

## Appendix O: Responsiveness Summary to Public Comments

### Authors of Written Comments on the Draft Upper Sandusky River TMDL Report

#	Date Received	Name	Organization
	<b>030504</b>	<b>Public notice given for the draft Upper Sandusky River TMDL report</b>	
1	031004	John Crumrine	SRWC <sup>1</sup> Steering Committee Member
2-3	031904	Dr. David Baker	SRWC Member
4-9	040704	Chris Riddle	SRWC Coordinator
10-11	040704	Dr. Tim Loftus	SRWC Steering Committee Chairman
12-37	040904	Dr. David Baker	SRWC Member

<sup>1</sup> SRWC- Sandusky River Watershed Coalition

All comments received during the public notice time frame are noted above. Comments were reviewed by the Ohio Environmental Protection Agency (Ohio EPA) and addressed in the following manner.

Several comments identified editing-related issues, including identification of spelling and grammar errors, reference errors, and citation errors. These errors were addressed as appropriate. In addition, some comments requested additional text clarifying a subject or item, word crafting, or other related issues. These edits did not result in changing the overall content or intent of the report. Ohio EPA thanks the comment authors for contributing to the overall clarity and accuracy of the report.

Substantive comments and those posing a question are specifically responded to below. Similar comments were grouped and referenced by comment author, keyed to the numbered list above. Page number references in the comments refer to the draft report available for public comment and may not apply to the final report.

#### 1. **Comment:**

A comment was made that field tile have a minor influence on ground water recharge and low stream flows and that surface drainage has a greater impact on impairment caused by flow alterations.

#### **Response:**

The Ohio EPA agrees that surface drainage has an effect on flow alteration by quickly removing water following rain storms. However, since sub-surface tile lower the water table in fields, this drainage practice certainly affects ground water recharge and flow augmentation. Revised text in Section 2.3.1 more clearly states this.

**2. Comment:**

A request was made for information regarding the QHEI gradient score in Appendix D and an explanation of why the sub-score totals do not match the QHEI for the site when they are added.

**Response:**

This information was provided to Dr. Baker via electronic mail on March 22, 2004.

**3. Comment:**

A request was made for the range of cutoffs used to determine whether sites were poor, fair, good, or excellent in Appendix D.

**Response:**

This information was provided to Dr. Baker via electronic mail on March 22, 2004.

**4. Comment:**

A comment was made that a map of use designations would be a welcome addition.

**Response:**

The Ohio EPA does not presently have the resources to generate use designation maps, but will consider this for future TMDL reports. Use designations for streams in the Sandusky River watershed are presented in the Ohio Water Quality Standards Chapter 3745-1-12. This rule will be updated to reflect changes recommended following the 2001 survey; such rule-makings include an opportunity for public comment. The proposed changes are provided in Table 1C of the Biological and Water Quality Study of the Sandusky River and Selected Tributaries, available at <http://www.epa.state.oh.us/dsw/documents/2001SanduskyTSD.pdf>.

**5. Comment:**

A request was made to provide the maps in Appendices C-F and GIS data used to create them.

**Response:**

This information has been provided to the SRWC.

**6. Comment:**

A comment was made that the graphs in Appendix D are difficult for landowners to read because of style changes.

**Response:**

The graphs in Appendix D have been modified to make them more user friendly.

**7. Comment:**

A comment was made that goals for QHEI attainment and all information applicable should be included in Appendix D.

**Response:**

More detail information has been included in Appendix D.

**8. Comment:**

A comment was made that the addition of a detailed map of each watershed showing the stream network and roads would be a good reference for landowners.

**Response:**

The Ohio EPA does not presently have the resources to generate these maps, but will consider this for future TMDL reports.

**9. Comment:**

A comment was made that increasing the accuracy on the changes in attainment or score status would be of great help.

**Response:**

The use attainment maps presented in Appendix C should only be used as a general picture of stream segment condition. Detailed information should be obtained from the individual index scores generated for each site.

