

Using the Wetland Rating System in Compensatory Mitigation

Constraints inherent in the Washington State Wetland Rating Systems when used for estimating changes in functions

The rating systems for eastern and western Washington were developed to categorize wetlands in the state based on their sensitivity to disturbance, their rarity, the difficulties in replacing them, and a characterization of how well they function. An intermediate step in the categorization requires users to calculate a numeric score for each of three groups of functions (improving water quality, hydrologic, and habitat). As a result, there is interest in using these intermediate scores to estimate changes in functions that can occur from impacts, restoration or compensatory mitigation. There are, however, several major constraints in trying to use the scores for these purposes. Specifically:

1. **The scores cannot be used to characterize the change in functions that occur in only a small part of a larger wetland.** Collecting data from only a small part of the wetland violates the scientific assumptions made in developing the method. Data from the entire wetland were used to calibrate the scores (see example in box below). Thus data need to be collected from the entire unit to properly apply the method. If compensatory mitigation occurs along the disturbed edge of a large relatively undisturbed wetland, the score for that wetland will probably not change much as a result of the activity. The mitigation may improve the indicators of function in the disturbed area, but this will not increase the score if these indicators are already present elsewhere in the wetland.

EXAMPLE: The maximum depth of ponding is one indicator for water storage in depressional wetlands. The scoring for this indicator is based on the actual values measured in reference wetlands. Thus, the depth of ponding has to be measured from the deepest point in the wetland regardless of where it is found. Measuring depth only in a small areas along its edge will not provide an accurate representation of the function. A measurement along the edge of a wetland is a different indicator than the one used in calibrating the method.

- If the scores for functions are used to compare one wetland to another then the statistical variability in the scores needs to be addressed.

- If the rating system is to be used to characterize a change in each group of functions, the scores have to be converted to a qualitative analysis.

- The scores cannot be used to characterize the change in functions that occur in only a small part of a larger wetland.

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2. **The rating system was developed to be easier to use and more rapid than methods for assessing functions.** The rating systems for both eastern and western Washington are more rapid and easier to use than the Washington State Function Assessment Methods. As a result, the rating systems are not as accurate as the latter. The scores of the rating system are best interpreted as a qualitative rating of high, moderate, and low level of function rather than a numeric level. Numbers are calculated to help establish the limits of each qualitative rating, but differences in scores within each rating are not significant.
3. **The qualitative rating of functions was developed to help determine buffers needed to protect those functions.** The basic structure of Ecology's guidance on buffers is also qualitative even though numbers are calculated in the intermediate steps. Wetlands are divided into those that need a relatively larger buffer, those that need a moderate width, and those whose functions are low enough that smaller buffers are adequate for reducing the risk of impacts from adjacent development (see Appendices 8-C and 8-D in "Wetlands in Washington: Volume 2: Guidance for protecting and managing wetlands," Ecology Publication #05-06-008).

The scientific literature indicates that some wetlands with low levels of function can be protected with buffers as small as 50 ft while others with higher levels of some functions may need more than 300 ft. Ecology's guidance has a large range in widths for the three qualitative categories (wetlands needed larger buffer widths, moderate widths, and smaller widths) to reflect these scientific results. One consequence of this large range, however, is that the increase in widths between the qualitative categories is also large. For example, the guidance has a 150 ft difference in buffer widths between wetlands with a moderate level of habitat and those with a high level of habitat. One option to reduce this large increase in widths between categories is to incrementally increase the widths as the habitat score increases (Alternative 3A in Ecology's guidance). This option, however, does not mean that the rating has suddenly become more quantitative. Alternative 3A was suggested as one way to reduce the effects on land-owners of the large range in buffers while minimizing the risk to the resource. A difference of a few points in the scores between wetlands is not statistically significant.

4. **If the scores for functions are used to compare one wetland to another then the statistical variability in the scores needs to be addressed.** A statistical analysis was done on the data collected during the calibration. It showed that the total score of a wetland that is being enhanced, or extended through creation, has to increase by more than 1/3 to be considered a lift in its functions. A difference of less than 1/3 is not statistically significant. Furthermore, comparisons between individual groups of functions can only be done qualitatively as described in #5 below.

EXAMPLE: A Category IV wetland scoring 28 points would have to be enhanced to at least 37 points to conclude that the mitigation has resulted in a change in the level of all its functions. A Category III wetland scoring 42 points would have to be enhanced to a final score of 56 points to conclude the mitigation actions increased the level of functions.

