

Sustainable Water Resources Roundtable, June 16, 17 2009 Meeting, Top of the Town, Rosslyn VA

Meeting Notes

Day 1, Tuesday June 16, 2009

Opening Welcome and review of goals for the day:

Rick Swanson SWRR Co-chair, **David Berry**, SWRR Facilitator

The Sustainable Water Resource Roundtable: An Overview,

Rhonda Kranz, Kranz Consulting; Water Environment Research Foundation

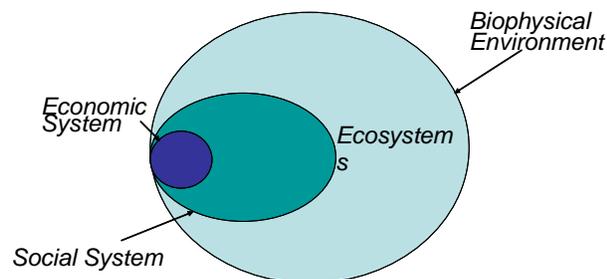
SWRR is a national collaboration of federal, state, local, corporate, non-profit, and academic interests. SWRR's mission is to promote sustainability of our nation's resources through...

- Evaluation of information
- Development & use of indicators
- Targeting of research
- Engagement of people & partners

SWRR was formed in 2002 and is chartered by the Advisory Committee on Water Information, which advises federal agencies responsible for managing water resources. SWRR receives funding from public agencies and the private sector. The roundtable has hosted multi-stakeholder meetings on indicators, innovative initiatives, and research needs in seven states in which about 300 people from over 200 organizations have participated. In addition, the roundtable has helped to organize and provided panels and speakers for other meetings.

The most fundamental concept for our work describes economic systems as embedded within social systems, both of which are embedded in the broader ecological system which includes living organisms and the physical environment in which they interact. This idea was central to the current indicator framework for sustainable water resource use.

Essential Relationships of Sustainability



Source: Sustainable Water Resources Roundtable

SWRR Principles of Water Sustainability

1. The value & limits of water
2. Shared responsibility
3. Equitable access
4. Stewardship

Round of self introductions: As usual it was inspiring to take note of the wide spectrum of interests related to the sustainability of water resources. A list of participants and their organizational affiliation can be found in Appendix A.

Accomplishments, indicators, and next steps of the Resources Roundtables

In the next part of the program we heard from each of the currently active resource roundtables on their accomplishments, their work on indicators and what they saw as their next steps.

Roundtable on Sustainable Forests

Peter Gaulke, Strategic Planning & Sustainability Office, US Forest Service began by stating that the Roundtable on Sustainable Forests “Serves as a forum to share information and perspectives that will enable better decision-making.” A goal of the work is to provide better data and better dialogue that will lead to better decisions.



The work of the Forest Roundtable is based on the Montreal Process Criteria and Indicators, the result of international negotiations of which the US Forest Service has been a part. The Montreal C & I provide the framework for conceptualizing, planning, implementing, monitoring and reporting on the status of forests. In 2009 the Forest Service in collaboration with the Roundtable on Sustainable Forests completes its Draft National Report on Sustainable Forests.

The Roundtable works on national and global issues like water quality and quality, invasive species, renewable energy and climate change and local challenges like flooding, sprawl, impaired watersheds and air quality. The Roundtable work plan has four major themes:

1. Reporting and Monitoring Progress toward Sustainable Forests
2. Coordinating with Related National Data and Indicator Efforts
3. Fostering Sustainable Forest Management through the Application of the C&I
4. Engaging the Broader Community of Forest Stakeholders at Multiple Scales

Peter gave examples of work at scale levels from national to local that use the Criteria and Indicators as developed by the Roundtable on Sustainable Forests. He suggested that the resource roundtables collaborate through the roundtable network and participate in data and indicator efforts including analyzing the connections among C&I Frameworks being used by

roundtables, fostering regional indicator and cross sectoral indicator initiatives and finding global opportunities for raising common concerns (e.g., 2011 International Year of Forests)

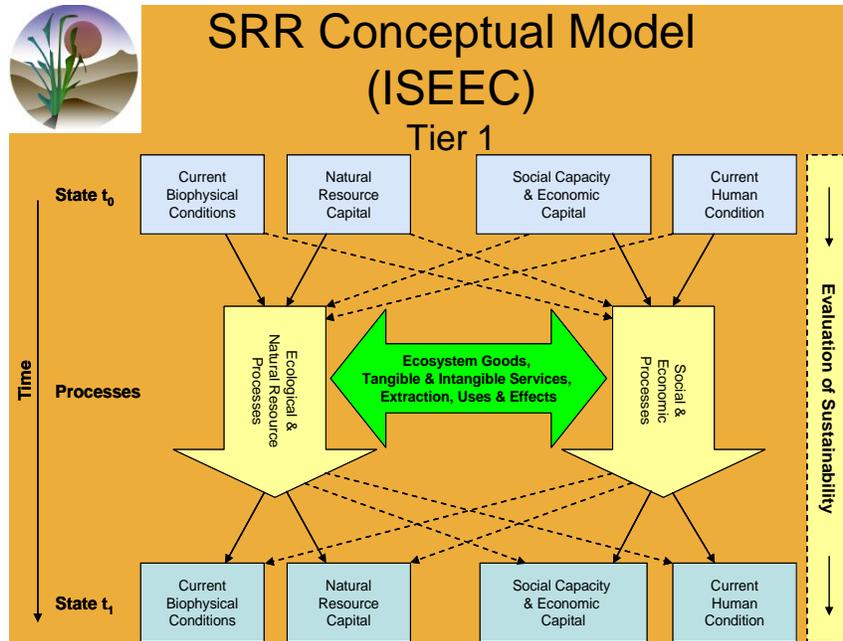
Sustainable Rangelands Roundtable

Clifford Duke, Ecological Society of America said there are 75 organizations involved in activities and initiatives of the Rangelands Roundtable. The SRR has identified 64 indicators of social, ecological, and economic rangeland sustainability, categorized under five criteria:

