

Groundwork for Future WQS Changes

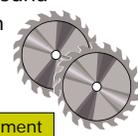
Discussion with Stream Mitigation Workgroup

Dan Dudley
April 10, 2007

(session postponed from 2-13-07)

Objective

- To initiate discussion on changes in the WQS foundation elements
 - Improve dialogue through education, understanding
 - Look for evidence of common ground
 - Identify the “tools to sharpen” in a future rule making



Topics beyond the stream mitigation rule

Other venues for full scale debate and comment

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Topics Covered (before lunch)

- WQS foundation review
- ✓ Running water basics Homework No. 1
- Limitations of biological methods
- Beneficial Uses
 - Setting WQ goals for extrinsic values
- ✓ Antideg Tiers
 - Intrinsic values vs. Extrinsic values
 - Decisions to allow lower water quality
 - Meaning of existing use Homework No. 4

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Open Discussion (after lunch)

- ✓ WQS Rule Issues
 - Aligning legal interpretations with “program insights” Homework Nos. 2, 3 & 5

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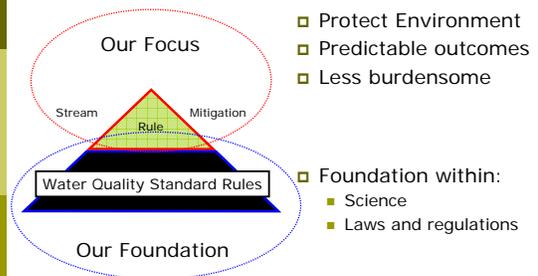
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WQS Foundation

Keep Foundation Intact while
Sharpening the Tools

Foundation Review

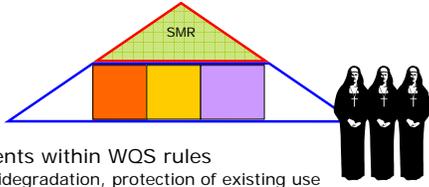


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What are Legal Foundations?



- Elements within WQS rules
 - Antidegradation, protection of existing use
 - Beneficial Uses, Tiered Aquatic life use categories (TALU)
 - Criteria to protect uses (a set standard)
 - Chemical WQ criteria
 - Biological criteria linked with some TALU

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Important Caveats

- Today's presentation and discussion of topics by Ohio EPA staff are to foster an open dialogue on key policy and technical issues
- What we say represents the viewpoints of staff and mid-level management
- These viewpoints will be further shaped by today's discussion and later presented to Director Korleski's senior management for consideration

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Which Tools to Sharpen?

- Definition of terms
- New and/or refined aquatic life uses (ALU)
- Antidegradation protocols
- Biological criteria
- Gauging non-attainment of ALUs
- Others?

Give us your thoughts

Please separate the task of sharpen these tools as we discuss the stream mitigation details

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Running Waters

Some Fundamentals

Running Water

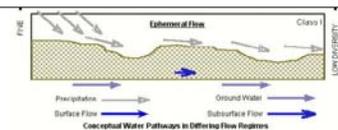
- What is a stream, where does it begin?
 - Homework No. 1
- Ecological answers
- Legal answers – set aside for now
 - Final topic, aligning legal interpretations with "program insights", discussed after lunch

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Hydrology controls biology

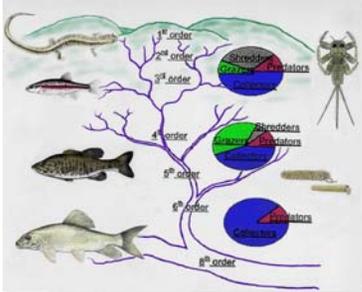


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Stream continuum



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My Answer

- A stream begins where the prevailing hydrology creates a channel and bed where aquatic life forms have evolved strategies to survive there
- Very few channels are not streams
 - In Ohio these drain very small watersheds
 - Must determine the appropriate standards and protections for different stream environments

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Limitations of Biological Methods

Theoretical basis and considerations within a public policy context

Biological Integrity Goal

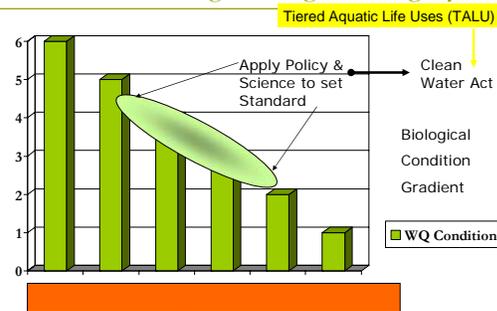
- Part of Clean Water Act
 - restore and maintain chemical, physical and biological integrity of nations waters
- Biological integrity – the ability of an aquatic community to support and maintain a structural and functional performance comparable to the natural habitats of a region.

