

TVARAM Development Notes

In 2004, Tennessee Valley Authority (TVA) biologists (Table 1) studied the regional components of the Ohio Rapid Assessment Method (ORAM) version 5.0 to develop a TVA regional version (TVARAM) for use in agency environmental assessments (See attached *TVARAM Field Form Quantitative Rating.pdf*). The TVARAM study area is the TVA Power Service Area which includes portions of seven states in the interior Southeastern US (KY, VA, NC, TN, GA, AL, MS).

Table 1. TVARAM Development Team (2004)

<p>TVA Staff:</p> <ul style="list-style-type: none">• Jane Awl• Wesley James• Mark McCreedy• Martin High• Kemmy Garrett• Gary Jenkins <p>Consultants:</p> <ul style="list-style-type: none">• James Groton (SAIC)• Britta Dimick (SAIC, now TVA)• Paul Durr (PTRL, now Water Resources, LLC)

TVARAM – Summary of Changes from ORAM 5.0

In the TVARAM, Metric 5 (Special Wetland Communities) ONLY was adjusted to appropriately assess Southeastern regional wetlands. All other metrics and submetrics are the SAME as ORAM 5.0. Metric 5 represents a maximum of 10 points out of a possible 100 point total, or a possible 10% of the total score. Additionally, adjustments to TVARAM Metric 5 were designed to allow it to function in place of a “narrative categorization” for the agency, further streamlining the wetland categorization process.

TVARAM scoring (Table 2) is comparable to the ORAM 5.0. [See *Final Report to U.S. EPA Grant No. CD985276/ Interim Report to U.S. EPA Grant No. CD985875. Volume 1: Vegetation Indices of Biotic Integrity (VIBI) for Wetlands and Calibration of the Ohio Rapid Assessment Method for Wetlands v. 5.0. August 1, 2000.* <<http://www.epa.state.oh.us/dsw/wetlands/FinE657IntG833.pdf>>].

Table 2. TVARAM Scoring

TVARAM Score	Wetland Category*
0 – 29.9	1
30 – 34.9	1 or 2 gray zone**
35 – 59.9	2
60 – 64.9	2 or 3 gray zone**
65 – 100	3
Metric 5 Raw Score of 30 or over***	3
<p>* The <i>TVA Rapid Assessment Method</i> (TVARAM) is a regionalized version of the Ohio Rapid Assessment Method (ORAM) that is designed to distinguish between three categories of wetland function and integrity:</p> <ul style="list-style-type: none"> • Category 1 includes wetlands with “minimal wetland function and/or integrity”; • Category 2 included wetlands with “moderate wetland function and/or integrity”; and • Category 3 includes wetlands with “superior wetland function and/or integrity”. <p>** If the TVARAM score is between the scoring ranges for Categories 1 and 2 or Categories 2 and 3 (i.e. is in the "gray zone" between categories), the Rater can do either of the following:</p> <ol style="list-style-type: none"> 1. Assign the wetland to the higher of the two categories (e.g. if the wetland is in the gray zone between Category 1 and 2, the Rater would assign the wetland to Category 2); 2. Assess the quality of the wetland using a non-rapid method of functional or biological assessment such as the <i>Vegetation Indices of Biotic Integrity</i> (VIBI), and use this information to assign the wetland to a category. <p>***Used in lieu of ORAM narrative categorization.</p>	

The calibration study for the ORAM included landscapes similar to those in the TVA region with the exception of the high mountains. Scoring adjustments for the

montane physiographic provinces within the study area--Blue Ridge (BR) and Cumberland Mountains (CM)--were developed and are provided on the TVARAM field form following the applicable submetrics. (See additional information on BR/CM scoring in the sections below.)

The TVARAM field-form has been enhanced with additional guidance, graphics, and prompts, to save time and reduce the need to carry a user manual in the field. No separate user manual has been developed for the TVARAM. Except for Metric 5, the Blue Ridge and Cumberland Mountains (BR/CM) scoring adjustments, and the added guidance, graphics, and prompts on the form, everything else is the same as ORAM 5.0. The Metric 5 changes and BR/CM scoring are all noted on the TVARAM field form. The ORAM 5.0 manual is therefore applicable for all other parts of the TVARAM form.

BR/CM Scoring Adjustments for TVARAM

Several options were considered for adjusting the TVARAM scoring for wetlands in the Blue Ridge (BR) and Cumberland Mountains (CM). The overall point scale adjustments (fixed points added to total score) that were tested provided inadequate separation of categories: too many points were added to lower quality wetlands, without sufficient adjustment for higher quality wetlands. Methods which would adjust points relative to specific wetland attributes were also tested. Minor adjustments to several sub-metrics were identified which provided a better fit for high quality wetlands, while low quality wetlands still receive appropriately low scores.

BR/CM Scoring Features:

- Original attributes and scoring are not affected--adjusted BR/CM points are in shown in brackets following regular score—e.g. “...(1) [BR/CM (2)]”.
- All metrics remain leveled at original maximum points, and sub-metrics retain original high point levels.
- Adjustments affect only metrics 1 (Wetland Area), 3 (Hydrology), and 6 (Plant Communities, etc.).
- Point adjustments are scaled relative to the pertinent attributes (size, water sources, depth and duration, vegetation types and interspersions) of the specific wetland.
- A BR or CM wetland may score anywhere between zero and roughly 30 additional points depending on its specific attributes.

BR/CM Scoring Effects on Metrics:

- Metric 1. Wetland Area: increased points for mid-range size classes; low (<0.1 acre) still scores zero, maximum points reached earlier.

- Metric 3. Hydrology:
 - 3a. Sources...: increased points where other groundwater is a source, or direct precipitation is the primary source (e.g. spring/seep/sink wetlands, ombrotrophic wetlands, saturated organic substrates, and perched isolated depressions with low evapotranspiration rates).

 - 3c. Maximum water depth: increased points for low to mid-range frequency classes; maximum points reached earlier.

 - 3d. Duration...: increased points for low to mid-range frequency classes; maximum points reached earlier.

- Metric 6. Plant Communities, Interspersion, Microtopography:
 - 6a. Wetland Vegetation...: size thresholds in the “Vegetation Community Cover Scale” and “Mudflat and Open Water Class Quality” are lowered. Additionally, there is an option to score the moss/lichen strata (where present) in the slot for “other”.

 - 6b. Horizontal (plan view) Interspersion: increased points for mid-range attributes; none still scores zero, maximum points reached earlier.

END