# Responses to ISRP Comments

## Project ID: 29037
## Ecosystem Diagnosis and Treatment in the Columbia Cascade Province

**Sponsor:** WDFW, YN, CCT
**Subbasin:** Methow, Okanogan, Entiat, Wenatchee.
**FY03 Request:** $925,563
**5YR Estimate:** $1,816,938
**Short Description:** Provide an analytic foundation, including refinement of the coarse screen EDT, needed for the aquatic assessment and management components of subbasin plans in the Columbia Cascade Province.
**Response Needed?** Yes
**ISRP Preliminary Recommendation and Comments:**
A response is needed. To be fundable this proposal should have a letter of support from the Council that it is needed as part of the subbasin planning effort.

The following list contains comments and questions from the document "Preliminary Review of the FY 2003 Proposals, Columbia Cascade Province..." ISRP, March 1, 2002. Comments and questions have been separated out so as each can be addressed specifically. If there are additional questions from ISRP and staff, please feel free to contact:

**Bob Rose, Yakama Nation Fisheries**
**509-865-6262**
**brose@yakama.com**

**The proposal should be reviewed in the context of the subbasin planning effort rather than the provincial review.**

Indeed, the proponents of this proposal view the EDT methodology as an important tool used specifically for individual subbasin plans. As stated in the proposal abstract "*This joint state-tribal proposal, supported by the Upper Columbia Salmon Recovery Board, provides the analytical foundation required to substantially complete the aquatic assessment and management components of subbasin plans in the* ***Columbia Cascade Province...***". We believe there is high value in using a comprehensive tool consistently across the entire Province, although, as indicated in Objective 1, Task 1.c we fully plan to use this tool at the stream reach level for each of the subbasins. Objective 7 identifies that we will "Develop a preferred Subbasin Management Strategy, for each subbasin, that will best attain stated long-term goals and objectives towards protection and restoration of aquatic/riparian resources."

**Would this proposal add significant value to the EDT analysis already envisioned and potentially funded through that effort?**

Yes. This proposal would add significant value to the EDT efforts already underway within the Columbia Basin Framework process and it would provide a rational basis for subbasin planners to identify and prioritize habitat issues and project proposals within the subbasin at a resolution of the stream reach or finer.

With regards to the Columbia Basin Framework, this proposal would provide a detailed database for habitat conditions that is substantially more accurate than is currently being used. Because of the local participation in providing accurate data, there will be a much higher level of confidence in the conclusions derived through the EDT process and planners will be much more effective in implementing subbasin plans as a result of this confidence. Additionally, important uncertainties / assumptions within the data can be flagged by local experts and future assessments can be identified and justified as legitimate needs.

**The proponents should indicate what scale of information is needed for the subbasin planning?**

Subbasin planning should be viewed from several "elevations" depending upon the considerations. However, specific to the context of this proposal the proponents believe that the fundamental unit in subbasin planning should be the stream reach (**as defined by local experts**, a generally homogeneous section of the stream with respect to physical habitat attributes, often observed to be from ¼ mile to potentially several miles in length). This will provide planners and decision makers a manageable framework to understand "cumulative causes" and "cumulative effects" for environmental conditions that resource managers may choose to address.

**A review of the scientific soundness of EDT and this further refinement needs to be done at a more in depth level than can provided as part of the Columbia Cascade Provincial Review. Perhaps this project and related EDT activities should be reviewed by the Council's and NMFS' Independent Scientific Advisory Board (ISAB) in the broader context of subbasin planning and recovery of anadromous fish in the entire Columbia Basin.**

The proponents of this proposal agree with this statement and welcome the input and involvement of the ISAB.

Currently, the EDT method is being reviewed by the RAAC on a timeline and in a manner that is complimentary with the initiation date for this proposed project. This work has initiated a process for evaluating the EDT model and assessing its applicability to the Columbia Basin Fish and Wildlife Program and the recovery of listed aquatic species pursuant to the Endangered Species Act. The outcome of the RAAC EDT validation process is focused on providing:

- identification of possible EDT enhancements,
- guidance for how EDT should be used within the context of Subbasin planning, and
- other as appropriate.