- Conservation & Maintenance of Soil & Water Resources on Rangelands
- Conservation & Maintenance of Plant & Animal Resources on Rangelands
- Maintenance of Productive Capacity on Rangelands
- Maintenance and Enhancement of Multiple Economic & Social Benefits to Current & Future Generations
- Legal, Institutional, and Economic Frameworks for Rangeland Conservation and Sustainable Management

The SRR identified 27 core indicators, those easiest to assess with current technologies, tools, and inventory platforms and held a workshop in June 2007, led by indicator expert James Bernard. Preliminary results were presented at the SRR meeting in Albuquerque later in 2007, and the process is ongoing. Overlaps, omissions, ambiguities, and compound indicators were identified, as were linkages to rangeland ecosystem goods, services, and core processes. The SRR does not have financial or personnel resources to review current indicators comparable to the intensive year-long process undertaken by the Roundtable on Sustainable Forests. If resources are available, SRR would welcome the opportunity to do so.

The SRR conceptual model working group did a case study described as an Integrated Social, Economic, and Ecological Concept (ISEEC). A paper on the model will be published in the *Journal of Society and Natural Resources* this year. SRR Steering Committee members Bill Fox, Bob Breckinridge, and John Tanaka led this effort, with other authors. Questions can be addressed to Dr. Bill Fox at Texas AgriLife Research, w-fox@tamu.edu.



Cliff concluded with summaries of the work on SRR indicators and climate change, SRR ecosystem services work, the SRR Ranch Assessment Project, SRR landscape pattern work and at a regional scale the Oregon Multi-Agency Pilot Project. These projects and the potential FY 2010 projects can all be found Cliff's PowerPoint presentation on the SWRR website.

Sustainable Water Resources Roundtable

John Wells, Minnesota Environmental Quality Board gave a presentation on the accomplishments of the Sustainable Water Resources Roundtable. He began with a review of the framework for sustainability developed by the group based on the idea that capital is the capacity to produce value over time and environmental, social and economic systems produce value through flows of services, experiences, or goods that meet human and ecosystem needs. We achieve sustainability by maintaining this capital to meet needs over time. SWRR uses the same chart as the Sustainable Rangeland Roundtable (above) to show those relationships over time and another (below) that builds on that chart to show ecosystem processes and societal drivers.



The framework SWRR uses for its indicators of water sustainability looks at five aspects:

- Water availability: Renewable water; Water in the environment after withdrawals for human use; and Water use sustainability
- Water quality: Quality of water for human uses; Quality of water in the environment; Water quality sustainability
- Human uses and health: Withdrawal and use of water; Human uses of water in the Environment; Water-dependant resource use; Human health
- Environmental health: Indices of biological condition; Amounts & quality of living resources
- Infrastructure and institutions: Capacity and reliability of infrastructure; Efficacy of institutions

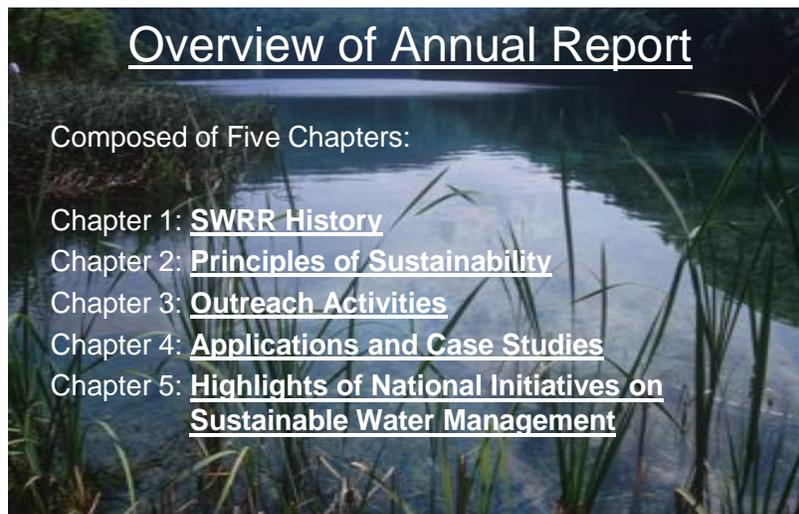
John also noted the factors SWRR considers important for developing a good set of indicators:

- Condition & capacity of ecological, social and economic systems
- A focus on what's most relevant to sustainability
- Appropriate time horizons and scale
- Information integrity
- Understandability

The work ahead for SWRR includes scalability of indicators to national, state, regional and local levels; assisting agencies in communicating the need for water sustainability; and expanding SWRR's relationships with the scientific and business communities and with regional water management programs. The current set of SWRR indicators for water sustainability, many of which John presented in his talk is available on the SWRR web site: www.acwi.gov/swrr

SWRR Annual Report

Doug Wade, Aarcher Consultant,



Doug outlined elements of the draft report which the Roundtable believes will communicate the SWRR's contributions to the water resources community, enhance outreach to engage participants, advance the exchange of information, and serve as a catalyst for future SWRR collaborations.

The history chapter of the report gives the authority, mission, vision and primary goals and objectives of SWRR. The second chapter on Principles of Water Sustainability puts forward our view of sustainability as an evolving, multidisciplinary study with no single definition or prescriptive solution. SWRR's work illustrates principles of sustainability through use of systems concepts.

Chapter 3 summarizes some of the outreach activities, presentations and contributions of SWRR participants. It provides review of SWRR meetings held in 2008, presents abstracts by SWRR participants and other water resource professionals, and presents the paper on the energy/water nexus that was supported by DOE National Energy Technology Laboratory (NETL) and written by Stacy Tellinghuisen then at UC Santa Barbara. The paper summarized presentations of two meetings of the SWRR exploring the Energy/Water Nexus. The main points of her paper are that water and energy are inextricably linked, thermoelectric power plants accounted for 39 percent of all water withdrawals in the U.S, providing water services including heating, cooling, pumping can require substantial energy and that there are significant opportunities for the water and energy sectors to collaborate on strategic planning to increase efficiency of water and energy used in providing water/energy services.

