

**Summary Minutes of the
U.S. Environmental Protection Agency (EPA)
Science Advisory Board (SAB)
Ecological Processes and Effects Committee
Geographic Information System Screening Tool Review Panel Public Meeting
November 30, 2005**

Panel Members: See Panel Roster – Appendix A

Date and Time: Wednesday, November 30, 2005

Location: By telephone only

Purpose: The purpose of this teleconference was to prepare for an upcoming meeting of the Panel to review the EPA Region 6 Geographic Information System Screening Tool.

Attendees: Chair: Dr. Virginia Dale

Panel Members: Mr. DeWitt Braud
Dr. Ivan Fernandez
Dr. Carol Johnston
Dr. William Mitsch
Dr. Michael Newman
Dr. Thomas Mueller
Dr. James Oris
Dr. Amanda Rodewald
Dr. David Stoms
Mr. Timothy Thompson
Dr. Robert Twiss

EPA SAB Staff: Thomas Armitage, Designated Federal Officer
Anthony Maciorowski, Associate Director, EPA
Science Advisory Board Staff Office

Other EPA Staff: Sharon Osowski, U.S. EPA Region 6
Mark Potts, U.S. EPA Region 6
Rhonda Smith U.S. EPA Region 6

Meeting Summary

The discussion followed the issues and timing as presented in the meeting agenda (Appendix B).

Convene Meeting, Call Attendance

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the SAB Geographic Information System Screening Tool Review Panel opened the meeting at 2:00 p.m. He stated that the Science Advisory Board (SAB) is a chartered federal advisory committee whose meetings are public by law. He reviewed Federal Advisory Committee Act (FACA) requirements, the Panel's compliance with federal ethics and conflict-of-interest laws, and the panel formation process. He stated that records of Panel discussions are maintained, and that summary minutes of the meeting would be prepared and certified by the Panel Chair. Dr. Armitage then asked the Panel members to identify themselves and their affiliations.

Dr. Anthony Maciorowski, Associate Director of the EPA Science Advisory Board Staff Office, welcomed the meeting participants and thanked them for serving on the panel.

Purpose of the Call and Review of the Agenda

Dr. Virginia Dale, Panel Chair, thanked the panel members for serving. She stated that the purpose of the call was to prepare for the upcoming review meeting. She stated that on the teleconference EPA would provide background information on the Geographic Information System Screening Tool, the Panel would discuss the charge questions, and EPA would answer questions from the Panel.

Purpose of the EPA Region 6 Geographic Information System Screening Tool

Dr. Sharon Osowski of EPA Region 6 provided background information on the Geographic Information System Screening Tool (GISST) and described how the tool was used. She stated that the GISST was developed to review complex projects as required under the National Environmental Protection Act (NEPA). She indicated that there was often not time to complete an in-depth review of such projects. The GISST was developed as a tool for standardizing the process to initially screen projects to determine potential environmental impacts. She stated that the GISST was one source of information that was used in NEPA evaluations. She stated that EPA Region 6 would like the SAB to provide advice to the Agency on how to improve the GISST. Osowski asked the Panel to keep in mind the following points when reviewing the GISST and addressing the specific charge questions to the panel:

- There is a need for a consistent and systematic approach to impact assessment and the GISST was developed to help meet this need
- There are no other tools currently available to EPA Region 6 for systematic cumulative impact assessment;
- There is a need to determine how the GISST "criteria" used for evaluations can be enhanced;
- There is a need to identify the critical science questions that must be addressed to appropriately use the tool in impact assessment;

- There is a need to consider whether it is reasonable to apply overlapping datasets in the GISST to conduct evaluations;
- The utility of the tool for assessing cumulative impacts should be considered;

Panel members discussed the uses of the GISST and asked EPA staff questions about the development and use of the tool. A panelist noted that a case study was provided to the Panel in the GISST User's Manual. The case study described the use of the tool for evaluation of the proposed Interstate Highway 69 corridor. He asked whether the case study would be presented at the meeting of the Panel. Osowski responded that she could answer questions about the case study and would present it in more detail at the Panel meeting. The Panel chair asked questions about the expertise of people who developed the GISST. She stated that it would be helpful to have additional information on the disciplinary expertise of the GISST developers, particularly in the areas of mathematical analysis and statistics. Osowski replied that she would make that information available to the Panel.

A panelist noted that some of the criteria used in the GISST were also used in the Critical Ecosystem Assessment Model (CrEAM) developed by EPA Region 5. The panelist asked whether there were commonalities among GISST, CrEAM, and other GIS-based assessment tools developed by EPA such as the Southeastern Ecological Framework and the Regional Vulnerability Assessment Methods. EPA staff responded that Region 6 had developed a "crosswalk" between the GISST and CrEAM criteria. Some of the CrEAM criteria were used in an assessment tool developed to conduct assessments in Texas. This tool was the Texas Ecological Assessment Protocol (TEAP). These TEAP criteria were also used in the GISST. EPA staff stated that Region 6 had considered incorporating into the GISST some of methods and criteria used in other EPA GIS-based tools. However these tools were developed for use in different regions, at different scales, and for somewhat different purposes, so EPA Region 6 staff could not apply the tools without additional development work.