**10. Comment:**

A comment was made that there appears to be a fundamental incongruence between aquatic life habitat use attainment status, including its method of determination, and the determination of certain impairments with associated calls for TMDLs. This is best illustrated in Broken Sword where the eastern third of the watershed is deemed to be in full aquatic life habitat use attainment. This leads one to believe, as it did many attending a public meeting for the Broken Sword watershed, that the area in full attainment is an exemplar of stream condition and management; the likes of which should be applied downstream where use attainment status is only partial or worse. Ironically, the area in full use attainment referred to here has been highly modified, features a “poor” riparian QHEI subscore, and is largely (if not entirely) on county maintenance.

Substrate scores from the habitat (QHEI) assessment for the majority of streams assessed in this same part of Broken Sword, however, are judged “poor” and in need of restoration/intervention (i.e., a sediment TMDL). Likewise, the habitat scores for all of the assessed streams in this part of Broken Sword are judged “poor” and also in need of restoration/intervention (i.e., a habitat TMDL). Thus, TMDLs and associated needs for public support for remediation efforts are required in areas of the watershed that are allegedly in “full” attainment of their primary designated use – aquatic life habitat. To the degree that this can be viewed as an inconsistency, a similar situation can be found in Honey Creek and probably elsewhere throughout the Upper Sandusky.

Perhaps the essence of the problem is that on the one hand, different standards (i.e., WWH, MWH, LRW) are used as “yardsticks of measurement” within the same

watershed and by which both use attainment status and an assessment unit score are determined; on the other hand, standards and targets for aquatic habitat (i.e., QHEI) and sedimentation (i.e., substrate score of QHEI) are applied uniformly throughout the watershed. What results is a mixed message that creates complexity for public consumption and potential difficulty with gaining acceptance for remediation called for in TMDLs.

**Response:**

TMDLs are required in watersheds identified as impaired on the 303(d) list. The 11 digit hydrologic unit code (HUC) is used to define watershed boundaries and a HUC is considered impaired if <100% of the sites assessed met their biological criteria. Attainment of WWH (warmwater habitat) and MWH (modified warmwater habitat) are generally achieved when all of the biological criteria (IBI- index of biotic integrity, ICI- invertebrate community index, mlwb- modified index of well being) are met. If one organism group or index meets the WWH criteria, but the other group or index does not, the use is only partially attained. Non-attainment is reflected by a failure of all indices to meet the applicable criterion.

Using the Broken Sword Creek and Honey Creek examples, both streams have dual use designations assigned to them; MWH segments in the headwaters because of ditch construction and maintenance projects and WWH segments in naturally flowing areas. The MWH segments are in full attainment and the WWH segments are in either partial or non attainment. Biological criteria are lower for streams designated MWH.

	EWB	WWH	MWH
IBI	50	40	24
mlwb	9.4	8.3	6.2
ICI	46	36	22

Since impaired waters are listed by assessment unit (HUC) rather than water body segment (stream), there may be instances where a TMDL is calculated for a stream segment considered in full attainment. However, by improving habitat, like riparian condition and substrate quality in the MWH segments, it is possible that the WWH segments will come into full attainment.

**11. Comment:**

A comment was made that given that QHEI scores play an important role in determining the need for TMDLs, the Ohio EPA should consider a scheme for incorporating the QHEI metric into quantifying use attainment along with three indices currently used: IBI, ICI and mlwb. This may result in eliminating or reducing the apparent contradictions as described above using the example of Broken Sword Creek. Alternately, a narrower margin of difference between minimum scores for attaining use designations- WWH (60), MWH (45), and LRW (30) might reduce the

production of many types of score results, some of which seem to be in conflict with one another. Does the Ohio EPA view this as potentially problematic from an implementation viewpoint and if so, how might this be resolved? If not, what explanation might Ohio EPA offer to resolve the apparent conflict among scores generated to characterize water quality, use attainment, and justify the need for a TMDL?

**Response:**

The QHEI score plays a role in designating the appropriate aquatic life habitat use of a stream (EWH- exceptional warmwater, WWH- warmwater, MWH- modified warmwater, and LRW- limited resource), but does not factor into determining use attainment (full, partial, and non) and the need for a TMDL. Use attainment is solely determined by biological index scores (IBI- index of biotic integrity, ICI- invertebrate community index, mlwb- modified index of well being) and biological criteria codified in the Ohio water quality standards (OAC 3745-1-07, Table 7-15).