Chapter 4 gathers applications and case studies from SWRR participants to provide insights into water resource challenges on various scales and to illustrate the value of indicators to understand sustainable ecosystem conditions. Submissions were invited in order to provide dialogue on the evolution of the study of sustainability, provide lessons learned by other organizations to advance the sustainable management of water resources, to emphasize local and regional policy considerations, help to guide future initiatives and roundtable collaborations.

The cases presented are:

- Chesapeake Bay: An Example of Integrated Success, Warren Flint, President 5 E's Unlimited
- Missouri River Basin: The Need for Sustainable Management, Warren Flint
- Sustainability in the Land of 10,000 Lakes, John Wells, Strategic Planning Director, Minnesota Environmental Quality Board
- Michigan Innovations in Water Management, Al Steinman, Annis Water Resources Institute, Grand Valley State University

Chapter 5 presents highlights of national initiatives on sustainable water management by other organizations to showcase those efforts and encourage collaboration. The initiatives included by no means represent all good work in the field but rather a sample of work by organizations with which SWRR has a close connection:

- USGS Water for America Initiative, Erik Evenson, Coordinator, Water for America Initiative
- Water Environment Federation 2008, WEF Managing Director, Mr. Matthew Ries
- EPA Report on Environment Water Chapter

Doug concluded by inviting participants at the meeting to comment on the draft report they had received.

Panel Discussion and questions on the role of the roundtables going forward and cooperation among them on The Year of the Forest, NEST and other projects

A meeting participant said that the indicators discussed in the three roundtables show trends or direction of change but there is no end point with respect to sustainability. There were comments supportive of the frameworks that encourage the preservation of various forms of capital.

Linda Parker from USFS said that while we often hear about the need to scale up to look at national data, we also need to scale down to look at the landscape continuum from rural to urban.

The representatives of the roundtables were asked about working across disciplines. Peter Gaulke said that the roundtables don't all use the same terminology but they can provide linkages across the landscape continuum. All have biodiversity, legal and institutional indicators.

John Wells suggested that the roundtables have to be careful not to tie only to national data and scale down but that the Water Roundtable needs to expand regional work as the RSF and SRR have done. Estimating sustainable supply is hard since we don't know how much water is available.

Cliff Duke wondered whether the roundtables could expand local efforts like SRR's work on the Front Range to create a national set of rangeland indicators. Some indicators could be evaluated using BLM range assessment data in their private lands data base. Cliff also said that the SRR took a field trip to the Baca Valley in Colorado that was useful in getting a local perspective.

Peter said we need to broaden and deepen the information to connect not just across resources but also landscapes. RSF can do that by pressing for more examples on the ground that can be shown. He said that regional indicator initiatives localize even further.

John said that it is useful to have detailed information on local systems like watersheds and forests and we still need to remember that it's all interconnected.

Jane Rowan the past president of the American Water Resources Association said that in managing specific sites we move from few indicators to many, and the devil is in the details. We can ask ourselves what is the relevant data? Where do we take this indicator and where do we find the objective criteria regarding what is sustainable and what is not?

There was some discussion of how the roundtables could best work to support the efforts to create indicators National Environmental Status and Trends. Cliff suggested that the roundtables collaborate in support of NEST's work on water indicators that will lead to the national set of environmental indicators. John volunteered to draft a letter suggesting to NEST that a framework like those used by the roundtables would be useful for putting the indicators into context.

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Lunch Keynote Speaker:

Jeff Peterson, Deputy Associate Director for Water Policy, White House Council on Environmental Quality

Jeff opened by reminding the Water Roundtable that he had spoken to us in the past and that he understood the importance of the work done by SWRR to support the sustainability of water resources. He said a key role of the Roundtable is to work with a range of stakeholders to improve management of water resources. CEQ also brings together people with diverse views and works to strengthen protection of the environment and its charter poetically charges it to:

“...encourage productive and enjoyable harmony between man and his environment...to eliminate damage to the environment and the biosphere...and to enrich understanding of ecological systems...”

To do this, Jeff said CEQ coordinates Federal environmental efforts working closely with agencies and other White House offices in development of environmental policies and initiatives.

Jeff’s remarks addressed two main topic areas: (1) emerging water issues and the thinking of CEQ about them; and (2) comments about the NEST project.

With respect to emerging issues and CEQ’s thinking, Jeff said President Obama has made it clear that he is driving forward a fundamentally new environmental and energy policy in America -- and in the world. This policy is based on science with the fundamental principal that a strong, sustainable economy and a healthy environment go hand in hand. CEQ is actively supporting the process of defining and implementing new environmental policies in areas ranging from climate change to ocean governance.

Jeff talked about key elements of the work that CEQ does related to water resources, particularly large aquatic ecosystems such as the Great Lakes and the Chesapeake Bay, restoring the broad jurisdiction of the Clean Water Act, and initial ideas about the design criteria that might apply to efforts to improve management of water data, including indicators. Because of the relevance of these topics to the Sustainable Water Roundtable Participants, they are presented here in detail:

PROTECTING LARGE AQUATIC ECOSYSTEMS

Despite the many improvements in water quality across the Nation, large aquatic ecosystems in every region of the country – the Great Lakes, the San Francisco Bay-Delta, from Chesapeake Bay to the Puget Sound – are struggling and are not meeting clean water goals or supporting healthy and diverse aquatic life. These large aquatic ecosystems share common characteristics. They are all rich natural resources of significant importance in both environmental and economic terms. They are all recognized as important -- in some cases are beloved -- by many people who live near them. Yet, despite all the care, and the determined application of our national environmental laws, these aquatic ecosystems are degraded and declining in some respects.

