be used to calculate wasteload allocations. Assessment of impacts during all seasons should be incorporated.

Response – DEQ disagrees that the use of a mixing does not apply in a TMDL analysis. Definition of the mixing zones is outside the scope of a TMDL, but will be addressed in the development and issuance of individual permits, which will also be subject to appropriate public notice. DEQ agrees that permitted discharges should ensure that water quality standards are not violated at all times of the year.

Regarding measured flows and temperatures: effluent temperature limits are flow-based. Limits will be calculated to implement the stated wasteload allocation. This will likely be a series of tables based on a range of flows. Where appropriate data exists it will be employed. Where not, assumptions will be made and permit conditions will include appropriate monitoring.

(2-18) EPA and NEDC Comment - What is the cumulative impact of allowing 0.25°F increase for each point source in the Umatilla River Basin? This should be accounted for.

Response - The cumulative impact is less than the model accuracy (+/- 1.6°F). If point sources are allowed +0.25°F, the cumulative effects (i.e. thermal effects throughout the mainstem) cannot be simulated to a statistically significant level. Note that only two of the point sources (Pendleton and Hermiston) are allowed to discharge during May 1 to October 31. These sources are more than 40 miles apart and the natural sources of heating and cooling will cause variation far in excess of 0.25°F. In addition, the volume contributed by a point source can increase the thermal capacity of streams, thus mitigating downstream increases due to solar input. The Oregon temperature standard defines “no measurable” as being equal or less than ¼ °F. The cumulative impact of allocated point source loads where calculated is very small, or nonexistent.

(2-19) NWEA Comment - Section 2.1.1.7. Groundwater inflow is stated as an element of conservatism of the margin of safety. Yet in page 3 of the document is treated as part of meeting the TMDL. Groundwater cannot play two roles at once.

Response - The context of Section 2.1.1.7 is *temperature*. Increased groundwater input is probable with riparian restoration, and increased groundwater inflow will cause additional cooling in the summer, providing a MOS (i.e., cooler than predicted temperatures). On page 3 the context is general, and the statement "in certain instances, groundwater improvement will be essential to attaining stream water quality..." is true, for example, in Wildhorse Creek watershed groundwater is undoubtedly a vector for *nitrate*.

(2-20) NEDC Comment - Table 18. Wasteload allocations relate to point sources and yet in Table 18 are referred to as Loading Capacity. This usage does not fit with the definition of loading capacity on page 71.

Response - This has been corrected in the revised document. Refer to response to comment #2-16. *

(2-21) NWEA Comment - Page 75. The caveats in the fifth full paragraph suggest that the Department is unsure whether the temperature surrogate measures are adequate. These caveats should be clarified along with proposed solutions to the problems they raise.

Response - Though the model predictions of temperatures for given conditions is robust, the ability to precisely predict future riparian conditions is not, even in a completely natural system. The intent of the referenced statements is not to caveat the TMDL, but rather to clearly articulate the principle it is based on - water quality is generally correlative with ecological status. If future evaluation of the riparian system identifies greater potential, the load allocations should not impede establishment of improved goals.

(2-22) EPA Comment - Page 80. Surrogate Measure #3. Should include a note that near stream disturbance zone (NSDZ) should not be increased if above the current target. Measures should be put in place to retain current near stream disturbance zone (NSDZ).

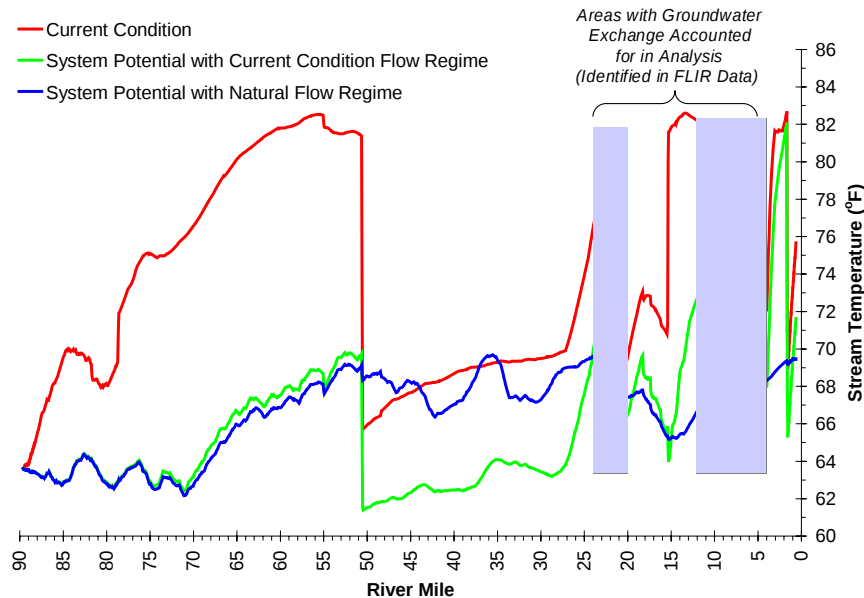
Response - The text of this page has been modified accordingly. *

(2-23) USFS Comment - Page 83. The role of groundwater in stream temperatures is only beginning to be understood and should be, at a minimum, acknowledged. Ongoing work by CTUIR staff (hyporheic exchange as a stream temperature control) should be recognized.

Response - The commendable ongoing work by CTUIR staff is acknowledged on page **141 and 191** of the public comment draft.

Groundwater is directly accounted for in the temperature TMDL analysis. FLIR imagery was evaluated for locations of sources and sinks of groundwater in the Umatilla Basin. FLIR imagery is an ideal technology for locating sources of groundwater and evaluating its impact on stream temperatures. Groundwater was directly added into the modeling analysis at locations which FLIR imagery and FLIR temperature profiles indicated ground water sources. As can be seen from the figure below, groundwater inflow has dramatic effects on the lower Umatilla River temperature regime.

Umatilla River Temperatures (4 PM August 10, 1998) and areas with observed groundwater



(2-24) NWEA Comment - Section 2.1.2.3. The TMDL concludes that it is "not feasible at the sub-basin scale to predict the reduction in the amount of erosion necessary to quantitatively improve the streambed grain-size distribution." If this is a phased TMDL, the Department should make clear what data are required, when they will be collected, and when it intends to revise the TMDL.

Response - This is not a phased TMDL. Improvements in response to the temperature and sediment TMDLs and the habitat and substrate section should optimize habitat conditions such as substrate composition. EPA has acknowledged that parameters such as habitat and substrate are not "allocable."

(2-25) NWEA Comment - Section 2.1.2.5. We urge the Department to make it clear that upland reduction beyond riparian buffers is needed.

Response - The sediment/turbidity TMDL provides upland erosion reduction targets as load allocations. These are clearly identified in Section 2.1.2.5.1.

(2-26) NWEA Comment - Section 2.1.2.5. The failure to assign a load allocation to mass wasting runs counter to the statutory requirement of a margin of safety.

Response - Mass Wasting was evaluated, both by DEQ and CTUIR. As a relatively subsidiary source of sediment, it is not considered necessary to express as an additional load allocation. However, the TMDL text does encourage managers to address it as appropriate (page 112, public comment draft). Margins of safety are discussed in the response to comment #G-5.

(2-27) EPA Comment - Page 92, Paragraph 2, Last Sentence. Strike Table 22. Only Table 21 applies.

Response - Table 22 and Figure 46 describe the sediment (substrate) listings in the basin and are considered relevant here. As stated in the last paragraph of Section 2.1.2.3, the turbidity-based sediment TMDL supports improvement to the streambed as well, and these listings are referenced in Section 2.2 - Habitat and Substrate, additionally

clarifying the distinction between substrate and water column impairment. Note also the introductory text of Section 2.1.2: "This TMDL is designed to implement the turbidity water quality standard by explicitly targeting turbidity and the sedimentation standard by reducing the amount of suspended material available for settling." It is also clearly stated that the numeric endpoint of the sediment TMDL is turbidity (Section 2.1.2.1. and 2.1.2.1.4.).

(2-28) EPA Comment - Page 92, Section 2.1.2.5.1. Strike *summarize* and replace with *presents*.

Response - The text has been modified as suggested. *

(2-29) ODA Comment - Page 93-94, Figure 47. Are in-channel sediment sources lumped with stream bank sources, or does the Department have data indicating that there is insignificant in-channel storage of sediment in the Umatilla River system? This should be clarified.

Response - This has been clarified in the revised document, Section 2.1.5. * The Department does not know of data quantifying in-channel storage.

(2-30) NWEA Comment - Section 2.1.6.1. The 25% eroding stream bank goal does not include an margin of safety, conservatism and does not appear to be based on site potential limitations.

Response - The 25% stream bank goal is based on regression of Total Suspended Solids (TSS) against % actively eroding stream bank and best professional judgement regarding system potential. Refer to the response to #G-5 for further discussion of margins of safety.

(2-31) NWEA Comment - Section 2.1.6.2. Upland erosion implementation measures should be identified. Management surrogates are needed.