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Framework to Manage Biological Integrity



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Biological Criteria

- The Good with the Bad



- Indexed to regional reference sites
- Documented SOPs
- Direct association with WQS goal setting
- Point source success story
- Ability to "see" remaining pollution
- Unforeseen implications when applied to new areas or issues
- Challenges of fitting into an "different" regulatory framework

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Methods Vary by Stream Size

- Large to mid-sized rivers and streams



- Adjust gear and metric scoring for smaller streams



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Very Small or "Atypical" Streams

- May need refinement in sampling methods and/or calibration of indices
- May need to add definitions and more TALU to WQS rules
- Biological methods applied with caution



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In Summary - Biological Methods

Strengths

- Designed and tested for Ohio's "principal" streams and rivers
 - > 50 - 1000 sq. mi.
 - > 20 - 50 sq. mi.
 - headwater streams
 - < 20 sq. mi.
- Linkage with sub-categories of TALU
- Sensitive to all stressors
 - Chemicals
 - Temp. & D.O.
 - Habitat



Weaknesses

- Gaps for certain stream types and sizes
 - Metric calibration
 - Method efficiency or lack of protocol
- For example
 - "swamp streams"
 - Primary Headwaters
- Method interpretation
 - Desiccation
 - UAAs for Ag-drainage
 - Threshold to gauge "loss for use"

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Beneficial Uses

Goal Setting and Extrinsic Values

WQS Fundamentals

Ohio Administrative Code (OAC) Chapter 3745-1

Three major components:

- Use designations

What each component does:

- Set desired goals

TALU, Level of biological integrity

- Water quality criteria

- Set safe "levels"
- Basis for permits

- Antidegradation

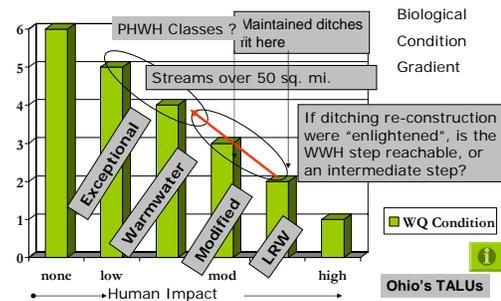
- Tests for "need" to lower water quality
- Preserves our best waters

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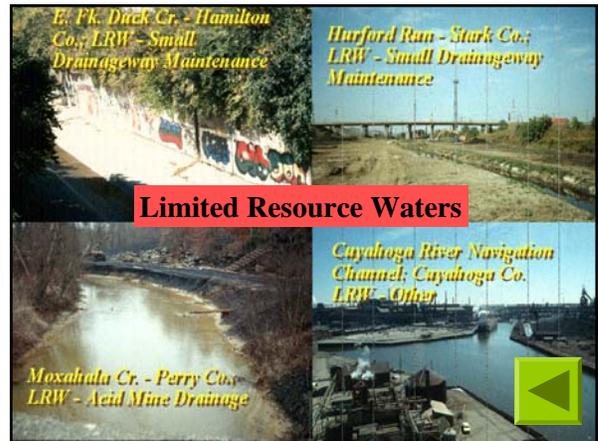
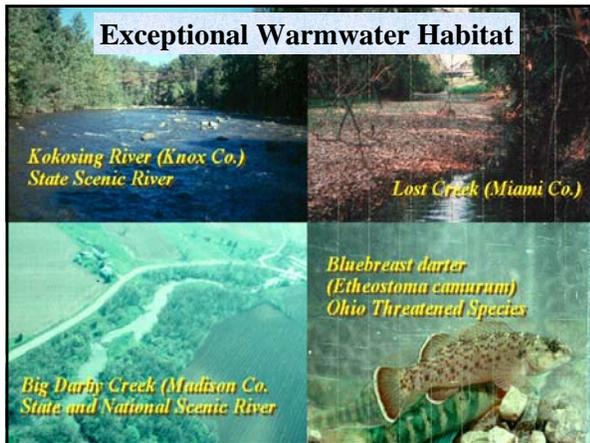
Tiered Aquatic Life Use Staircase



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Objective of Stream Mitigation Protocol

- ▣ Projects impacting a stream should allow for "like to like" restoration of the beneficial use
 - Done with on site and off site mitigation
- ▣ Protocol assumes there is no loss of use
 - Proper definitions and tests need to be in place to ensure that this is in fact the case

A lot of impacts on very small streams –

Toolbox must handle PHWHs

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Antidegradation Policy

Intrinsic values vs. Extrinsic values
Decisions to allow lower water quality

Antideg – a short history

- First implemented in the 1960s (before the Clean Water Act) through Dept. of Interior policy
- In response to the possibility that States could “sell out” water quality for growth and development, and do great harm to waters that were seen as national treasures”