Why? As we learn more about the threats to these ecosystems, it becomes clear that -- despite some common characteristics -- each of these large ecosystems is very different and faces a unique array of pollution problems. Restoring the health of large aquatic ecosystems is going to require place-specific, tailor made, solutions. The challenge is to find, for each ecosystem, the right mix of programs, resources, and strategies that add up to a restored ecosystem. We are making some progress in this effort. For example, the President has just proposed \$475 million for the Great Lakes restoration initiative -- a dramatic increase -- targeting significant problems in the region, including invasive species, nonpoint source pollution, and contaminated sediment. Just last month, President Obama issued an Executive Order calling on Federal agencies to work with State and local governments and private citizens to expand efforts to restore the Chesapeake Bay. This work will include a multi-Agency effort to meeting water quality goals, responding to climate change, and protecting living resources. In addition, ecosystem restoration efforts in the San Francisco Bay-Delta, the Chesapeake Bay, the Everglades, and other areas are being supported. CEQ will be looking for creative, tailored ways to bring the right mix of Federal and other resources to the table to conserve those iconic places and to ensure the sustainability of those aquatic ecosystems well into the future.

JURISDICTION OF THE CLEAN WATER ACT

Since its enactment in 1972, the condition of rivers, lakes, streams, wetlands, and coastal waters across the country has dramatically improved. Today, millions of Americans are able to enjoy swimming, fishing, boating, and other recreational activities because of the cooperative efforts by Federal, State, Tribal, and local governments to implement the Clean Water Act. In addition, by protecting the Nation's aquatic ecosystems, the Clean Water Act has helped assure that water is safe to drink and fish and shellfish are safe to eat. Along with these vital environmental and public health benefits, clean and safe water is critical to the economy of the Nation, providing significant benefits associated with activities ranging from recreation to urban revitalization.

Supreme Court decisions in 2001 and 2006, however, narrowed the prior interpretation of the scope of waters protected by the Clean Water Act. Federal agencies have faced significant challenges implementing these decisions. In addition, U.S. Circuit Courts of Appeal have taken different positions in interpreting the Supreme Court decisions, further complicating implementation. Current agency guidance implementing the decisions contemplates complex findings that sometimes result in jurisdictional determinations that lack consistency across the country and can be time-consuming and expensive. Delayed and unpredictable decisions are frustrating and costly to persons seeking approval of projects related to these waters. Although the Supreme Court decisions arose in the context of the Clean Water Act dredged or fill program, they affect all Clean Water Act protections because the Act has a single definition for "waters of the United States". As a result, these decisions affect the National Pollutant Discharge Elimination System (NPDES) program; water quality standards program, oil spill prevention and

clean-up program, as well as the permit program for dredged or fill material. Taken together, these programs are the heart of the Clean Water Act.

The Administration is committed to resolving key issues with respect to the scope of the Clean Water Act in order to provide a solid foundation for addressing continuing challenges to the health of aquatic ecosystems. This will require focusing on the importance of coordination among Federal, State, and local programs related to wetlands, floodplain management, water quality protection, and habitat restoration. In addition, the impacts of a changing climate, including changes in precipitation patterns and rising sea levels, will pose difficult challenges for protection of aquatic ecosystems.

Finally, as we work to meet goals for wetlands protection nationwide, we need to identify opportunities to expand protection of wetlands and other aquatic resources that are especially vulnerable or critical to sustaining the health of these systems. The Chair of CEQ, along with Secretary of Agriculture Vilsack, Secretary of Interior Salazar, EPA Administrator Jackson, and Acting Assistant Secretary of the Army Salt wrote to Committee Chairs in the Congress to describe this problem and to identify four general principles that should be followed as Congress considers legislation in this area. Here are the four principles.

- 1) **Broadly Protect the Nation's Waters:** It is essential that the Clean Water Act provide broad protection of the Nation's waters, consistent with full Congressional authority under the Constitution. All of the environmental and economic benefits that these aquatic ecosystems provide are at risk if some elements are protected and others are not.
- 2) **Make Definition of Covered Waters Predictable and Manageable:** The definition of waters protected by the Clean Water Act should be clear, understandable, well-supported, and transparent to the public. Legislation and supporting guidance concerning waters covered by the Act should promote prompt actions and avoid time-consuming and costly technical analyses.
- 3) **Promote Consistency between Clean Water Act and Agricultural Wetlands Programs:** Farmers often face complex issues with respect to whether wetlands located on their farm are within the scope of the Clean Water Act, the wetland conservation provisions of the Food Security Act, or both. Identification of waters covered by the Clean Water Act and the Food Security Act, and operational elements of implementing programs, should reflect consistent, predictable, and straight-forward decision guidelines.
- 4) **Recognize Long-standing Practices:** In over thirty years of implementing wetlands protection programs, Federal agencies worked with States and stakeholders to make common-sense interpretations of the Clean Water Act in various agency regulations. Congress should consider including in the Clean Water Act certain exemptions that are now in effect only through regulations or guidance. For example, a carefully crafted statutory exemption for "prior converted cropland" would be useful to both farmers and Federal agencies.

The letter indicates that enactment of legislation amending the Clean Water Act – based on these principles – would go a long way toward addressing the substantial confusion and uncertainty arising from the recent Supreme Court decisions. It also indicates that, since existing guidance documents and supporting regulations can be revised to implement these principles to only a limited degree, a clear statement of Congressional intent is needed to provide a foundation for steady and predictable implementation of the Clean Water Act in the years to come. The

Administration will continue to encourage Congress to enact this important legislation and support this work where necessary.

WATER INDICATORS, DATA AND THE NEST PROCESS

2008 was an important year for the effective use of data and information to make sound decisions for protecting the environment with the commitment by CEQ, OMB, and the Office of Science and Technology Policy, to support development of measures of the condition of the environment through the National Environmental Status and Trends, or NEST, process. Also that year, the Heinz Center released its updated *State of the Nation's Ecosystems* and the report *Environmental Information: A Road Map for the Future*.

Much interest related to measuring the condition of the environment is focused on water. For example, the NEST process is starting with water. The OSTP released its Strategy to support water availability and quality, in September 2007 and legislative proposals addressing water research and data are moving in the Congress. To support the NEST later in the day Jeff offered ideas for criteria for a system of water indicators and data. Jeff said these “top ten” criteria have been suggested by others and he cited those that seemed to be especially important.