Response - The Department agrees that implementation measures should be further specified in fulfillment of the WQMP, or in revisions, e.g., the SB1010 plan. However, the plan is considered sufficient given the information and planning available within the assigned timeframe for preparation of this document.

(2-32) NWEA Comment - Section 2.1.6.4. The text of this section should be made explicit in the temperature TMDL surrogates, e.g., pool frequency, increased space for sinuosity/stability, floodplain reconnection and increased upland groundcover.

Response - The goals needed to attain water quality standards are identified in the TMDL. In order to achieve the channel narrowing surrogates of the temperature TMDL, improved stream hydraulics, substrate/bank materials and vegetation will typically be essential. Stream stability, large wood and increased sinuosity are implicit in the temperature and sediment TMDLs. As these attributes develop, habitat features will form through more natural stream function. We acknowledge that floodplain restoration is also beneficial. Increased upland groundcover or related measures are implicit in the upland erosion reduction sediment load allocations.

(2-33) NEDC Comment - The Department appears to be relying on the temperature-related improvements to decrease sediment loads. There are steps that decrease sediment loads that take less time than riparian vegetation, such as grazing controls, which should be accounted for.

Response - The Department recognizes that the implementation targets and methods overlap, e.g., stable bank targets for temperature should be similar to those for sediment, and methods such as riparian vegetation restoration and grazing management both lead to this mutual goal. The Department expects that implementation be initiated as soon as feasible. This is manifest in the language of Section 1.3.6.

(2-34) NWEA and NEDC Comment - Section 2.1.2.7. The margin of safety for sediment is inadequate. The argument that large upland reduction load allocations will be challenging is not a basis for minimizing a margin of safety. Why aren't more stringent controls identified? Also, Best Professional Judgement is not at all related to margins of safety. The Department should incorporate an explicit margin of safety.

Response - Refer to response to comment #G-5.

(2-35) NWEA Comment - Section 2.1.2.7. The Meacham watershed is given a zero reduction load allocation for sediment. Yet the Upper Meacham Creek is assessed as having two "highly unstable" areas. It is home to Bull trout. Yet there appears to be no requirement in the TMDL to protect the watershed.

Response - Less than one percent of the total suspended solids data from the mouth of Meacham Creek exceeded the 30 NTU target, and no data series exceeded the 48-hour allowance built into the target. While this and design storm modeling reinforce to form the basis for not assigning reduction in the water column-based sediment TMDL, there are numerous goals in Chapter Two to protect the watershed: temperature surrogate #2, 4, and 5 allocate channel narrowing, increased shade and increased flow. Related goals for habitat and substrate (Section 2.2.1): >80% of fine sediment should be larger than 0.84mm in diameter, actively eroding stream banks should comprise less than 20-30 percent of stream length, sinuosity, entrenchment ratio and bankfull width to depth ratios and pool frequency.

(2-36) USFS Comment - Page 111. Recognize lag in sediment transport, sediment deposited in floodplains and channel banks. Reference source of Figure 57 (Reid and Dunne, 1996).

Response - The revised text has been modified in accordance with this recommendation (Section 2.1.2.5.3 *Model Calibration, Assumptions and Limitations*). *

(2-37) EPA Comment - Page 114, Section 2.1.2.9. Wasteload allocation should be set no higher than the current limit, thereby applying the anti-backsliding requirement.

Response - Wasteload allocations by definition target water quality standards numeric criteria or other appropriate endpoints designed to achieve the standard. The anti-backsliding requirement will be implemented through the permitting process, which may or may not allow less stringent effluent limitations.

(2-38) NWEA Comment - Section 2.1.2.9.2. We reject the statement that "any limitations on beneficial flow is generally not advisable."

Response - The phrase has been modified to "limitations on beneficial flow can be detrimental" in the revised text. *

(2-39) USFS Comment - Include references to Bunte and McDonald, 1998 and Reid and Dunne, 1996.

Response - These references have been included in the revised text. *

(2-40) NWEA Comment - Section 2.1.3.2. This section should address the degree of deviation.

Response - The degree of deviation is apparent in the graphs of current condition, temperature v. river mile, e.g., Figure 41; and through review of the 303(d) list which identifies the appropriate criteria and the data values of exceedance.

(2-40) NWEA Comment - Section 2.1.3.3.1. Phosphorus. The TMDL should identify nutrient sources such as animal feedlots and must require reduction in nutrient loads from other sources. The TMDL should address the issue of whether the Umatilla is contributing nutrient loads to the Columbia River that contribute to pH violations in that river.

Response - Through pH modeling conducted by DEQ and reviewed by EPA, it has been concluded that phosphorus is not a limiting factor with regard to algae growth and the associated high pH. Feedlots are discussed in Section 2.1.4 (nitrate TMDL).

In the event that Columbia River TMDL development requires tributary reductions in phosphorus, the Umatilla TMDL may be re-evaluated. Note the Columbia River is not currently listed for phosphorus or pH in the receiving reach.

(2-41) NEDC Comment - This TMDL purports to address pH concerns solely through reduction in stream temperatures. The time frame for achievement of temperature reductions is too long to have any immediate impacts on algal growth or pH in the Basin. There is no mention of point source nutrient discharges. These additional sources of pH affecting nutrients must be considered. Background levels should be discussed.

Response - There are no point sources of nutrients upstream of the first site where Umatilla River pH violations have been observed. Figures 62 and 63 in the public comment draft TMDL illustrates that the observed "background" soluble reactive (ortho) phosphorus and total inorganic nitrogen in the North and South Forks of the Umatilla River are above concentrations that would be considered limiting.

The Umatilla Basin TMDL Technical Committee examined the issue of nonpoint sources of nutrients and found that phosphorus is rarely applied as a crop nutrient throughout the Umatilla Basin above Pendleton because there is a sufficient geologic source. The USFS has indicated that nitrogen fertilizer generally has not been applied in the Umatilla National Forest.

The Department has found through empirical evidence and modeling that reducing anthropogenic increases in instream temperature would reduce periphyton growth and pH. The rate of periphyton growth is limited by the availability of light, nutrients and water temperature. In a situation where the available light for periphyton growth is at an optimum level and nutrients are plentiful, then the growth of periphyton will be dependent on the temperature effect (Thomann and Mueller, 1987, Principles of Surface Water Quality Modeling and Control).

(2-42) NWEA Comment - Section 2.1.3.6. The TMDL is incomplete. Modeling should be conducted for all water quality limited watersheds, including Butter Creek and McKay Creek.

Response - Insufficient data precluded modeling in these areas. The Department considers the approach sufficient. The EPA agreed to the extrapolation of conclusions from elsewhere in the Basin as the optimal approach, given the physiographic similarity and the lack of information available. Clearly the temperature TMDL applies, and clearly its implementation will mitigate wide diurnal pH swings.

(2-43) NWEA & NEDC Comment - Section 2.1.3.7. The margins of safety are not quantified in any aspect related to the uncertainty inherent in the TMDL and they do not address the stated lack of conservatism in the TMDL analysis. Groundwater inflow could actually make the pH problem worse if the water contained certain ions.

Response - In the Umatilla Basin the geology is such that groundwater alkalinity may buffer pH. Groundwater is not considered a likely source of human-induced pH modification, and the effect of groundwater cooling on algae production is expected to overwhelm any groundwater chemical influences to pH. DEQ believes that the multi-faceted implicit margin of safety stated in the referenced section is sufficient, particularly when considering the related margins of safety implicit in the implementing temperature TMDL.

(2-44) NEDC Comment - Nutrients in general. Change in land-use patterns and subsequent impacts on nutrients should be assessed in the TMDL. Background levels should be identified.

Response - Background levels have been identified and are discussed in various sections of the document. A more detailed discussion is available, as referenced, in the *Umatilla River Basin Data Review* (DEQ, 1998 Draft).

Further assessment of relationships between land use patterns and nutrient loading/fate would be beneficial and is recommended as the TMDL is implemented. The document discusses existing sources in each TMDL section of Chapter Two.

(2-45) ODA Comment - Page 153. The recharge area for Athena Springs may be outside of the Umatilla Basin; hence a Umatilla Basin load allocation including this area may be inappropriate. The Department should be cognizant of the fact that reducing nitrate loads from springs will take a long time, depending on groundwater flow rates. The wasteload allocation for nitrates is problematic for agriculture because of the contribution from Athena Springs and Spring Hollow - these discharges alone could exceed the Wildhorse Creek allocation for agriculture, and the pollutant source is unknown.

Response - The Athena Springs watershed is inside the Umatilla Basin. Area geology is such that there is little reason to suspect contributions to the shallow aquifer from an extra-basinal source.

The Department is cognizant that reducing nitrate load from springs will take a long time.

Note the load allocation assigned to agriculture is, by definition, for nonpoint sources - it is not a wasteload allocation, which are applicable to permittable point sources.

The nitrate load allocations are for the Wildhorse, Spring Hollow and Sand Hollow Creeks. Athena Springs is not assigned a separate allocation and therefore should be addressed through the Wildhorse Creek load allocation. These four waters are in locations vastly dominated by agricultural land use, with no other probable source. The indicated approach is for the responsible entities to address sources of pollution contributing to waterbodies with load allocations, from both surface and subsurface sources.