The Columbia Cascade Provincial EDT Assessment Project will be led by members of the RAAC. One of the highest benefits of this proposal is that EDT will be applied as an analysis and planning tool, one of EDTs strongest capabilities. The RAAC members will gain vital perspectives of how this approach can be further supported, and the RAAC EDT validation process will provide direct guidance to the Columbia Cascade EDT analysis.

**Apparently, the Regional Analytical Advisory Committee will provide some ground-truthing and review of EDT for use in subbasin planning, but these efforts are just underway and should be described in detail. What is the work plan and method developed by the RAAC for the EDT validation project?**

The EDT Validation project is being conducted under the auspices of the Regional Assessment Advisory Committee (RAAC). The RAAC was created by the Northwest Power Planning Council (Council) and consists of agency and private sector scientists with expertise in biological modeling. The RAAC is co-chaired by the Council and the National Marine Fisheries Service (NMFS). The Committee's charter directs that the RAAC "will advise the Council and the region on technical aspects of the biological assessment of subbasins." The Committee's primary function "is to advise the Council on how to conduct subbasin assessments that are technically sound, and deliver outputs that are understandable and manageable by a non-technical audience...."

As defined in its mission statement, the RAAC will focus its attention on the following tasks:

- Advise the Council and region on the application and use of analytical tools used to synthesize data collected during subbasin assessments and regional planning.
- Facilitate collection of subbasin level biological and habitat information that is consistent with the subbasin assessment template.
- Facilitate coordination of Council funded assessments with related assessments conducted by state, tribal, and federal entities.
- Advise the Council on use and development of the EDT model including recommendations regarding activities conducted to validate and develop this model as a tool to assist the Council's subbasin planning process.

Based on the above guidance, the specific objectives of the EDT evaluation are:

- To determine the extent to which EDT analyses accurately describe the relationship between a given fish population and its environment as expressed by fish production (using estimates from current or recent historical observations for comparisons).
- To provide substantive recommendations for improving the usefulness of EDT in terms of data inputs, rules, and computation procedures.
- To provide guidance regarding the use of EDT in subbasin-level fish and wildlife restoration and conservation planning.

Among the specific questions identified by the RAAC that could be addressed through the evaluation are:

- Are there certain environmental attributes that appear to "drive" the analysis and that, therefore, could serve as the focus for future EDT analyses?
- Are there ways to simplify the computational process without sacrificing its utility?
- How might EDT account for critical uncertainties related to the mainstem, estuary, and ocean?
- Are there ways to highlight key assumptions regarding the relationships between fish productivity and environmental factors and ensure that these are clearly understood by users?
- How might results from EDT be used to help target restoration activities?

Roles of Participants. Participants involved in one or more project tasks include:

- Columbia River Intertribal Fish Commission and member tribes
- Idaho Department of Fish and Game
- Montana Department of Fish, Wildlife, and Parks
- National Marine Fisheries Service
- Northwest Power Planning Council
- Oregon Department of Fish and Wildlife
- US Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- Colville Indian Tribe and Upper Columbia United Tribes

**The response should report current results from the use of EDT in the Entiat subbasin, and other subbasins starting with the Grand Ronde subbasin in 1992 and illustrate the role of EDT in selection of specific management actions for these subbasins. The response should identify specific management actions that have or will be carried out as a direct result of the use of EDT. Please give names and contact information of individuals responsible for these management actions. Include letters of support from individuals who have used EDT to reach consensus on management actions.**

EDT work in the Entiat subbasin has progressed well. Recently data used for the Diagnosis of the subbasin and the initial modeling results were reviewed by members of the Entiat Planning Unit (a State recognized body formed under the 2514 Watershed Management Act). Minor modifications were suggested and a "Final Diagnosis Report" will be available in May. In the meantime, the Planning Unit has directed staff to begin the Treatment phase of the EDT methodology. Alternative management strategies and associated potential projects (for each strategy) will be identified and documented in July, 2002. Upon approval of these alternative strategies, the Planning Unit will direct additional modeling of the data with the intention of having results available by October 2002. Upon approval, it is expected that the EDT evaluation will be available for subsequent subbasin planning efforts in winter 2002/2003.