A panelist stated that he had some concerns about the GISST that were beyond the specific scope of the charge questions. He asked whether there would be an opportunity to discuss these broad concerns. The Chair responded that in addition to responding to the specific charge questions, the Panel could provide broader advice to EPA. She noted that at the meeting of the Panel there would be an opportunity to discuss broader issues.

Discussion of the Charge Questions to the Panel

The Chair stated that individual Panel members had been assigned lead discussant responsibilities for the charge questions. She asked that the lead discussants initiate discussion of their assigned questions at the meeting and identify points to be covered in the Panel's responses. The Chair then reviewed the charge questions and asked panelists whether they had questions or comments about their assignments or the questions. The Panel then discussed each of the charge questions.

Charge Question 1

Charge Question 1 focused on whether the mathematical algorithm in the GISST, the GISST criteria, and the datasets were reasonable and appropriately applied. A panelist stated that there were approximately 70 criteria provided for use in the GISST and that EPA had requested input on whether these criteria were appropriate for assessing impacts. He stated that he had some concerns about how different criteria were combined to develop an overall impact score in the GISST and noted that Appendix A of the GISST User's Manual did not seem to provide enough information to determine how scores were assigned to the criteria. He stated that at the upcoming meeting of the Panel it would be helpful to discuss the basis for selecting various criteria for use in impact assessments and also the basis for assigning the 1-5 scores to the criteria. The Chair agreed with this comment and stated that the Panel would need to discuss these issues at the meeting.

Another panelist commented on the nature of the process used to develop and obtain peer review of the GISST. He questioned how the GISST criteria and data were selected for use and how criteria scores were developed. EPA staff responded that in many cases limited data were available for environmental impact evaluations. In developing the GISST criteria and scoring system EPA considered: 1) whether data were available to apply the criteria, 2) whether there were natural breaks in the data that could be identified to develop the scoring system, and 3) whether EPA program offices considered the criteria and scores to be appropriate and reasonable for use in evaluating project impacts. After the criteria were developed better data became available and EPA identified new "provisional" criteria. The provisional criteria were included in the GISST documentation. EPA staff stated that the provisional criteria may be appropriate for use in the tool but there may not be enough data currently available to apply these criteria. The Panelist asked whether there had been a 3rd party peer review of the GISST criteria and scoring system prior to the SAB review. EPA staff responded that the peer review of the tool had been internal to EPA.

A panelist stated that at the Panel meeting he would have questions for EPA about how the data had been scaled. He also noted that some of the data had been scored on a 1-4 scale, and he expressed the opinion that it may be more appropriate to score the criteria on a 0-5 scale. He also stated that he would have questions for EPA about how data sets should be grouped and aggregated.

A panelist asked whether any of the GISST criteria were used as "show stoppers" in an evaluation. EPA responded that there were no show stopper criteria. Endangered species impacts were considered to be very important because of the statutory requirements of the Endangered Species Act, but there were not thresholds that stopped the impact assessment process. The panelist stated that at the meeting he would like to discuss the need to assign weights to the criteria.

Panelists further discussed how endangered species impacts were evaluated in the GISST process. EPA staff stated that even if potential endangered species impacts were identified the assessment process would be completed. The Fish and Wildlife Service

would be contacted and endangered species impacts would be addressed through the consultation process.

A panelist stated that at the upcoming meeting he would like to further discuss how the criteria were developed. He also asked that at the Panel meeting there be discussion of how decisions were made using the GISST. He also noted that it was important to consider whether ordinal or cardinal numbers were used to score the criteria and indicated that this should also be discussed at the meeting of the Panel. The Chair asked EPA staff how they had addressed units of measurement in scoring the criteria. EPA staff responded that a unitless score was assigned on a 1-5 scale.

Charge Question 2

The Panel discussed charge question 2. This question focused on whether the GISST was appropriate and reasonable for use in prioritizing environmental impacts and in evaluating project alternatives in the NEPA process. Panelists asked a number of clarifying questions about the charge questions. Panelists asked EPA to define “project alternatives.” EPA staff responded that in most evaluations, project alternatives referred to projects that might be sited at different geographic locations. A panelist asked EPA staff how they viewed the differences between those parts of the charge question focusing on prioritizing impacts and those focusing on evaluating alternatives. EPA staff stated that the first part of the question addressed the strengths and limitations of the GISST as a tool for prioritizing impacts for further assessment. The second part of the question focused on the usefulness of the tool for comparing project alternatives for decision making. A panel member asked whether the GISST might be used to determine whether an environmental assessment or environmental impact statement is needed. EPA staff responded that the environmental assessments and impact statements are prepared in accordance with NEPA requirements and that the tool can provide useful information for NEPA evaluations.