- **State roles.** The NEST project needs to go beyond just federal data to include data and information collected by others. The project should engage state partners.
- **Quantity as well as quality.** The architecture needs to reflect both the quality and the quantity aspects of water to be of greatest benefit.
- **Think about climate change.** How can the NEST indicators be used to better understand climate change impacts? As you choose indicators and data to include in the website, be aware of policy makers' need for information on climate change. Some of the information you have already selected to report is important for understanding climate change. Think about the balance between investments in observational data and in prediction models.
- **Wetlands.** In completing the water pilot for NEST, don't sidestep the issue of quantifying wetlands area, condition, quality, and trends. Wetlands are important ecologically and changes in them frequently rise to the attention of policymakers.
- **Estuarine and coastal ocean areas.** Limiting consideration to freshwater would overly narrow the scope reports on water condition and trends and key dimensions of estuarine and coastal ocean ecosystems should be included.
- **Real-time reporting is vital.** The NEST project needs to explore ways of building institutional capacity to serve decision makers with current, real-time information. Conditions that existed several years ago only help explain the context for current conditions. It's the current conditions that are important.

- **Control future NEST costs.** New opportunities for federal program investments will be limited. So the NEST project should focus on ways to report more and better information that do not require large, new, investments of federal funds.
- **Watersheds are an important part of the data management and reporting system being considered by NEST.** The NEST project should move into thinking about decision making, reporting conditions, and conducting analyses at the watershed level. So to the extent possible, addressing policy questions and reporting information by watersheds would be a good thing to do. In addition, be flexible about spatial scale. Where possible, provide information by finer spatial scales or provide explicit links to places on agency websites where information is available at finer spatial scales. Think about how to design a data management and reporting system that allows users to choose the spatial scale of interest to them and then have the website serve up data at that scale for the watersheds of interest.
- **Keep in mind the link between policy, data, and research.** Any institutional structure that is able to manage water data also needs to be well coordinated with water research programs, especially the research related to monitoring method and criteria development.
- **Feedback from decision makers to the builders and maintainers of the NEST information system is vital and regular sensing should occur.** Building a policy-relevant system with policy maker input at the beginning is important. More important is creating regular, periodic dialog with policy makers about the utility of the information presented as well as how the information is presented. Set up a continuous improvement loop that includes policy makers.

In closing, Jeff said there is every reason to hope that the next several years will see dramatic progress in protection of water resources, with steps forward in restoration of large ecosystems, restoration of broad jurisdiction of the Clean Water Act, and the development and effective use of data on water. He said a skeptic might say “we are confronted with insurmountable opportunities...” and the lack of progress in these areas in past years could reasonably cause one to be a skeptic. But, with the efforts of groups such as the Sustainable Water Resources Roundtable, he thought we can make substantial progress and he looked forward to that effort.

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Presentation on NEST Water Pilot and Developing Water Indicators,
 Rich Guldin, Director of Science, Policy, Planning, Inventory and Information, USFS



What is NEST?

Latest incarnation of ongoing national-level interest in having a national set of environmental indicators spanning the science-policy interface

Trace our lineage back to 1992 UNCED Conference through multiple national and international activities associated with sustainable development and sustainable natural resource indicators

15-year thread of interest by OSTP, CEQ, and OMB in accurately and timely reporting on current environmental conditions and trends important to national and regional environmental policy makers

NEST was launched in June 2008 to pilot test institutional relationships for developing environmental indicators, using water as the pilot

- CEQ, OSTP, OMB represent Executive Office of the President
- USDA (FS & NRCS), Interior (USGS), EPA (ORD & OWP), NOAA



4 Key Products of NEST Project

- Desirable attributes of high-level environmental and natural resource indicators
- Set of core policy-related questions that guide indicator creation/selection for water availability
 - Frame broad, high-level policy questions & issues
 - Reflect enduring, recurring interests
- Initial set of indicators for water availability (5 to 7)
 - Results of an initial test of data interoperability and the ability to report on them
 - Recommended changes to existing programs at the participating agencies to improve reporting
- "After Action Review" of institutional collaboration and any recommended changes to improve institutional capacity

Rich gave a presentation on NEST and the current set of indicators NEST is proposing to use to answer the five main questions we have about water resources:

1. How much water do we have?
2. How much water do we use?
3. What is the condition of aquatic ecological communities?
4. What is the physical and chemical quality of our water?
5. Is the water we have suitable for human use and contact?

The presentation was an introduction to working breakout sessions to give NEST feedback on the approach and indicators it proposes to post on its web site at <http://www.fs.fed.us/NEST/>

Small Group Reports Critiquing the NEST Website

Group 1: Oral Report:

Regarding "leading indicators", what are the drivers of increased demand for water (e.g., thermo-electric power generation)? Find indicators of those demand drivers and use them in the NEST web site.

- Land use change is important. Fresh data on land use changes should be included
- Move to collecting data so that it can be accessed and reported by major watersheds
- Include invasive species in the aquatic ecological conditions
- Include water temperature in the indicator data

Flip Chart Notes:

- A). Can indices of increased demand for water be identified? Competition between thermoelectric vs. irrigation vs. public water supplies vs. biomass/bioenergy
- B) Land use
- C) Watershed basis for reporting versus geo-political basis (e.g., States) for reporting
- D) Invasive species
- E) Temperature

Group 2: Oral Report:

We have three general comments:

- The five key questions are the right questions
- We have concerns about the target audience and the spatial scales used. These are not clear at this juncture. Most people at this table work at the local level and we don't have good data for decision-making.
 - How can we use NEST data and indicators at the local level?
 - How can we use the data for local planning and permitting processes? Developers bring lawyers and college "experts" to local permitting boards, but citizen boards (whose members try to do the right thing) don't have information to put the developer's information in context or to cross-check their assertions. Could NEST information help provide that context, if it were available at a finer spatial scale than national?
- We have concerns about the consistency of data collected. Data collected at the state level may not provide consistent information, but reporting only at the national level might not be best either.
- If there is a lack of data for a critical indicator, say so.

Flip Chart Notes:

You might want to start with one audience (e.g., high level agency decision makers) and provide data that would help them. We think there should be interest in expanding to other audiences (e.g., state/local) and would like feedback and ideas for planning future NEST activities. But start with one thing and see if it works. Right now, it's all over the place.