Other EDT efforts, either ongoing or completed include:

**Puget Sound/Coastal Washington:**

| | |
|---|---|
| Nisqually Basin | David Troutt (Nisqually Tribe) |
| Puyallup Basin, Chambers Creek | Debby Hyde (Pierce County) |
| Stillaguamish / Snohomish Basins | Kit Rawson (Tulalip Tribes) |
| Chehalis Basin | Jim Scott (WDFW) |

**Columbia River:**

| | |
|---|---|
| Sandy Basin | Steve Kucas.....(Portland Water Department) |
| Johnson Creek | Chip McConnha (City of Portland) |
| Cowlitz Basin | Mark Lariviere (Tacoma Power) |
| Yakima Basin | Bruce Watson/Joel Hubble (Yakama Nation) |
| Deschutes Basin | Bob Rose (Yakama Nation) |
| Entiat Basin | Bob Rose (Yakama Nation) |

**Is the following quote from proposal #29021 correct? "Habitat models such as the Ecosystem Diagnosis and Treatment model provide an adequately relative conditions across a well-defined set of environmental attributes but stop short of assisting planners and decision-makers with identifying specific actions (e.g., realign a segment of stream, mobilize and store sediments, normalize a hydrograph, stabilize a bank, remove a road, modify a dike structure) that will result in changes in the condition of habitat attributes, or the ability to assess the effects of specific actions." If correct, explain why this project should be funded. If incorrect, provide some counter examples.**

The ISRP excerpts a quote from proposal #29021 with regard to the soundness of using EDT in the Columbia Cascade Province. This statement is incorrect, especially in the context of using EDT at the subbasin level, using the best available measured and "expert" data for the development and analysis of site-specific projects at the reach level.

One of the primary strengths of EDT is the ability to link landscape data to stream habitat quality to fish performance. The output of the EDT analysis helps the planner determine what locations and attributes the actions should target. EDT allows actions to be sited on the landscape at the scale upon which the analysis was performed. For example, if an EDT analysis reveals that sediment loading is a problem, specific actions that lead to reduction in sediment load (such as road removal) would be identified. Determining which roads to remove, in order to be the most effective (i.e. reduce sediment levels the quickest), is a question that EDT cannot answer without additional analysis or tools.

**Proposal #29021 also has the critical question "Which alternative project strategy exhibits the 'best' expected performance or outcome?" Is this an output of an EDT analysis? Give real illustrations.**

Proposal #29021 concentrates its effort on developing a linking (physical world to biological) method and subroutine to automate current EDT functions. The objective is to make EDT output, such as stream reach analysis and prioritization information, more accessible and adaptable for decision-makers, planners and most appreciably, for stakeholder groups and non-technical audiences.

Yes, EDT can provide decision makers information that can lead to a "best" expected outcome if adequate information and resources are made available to subbasin planners. Managers can look at model results for each of the alternative management strategies and consider the relative improvements expected for each reach (as described by the "currencies" a) productivity, b) carrying capacity, c) life history diversity and d) equilibrium run size). However, additional information about costs, primary and secondary benefits (to other species for example) and risk of project failure must also be considered. Note that we are not suggesting that EDT gives managers "the best answer" but it is a tool to help inform managers of expected performances and outcomes.

**What exactly is the expected outcome of the proposed EDT analysis for a given subbasin? In the relationship to other projects the phrases "EDT could be used to….." or "EDT may be useful in ……" are given. Where are the demonstrated important uses and results?**

There are a variety of outcomes expected because of this analysis;

- **Habitat ratings** for 40-plus physical attributes that specifically describe the current condition and (possible) historic condition and all associated data/rational used to determine these ratings.
- A Diagnostic modeling of how salmonids (primarily chinook, steelhead and coho at this time) respond to the physical environment, providing the basis for a **limiting factors analysis**. The "currency" used as the foundation for this analysis are a) salmonid productivity, b) carrying capacity, c) life history diversity and d) equilibrium run size.
- Analysis of this data allows managers the ability to make **explicit hypothesis statements** about how habitat features are affecting salmonids and what types of activities could be implemented to improve these conditions. Contained within this information are clearly and specifically stated expectations as to how projects will affect habitat attributes and various life history stages of salmonids.
- A synthesis of this information provides managers the **ability to rank and prioritize stream reaches** in terms of their potential values in restoration strategies or in protection strategies.
- As a result of the EDT process, there is substantial input and discussion amongst fishery managers and other interested stakeholder groups. This creates much **higher levels of trust and "buy-in"** to the results and conclusions of the process.
- An expansion from the Diagnosis (the Treatment) provides relative information about the **costs, benefits and potential risks of implementing various "project-types"** at the reach level. This information is organized in such a way that various management strategies are described and compared by their potential to achieve stated management goals or objectives.
- Upon selection of a management strategy (simply stated, this is a prioritized list of specific projects to be implemented in specific stream reaches over a foreseeable time period, 5-years for example) **managers have a clear rational for proposed actions, stronger stakeholder support and a well defined set of expectations from which to build a monitoring strategy specific to habitat attributes at the reach level.**