(2-46) NWEA Comment - Section 2.1.4.3. The TMDL should include a load allocation (LA) for urban sources. No LA is the equivalent of a LA of zero because the loading capacity is the sum of the allocations. Further, the discussion of agricultural sources is inadequate. Livestock feeding operations should be identified and addressed immediately. The additional information should have been obtained, and having not, this should be considered a phased TMDL and should include information on what data is needed, who will gather data, when the Department will complete the second phase of analysis. Agricultural sources should be subdivided rather than lumped.

Response - This is not a phased TMDL. Sources other than agriculture do not appear significant. The reader is referred to the screening calculations on page 148, comparing the maximum potential load from urban (14-31 pounds per day) to the minimum loading potential from crop growing (3,000 pounds per day). Also note that upstream background (0.43 mg/l nitrate+nitrite-N) is less than the variance of the much higher concentrations found in solely-agricultural streams (Table 37). Rather than characterizing all sources, the department has chosen to assign allocations where significant sources are documentable. It should be recognized that urban density in the Wildhorse Creek watershed is extremely low. Under this approach, urban sources essentially have a zero allocation and should maintain an insignificant level of nitrate contribution.

During TMDL development, insufficient information was available to subdivide agricultural sources. The Department views Oregon Department of Agriculture (ODA) as primarily responsible to further define sources within the broad category of agriculture.

(2-47) NWEA Comment - Section 2.1.4.6. The TMDL should state whether the load and wasteload allocations made in Table 39 will protect groundwater flowing into streams.

Response - The Umatilla Basin TMDLs address 303(d) listed surface waters and surface waters that contribute to these impairments. Groundwater is a sink and vector for nutrients that enter streams of the Wildhorse Creek watershed. Note that this is addressed on page 149 of the public comment draft - the State groundwater action level of 7.0 mg/l nitrate-nitrogen is recommended as a groundwater target.

(2-48) EPA Comment - The ammonia TMDL fails to identify a load capacity, load allocation(s) and wasteload allocation. The current TMDL for ammonia only identifies an instream target of 0.12 mg/l on which a load-based loading capacity should be based. The TMDL should calculate load capacity, load allocation(s) and wasteload allocation. The ammonia TMDL should also include a table summarizing the loading capacity, load allocation and wasteload allocation for ammonia. (See Tualatin River TMDL, TMDL Number 22M-01-004, September 1988)

Response - The Department agrees. The Loading capacity have been modified with variable criteria, based on the temperature and pH dependency of toxicity.* The Department has developed a set of waste load allocation tables to better describe the waste load allocations in mass load terms.

(2-49) NWEA Comment - Section 2.1.5.8. The margin of safety fails to address the effects of multiple pollutants on uses or the problem that the margin of safety is virtually nonexistent during critical times. The margin of safety is also based on the unwarranted belief that the temperature TMDL will be implemented.

Response - Management measures are already being undertaken in the Umatilla Basin to implement the temperature TMDL. The lower Umatilla River temperature is expected to decrease over time as a result of TMDL implementation, which should produce the effect of reducing pH, and providing an additional margin of safety for the ammonia TMDL.

(2-50) NEDC Comment - Bacteria. The model considers Horton-type overland flow and should consider as well Dunne-type flow which can be important with regard to deeply incised channels and leaky septic systems and animal waste. Furthermore, it is not apparent that the model has been properly adjusted for ultraviolet radiation, temperature or overland decay. Potentially elevated anthropogenic groundwater concentrations must be considered.

Response - Overland decay was included in the bacteria TMDL model using kinematic wave theory. Dunne-type flow, ultraviolet radiation and temperature could have been included in the model had additional data been available for calibration. It is scientifically suspect and would bias the model to add terms for which little or no data exist. We are not aware of existing data to model groundwater impacts. Even if limited groundwater data were available, it would have been problematic to extrapolate sparse data over a very large area.

(2-51) EPA and NEDC Comment - The bacteria TMDL is developed using Oregon's instantaneous *E. coli* criteria of 406 organisms/100 ml as the basis for the loading capacity. This single sample standard was used because the load allocations are based on a daily storm event. Although the TMDL protects for worst case conditions, how does the TMDL protect for non-storm related conditions. The TMDL should incorporate language that indicates that during non-storm related conditions; Oregon *E. coli* 30 day-log mean criteria must be met. The model assumes that the 126 *E. coli* over 30-days standard will result in achievement of the instantaneous standard - the validity of this assumption must be explained.

Response - The assumption that the 126 *E. coli* criteria will be achieved is based on the determination of the bacteria load allocations using "worst case" precipitation. Management practices implemented to achieve the 406 daily maximum *E. coli* criteria during intensive storm events, which don't usually last for more than a few days in the Umatilla Basin, should result in the 126 monthly log mean *E. coli* criteria also being achieved.

(2-52) NWEA Comment - Section 2.1.6.3.1. The bacteria TMDL should identify Confined Animal Feeding Operations (CAFOs) in the Basin.

Response - Refer to the response to general statements #F, #G and #H and the response to comment #2-46.

(2-53) NWEA Comment - Section 2.1.6.9. The extremely brief discussion of agricultural BMPs is insufficient. The issue is how preventing animal wastes from reaching streams will be accomplished.

Response - Refer to the response to general statements #F, #G and #H and the response to comment #2-46.

(2-54) NWEA Comment - Section 2.2.1. The section on habitat and substrate should set waterbody-specific goals for things like: pool/riffle ratios, large woody debris, overhanging cover, undercut banks, etc. This section references future data collection and development of sampling design. Clear intention to address these data gaps should be stated. The choice of a 30 % eroding stream bank goal in light of the PACFISH 20 % and the TSS-derived target of 24% is contrary to the margin of safety requirement.

Response - Refer to the response to general statements #F, #G and #H and the response to comment #2-32. Note the stated goal in Section 2.2.1 is 20-30%, acknowledging natural variability. Note also that future data collection and sample design is called for in Section 3.5.4, the Long Term Monitoring Plan.

(2-55) ODA Question - Page 182. Does the Department have reliable data on the current percent distribution of actively eroding stream banks? This data is needed to help determine what level of effort is needed to achieve a stream bank erosion rate of 20-30%.

Response - The USFS, CTUIR and ODFW have compiled data for a number of streams within the Basin, using habitat surveys such as Moore et al., 1993 (*Method for Stream Habitat Surveys*, ODFW).

Comment & Response - Chapter Three (Water Quality Management Plan)

(3-1) EPA Comment -

Inclusion of an implementation plan as part of a TMDL is valuable and progressive. After all, the purpose of Section 303(d) of the Clean Water Act is restoration of waterbodies not meeting water quality standards. Listing and analysis are preliminary steps. The implementation plan is the key to getting measures on the ground where needed in order to meet specific targets and goals laid out in the TMDL. We are pleased that development of WQMPs is an integral part of Oregon's TMDL process.

We recognize that while the Water Quality Management Plan is being submitted by the Department as part of the TMDL, the Plan was developed by groups and agencies who have responsibility for the various components of the Plan (designated management agencies). Therefore EPA's comments on this Plan are directed toward the applicable designated management agencies.

In the Oregon Plan for Salmon and Watersheds, communities and government agencies at all levels have made commitments to conserve and restore crucial elements of natural systems that support fish, wildlife and people. This Water Quality Management Plan includes a number of actions which are fruition of commitments made in the Oregon Plan.

The Umatilla Basin TMDL is a scientifically sound analysis of excellent data, establishing a connection between landscape condition and water quality, and translating loads into understandable and achievable surrogate targets such as site potential effective shade, and stream morphology aspects, such as width-to-depth ratios and sinuosity. As such, the TMDL is the primary mechanism to use in order to ultimately meet water quality standards. It is an excellent tool for improving overall watershed health. It is the tool that should provide the basis for this Water Quality Management Plan. We are delighted to see that many of the work groups took this to heart as they developed action plans.

The work groups, committees, agencies and tribes are to be congratulated for their cooperative work on this plan which has good technical and practical merits. The language of the plan makes it clear that the multiple groups involved in this endeavor respect each other and care about the land and water resources. We recognize the complex and controversial nature of river basin assessment and planning, particularly when it comes to the point of making commitments to take actions across the landscape for protection and restoration of water quality and related environmental goals.

This Water Quality Management Plan is very well thought out and thorough. It is particularly strong where it is closely tied to the TMDL load allocations and where implementation actions are spelled out in detail along with cost estimates, schedules and monitoring. It is less strong where actions are broad and vague.

Response – The Department acknowledges this comment. No response required.

(3-2) CTUIR Comment - The water quality management plans do not prescribe specific actions, geographic priorities or strategies to implement best management practices or restoration actions. Such plans should be geographically specific and should provide much greater detail about priority areas, priority actions, BMPs, timeframes and the cost of implementation.

Response - Refer to general statements #F, #G and #H.