A race to the bottom ---

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Antidegradation Philosophy

- There is an intrinsic, metaphysical or spiritual nature and value to water
 - Something beyond the material “use” of water by mankind that is important to most people
 - No right to pollute
- We should strive to keep clean waters clean based on this intrinsic value
- The quality of a water may be lowered, but only within set limits and by a prescribed protocol

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Three Tiers and Requirements

- Tier III, our national treasures
 - Outstanding National Resource Waters
 - Never allow any lowering of quality
- Tier II, waters quality better than WQS
 - Review is necessary to lower water quality
 - Social and economic justification
 - Outcome might be not to lower water quality
- Tier I, always protect the use
 - Designated use, and
 - Existing use

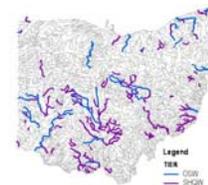
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Ohio's Tier II ½ Waters

- Outstanding State Waters
 - Ecological
 - Recreational
- Superior High Quality Waters
- These categories should factor into stream mitigation rule



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Weighing Decisions to Lower WQ

- Tier II ½ waters
 - High “intrinsic value” retained by restricting the degree to which we allow lower WQ
 - Implicit that socio-economic need is great
- Tier II waters
 - “Intrinsic value” of WQ exchanged for a lower WQ necessitated by a socio-economic need
- Tier I waters [Homework No. 4](#)
 - Prohibits loss of “extrinsic” values regardless of socio-economic need

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No loss of “extrinsic” value or use

- Home work No. 4
 - What does the term existing use mean to you?
 - What are some of the key factors to consider within a regulatory scheme that seeks to implement the requirement that “permitted projects may not result in the loss of existing use?”

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Wetland loss vs. Stream loss

- ❑ Wetlands are filled, loss of use in that “local instance”, but USEPA policy says that is acceptable under “no net loss” theory carried out via mitigation with new or enhanced wetlands in other locations
- ❑ What technical basis does this have?
- ❑ What “practical” factors led to this approach?
 - Static or slack water vs. flowing water systems
 - Often many small and relatively independent wetlands
 - The overall wetland system on a larger scale is the “use” to be protected

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Traditional thinking on streams

[References listed in homework](#)

- ❑ Major concern chemical/toxicity “impacts”
- ❑ Most states have only a general ALU classification system
- ❑ Rarely thinking of impacts akin to wetland fills – e.g., habitat alterations
- ❑ Not thinking in terms of having biological criteria in place to measure attainment of TALU
- ❑ Rarely thinking of very small streams

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A Scale to Gauge Loss of Stream Use

- ❑ “Sampling zone” scale of resolution for biocriteria performance level (BPL)
 - Essentially every linear foot of stream experiences no loss of BPL
- ❑ Stream segment scale of resolution
 - Length associated with X consecutive sampling zones experiences no loss of BPL
- ❑ Watershed scale of resolution
 - A “threshold” fraction of 1st to 2nd order(?) streams experience no loss of BPL



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Pick up with Homework Nos. 2, 3, 5

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Group Discussion

WQS Rule Issues

Aligning legal interpretations with
“program insights”

Small Group Breakout Sessions

- ❑ First Session
 - Scenarios 5a and 5b
- ❑ Second Session (if time allows)
 - Questions 2 and 3
- ❑ Procedure for the breakout sessions

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Scenario Discussions

- Scenario A - Frank Rd. Car Dealer
 - Scenario B - Regional Airport
- For each consider:
 - What you know -
 - What you don't know, but should -
 - What outcome do you recommend -

Small Group Discussion – report back to full group

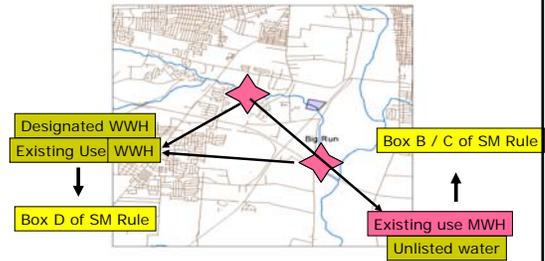
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Biological data points

Fig. 1. Scenario for hypothetical Frank Road Car Dealership expansion



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What issues are raised by the Biological data?

Fig. 2. Hypothetical expansion of Regional Airport located within Crystal River watershed.



Red lines are rivers. Gold lines are areas of expanded airport.

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Discussion Questions

- No. 2 - Are there important differences between a stream channel of natural origin vs. a stream channel constructed or highly modified by human activity?
- No. 3 - Are there streams on the landscape that don't need the attention of water quality regulators?
- If so, what are they – how would you describe those streams?
- If so, what are the differences?

Small Group Discussion – report back to full group

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Thank You

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