5. **If the rating system is to be used to characterize a change in each group of functions, the scores have to be converted to a qualitative analysis. Furthermore, the "potential" for a function has to be separated from its "opportunity."** To understand if a proposed project is adequate to mitigate for impacts one needs to understand the possible trade-offs between potential and opportunity. Thus, do not combine these two characteristics of a function when you are comparing the impacts to a wetland with the compensatory mitigation that is being proposed as a replacement. A combined score hides this important information.

Use the following table to convert the scores into a qualitative rating of “High,” Moderate,” or “Low” for the functions. The qualitative analysis provides a more statistically accurate representation of the information the method provides. The thresholds in the table were based on a comparison of data collected for the Function Assessment Method and the results of the ratings for the reference wetlands used. The scores for potential and opportunity can be found on the rating form as noted. The opportunity for improving water quality and the hydrologic functions is not listed because the answers to these questions are yes/no, and the score is based on the score for the potential.

Qualitative Rating of Function	Improving Water Quality Potential Total for Question D1, R1, L1, or S1 on the rating form depending on HGM class	Hydrologic Functions Potential Total for Question D3, R3, L3, or S3 on the rating form depending on HGM class	Habitat Functions Potential Total for H1 on p. 14 of the rating form.	Habitat Functions Opportunity Total for H2 on p. 17 of the rating form
High	12 - 16	12 - 16	15 - 18	14 - 18
Moderate	6 - 11	6 - 11	7 - 14	6 - 13
Low	0 - 5	0 - 5	0 - 6	0 - 5

The following table gives an example of how this approach can be used to characterize the changes in functions resulting from rehabilitating an existing wetland. It summarizes changes in the rating of functions at a hypothetical mitigation. The actual rating scores are shown in parentheses.

	Improving Water Quality		Hydrologic Functions		Habitat Functions		Rating Score
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity	
Rating before	Moderate (6)	Yes	Low (4)	No	Low (6)	Moderate (7)	29
Rating after	Moderate (11)	Yes	High (13)	Yes	Moderate (13)	Moderate (7)	58
Change	No change	No change	Low - High	Opportunity is provided	Low - Moderate	No change	29 Significant

This qualitative information can be used to help determine if the compensatory actions are adequate to replace the functions lost. If functions are not being replaced directly, then one has to decide if the increase in another group of functions is an acceptable substitute. An example using hypothetical scores and the table above is shown on the next page.

EXAMPLE

Proposal: Fill two acres of a Category III wetland. Compensate with rehabilitating eight acres of a Category IV wetland.

Wetland being filled (2 acres of impact)

	Improving Water Quality		Hydrologic Functions		Habitat Functions		Rating Score
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity	
Rating before (score)	Moderate (7)	Yes	Low (4)	No	Low (6)	Moderate (10)	34

Site for compensatory mitigation (8 acres of rehabilitation)

	Improving Water Quality		Hydrologic Functions		Habitat Functions		Rating Score
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity	
Rating before	Moderate (6)	Yes	Low (4)	No	Low (6)	Moderate (7)	29
Rating after	Moderate (11)	Yes	High (13)	Yes	Moderate (13)	Moderate (7)	58
Change	No change	No change	Low - High	Opportunity is provided	Low - Moderate	No change	29 Significant

Conclusions:

The mitigation does result in a net gain in functions overall at the enhancement site. The increase is more than 1/3 larger than the score before the enhancement. The mitigation ratios are consistent with the guidance provided by Ecology.

The analysis however, cannot conclusively determine if the proposed mitigation is adequate to replace the functions lost. This is a value judgment that needs to be negotiated. At question: Is the loss of 2 acres of a Category III wetland equivalent to the improvement of 8 acres of a Category IV wetland to a Category II wetland?

In addition:

1. The mitigation does not replace the water quality functions lost to filling. There is no change in the Water Quality functions at the proposed mitigation site.
2. The mitigation does replace the hydrologic functions based on a qualitative judgment because there is a net improvement in the potential from low to high over 6 acres as well as providing the opportunity. The impacts are to 2 acres with a low potential for hydrologic functions and that have no opportunity to perform the function.

3. There is a net gain in the potential for habitat as the mitigation site from low to moderate. The opportunity is not changed and remains at moderate. This means that there is access for some species to use the improved habitat. **The analysis however, cannot conclusively determine if the proposed mitigation is adequate to replace the impacts to habitat.** This is a value judgment that needs to be negotiated. At question: Is the loss of 2 acres of a wetland with a low habitat potential equivalent to the improvement in habitat potential from low to medium over 6 acres? In this case both sites have a moderate opportunity for habitat, and this factor therefore, become moot in the decision.