A general idea of the appropriate use designation for a stream can be determined using the QHEI score. QHEI scores <45 are usually associated with streams that do not attain WWH and scores of >60 usually do achieve WWH. Scores intermediate to this may fall into the range of the MWH or WWH depending on what habitat characteristics appear to be limiting to aquatic life. This intermediate range is wide because such sites are found both in basins with generally good and generally poor habitat; this increases the range in the observed IBI scores. In contrast, sites with extreme QHEI scores (high or low) are less likely found in streams of the opposite range of habitat quality. Thus, the average habitat in a basin or homogenous stream reach is important to the designation of aquatic life uses.

Stream reaches with QHEI scores averaging >60 will likely have the potential to attain the WWH use. With QHEI scores >60 the effects of any stream modification are usually not severe and many of the natural characteristics of the stream still exist. It is likely that any past habitat degradation will recover with time in such areas. Streams with QHEI scores averaging <45 have modifications that are generally severe and widespread. Often channel modifications are maintained or flow and stream gradient are very low so that more natural conditions do not readily appear.

The LRW use is reserved for streams with extremely limited physical habitat. Streams that drain <3 mi.<sup>2</sup> that have a QHEI score <32 would be strong candidates to be classified as LRW.

**12. Comment:**

A comment was made about the use of sub-watershed medians of phosphorus in headwater streams as the guideline for point source reductions in the sub-watersheds. The author sees no relationship between median phosphorus concentrations in headwater streams and needed point source reductions.

**Response:**

The Upper Sandusky TMDL report is arranged by assessment units as a compromise between too much detail (TMDLs for each stream segment) and not enough detail (TMDL for the whole watershed). The magnitude of the point source loads in each assessment unit was assessed (see Figure 16 in the TMDL report), in conjunction with the use attainment/ habitat data for the reaches receiving the loads. The assessment units with the largest point source phosphorus loads were given more priority for load reduction actions, particularly if the receiving segment was not meeting its phosphorus target. The deviation of observed total P from target concentration was used as a simple way to assign phosphorus reduction to point sources in a reach, while allowing some flexibility in how the load reductions are distributed. Some examples of point sources affecting headwater streams are the Crestline (Bucyrus assessment unit) and Carey WWTP (Lower Tymochtee assessment unit).

**13. Comment:**

A comment was made that a percentage deviation from the target (Table 10) is not the same as the percentage reduction of the observed median needed to reach the target (Table 19). Even the correct calculation of the percent reduction in existing concentrations needed to attain a target concentration cannot be directly translated into an adequate point source load reduction. It would be adequate only under conditions where 100% of the phosphorus in the stream is derived from the point source.

**Response:**

As mentioned under comment 12, Ohio EPA's point source reduction recommendations used the percent deviation from the target as a simplified way to trigger phosphorus load reductions for dischargers in a whole assessment unit. Ohio EPA realizes that instream phosphorus concentrations are the result of many sources (natural, point and nonpoint, etc.) and are affected by precipitation, seasonal patterns, and assimilation by aquatic biota. That's one of the reasons why a general approach to trigger point source load reductions is considered adequate to provide relief to an enriched assessment unit. The comment mentioned there are other sources besides point sources, therefore a very strict limit on point sources would be very expensive, potentially draining county funds that wouldn't completely solve the phosphorus enrichment problem. The balance of the phosphorus load reduction will come from nonpoint source reductions, as well as increased assimilative capacity due to habitat improvements.

**14. Comment:**

A request was made to justify calculating average daily loads from point sources using the formula

$$(\text{Kg/day}) = P_{\text{eff}} \times Q_{\text{eff}} \times F$$

$P_{\text{eff}}$  = median daily phosphorus concentration

$Q_{\text{eff}}$  = median daily flow

**Response:**

Calculating phosphorus loads using median concentration and flow data as shown in TMDL Table 27 will be the basis of an NPDES permit condition for the point source dischargers. The permit condition will be used to determine compliance with the TMDL wasteload allocation. Nutrient criteria, or the target values for phosphorus that were used in the TMDL, are not necessarily meant to be met at all times, but rather over a defined averaging period. The phosphorus calculations in the TMDL are based on an annual period, using various safety factors to address extreme and seasonal situations. The permit condition is also based on an annual period - the median of annual phosphorus data and the median of multi-year flow data. This provides the treatment plant with a known phosphorus level they need to regularly achieve to comply with the TMDL load. As operating data shows, to ensure compliance with permit conditions, wastewater plants treat to levels significantly lower than what's required to meet the permit.