**The response should describe in detail a monitoring and evaluation component for this project**.

EDT provides the groundwork and framework for a monitoring program for individual projects and at the subbasin level. Because the subbasin is finely dissected and described reach by reach, for each habitat attribute and because all proposed actions must be described in terms of their affect upon these attributes, the methodology (when used correctly) forces resource managers to clearly articulate what will be the expectations for

successful project implementation and specifically what attributes will be monitored (which should also describe methodology and reporting format). This EDT proposal does not have a monitoring and evaluation component, but it provides the foundation for the development of long term tracking of project effects on the environment.

**What real data will be collected and how will the project be evaluated (ground truthed)?**

For the most part, this proposal advocates using existing information already contained within various databases throughout the area. In the cases where data is lacking, local experts will provide a rating for attributes and a clear description of how this conclusion was derived. A small team of technicians will be funded to ground truth (or measure where needed) certain attributes, especially channel widths and depths, habitat types (pools, riffles, etc.) and related features that are important in estimating habitat carrying capacities. Most of this data will be stored in formats already developed by Mobrand Biometrics Inc. Additional information (such as comments and levels of uncertainty) will be available within the expected reporting formats.

Ground truthing: Reporting formats are available that clearly describe how the technical teams have evaluated and described habitat attributes and salmonid responses for each stream reach. Experts and interested stakeholders are able to examine this information and ask the fundamental question "does this make sense"? It is anticipated that there will be several field trips required to discuss habitat ratings and modeling results. If clear resolution cannot be found in some cases, this concern is flagged and will become a strong candidate within the subbasin plan for future assessment needs.

**How and when will one know that the project was a success or a failure?**

In the short-term (2-3 years), we will know this proposal was successful if there is:

- consolidation of the 40-plus (Level 2) habitat attributes (and rational for determination) into one single and easily navigated information (data) base,
- reasonably strong acceptance by the scientific and non-scientific community (within the subbasin) of the process and its contributions in determining management strategies and future information needs, and
- strong incorporation of the EDT findings into the subbasin plan.

In the longer term (10+ years) we will know if this proposal was successful if the database is:

- kept up – i.e. if habitat attribute ratings are modified to reflect management actions and natural events that have changed the environment,
- used to learn if in-fact our stated hypothesis about expected outcomes for project implementation were correct – or not,
- the EDT methodology forces us to look at the world with a more holistic perspective and managers are capable of describing the environment and affects of management actions more explicitly and with a higher degree of accountability.

**The copy of the proposal may have been cut off short. References and resumes should be given.**

**Dr. Lars Mobrand**

The MBI team leader, Lars Mobrand, has provided consulting services to state and federal agencies, Native American Tribes, utilities, and private industry for 30 years. Recently, Lars' professional activities have focused on ecosystem planning, resource restoration, cumulative impact analysis, and facilitation of cooperative resource planning projects. Lars, in conjunction with other MBI staff, has developed and widely implemented the Ecosystem Diagnosis and Treatment (EDT) model, a science-based approach to watershed planning. He specializes in population dynamics and experimental design as well as statistics, computer simulation modeling, risk analysis, and decision theory. Lars holds a Ph.D. in biomathematics from the University of Washington.