(3-3) EPA Comment - Appreciation is expressed for inclusion of the management plans as part of the TMDL. The iterative nature of TMDLs, ongoing monitoring, promotion of natural stream and floodplain function, acknowledgement of groundwater connection, are strongly supported.

Response – The Department acknowledges this comment. No response required.

(3-4) EPA Comment - It is recommended and emphasized that the WQMP should be applied to small and intermittent streams as well as perennial streams.

Response - The Department generally agrees, as stated in Section 2.1.2.6.3 *Delineating Upland and Streambank Load Allocations*. The sediment load allocations apply throughout specified major watersheds. The Department also recognizes that improvements that reduce intermittent stream sediment loads should support channel evolution consistent with temperature reduction.

(3-5) NEDC Comment - The WQMP has little force or certainty. The WQMP must be backed by the authority of implementation. The WQMP should establish more clearly what regulatory mechanisms will be used to ensure that appropriate control actions are taken and must include "adequate authority for intergovernmental cooperation." CWA §303(e)(3)(E) The TMDL and the associated WQMP must establish the roles of the various participating agencies to ensure sufficient non-point source pollution controls to meet the requirements of the TMDL and it must spell out the details necessary to achieve that end.

Response - The document in Section 3.5.6 clearly lays out the authorities for implementation of the wasteload and load allocations. In addition, the Department retains authority to ensure that Water Quality Standards are being met and allocations are being achieved. The Department through various mechanisms will work with regulatory agencies and stakeholders to implement the load and wasteload allocations in the TMDL. That, too, is clearly laid out in Section 3.5.6.

(3-6) NWEA Comment - The WQMP virtually ignores the TMDL temperature surrogates.

Response - The Department agrees that through time the WQMP or associated documentation should more explicitly address the surrogates. For example, the urban/industrial schedule of Section 3.3.1.3 calls for assessment and development of rules, plans, policies, etc., that implement nonpoint source pollution reduction. The agricultural plan is up for review in 9/99 and should include measures addressing bank stability and shade, as it addresses the newly issued TMDL. Forest practices are currently being evaluated for TMDL compliance in Oregon. Each core management chapter of Section 3.3 explicitly states that load allocations essential targets.

(3-7) NWEA Comment - The single biggest failure of the document is that it does not clearly set out how existing programs will be modified. Implementation should have greater stringency of controls to enhance the rate of improvement, e.g., if farmers under the SB1010 plan are allowed to continue to plant within buffers and grazers are allowed to continue to rotate grazing in and around streams, the initiation of implementation could be long deferred.

Response - The Department disagrees. The document does discuss in some detail how existing programs will be modified to reflect load and wasteload allocations in the TMDL. In Section 3-3, each land use sector is discussed and mechanisms for changing existing programs as a result of the TMDL are presented.

(3-8) NEDC Comment - Page 187. The use of the Department's guidance document cited on page 187 for developing TMDLs is not a complete or widely accepted method for developing a WQMP. The EPA has made it clear that the document is flawed in some of its assumptions and that a WQMP should never be used in place of a TMDL and vice versa. DEQ must revise the WQMP to reflect compliance with EPA's requirements for WQMP, not a flawed, misleading document.

Response - The commentor seems to misunderstand the use of the referenced guidance document. It is in fact, used as a foundation for the development of the WQMP not the TMDL. All the necessary elements of a TMDL and WQMP are included in the document.

(3-9) EPA Comment - Section 3.3.1. A new document that may be of interest to the Urban/Industrial Workgroup is a draft model water quality ordinance, developed through a 319 grant to DLCD. Also an existing ordinance from Lacey, WA that makes it easier for folks to design and build low impact structures, facilities, and developments and to reduce impervious surface, is attached (Attachment 2 of this response).

Response - The Department appreciates this input and will make it available to Basin municipalities, as they evaluate existing ordinances (refer to response to comment #3-6). Note that website references to other model ordinances are provided as well, in the public draft WQMP (page 200).

(3-10) NWEA Comment - Municipal governments in the Basin should be encouraged to identify old landfills and hazardous waste dumpsites that may contribute toxic contaminants to the area streams.

Response - The Department agrees. However, note that the Umatilla TMDLs address the Basin's 303(d) listed pollutants, which are generally not toxic contaminants. The exceptions are nitrate and ammonia, which have much more probable sources in the Basin than landfills.

(3-11) EPA Comment - Page 196. Will there also be a focussed effort to protect high quality areas within and near the Urban Growth Boundaries?

Response - Generally in the Basin urban areas water quality does not meet temperature water quality standard criteria and sediment and turbidity endpoints, and should be protected throughout via implementation of the appropriate load allocations. This is further addressed through the guidelines for new development, habitat improvement and city maintenance practices of the Urban text attachment E (Section 3.3.1).

(3-12) EPA Comment - Page 198 - Good schedule and allocation of responsibilities, if there is assurance of implementation. Of particular concern is "Implementation and effectiveness of BMPs will be monitored and evaluated as resources allow." Monitoring and evaluation are crucial to success - the plan would be stronger if resources were identified and committed immediately or within a specific, short time frame.

Response - The Department agrees that this would be optimal. Some resources are identified in the long term monitoring plan, and some have yet to be determined. Refer to response to general comments #F, #G and #H.

(3-13) EPA Comment - Page 200. Consider adding State Revolving Fund loans to 'funding' section. Also regarding funding, consider a WQMP implementation project that would be written for a number of actions in the entire plan, to be taken by numerous responsible parties. The overall project could be submitted to a number of sources for funding and could be administered through one of the organizations in the basin.

Response - The 'State Revolving Fund loans' has been added to the funding section. The Department agrees that the large-scale project approach has merit and will refer this to the Watershed Council and other Basin managers.

(3-14) ODA Comment - Page 208. It is recommended that the Urban/Industrial yard maintenance BMP section include a statement regarding the timing of fertilizer application. Fertilizers should not be applied during times when plants do not use nutrients, unless they are applied in a form which is highly stable and immobile until needed by the target plants. In the Umatilla area, this time period is approximately late October through early March.

Response - This item has been added to the indicated list: "Fertilizers should not be applied during times when plants do not use nutrients, unless they are applied in a form which is highly stable and immobile until needed by the target plants." *

(3-15) EPA Comment - Page 219. Habitat improvement - good. Also consider connected network of good riparian areas and the importance of the cumulative effect of small streams.

Response - The temperature and streambank sediment load allocations provide for this request. Various managers in the Basin have expressed recognition of the importance of habitat frequency/connectivity and cumulative effects of small streams.

(3-16) EPA Comment - Page 229. The Agricultural Water Quality Management Area Plan for the Umatilla River Basin was written and rules adopted before this TMDL was submitted. EPA commented on the AWQMAP and rules during the public comment period (Attachment 1 in this response). With the TMDL now in hand, EPA believes that the existing 1010 plan should be revised to better align with the TMDL load allocations. We support the statement on page 219 where it is specifically requested that ODA in consultation with the Department evaluate the Umatilla Basin 1010 plan within two years of the publication date of the TMDL. We would like to see a commitment from ODA and DEQ to conduct the evaluation and set specific target dates in this WQMP if possible. I see it is in the schedule at the end. It would be good to mention the dates in this section and refer to the table.

Response - The EPA's comments are referred to the Oregon Department of Agriculture (ODA). As stated, the Department intends to work with ODA to update the plan. Section 3.3.2 has been modified to refer to the referenced schedule. *

(3-17) NWEA Comment - Page 229. The description of the plan (page 229 in WQMP) is wholly misleading. It states there are "clear enforcement provisions to be utilized" when in fact, there is nothing clear about the plan including its expectations of farmers and how and when enforcement will be used. This section of the WQMP should be removed as misleading.

Response - The sentence has been modified as follows: "There are Oregon Statute provides clear enforcement provisions to be utilized..." *

(3-18) CTUIR Comment -Section 3.3.3. The Oregon Forest Practice Act is characterized as being adequate to achieve compliance with both the TMDL and to move the basin to meet water quality standards. This conclusion is believed unsupportable. Existing standards in the Act allow for continued vegetation removal within streamside areas, and thus prescribe additional reductions in shade. Additionally, sediment protection measures are inadequate and "legacy" impacts are completely un-addressed.

Response - This section recommends that the temperature TMDL and habitat concerns, with regard to state and private forestry, be addressed through a combined approach: the Oregon Forest Practices Act, modifications to the act as provided in the DEQ-ODF Memorandum of Agreement, and voluntary and incentive programs. This section acknowledges that "legacy issues that have impaired water quality may never be addressed through existing regulations" (Section 3.3.3.4.1.2) and recommends voluntary and incentive programs to address this gap. Non-enforceable measures are appropriate if there is reasonable assurance of implementation, which may depend in part on the establishment of a track record of responsiveness within the Basin. The Department will review this issue and the outcome of the sufficiency analysis, and if necessary, will petition the Board of Forestry for rule changes, which can be basin-specific.

