The Waters of the US Proposed Rule – the Science Advisory Board

Western Coalitions of Arid States – Fall Meeting
October 29-31, 2014
Holiday Inn & Suites Phoenix Airport North

Dr. Mark Murphy, Principal Scientist
Hassayampa Associates
How did we arrive here?

- 1969, Clean Water Act passed - Authority to regulate based upon the Commerce Clause
- 1985, Bayview Homes – EPA/Corp policy confirmed by court to include adjacent wetlands, tributaries
- 2001, SWANCC - ”It was the significant nexus between the wetlands and ‘navigable waters’ that informed our reading of the CWA . . .”
- 2006, Rapanos - “The required nexus must be assessed in terms of the statute’s goals and purposes. Congress enacted the law to ‘restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.’” - Kennedy
What just happened?

- **March 2013.** EPA Office of Research & Development calls for an Science Advisory Board, Ad-Hoc Subcommittee to review, *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence*
  
  March to June – 128 nominees including lists from both industry, municipal and environmental activist group.
  
  27 selected, only two non-academics, no active state regulators

- **September to December 2013.** Report released and reviewed by panel.
  
  Comments received by EPA and forwarded to panel.
  
  A consensus document.
The consensus of the panel

• General approval of the depth of research of the work
• Uncertainty about the relationship between the report and the draft rule.
• Dispute about the meaning of significance in the report.
• Serious reservations about assuming a dichotomous, or digital, definition of connection (i.e. is connected/is not connected)
The consensus of the panel

• Lack of a clear conceptual model.
• Lack of any temporal and spatial scaling (all connections are equal)
• Confusion about unidirectional vs. ‘other-dimensional’ flow.
• Regional differences ignored (arid West, permafrost, tropical near-shore wetlands).
• Serious reservations about the definition of ‘geographic isolation.’ If all systems are connected . . . where do WOTUS end?
Conceptual model.

• Cause and effect
• Connectivity to what?
• Need to define ‘flowpaths’ not ‘connections.’
• Need to define actions and consequences.
• The risk exposure paradigm
The risk exposure paradigm

- A source - transport – exposure, physics-based process.
- Defines a clear, but possibly complex, flowpath
- Defines a testable cause and effect couple.
- End member exposure – directly extracted from toxicological science, for example, water quality criteria
- Connections become gradational, no longer dichotomous and depend on significance.
The SAB told that ‘significant nexus’ was a policy term, not scientific.

- Justice Kennedy defined it relative to “the chemical, physical, and biological integrity of the Nation’s waters.”
- The Corps has always used a scientific basis for jurisdictional determination under the significant nexus test.
- The EPA Report uses ‘significant’ or ‘significantly’ 56 times, 43% citing statistically based conclusions from the scientific literature.
“Waters have the requisite significant nexus if they . . . significantly affect the chemical, physical, or biological integrity of traditional navigable waters or interstate waters.”

And what about the draft rule?

- Does not address the SAB review. How could it!
- No understanding of disturbance ecology or transport-based science.
- No science-based definition of either floodplains or isolated waters.
- Still based upon ‘ordinary high water mark’ which is not a science-based criteria.

“Other differences in identifying the jurisdictional limits of rivers and streams stemmed from the diverse environmental factors present in various districts. For example, districts in the arid West developed a method for identifying the jurisdictional boundaries of dry channels that flood occasionally, expanding several times their normal size.”

And what about the draft rule?

- Panel was split but the two members from WestCAS states did not support the scientific basis of the draft rule.
- The draft rule does NOT reflect the SAB review comments.
- Regulated community needs to provide a science-based alternative to the draft rule.
- Should use:
  - Gradational connectivity,
  - Physics-based transport processes,
  - Disturbance ecology and toxicological data to produce
  - Quantifiable down-gradient ecological consequences.
“Little if any sediment entrained upstream of Marana (immediately north of Tucson) makes it through the Santa Cruz Flats to the Gila River, except during rare, large floods. Indeed, most maps do not show a channel crossing this nearly featureless plain. Most of the time, the lower Santa Cruz valley functions as a closed basin, with all the water and sediment from the Tucson Basin trapped on the alluvial plain downstream of Marana.”

Questions?