**Larry Lestelle**

A senior biologist for MBI, Larry has been with MBI for over 9 years. He has over 26 years of experience in Pacific Northwest salmonid issues, providing expertise to tribal and governmental entities in the fields of salmonid ecology, resource assessment and enhancement, population dynamics, fisheries management and environmental impacts. Larry provides technical expertise in resource restoration and development of analytical methods for planning potential supplementation and habitat improvement initiatives. He is currently involved in development and implementation of the Ecosystem Diagnosis and Treatment (EDT) model, including facilitation of workshops through the Pacific Northwest. Larry holds an M.S. in Fisheries Science from the University of Washington.

**Keith Wolf**

Mr. Wolf directs the activities of the Ecological Sciences Group at Golder. This position involves project management, business development and consulting services in technical as well as policy areas of fisheries and habitat assessment, with emphasis on the Endangered Species Act and salmon habitat recovery issues.

As the previous Columbia River Policy Coordinator and a Fish Program Manager for Washington Department of Fish and Wildlife, he developed a 15-year multidisciplinary background in fish ecology including ecosystem modeling, statistical analysis, environmental policy and regulatory compliance. He has a wide range of project experience in areas of hydrology, instream flow, salmonid habitat assessment and ESA response planning. He also coordinates with related Golder technical and engineering service areas to provide structural and institutional solutions to natural resource problems. Mr. Wolf currently advises several key agencies and governments on ecological systems monitoring and is also working directly on developing systems models for salmon recovery and public participation processes. He has extensive experience in reviewing responses, plans and study results for compliance with ESA and other regulatory requirements.

**Bob Rose**
Mr. Rose was initially involved with the EDT methodology in 1992 as an employee of the U.S. Forest Service in northeast Oregon. At that time he was a core member on the EDT Technical Team in the evaluation of the Grand Ronde subbasin.

In 1998 Mr. Rose was employed by the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS) as the coordinator and facilitator for the EDT evaluation in the lower portion of the Deschutes subbasin. This evaluation contained both aquatic and terrestrial components and was the central organizing theme in the determination of proposed "off-site" mitigation for the FERC relicensing of the Pelton-Round Butte hydroelectric project.

In 2000 (to present) Mr. Rose continues a strong involvement with the EDT methodology as an employee of the Yakama Nation fisheries program. He is strongly involved with all aspects of the Yakama Nation use of EDT in the Yakima and Klickitat subbasins and for the past year has coordinated and facilitated the EDT assessment in the Entiat subbasin.

**The response should contain references to and perhaps copies of critical documents (technical appendices) that give the actual mathematical formulas and methods behind EDT.**

These materials are available upon request from Mobrand Biometrics Inc.

Reference List


Mobrand Biometrics, Inc. 1999. Analysis of factors affecting aquatic resources of the Deschutes watershed: with application to relicensing of the Pelton-Round Butte Project. Mobrand Biometrics, Inc., Vashon, Washington.

Mobrand Biometrics, Inc. 1999. Application of the Ecosystem Diagnosis and Treatment Method (EDT) to analyze fish resources in the Cowlitz Watershed in support of FERC relicensing process. Volume 1. Draft. Mobrand Biometrics, Inc., Vashon, Washington.

Mobrand Biometrics, Inc. 2000. Columbia river multi-species framework project coarse screening analysis, Volume 1: Progress report. Report to Northwest Power Planning Council. Mobrand Biometrics, Inc., Vashon Island, Washington.

Mobrand Biometrics, Inc. 2000. Columbia river multi-species framework project coarse screening analysis, Volume 2: Methods and Appendices (A-E). Report to Northwest Power Planning Council. Mobrand Biometrics, Inc., Vashon Island, Washington.

Mobrand Biometrics, Inc. 2001. Entiat EDT watershed analysis. Draft Progress Report. Mobrand Biometrics, Inc., Vashon, Washington.

Mobrand Biometrics, Inc. 2001. Rules for translating level 2 environmental attribute values to level 3 biometrics for chinook salmon (Book of Rules). Mobrand Biometrics, Vashon, Washington.

Mobrand Biometrics, Inc. 2001. Watershed analysis for the development of salmonid conservation and recovery plans within Pierce County. Completion Report. Mobrand Biometrics, Inc., Vashon, Washington.

Nisqually Chinook Recovery Team. 2001. Nisqually fall chinook recovery plan. Draft. Mobrand Biometrics, Inc., Vashon, Washington.