(3-19) EPA Comment - Section 3.3.3. Keeping in mind the strategy to prevent heating in as many stream systems as possible throughout the basin and the fact the headwaters of these streams are in the forested areas of the basin, the first challenge is to those who manage forests to do it in ways that prevent heating and erosion, and protect, maintain and restore natural landscape function. Standards and guidelines for forest management on federal, state and private lands are spelled out in rules applicable to ownership. The Forestry Workgroup and other basin entities are encouraged to evaluate whether the applicable standards and guidelines are consistent with the specific load allocations developed for the Umatilla Basin on a more site-specific basis. It looks like such a process is envisioned (page 225), but it is not clear whether the analysis of situations in the Umatilla will feed into statewide recommendations or whether the analyses can result in forest management suited to specifics in the Umatilla Basin. For example, will the riparian provisions achieve site potential effective shade? Will small and intermittent streams be shaded enough to prevent heating? Are streams utilizing their floodplains, particularly where alluvial hyporheic zones are important for temperature moderation and/or biological pathways? And are there plans to address legacy conditions on the landscape that exacerbate erosion, mass wasting, sediment delivery, and flashy hydrology? We support the recommendation to develop a Umatilla Basin Forestry Incentive Program (page 226) which would help address some of site specific and legacy issues.

We continue to have concerns regarding the broad management schemes of USFS Guidelines and the FPA. Comments we offered on the Grande Ronde WQMP also have applicability here:

“Federal Lands

The standards and guidelines in the Wallowa-Whitman National Forest Plan as amended by PACFISH and as will be amended by EISs that incorporate the NMFS Biological Opinion form a solid foundation for implementation of this TMDL on federal forest land. Individual watershed analyses and EISs should incorporate appropriate information from this TMDL. However, there are impacts from grazing and roads that may not be sufficiently addressed through the above mechanisms.

Non-Federal Lands

EPA believes that the TMDL and supporting analysis demonstrate that certain provisions of the existing OFPA measures do not meet the TMDL load allocations. For example, riparian buffers are not required under the current OFPA on small non-fish bearing streams. The removal of trees within the riparian zone results in increased solar loading and higher ambient air temperatures around streams. These factors in conjunction with the loss of in-stream structure and resultant decreased pool depth and widened streams can result in further elevated water temperatures. EPA believes that the level of disconnect between other OFPA provisions and the TMDL load allocations is likely higher for small and medium streams than it is for large streams given the wider buffers and higher basal area retention requirements for large streams.

We recognize that the Forest Practices Advisory Committee process currently underway is considering whether changes to the OFPA are necessary to address salmonid recovery. Some of the changes to the OFPA currently under consideration should help better align Oregon's forest practices with the TMDL load allocations. We are also aware that ODF and DEQ are undertaking a sufficiency analysis for specific water quality parameters. Given EPA's role in approving state water quality standards, we request an opportunity to participate in the proposed peer review process prior to final release. Based on the TMDL, sufficiency analysis, and other information we encourage ODF and DEQ to use the basin rule change provisions of the OFPA as necessary to ensure that state forest practices achieve the TMDL load allocations.”

Response - The Department appreciates the comments and will make sure implementation of all provisions in our agreement with the Oregon Department of Forestry are implemented. Also refer to the response to question 3-18.

(3-20) NWEA Comment - Section 3.3.3. Neither the WQMP nor the TMDL address the need for forestry practices that protect Bull Trout present in forested lands of the Umatilla Basin.

Response - The plan is designed, as stated in the introductory sections, to address temperature, habitat, sediment and the associated TMDLs and management goals. These are the water quality parameters that are listed in the Basin 303(d) list and are the agreed upon issues in the context of the Basin fish managers activities (CTUIR, USFS, ODFW) and the habitat conservation strategy for Bull Trout that is currently in preparation by ODFW.

(3-21) NWEA Comment - Section 3.3.3.2. This discussion of Forestry BMPs should establish clearly that TMDLs are the basis for setting the practices necessary to meet the Clean Water Act, not some pre-existing and inadequate BMPs.

Response - The Department agrees that the goal of management must be water quality standard attainment, as clearly stated in the document. If existing BMPs are not sufficient to meet water quality standards as described in the TMDL then those practices must be rigorously evaluated and modified as feasible. The remainder of Section 3.3.3 discusses the relationship of the TMDL to existing BMPs for different parameters and how inadequacies of BMPs will be addressed. The Oregon forest practice rules are currently undergoing review and basin-specific practices may be necessary, pursuant to the DEQ-ODF memorandum of agreement included in Section 3.3.3.

(3-22) NWEA Comment - Section 3.3.3.4.1.1. General Management Measures. The discussion of legacy issues points to the fact that the TMDL does not include sufficient information upon which to address these critical issues. The TMDL and/or the WQMP should address where legacy issues are located, what is needed to fix them, who will be responsible for fixing and monitoring them, and when the issue will be re-visited to assure that monitoring demonstrates compliance.

Response - The Department agrees that more information is needed and will encourage further identification of legacy impacts and solutions. It is appropriate to develop this information in response to this document. Refer to general statements #F, #G and #H.

(3-23) NWEA Comment - Section 3.3.3.4.2.3. The WQMP discusses restrictions in Riparian Habitat Conservation Areas (RHCAs) but does not establish what percentage of the Umatilla is a RHCA. It would also be useful to note which private forested lands would be RHCAs if they were in the National Forest.

Response - The areas comprising RHCAs are described sufficiently in Section 3.3.3.4.2.4 in the last 6 paragraphs.

(3-24) EPA Comment - Transportation Section.

(a) It is very good to see that this work group is keeping the TMDL allocations and the Stakeholder Committee's goals firmly in mind as options are considered. The description of the impact of the railroad is good along with the recognition that Union Pacific needs to be brought into the process. How will that be accomplished?

Response - As with any designated management agency, the Union Pacific Railroad is addressed by the issuance of this document. The Department will petition Railroad authorities if needed. Discussions with the Union Pacific Railroad Omaha office indicate that evaluation of compliance measures is underway.

(b) It is good to see that the committee will conduct a detailed inventory and identify and prioritize "hot spots" for correction. Is there a target date for completion? Will the group identify high quality natural areas in need of protection as well as areas in need of restoration?

Response - The timeframe identified in Section 3.3.4.2.5 for implementation of solutions is 2000-2005. It is envisioned that restoration design and initiation would take place within this time-frame. Full realization of benefits may take decades and maintenance and improvements may be required through time. Protection and expansion of high quality natural areas is expected to occur through efforts to broaden the area of load allocation attainment.

(c) We also appreciate that while the group is focusing largely on sediment, they are also considering other aspects. Reducing the sediment load will help achieve target width to depth ratios. However, it is not clear whether the envisioned inventory and implementation of practices will include other elements that are aimed directly at achieving the site potential effective shade targets or upland vegetation conditions. Are there riparian areas near roads in high priority places where shade-producing vegetation should be planted or protected? Are there opportunities to reconnect surface and ground water and/or restore flood plain function? Are there opportunities in the valley to design or replace stream crossings so that sinuosity is increased? What about removal of problem roads? What about timing of scraping county ditches?

Response - The inventory is intended to target the load allocations for parameters influenced by transportation corridors, which are described in Section 3.3.4.1.2.1.

(3-25) EPA Comment - Water Quantity Section. The best scenario would be to maximize use of natural watershed storage (such as functional flood plains and wetlands throughout the watershed) to most closely approach natural hydrologic function and maintain in-stream flow to benefit water quality and biota. We acknowledge the complexities in dealing with the water quantity issues and commend the committee for taking these on. We concur that completion of Phase III of the Umatilla Basin Project (UBP) would be extremely beneficial in keeping significant flow in the lower Umatilla River during periods of low flow. We support the recommendations. We also particularly support protection and restoration of wetlands, purchasing or leasing water rights, and improving irrigation systems to conserve water if the saved water would be used to augment in-stream flow. Very good to see the letters of support.

Response – The Department acknowledges this comment. No response required.

(3-26) NWEA Comment - Section 3.4.1.2. At a minimum the WQMP should present numeric information on water flows, instream rights, appropriations, etc.

Response - Instream rights are numerically described in Table 58. Flow data and appropriation information is available through OWRD. The OWRD has committed to make information available as needed in support of, e.g., water right purchase and leasing (Section 3.4.5).

(3-27) NWEA Comment - Section 3.4.1.3. The workgroup states that its main purpose is to provide adequate flows for "all designated beneficial uses." This is a misstatement of the Clean Water Act and the role of the TMDL. In fact, the TMDL is not intended to protect "all" designated beneficial uses, but rather to protect the most sensitive beneficial uses including those uses that may be existing but not designated.

Response - Refer to response to Comment #G-6, #1-3, #1-6. *

(3-28) NWEA Comment - Section 3.4.3.5.1. The WQMP notes that it would be good if wetlands "be maintained in a functional status." The WQMP does not suggest how this will happen, by ordinance, rule, through antidegradation policies, through the TMDL?

Response - Refer to general statement #F, #G and #H.

(3-29) NWEA Comment - Section 3.4.3.5.2. Nowhere in this section on constructed ponds does the WQMP note the benefits to be derived from such construction for the sensitive beneficial uses or the attainment of water quality standards.