Charge Question 3

The Panel discussed charge question 3. This question focused on steps that could be taken to enhance the usability of the GISST User’s Manual and documentation. EPA staff stated that the Agency was interested in Panel recommendations to improve the GISST User’s Manual and documentation. EPA staff stated that they wanted to provide a demonstration of the GISST on a laptop computer to Panel members at the upcoming meeting, but the demonstration had not yet been prepared.

A panelist expressed concern that only one case study of the GISST was being presented at the meeting. He asked whether there were other applications available that might be available to the Panel. EPA staff responded that they planned to present the Interstate Highway 69 case study at the Panel meeting. In that case study they would provide information showing how the criteria were developed, how expert opinion was folded into the process of using the GISST, and how the approach was limited by available data.

A panelist noted that the GISST User's Manual indicated that ecological processes were not explicitly taken into consideration in the GISST. He stated that some discussion of this limitation of the GISST would be useful at the Panel meeting.

The Chair then asked panelists if they had additional questions or comments concerning the upcoming meeting or the charge questions. There were no additional questions so the chair reminded the panelists of the lead discussant assignments, thanked the panelists for participating on the call, and stated that she looked forward to a productive GISST review meeting. The Chair then adjourned the teleconference at 3:30 p.m.

Respectfully Submitted:

Certified as True:

/Signed/

/Signed/

Dr. Thomas Armitage
Designated Federal Officer

Dr. Virginia Dale, Chair
Geographic Information System
Screening Tool Review Panel

Appendix A – Panel Roster

U.S. Environmental Protection Agency Science Advisory Board Ecological Processes and Effects Committee Geographic Information System Screening Tool Review Panel

CHAIR

Dr. Virginia Dale, Corporate Fellow, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN

MEMBERS

Mr. DeWitt Braud, Director, Academic Area, Coastal Studies Institute, Louisiana State University, Baton Rouge, LA

Dr. Ivan J. Fernandez, Professor, Department of Plant, Soil and Environmental Sciences, University of Maine, Orono, ME

Dr. Carol Johnston, Professor, Center for Biocomplexity Studies, South Dakota State University, Brookings, SD

Dr. William Mitsch, Professor, Olentangy River Wetland Research Park, The Ohio State University, Columbus, OH

Dr. Thomas C. Mueller, Professor, Department of Plant Sciences, University of Tennessee, Knoxville, TN

Dr. Michael C. Newman, Professor of Marine Science, School of Marine Sciences, Virginia Institute of Marine Science, College of William & Mary, Gloucester Point, VA

Dr. James Oris, Professor, Department of Zoology, Miami University, Oxford, OH

Dr. Charles Rabeni, Leader, Missouri Cooperative Fish and Wildlife Research Unit, U.S. Geological Survey, Columbia, MO

Dr. Mark Ridgley, Professor and Chair, Department of Geography, University of Hawaii at Manoa, Honolulu, HI

Dr. Amanda Rodewald, Assistant Professor, School of Natural Resources, The Ohio State University, Columbus, OH

Dr. James Sanders, Director, Skidaway Institute of Oceanography, Savannah, GA

Dr. David Stoms, Associate Researcher, Institute for Computational Earth Systems Science, University of California at Santa Barbara, Santa Barbara, CA

Mr. Timothy Thompson, Senior Environmental Scientist, Science, Engineering, and the Environment, LLC, Seattle, WA

Dr. Robert Twiss, Professor, The Graduate School, University of California-Berkeley, Ross, CA

SCIENCE ADVISORY BOARD STAFF

Dr. Thomas Armitage, Designated Federal Officer, U.S. Environmental Protection Agency, Washington, D.C.

Appendix B – Teleconference Agenda

SCIENCE ADVISORY BOARD

**Ecological Processes and Effects Committee
Geographic Information System Screening Tool Review Panel
Public Teleconference
November 30, 2005, 2:00 - 4:00 p.m. (Eastern Standard Time)**

Agenda

2:00 p.m.	Convene meeting, Roll Call of Meeting Participants	Dr. Thomas Armitage Designated Federal Officer EPA SAB Staff Office
2:15 p.m.	Welcoming Remarks	Dr. Anthony Maciorowski Associate Director EPA SAB Staff Office
2:20 p.m.	Purpose of the Call and Review of Agenda	Dr. Virginia Dale, Chair
2:25 p.m.	Purpose of the EPA Region 6 Geographic Information System Screening Tool and Overview of Charge to the Panel	Dr. Sharon Osowski EPA Region 6
2:55 p.m.	Panel Discussion of the Charge	Dr. Virginia Dale, Chair and Panel
3:35 p.m.	Public Comments	
3:45 p.m.	Review Agenda and Panel Assignments for the December 7-8 Meeting	Dr. Virginia Dale, Chair and Panel
4:00 p.m.	Adjourn	