- It's nice that there is a website showing where to dig to get more information, hopefully useful local information. Be sure to keep the information links on the web site up to date.
- It would be useful to have a baseline that local interests could use to understand their community in context to broader perceptions
- Could the information be useful for long term planning?
- Not clear what policy decisions could be made just based on the data provided
- NEST data could be useful to inform non-point source policy decisions at state and local levels.
- Where we don't have data, but it would be important to have information, highlight these data gaps. Don't just passively let something blank without emphasizing the importance of these data that are not yet available.

Group 3: Oral Report:

Connect NEST to the NASA website. NASA has some information that will be useful for some of the questions and indicators you've identified. NASA snow pack information was mentioned.

Link freshwater information and coastal ocean information better. Put more information about coastal zones into the website.

How will "meaning" be distilled from the NEST indicators? We need a new assessment mission, capacity, and organizational arrangement to supplement indicator reporting as part of NEST.

- It should focus on large aquatic ecosystems/ecozones.
- It should include NGOs as part of the assessment team. The Forest Service's RPA Assessment is a good example. The Fisheries Management Council reports are additional examples.
- The assessment role should co-evolve along with the data reporting role. Look for ways to add meaning to the assessment process by including the right data. Look for ways to use additional science (ecological, social, and economic science) to add meaning to the indicator reporting and assessments.
- People care a lot about water. Although the science for water is good and available, the public deserves to participate in the assessments. People need to engage with the data and help add "meaning" to the scientific analyses done by experts.

Group 4: Oral Report:

Is NEST just reporting indicators where data are available? If data don't exist, report the indicator as needed and highlight the data gap.

Think about the international importance of NEST information for water. This example for the USA could influence other countries and motivate them to do environmental reporting better too. NGOs working internationally would like to hold up a successful NEST project for other countries to emulate.

We like the 5 key questions and the indicators selected. They are the right questions.

Think through how to present data for audiences "outside the Beltway." You need to sell this project and proposal to groups throughout the USA. Consider commissioning reviews from county and local officials.

Flip Chart Notes:

What if there is data, but no consensus on a national indicator? Algal blooms are an example. Is the number of harmful algal blooms growing? Is the intensity or the area scope or the toxicity growing? One could design a national indicator that has variable criteria because the algal levels that trigger hypoxia in one area (really, the dissolved oxygen remaining in the water) might differ from the algal level (dissolved oxygen levels) that trigger hypoxia impacts in a different area (e.g., cold water ecosystems may have a different trigger point than warm water ecosystems).

Further, there may be different levels of “naturally occurring” algae that make direct measure of algal concentrations invalid for direct comparisons among areas.

Do we need ephemeral indicators like daily stream flow data? Is this data in search of a question? What are policy makers expected to do with data that change hourly or daily?

There is an international need for a system like NEST.

The presentation of the 5 questions and the supporting indicators sets works well – well done!

Leading and lagging data are both important. Lagging data are important for assessing the effects of policies implemented. A given indicator can be both leading and lagging. Consider nitrates. Measured at the Mississippi River Gulf outlet, they are a lagging indicator of the effectiveness of watershed management activities upstream and they are a leading indicator of the size of the hypoxic zone expected in a few weeks farther out into the Gulf of Mexico. So do the terms “leading” and “lagging” confuse?

Sustainability does not seem to be an explicit objective of the NEST project. That’s too bad. We do see sustainability as implicit in the project, though, just wish it were a more explicit driver.

Do criteria have values attached to them? Even if the indicators seem unbiased in themselves, the fact that you have chosen them for inclusion in the NEST website says something about the team’s values.

With a goal of only including data collected more frequently than once every two years, do we toss out the USGS water use data? Or do we use the NEST project as leverage to bring water use sampling and reporting by USGS up to a once-every-two-years regular schedule?

NEST didn’t seem to develop its criteria and indicators with a concept of systems (nested) in mind. And so it may be vulnerable to the accusation that it only responds to “today’s question” rather than being considered as a more systematic reporting system.

Next Steps on NEST

Rich Guldin thanked the SWRR participants for their input and welcomed further cooperation with SWRR as NEST moved forward on its national environmental indicators using water indicators as a first case.

After the meeting adjourned for the day, David Berry hosted a dinner for out of town attendees and anyone else that wished to participate.

Day 2: Wednesday June 17

Welcome and review of goals for the day: David Berry

Federal Agencies' programs in the new Administration related to Water Sustainability:
Moderator, David Berry.

USFS Rick Swanson **Watershed Condition Framework**

Goals of Watershed Condition Assessment

- Establish a systematic process for determining WC classes.
- Foster multi-scale ecosystem based approaches.
- Strengthen the effectiveness of the FS Watershed Program.
- Improve the internal dialog among disciplines.
- Enable a coordinated and priority-based approach.
- Enhance coordination with external agencies and partners.

Rick gave a very open and candid presentation when he opened by saying that OMB made a determination of “*Results Not Demonstrated*” with respect to parts of the Forest Service Watershed Program. The Forest Service was told the program lacks performance-based outcome measures that meaningfully reflect program purpose.

- Inability to track watershed prioritization
- Failure to identify restoration outcomes
- Determine if projects improved watersheds

Rick said nothing gets the attention of a federal office faster than hearing from the budget office that they have not demonstrated the results of their program. The Forest Service response was the creation of the Watershed Condition Framework, a comprehensive assessment to:

- Classify & assess watershed condition
- Produce efficiency measures related to watershed condition
- Products:
 - nationally consistent definitions
 - national map of watershed condition
 - Acres improved to a better condition class / \$M

The assessment is in four phases: Broad-scale national WC assessment (to 5th HUC), reconnaissance level assessments by National Forests (to 6th HUC), validation and monitoring, and to develop future approaches for evaluating adjacent private lands.