Response - This section focuses on defining an improvement. The beneficial uses and the basis for protecting these uses are described in Chapters One and Two.

(3-30) NWEA Comment - Section 3.4.4. Nowhere in this section on reservoir development does the WQMP note the benefits to be derived from such construction for the sensitive beneficial uses or the attainment of water quality standards.

Response - Section 3.4.1.2 states that the purpose of this section is to improve instream flow for all beneficial uses. Specific objectives such as timing of storage and release and quality of water should be related to beneficial uses identification and attainment; prior to the evaluation of large reservoir pros and cons. This is expected to occur in response to the revised document, not within it.

(3-31) NWEA Comment - Section 3.4.5.2. Table 58 is not helpful because it does not relate these instream water rights to available flows, other rights, etc.

Response - The referenced list of instream water rights was included because they are working goals stated in Section 3.4.1.4. Flow statistics are not available for many of the streams. Gage and water right information is readily available on -line or through the OWRD, who can provide further context for specific questions.

(3-32) NWEA Comment - Section 3.4.8.4. This section demonstrates no intent to make progress in conserving water used for agricultural purposes.

Response - This section identifies a framework for progress. Refer to general statements #F, #G, H.

(3-33) NWEA Comment - Section 3.4.9. This section demonstrates no intent to make progress in conserving water used for agricultural purposes.

Response - This section identifies a framework for progress. Refer to general statements #F, #G, H.

(3-34) EPA Comment -General Elements.

3.5.1 Cost Estimates - an outstanding effort to begin the process of defining specific needs which will more quickly lead to project planning and funding requests. We are also pleased to see that monitoring cost estimates are also included.

3.5.2 Areas of emphasis - We support the priority setting scheme laid out in this section and endorse the overarching points. Particularly pleased to see that protection of high quality areas is a priority.

3.5.4. Monitoring plan and schedule of implementation - very good to see both included here. We assume they will be expanded and revised as actions become more detailed.

Response – The Department acknowledges this comment. No response required.

(3-35) NWEA Comment - Section 3.5. This section would be a good place for the Department to explain what value has been added to existing programs by the exercise of preparing this WQMP. The document fails to sufficiently describe specific measures, rendering it virtually useless.

Response - The Department disagrees that the development of the WQMP and its presentation in the document "render it virtually useless". We acknowledge and state that existing practices and management plans likely need to change in order to meet the allocations in the TMDL. Even though the document does not spell out in detail what all of those changes are, it does lay out the mechanism and timeframe for making changes.

(3-36) SWCD Comment - The following text is recommended to be added to the Section 3.5.3 - Public Involvement:

The Umatilla County Soil and Water Conservation District is directed by an elected board of community members. Monthly meetings are held on the second Wednesday of every month and are open to the public. The public is encouraged to attend and participate in the efforts of the Soil and Water Conservation District to implement conservation practices. The District has an ongoing outreach program for the Senate Bill 1010 *Umatilla River Subbasin Agricultural Water Quality Management Area Plan*. The program includes working with landowners for the development of conservation farm plans focusing on improving water quality in the Umatilla River and Walla Walla River basins. The District is the lead sponsor of Envirothon, an educational program providing hands on environmental awareness for 13-18 year olds. Often the District brings landowners and government agencies together to organize watershed restoration projects. Some of the District's partners for restoration, education and outreach include the OSU Extension Service, Farm Service Agency, Natural Resource Conservation Service, Environmental Protection Agency, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Confederated Tribes of the Umatilla Indian Reservation, Department of Environmental Quality, Pheasants Forever, Umatilla Basin Watershed Council, Walla Walla Basin Watershed Council, and the Columbia-Blue Mountain Resource Conservation Development Council. Combined outreach efforts include sponsorship of annual agricultural tours and workshops throughout the Umatilla Basin. The District supports an annual Conservation Farmer Award to recognize a farmer who is striving to improve his/her conservation programs. The Umatilla County Soil and Water Conservation District is dedicated to developing strategies for improving awareness about conservation issues throughout the Umatilla Basin.

Response - This text has been added as recommended. *

(3-37) USFS Comment - Page 243. The expectation that the Watershed Council will take the lead in developing incentive programs for private land will require further commitments from state and appropriate federal entities to ensure these expectations will be met.

Response - The Department agrees, additional funding sources are important.

(3-38) USFS Comment - Page 264. Unified Federal Policy - this policy was final as of October 2000.

Response - This citation has been updated in the revised document. *

(3-39) NWEA Comment - Section 3.1. The last paragraph of this section (page 188) suggests that the WQMP does not or should not address sources of impairment such as CAFOs and lack of instream flow. This is incorrect.

Response - This paragraph reflects the current status. Currently there are no NPDES-permitted CAFOs that discharge to surface waters in the Umatilla Basin. The agricultural plan, or related rules, should be applied to discrete and diffuse sources associated with animal feeding operations. Modification: change "only" to "primarily" in indicated paragraph. Also modify to acknowledge that the plan does address flow: "...addresses primarily nonpoint source pollution, flow impairment and storm water." *

(3-40) NWEA Comment - Section 3.5.6. This section merely rehashes existing institutions and insufficient programs. There is no reasonable assurance of implementation.

Response - The Department disagrees with this generality, though we acknowledge that further development of assurance and implementation programs is important. For further discussion of the Department's implementation policy, refer to Section 1.3.6 (g). Also refer to general statements #F, #G and #H.

*Where responses are astericized, the document has been modified to address the comment.

ATTACHMENT 1

COMMENTS TO:

UMATILLA RIVER SUBBASIN AGRICULTURAL WATER QUALITY MANAGEMENT AREA PLAN

Note: This section documents comments received regarding the agricultural water quality plan for the Umatilla Basin. The plan titled above is not subject to modification during this TMDL public comment period. The Agricultural plan was approved by the Board of Agriculture September 1999, and is subject to periodic review through the SB1010 process. It is recommended that the comments in this attachment be considered during the next periodic review.

NEDC Comments on the Umatilla River Subbasin Agricultural Water Quality Management Area Plan

The WQMP for agriculture is not adequate to achieve the desired results of the TMDL. The scope of agriculture within the basin necessitates the development of a comprehensive plan for dealing with the associated non-point impacts. The existing plan calls for voluntary water quality farm plans and use of best management practices. These measures are not sufficient to insure attainment and there must be a well-defined and appropriate "backstop" mechanism in place to deal with substantial noncompliance. The WQMP does not address these concerns adequately.

NWEA Comments on the Umatilla River Subbasin Agricultural Water Quality Management Area Plan

The lack of any specificity in the implementation by the ODA speaks volumes about the likelihood implementation will take place in a timely fashion, if at all. There should be a schedule for timeframe of attainment.

The description of the plan (page 229 in WQMP) is wholly misleading. It states that are "clear enforcement provisions to be utilized" when in fact, there is nothing clear about the plan including its expectations of farmers and how and when enforcement will be used.

EPA Region 10 Comments on the Umatilla River Subbasin Agricultural Water Quality Management Area Plan

1. We applaud the Local Advisory Committee for undertaking this important task and for their investment of time and effort to put the plan together. It is clear that the Committee has an excellent basic understanding of the watershed and understands and acknowledge the connection between landscape conditions and water quality.

2. Geographic area and physical setting (pages 1 - 3)

Very good discussion which includes natural features, land use, history, agricultural economics, and water use. The discussion puts the ensuing issues and plan in an understandable context. A suggested improvement would be to include more information about landscape dynamics and watershed function (floodplains and wetlands, for instance), particularly regarding hydrology and vegetation and the resultant changes in temperature and habitat.

3. Mission, goals, objectives and scope (pages 3 - 4)

Appropriately, the plan is aimed at achieving water quality standards. The goals and objectives are consistent with the mission. The Committee is commended for having an objective that calls for restoration and enhancement of wetlands and riparian habitat.

4. Water quality issues (pages 5 - 6)

We are pleased to note that the Committee is aware of and engaged in interagency monitoring efforts. There is specific knowledge about condition of stream segments and specific causes of nonpoint source pollution which is being used to guide control efforts. However, we find it surprising that there is no mention of the TMDL being developed for this watershed, nor how this plan will be integrated with it. Will this Agricultural Water Quality Management Area Plan implement measures necessary to achieve water quality standards as laid out in the TMDL? The discussion of administrative roles and responsibilities on pages 15 and 16 show how the TMDL process works when the TMDL precedes the 1010 plan. However, we are left wondering what will happen in this case, where the 1010 plan precedes the TMDL. Will the AWQMAP be revised once the TMDL comes out to acknowledge the agricultural load allocations and make any needed adjustments?

5. Strategies for achieving goals and measures (page 6)

It is clear that the intent is to implement control measures and build cooperation, using both voluntary strategies and regulatory measures as appropriate. It is a sound approach so long as there are enough people interested in the voluntary approach, and regulatory action kicks in when needed. Problems will arise if there are not enough volunteers and/or no complaints where complaints are warranted. Accountability is key. Justification to maintain a status quo that keeps water quality below standards is not acceptable.