**15. Comment:**

A comment was made that there are inconsistencies between TMDL conclusions and sub-watershed descriptions regarding the need for point source phosphorus controls. Because the median concentrations in headwater streams are used as a basis for assessing the needs for point source controls, problems of elevated phosphorus concentrations in Broken Sword Creek do not show up in the TMDL Tables 10 and 19 or in the Questions and Answers brochure.

**Response:**

Ohio EPA agrees that using the headwaters' median concentrations as an indicator of phosphorus enrichment for Broken Sword Creek ignores the impact of point and nonpoint sources entering the mainstem between RM 12.4 and the mouth. Since the stream flow was so low in 2001, even very small dischargers (septic systems, package plants) in addition to the Nevada WWTP were increasing the phosphorus concentration in Broken Sword Creek. The figure below shows Total P concentration versus river mile in Broken Sword Creek. Based on the 2001 data, the average phosphorus concentration rises consistently above the target level (0.1 mg/l) starting at the monitoring site located in RM 10.53 (upstream from the Nevada WWTP tributary). Some other phosphorus sources affect the creek downstream of RM 12.4. The known point sources are the Foxfire Campground (unknown RM) and the Nevada WWTP, entering at RM 5.23 via Rhine ditch. More information may be needed to confirm if the sources of phosphorus are indeed those point sources. For TMDL report purposes, it is recommended that the basin wide 25% phosphorus reduction (intended for nonpoint sources) be also applied to point sources in Broken Sword Creek, so that any financing opportunities available can be used for point source load reduction as well. Additional reductions may be recommended once more information is available.

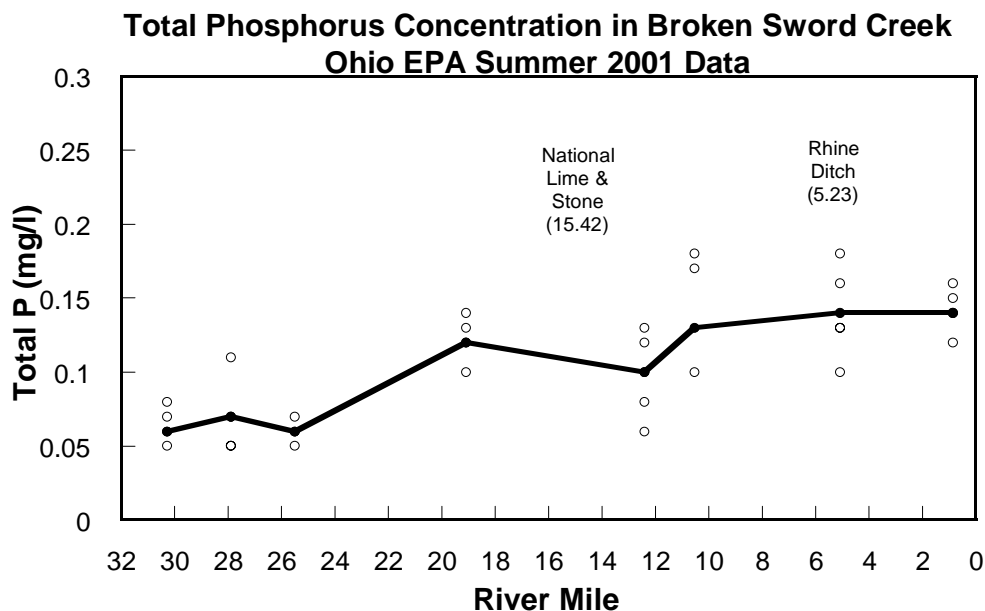


Figure source: Biological and Water Quality Study of the Sandusky River & Selected Tributaries, Ohio EPA, Division of Surface Water, 2001

**16. Comment:**

A comment was made that controls of elevated phosphorus concentrations during low flows have a very important role to play in the restoration of impaired aquatic life in streams of the Sandusky Watershed and that most of this phosphorus is derived from point sources or septic tanks. The author presented several attachments interpreting raw chemical data collected by the Ohio EPA in 2001 and provided to the Sandusky River Watershed Coalition.