Rick said the assessment would use various types of indicators including:

- Condition indicators - existing, on-the-ground alterations of observed or measured watershed conditions
- Risk-based indicators – situations with potential to degrade watershed conditions

Specific indicators are likely to include:

- Water quality conditions
- Water flow regime change
- Riparian vegetation condition
- Stream and habitat condition
- Aquatic biota condition
- Road condition
- Soil condition
- Fire regime condition
- Forest cover condition
- Rangeland, grasslands, and open area condition
- Mass Wasting Risk and Severe Erosion Hazard Risk
- Catastrophic disturbances
- Risk from insects and disease
- Risk from terrestrial invasive species

NOAA Jawed Hameedi, NOAA **Programs Related to Water Sustainability**

Jawed said that “sustainability” features very prominently in all program planning and guidance documents of NOAA, but not specifically “water sustainability”

NOAA’s science, services, and stewardship contribute to “sustainable” economic growth:

- Ensuring sustainable fisheries
- Improving coastal resilience [to environmental impacts]
- Safeguarding people and physical infrastructure [from extreme natural events]
- Sustainable use of ocean and coastal resources

There are programs related to sustainability in all line offices. In the FY 2010 budget request NOAA is seeking enhancements for its programs in harmful algal bloom forecasting, coastal resiliency and coastal zone management and stewardship. NOAA also received \$830 million in American Recovery and Reinvestment Act funds

- Habitat restoration, navigational services, etc.
- Climate modeling, supercomputer procurement, research, etc.
- Construction and repair of NOAA facilities; ships and equipment; improvements in weather forecasting; satellites

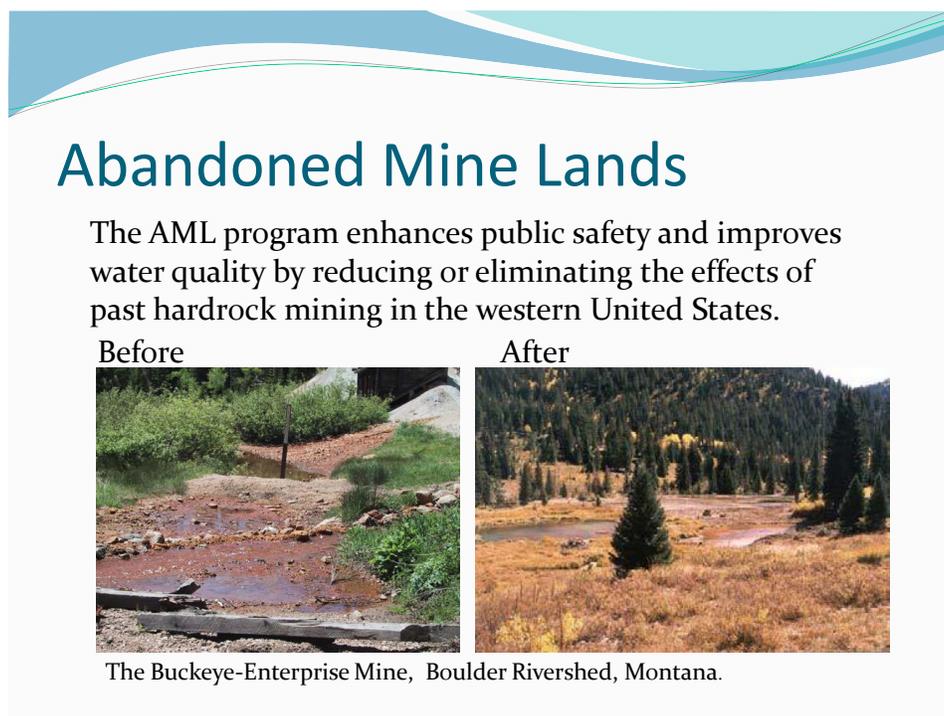
Nancy enumerated several areas of BLM work on water quality:

- Abandoned Mine Lands: restoration of sites
- BMPs associated with Oil & Gas development – The Gold Book
- BMPs associated with Grazing – Rangeland Health
- Monitoring Riparian areas – Proper Functioning Condition
- Colorado River Salinity Control Program

... and water quantity

- Working with the states to obtain water rights for BLM’s multiple purposes
- Standardizing water monitoring methodologies throughout BLM

Some of the more severe problems associated with water that BLM deals with are related to abandoned mine lands.



BLM is working in partnership with the Western States Water Council, the Colorado River Salinity Control Program, and is participating in the U.S. Army Corp of Engineers’ “Building Strong Collaborative Relationships for a Sustainable Water Resources Future” effort, a series of regionally-held meetings (southeast, western and eastern US) intended to bring together state and federal water managers to better understand how States and Tribes are planning and managing water resources, what their future plans are, and to determine how the Federal government can better support States in integrated water resources planning and management. One of the outcomes of this effort will be a “Federal Toolbox” which will enable the states to better manage the water within their boundaries.



Eric said the USGS objective for the Water Census is to place the technical information and tools into stake-holders hands that allow them to evaluate water availability for the primary questions that they are facing:

- Does the Nation have an adequate quantity of water, with sufficient quality and timing-characteristics, to meet both human and ecological needs?
- Will this water be present to meet both existing and future needs?

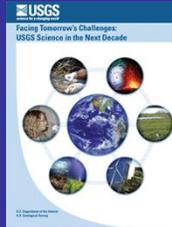
USGS had long done useful work on water. Congress said they recognized the importance of the work in Water for America but recommended USGS submit a more integrated program request in a future budget. Section 9507 of the Secure Water Act passed by the House on March 15, 2009, focuses on water data enhancement by calling for a full national streamflow information program, a national groundwater resources monitoring program and a brackish groundwater assessment. Section 9508 creates a national program to study water quality and quantity and requires a first report in 2012 and every five years thereafter.