It looks as if primary strategies are focused on pollutant reduction in agricultural runoff. We would suggest that stream-side management which benefits temperature and habitat also be featured as a primary strategy focus, since most of the 303(d) listings are for temperature.

6. Prevention and control measures (pages 6 - 10)

The measures are well thought out and articulated. It is understandable that agronomic and economic feasibility should be qualifiers, but they should not be used as license to maintain a status quo that causes degradation. Such qualifiers should be carefully examined, and creative solutions should be sought when such qualifiers would compromise important environmental goals.

Soil erosion and sediment control

It is good to see that the erosion reduction rate is intended for all lands, not just HEL. Using T as a target to reduce erosion is reasonable for a start. An adaptive management process could be used to ascertain progress to achievement of water quality standards. It is less clear that 75% reduction from a baseline condition would hit reasonable targets. It will probably work in most cases except the egregious ones. In any case, it should be used with care.

The second paragraph states that grazing shall be conducted so as to "limit" soil erosion and "minimize" sediment and waste delivery to the stream. And in the next paragraph, road structures shall "limit" contributing sediment, and stream crossings shall be kept to a "minimum." How is it determined what "limit" and "minimize" mean in the context of meeting environmental goals?

Stream-side area management

We are pleased to see a riparian management measure. It does a reasonable job of describing conditions that would limit stream bank erosion, but it does not yet go far enough for temperature or habitat. Stream-side vegetation that remains in place for the long term is important for shade, channel morphology, and habitat complexity. Biologically important native vegetation should be encouraged, particularly immediately adjacent to the stream. Site specific flexibility can be provided within the framework of watershed system dynamics and specific watershed goals.

How will widths of stream-side management areas (10 - 100 feet) be determined? What levels of disturbance are anticipated within these areas? In both the "Stream-side" and "Livestock Management" sections, noxious weeds are addressed – this is a commendable inclusion, but care of chemical application, especially in the stream-side area, must be stressed ... and potentially explained to prevent application to or drift into waters.

Livestock Management

Is there a target for "minimize sediment, nutrient, and bacterial contributions"? Vegetative cover is intended primarily as erosion control, which is good as far as it goes. Vegetative cover and management of stream-side management areas are also important for temperature and habitat.

Irrigation management

Excellent to see that this measure is aimed at efficient irrigation to minimize runoff and conserve water. It is not clear whether conserved water will benefit temperature needs. Is there an effort to increase in-stream water rights?

The first statement of the second paragraph is confusing. On the one hand, it stresses water use efficiency by saying withdrawals shall minimize impacts; but on the other hand, it allows for the continued

inefficiency of present water rights, by saying that this provision is "subject to legal water rights." This should be clarified.

The third paragraph underscores positive benefits of flood irrigation, but this needs further clarification. There are definite positive benefits from natural flooding of floodplain areas, but manipulated flood irrigation may be positive and may be very negative depending on many factors. As it is presently stated, this paragraph is misleading.

The fourth paragraph on push-up dams is good.

Nutrient and farm chemical management

The fourth paragraph on application and storage within the stream-side area is unclear. The Plan's proposed uses of the Stream-side area are unclear, as discussed above. Further, why do chemicals need to be stored at all in the stream-side area? Also in this paragraph, safe storage of chemicals should be required, not merely encouraged.

Resolution of complaints and enforcement

Inspections and enforcement are triggered by complaints. While response to complaints is important, there are more proactive ways to make sure important actions are being taken where needed. Will inspections other than complaint-driven ones be carried out?

EPA Region 10 Comments on Umatilla River Subbasin Administrative Rules (603-095-0300 et seq.)

1. Purpose (603-095-0300)

The purpose states that the plan is being written due to a determination by the EQC to establish TMDLs and allocate a load to agricultural nonpoint sources. It does not say that the intent of the plan is to meet the load targets. It only says that compliance is expected to aid in the achievement of water quality standards. How will 1010 plans align with TMDLs to achieve environmental goals?

2. Prevention and Control Measures (603-095-0340)

These measures are consistent with the AWQMAP. Our comments on the measures in the Plan also apply here.

3. Complaints and investigations (603-095-0380)

Inspections and enforcement are triggered by complaints. While response to complaints is important, there are more proactive ways to make sure important actions are being taken where needed. Will inspections other than complaint-driven ones be carried out?

What are the assurances that the voluntary plans will be implemented? Will implementation be tracked?

NWEA Comments on the Umatilla River Subbasin Agricultural Water Quality Management Area Plan

Appendix A-10

Land Use - Page 5

Given, as the SB 1010 plan states, that 42 percent of the Basin is agricultural land and another 42 percent is rangeland, and that 85 percent of the Basin is privately owned, this plan is key to the success of the Umatilla Basin TMDLs. It falls so grossly short of what is needed as to be laughable, if the subject were not so serious.

Goals and Objectives - Page 8-9

The twin ideas of enforcement and moving quickly are clearly not incorporated into the plan's goals or objectives.

Strategies for Achieving Plan Mission, Goals, and Objectives - page 11

The three sentence paragraph discussing the ODA's philosophy of obtaining compliance is insufficient to overcome its obvious strong disinterest in actually using SB 1010's regulatory provisions. Certainly, the plan's failure to explain how and when enforcement action will be taken is indication enough that ODA never intends to take such action.

Prevention and Control Measures - Page 11

These measures are full of the word "shall" with no accompanying indication that ODA will enforce these requirements. Moreover, the plan has no binding authority, so the absence of proposed rules makes evaluation of this legalistic wording impossible. The soil erosion section omits at least half of the actual numbers due to typographical errors. More important, by adopting vague percentages of erosion reductions, the AWQAP eliminates the benefits to be derived from use of surrogate measures. There is no discussion of how the overall 75 percent goal relates to the TMDL, or how the baseline condition will be established (necessary for both analytical and enforcement reasons). The discussion of stream-side area management does not explicitly call for necessary buffers, as discussed in the TMDL, nor does it conform to the other surrogate measures. Amazingly, the plan states: "*When establishment or reestablishment of crops occurs in the stream-side management area during the growing season (March through October), conservation management systems shall be employed, and seedbed preparation shall be timed so as to minimize exposure to erosive forces. An adequate vegetative buffer or equally effective erosion control practices shall be provided during the winter months (November through March).*" AWQAP at 13. Likewise, "*[g]razing within the stream-side management area shall be done in a manner which does not degrade water quality or negatively impact the stability of streambanks. Id.*" This is simply not possible. Did the writers of this plan read a different TMDL than the Department prepared? How can site potentials be achieved for vegetative cover to provide shading of streams if there is no vegetation? How can stream-side areas continue to be used for crops and still meet the requirements of the TMDL? This demonstrates that the ODA has absolutely no intention of even pretending to meet the

requirements of the TMDL. Similarly, the language concerning push up dams does not address the water quality impacts of construction push up dams (which would suggest their complete elimination in the Umatilla Basin) but rather paper assurances that once they are in place they will not have certain effects. AWQAP at 14. Such practices inherently damage the ability of streams to become stable.

Finally, references to enforcement actions under “Implementation Strategies” and “Enforcement Action” suffer from the same ambiguity as other references to enforcement by ODA making clear that this is not a tool that will be withdrawn from the tool box to attain water quality standards in the Umatilla Basin. There is nothing in the SB 1010 plan to demonstrate monitoring will relate to the surrogate measures and site potentials established in the TMDL. There is no thought given to the stringency of the controls needed to meet the vague and non-binding timeframe goals set out in the WQMP and the AWQAP. There is no monitoring and inspection established for enforcement purposes or even for revision of plans and controls. There is even no discussion of the effects of grazing or row crops on streams.