**Response:**

Ohio EPA is pleased that the information provided to the Coalition has been useful. A 25% phosphorus load reduction will be recommended for Broken Sword Creek point source dischargers, with larger reductions possible once more information is available. The most significant point sources in the other subwatersheds mentioned have already been targeted for phosphorus reductions.

**17. Comment:**

A request was made for information regarding the translation of station data to stream segment data presented in watershed maps presented in Appendices C-F.

**Response:**

A disclaimer will be added to the watershed maps in the appendices to indicate that the boundaries between impairment levels or changes in other index conditions are



generally placed at the site where a monitoring station was located, even though the real boundary may be located elsewhere. The maps provided in the appendices are intended to be first drafts, to be refined by the watershed group with more local knowledge, and will be labeled as such. Alternatively, these maps could be excluded from the TMDL report altogether, and the watershed group could refine them before they are released to the public.

**18. Comment:**

A request was made for a map of aquatic life use designations. While the information was included in table form in the TSD, not all headwater streams were included.

**Response:**

See response to comment 17 and comment 4.

**19. Comment:**

A question was raised regarding streams in Appendix C that were not assessed for use attainment and if un-assessed streams have specific use designations assigned.

**Response:**

No. The maps are a work in progress and will be labeled as such if included in the final TMDL report. Any small tributary that had no biological monitoring station should be considered unassessed. Once the stream or tributary has been assessed by the biologists, a classification is recommended, and formal rule-making occurs (Chapter 3745-1 of the Ohio Administrative Code). Table 1C in the TSD document indicates which newly assessed streams and tributaries in the Sandusky watershed are recommended for new or different use designations. These are proposed, and won't be final until the rule-making process, including an opportunity for public comment, is completed. Any tributaries not shown in that table are unassessed. WWH criteria apply in streams having no other designation.

**20. Comment:**

A comment was made that several sampling locations in the Honey Creek basin were missing or misplaced on Appendix maps D-F.

**Response:**

The four stations that are mentioned were lacking lat/long coordinates when the maps were being assembled, therefore were not included on the map. These corrections have been made.

**21. Comment:**

A comment was made that the use of site specific QHEI, substrate, and riparian scores has advantages over judgements of conditions based on median scores.

**Response:**

Text has been added to the TMDL report stating that it is acceptable for watershed groups to embark on restoration efforts based on reliable site specific information, even if the overall scores for the watershed are above target.

**22. Comment:**

A comment was made that basing deviation from habitat targets on median scores could undercut the spirit of restoration efforts because programs to reach the goal could be limited to a small subset of the stations whose scores fall below the target score.

**Response:**

Appendix D of the draft TMDL report shows plots of river mile versus habitat scores (and applicable habitat target) for the major tributaries in each assessment unit. This information allows watershed groups to target specific stream reaches for restoration activities, regardless of the assessment unit results.

**23. Comment:**

A comment was made that numerical cutoffs of excellent, good, fair, and poor rankings for QHEI, substrate, and riparian corridor conditions should be included in the TMDL document.

**Response:**

The cutoff ranges for segment condition will be included in the TMDL report. They are intended to roughly indicate the extent of each segment and their condition. This information was provided to Dr. Baker via electronic mail on March 22, 2004.

**24. Comment:**

A comment was made asking why the use attainment maps in Appendix C took into account use designation, but the various habitat maps did not.

**Response:**

Neither Appendix C nor the other maps display use designations, due to lack of resources to refine the maps. This is misleading in Appendix C, because a segment shown as being in full attainment doesn't specify if it's classified as Warmwater, Modified or Limited Resource Water. The maps may be replaced by tables to eliminate the confusion.

**25. Comment:**

A comment was made that the method for calculating assessment unit scores should be described in the document. The possibility of one station within a watershed size range determining a large portion of the score was viewed as a problem.

**Response:**

Text in Section 2.2.1.2 will be revised to include the method of calculation.

**26. Comment:**

A comment was made that drainage areas associated with sampling stations should be provided in the TSD and TMDL documents.

**Response:**

This information has been provided to the author (Dr. David Baker) and will be included in the report, if available.

**27. Comment:**

A comment was made recommending the use of a station numbering system for comparing assessment unit tables with assessment unit maps in future TMDL reports.

**Response:**

No response needed.

**28. Comment:**

A comment was made that demonstration projects are needed to clarify relationships between nutrient processing, nutrient concentrations in streams, and stream habitat. It was also stated that it is necessary to distinguish between processing related to nutrient filtration and uptake during water movement through floodplains and riparian corridors during storm events, and in-stream nutrient processing during low flows.

**Response:**

The Ohio EPA agrees that additional research is needed.

**29. Comment:**

A comment was made that demonstration projects are needed to clarify the use of substrate scores to assess sediment/sedimentation reduction efforts.

**Response:**

Ohio EPA agrees that many factors affect substrate scores. As part of the habitat (QHEI) index, the substrate score is not intended to quantify sediment export, but to serve as a means to more specifically track how sediment characteristics (embeddedness, substrate type and quality) are contributing to habitat impairment. Ohio EPA data indicates that sites with good substrate scores are more likely to achieve their aquatic life use designation than sites with poor substrate scores.

**30. Comment:**

A comment was made that the WWH attainment line for the IBI is set at 36 rather than 40 in Figure 10 of the draft TMDL.

**Response:**

A corrected version of the graph is included in the final TMDL report.

**31. Comment:**

A comment was made that the importance of assessment unit scores in setting priorities for which sub-watershed to address underscores the importance of those scores. Concerns about the drainage area categories in the scoring suggest that considerable uncertainty could be present when using the current scoring system to categorize aquatic life conditions in subwatersheds.

**Response:**

Text that better describes assessment unit scores and how they are used to prioritize TMDLs will be drafted for the final report. Ohio EPA developed a point system that incorporates the status of recreation use (7 points), aquatic life use (4 points), and fish consumption (2 points). Ohio EPA does not intend to modify the method for determining assessment unit scores at this time, but is aware that in some instances only one site can determine the weight given to a watershed size category. The agency welcomes any suggestions on how to refine the scoring method.

**32. Comment:**

A request was made to add orthophosphate to the Ohio EPA analytical program.

**Response:**

The Ohio EPA, Division of Environmental Services (DES) has instrumentation capable of testing for orthophosphate. The Division of Surface Water (DSW) requests total phosphorus analysis because this is the parameter regulated in NPDES permits. The DSW will sometimes request total dissolved phosphorus analysis but did not for this project. Ohio does not have water quality criteria for phosphorus, but they are currently under development. U.S. EPA has mandated that states adopt phosphorus criteria and are recommending total phosphorus values calculated by a reference site approach. It is likely that Ohio will continue to monitor for total phosphorus, but the agency will consider an orthophosphate test to provide additional information, especially when there is a good potential for phosphorus TMDLs.

**33. Comment:**

A comment was made to correct the 60% reduction in NPS phosphorus loads to 25% reduction in the top paragraph of page 48 in the draft TMDL.

**Response:**

The correction has been made.

**34. Comment:**

A comment was made that Section 4.1.3 describes why Ohio EPA clustered the subwatershed data and compared median values with target values, but the same paragraph also suggests importance of using the data on a site specific basis.

**Response:**

It is useful to examine the information from several points of view. The site specific data provides detail, while the sub-watershed scale data allows comparison among larger study areas.

**35. Comment:**

A comment was made that the Ohio EPA provided very good justification of 25% for the phosphorus reduction from nonpoint sources.

**Response:**

No response needed.

**36. Comment:**

A comment was made that it is not clear why both monthly and weekly concentrations are shown in Tables 26 and 29 of Section 6.1.3 and why the values differ.

**Response:**

Many pollutants regulated by an NPDES permit have both concentration (mg/l) and loading (kg/day) limits and minimum/maximum values (weekly) and average values (monthly) are established for each. Monitoring frequency depends on the parameter and can be daily, 3 times per week, or once per month. Individual results must meet the weekly limit, while the average must meet the monthly limit.

**37. Comment:**

Comparing information for Broken Sword Creek in the TSD with the TMDL reveals some inconsistency with respect to how many miles are impaired.

**Response:**

The use attainment maps shown in the appendices of the draft report have been modified and explanatory notes has been added.