ATTACHMENT 2

ORDINANCE _____

CITY OF LACEY

AN ORDINANCE OF THE CITY OF LACEY, WASHINGTON, ESTABLISHING
PROVISIONS FOR APPROVAL OF ZERO EFFECTIVE IMPERVIOUS SURFACE PROJECTS, ADDING A
NEW CHAPTER 14.31 TO THE LACEY MUNICIPAL CODE
AND APPROVING A SUMMARY FOR PUBLICATION

WHEREAS, an increasing number of federal, state and local governmental actions are aimed at improving watershed conditions in order to increase water quality, improve hydrologic flows to reduce flooding and erosion and maintain stream flows to support healthy living conditions for human, fish, insect, and animal life; and

WHEREAS, scientific research shows that the amount of impervious land cover in a watershed can produce problems in stream and watershed health, and that the cumulative effects of traditional site, building and road design adds to this degradation over the long term; and

WHEREAS, site design is important to stream protection and standards are desired that result in less impervious surface, more "green" and open space areas, and retention of precipitation on site to the extent reasonably possible; and

WHEREAS, creative site design and construction practices may be available to significantly reduce impervious cover and approach zero drainage discharge from development, but these may not be permitted or are difficult to achieve under existing road, stormwater and development regulations; and

WHEREAS, experience in silvaculture shows that a small percentage of a forest in a watershed can be cleared without impacts to streams and if site development does not exceed that threshold for clearing, downstream impacts might be avoided; and

WHEREAS, the City wishes to foster innovative design and development techniques that will demonstrate that the impact of development on salmon streams can be reduced to an immeasurable amount and that changes can be made to development regulations and building practices that will lead to zero impact on receiving waters as a result of development;

NOW, THEREFORE,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LACEY, WASHINGTON, as follows:

Section 1. There is hereby added to the Lacey Municipal Code a new chapter 14.31 entitled "Zero Effect Drainage Discharge" to read as follows:

ZERO EFFECT DRAINAGE DISCHARGE

Sections:

14.31.010 Goal and Purpose of Chapter 14.31.020 Definitions

14.31.030 Authorized Deviations from Engineering Design and Development Guidelines and Public Works Standards

14.31.040 Official Approval

14.31.050 Evaluation and Monitoring

14.31.010 Goal and Purpose of Chapter. This Chapter is enacted with a goal of retaining the critical functions of a forest including evapotranspiration and infiltration after site development such that near "zero effective impervious surface" is achieved. As part of meeting such goal, this chapter is intended to fulfill the following purposes:

A. Provide those developing land the opportunity to demonstrate zero effective impervious surfaces.

B. Improve the conditions of habitat and ground and surface waters within a watershed with innovative urban residential design and development techniques.

C. Foster broad community acceptance of the use of significantly less impervious surface and greater natural habitat conservation on sites.

D. Provide the opportunity to identify and evaluate potential substantive changes to land use development regulations which support and improve natural functions of watersheds.

14.31.02. Definitions. As used in this chapter, the words hereinafter defined shall have the meaning set forth.

A. "Drainage collection system" means a system for conveying, treating and detaining stormwater runoff swales, ponds, and outfalls.

B. "Forested area" means a treed area which functions, or which over time will be restored to function, as a mature forest

characterized by an undisturbed understory.

C. "Innovative site design" means development techniques for development using creative approaches to site design, habitat and tree retention, significant reduction of impervious surfaces, changes in traditional site features such as roads and structures in favor of natural habitat features which result in zero or near-zero drainage discharge from the site after development.

D. "Zero effective impervious surface" means impervious surface reduction to a small fraction of that resulting from traditional site development techniques such that usual manade drainage collection systems are not necessary.

E. "Zero effective impervious surface project" means those projects characterized by a reduction of total impervious surface to a small fraction of that which would result from traditional development. Such projects will place impervious surfaces in increments such that run off travel distance to a vegetative buffer is minimized and does not exceed a maximum of fifteen feet. Further, the landscaped areas within such projects will be minimized and buffered on the down-slope side by a forested area. A forested area shall comprise at least 60% of the land area upon which the project is located, shall be maintained in perpetuity and shall substitute for a traditional drainage system. It is preferred that the site for such projects be characterized by a predominance of Soils Conservation Service Class C or D soils.

14.31.030 Authorized Deviations From Engineering Design and Development Guidelines and Public Works Standards. In order to accomplish the purposes and goal of this chapter, the site plan review committee may approve or for those projects requiring review and approval by either the hearings examiner or by the City Council, recommend approval of deviations from engineering design and the provisions of the City's Development Guidelines and Public Works Standards in accordance with the requirements set forth in this chapter. Deviations shall be based on the following criteria:

A. The deviations contribute to and are consistent with the zero effective impervious surface goals of this chapter.

B. The proposed development project offers reasonable assurance that near zero effect impervious surface will be achieved and maintained.

C. The deviations do not threaten public health or safety.

D. The deviations are consistent with generally accepted. engineering and design criteria, except as necessary to achieve the purposes set forth in this chapter.

E. The deviations promote one or more of the following:

1. Innovative site or housing design furthering the purposes of the program;
2. Increased on-site stormwater retention using a variety of native vegetation;
3. Retention of at least 60% of natural habitat conditions over the site;
4. Improved on-site water quality beyond that required by current applicable regulations;
5. Retention or re-creation of pre-development and/or natural hydrologic conditions to the maximum extent possible;
6. The reduction of effective impervious surfaces to near zero.

F. The deviations do not allow density greater than what would otherwise be allowed under City regulations then in effect.

The applicant will be required to list and document the justification for each deviation requested. In order for such a project to be approved, it must be demonstrated that the project meets all other requirements of the Lacey Municipal Code except for such specific deviations and that such project has a reasonable assurance of long term success. There shall be submitted in conjunction with each such project, covenants, conditions and restrictions which will be binding upon the property and which require forest retention, no net increases in impervious surface and such other critical features as the City may require.

14.31.040. Official Approval. All projects proposed under the terms of this chapter shall require approval of either a plat or an official site plan approved pursuant to the provisions of this code in recordable form which shall be binding upon the owners of the real property, their heirs and assigns. Such plat or official site plan shall include a specific land clearing and tree retention plan which shall be referenced upon the face of the plat or binding site plan. All development of the land, site design, landscaping, natural drainage features, habitat protection, stormwater design and the design, placement and size of housing or other buildings and any additional site features shall be consistent with the approved plat or site plan. Any changes will require a formal application and amendment of either

the plat or the official adopted site plan pursuant to the provisions of this code.

14.31.050 Evaluation and Monitoring. Each application for approval of a project pursuant to the terms of this chapter shall be accompanied by a proposed monitoring and evaluation process designed to measure the performance of specific elements addressed in the deviations sought for the project. After the approval of a project, the city shall, with such cooperation as may be required of the property owner, document project progress, and in particular, those innovations and code deviations granted as part of such project approval. Written progress evaluations shall be prepared by the staff of the Public Works Department and provided to the Site Plan Review Committee and City Council. An annual report on all such approved projects shall be prepared for the City Council including a summary description and evaluation of each selected project and any recommendations regarding substantive changes to the Lacey Municipal Code which are supported by such evaluation.

Section 2. The terms of this chapter shall be in effect until September 30, 2004 unless such expiration date is extended by action of the City Council or action is take by the Council to earlier modify or repeal this chapter.

Section 3. The summary of this ordinance, which is attached hereto, is approved for publication.

PASSED BY THE CITY COUNCIL OF THE CITY OF LACEY, WASHINGTON, this _____ day of _____, 1999.

CITY COUNCIL

By _____
Mayor

Attest:

Approved as to form:

City Clerk

City Attorney

Published: _____

Ordinance No. _____ Page 5 of 5

SUMMARY FOR PUBLICATION

ORDINANCE _____

CITY OF LACEY

The City Council of the City of Lacey, Washington, passed on August _____, 1999, Ordinance No. _____ entitled "AN ORDINANCE OF THE CITY OF LACEY, WASHINGTON, ESTABLISHING PROVISIONS FOR APPROVAL OF ZERO EFFECTIVE IMPERVIOUS SURFACE PROJECTS, ADDING A NEW CHAPTER 14.31 TO THE LACEY MUNICIPAL CODE AND APPROVING A SUMMARY FOR PUBLICATION"

The Main points of the ordinance are as follows:

1. The ordinance provides for allowing projects on a demonstration basis which will result in no increase in the effective impervious surface aspects of the project because of the use of forested areas, vegetated buffers and minimum landscaped areas.
2. Applicants for approval of such projects may ask for deviations from engineering design and the City's Development Guidelines and Public Works Standards by demonstrating innovative techniques warranting such deviations in accordance with the criteria set forth in the ordinance.
3. All such projects will require either a binding site plan or plat approval and will be approved only with binding assurances of reasonably long term success and maintenance of those features which allow the project to be approved.
4. The ordinance also provides for monitoring of the progress of such projects in order that the council may determine whether to continue the program and further whether changes to the City's Development Guidelines and Public Works Standards are warranted by the experience of such projects.

A copy of the full text of this Ordinance will be mailed without charge to any person requesting the same from the City of Lacey.

Published: _____, 1999.

ATTACHMENT 3

TERMS AND ABBREVIATIONS

"The Department"	Oregon Department of Environmental Quality
BMP	Best Management Practice
CAFO	Confined Animal Feeding Operation
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DEQ	Oregon Department of Environmental Quality
<i>E. coli</i>	<i>Escherichia coli</i>
EPA	US Environmental Protection Agency
LA	Load Allocation (nonpoint sources)
MOS	Margin of Safety
NEDC	Northwest Environmental Defense Center
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NWEA	Northwest Environmental Advocates
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
OWRD	Oregon Department of Water Resources
RHCA	Riparian Habitat Conservation Area
SB 1010	Oregon Senate Bill 1010 - Agricultural Water Quality Management
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load [from Section 303(d) of the Federal Clean Water Act]
TSS	Total Suspended Solids
UBP	Umatilla Basin Project
UBWC	Umatilla Basin Watershed Council
UCCA	Umatilla County Cattleman's Association
USBOR	US Bureau of Reclamation
USFS	US Forest Service
USFW	US Fish and Wildlife Service
WLA	Wasteload Allocation (point sources)
WQMP	Water Quality Management Plan [from 40 CFR 130.6]