The database of hydrologic indicators for the census will address:

- Precipitation
- Evapotranspiration
- Water in storage in snowpack, icefields, and large lakes
- Ground-water level indices
- Rates of ground-water recharge
- Changes in ground-water storage
- Stream and river run-off characteristics
- Stream and river baseflow characteristics
- Total water withdrawals by source
- Interbasin transfers
- Consumptive uses
- Return flows
- Impaired surface water & ground water supplies used for existing demands

A Water Census of the United States: Quantifying, Forecasting, and Securing Freshwater for America's Future

- The **status** of freshwater resources and how they are changing,
- Water use** for human, environmental, and wildlife needs,
- How freshwater availability is related to **natural storage and movement of water** as well as engineered infrastructure,
- The location of **water sources not commonly thought to be a resource** that might provide freshwater for human and environmental needs, and
- Forecasts** of likely outcomes of water availability, quality, and aquatic ecosystem health due to changes in land use and cover, natural and engineered infrastructure, water use, and climate.



Eric said the next steps in moving forward are to:

- Bring all of the existing plans and legislative mandates together
- Integrate existing science efforts to bring more resources to bear on water availability questions
- Develop an implementation plan for the Water Census

EPA Ellen Tarquinio EPA's National Aquatic Resources Survey

Ellen said that in response to critiques, workload model, ASIWPCA review of state programs, and EPA's own recognition of the limitations of existing 305(b) reports and the vulnerability of the CWA programs without adequate data. EPA worked with states to define the elements of an adequate monitoring program and developed a budget initiative to address key monitoring gaps:

- 1) Strengthen state monitoring programs
- 2) Assess all waters

EPA believes that it is adhering to the House Report language. States have flexibility to use these funds for state monitoring priorities. House language does not preclude applying some of these funds to statistically representative monitoring. EPA is targeting the smaller portion of these funds for state and Tribal participation in statistical surveys to overcome years of critiques that monitoring data is from a small percentage of the Nation's waters and cannot be compared across the Nation or over time.

There is wide acceptance of the use of statistical surveys in reports on the Nation's housing, labor, health, agriculture, and other sectors.

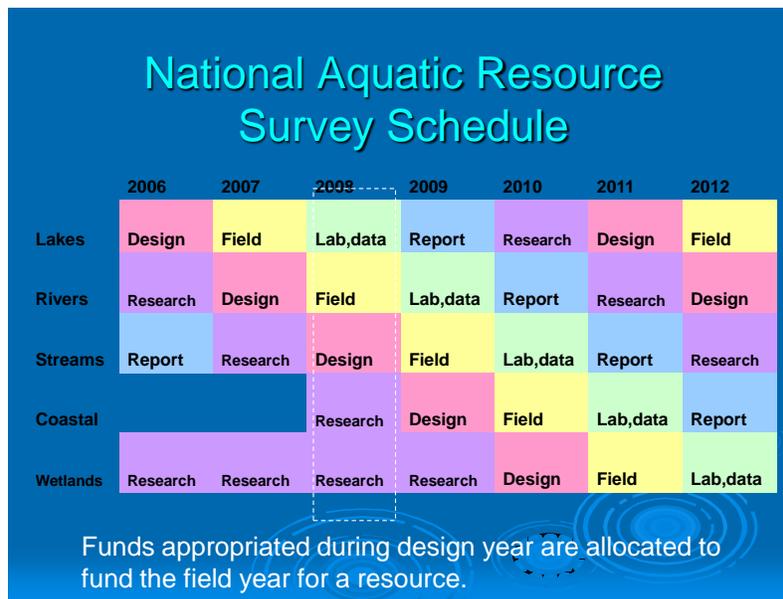
ASIWPCA's 2002 Water Quality Monitoring Programs Survey found:

- States have about half the monitoring resources they need

- By coordinating efforts, sharing innovations, and standardizing monitoring methods among agencies and organizations, much more effective use can be made of data collected.
- Within the realm of water quality programs, ambient monitoring activities have usually been the first to be cut when budgets are tight.
- Meetings and briefings with Congress emphasized the need for state monitoring enhancements and statistically valid reports

The National Aquatic Resources Surveys are directed to water quality monitoring to address past shortcomings and address key questions:

- What is the condition of aquatic resources nationally and regionally and how is it changing over time? For example:
 - What percent is in good, fair, poor condition based on interpretation of biological assemblages?
 - What percent supports recreational goals based on fish tissue or pathogen indicators?
- What extent of waters is affected by key stressors? For example:
 - What is the percent with elevated nutrient levels?
 - What is the percent with pathogen levels that may pose concerns for recreational use?



NRCS Jan Surface, **NRCS water related programs.**



United States Department of Agriculture
Natural Resources Conservation Service

USDA NRCS

Chesapeake Bay Watershed Initiative

- complements State and Federal conservation efforts that improve water quality and quantity, and restore, enhance, and preserve soil, air, and related resources.
- CBWI helps producers enhance land and water resources by:
 - controlling erosion and reducing sediment and nutrient levels in ground and surface water
 - planning, designing, implementing, and evaluating habitat conservation, restoration, and enhancement measures where there is significant ecological value for either retaining the land in its current use or restoring the land to its natural condition

- Besides the Chesapeake Bay Watershed Initiative, NRCS has many new watershed-based activities (e.g. Great Lakes Restoration Initiative, Conservation Effects Assessment Project, and the Agricultural Water Enhancement Program).
- Currently NRCS reports progress in terms of conservation practices installed. We need to be moving towards more measurable results-based progress reporting (i.e. reduction of sediment load, nutrient load).
- Since NRCS is not a monitoring agency, we will need to partner with monitoring agencies to help us define our progress in terms of measurable results.
- The multi-agency Conservation Effects Assessment Project (CEAP) is an on-going effort to quantify the environmental benefits of conservation practices used by landowners participating in USDA conservation programs.

Jan mentioned that the principle NRCS contact for SWRR is Howard Hankin, NRCS National Aquatic Ecologist.

Panel Discussion on Agency programs and opportunities for collaboration

Rick Swanson said there are opportunities for collaboration among agencies particularly if funds are made available by Congress. There is overlap among programs and so much data and information could be shared.

Nancy Dean told the group that everything Rick said about the difficulty of demonstrating the effectiveness of programs to OMB also applies to BLM. Offices at BLM have been talking among themselves. They would like to put together a handbook on indicators of program effectiveness so that all those assessing their programs would work from a common base. Nancy wondered if BLM could work with the Forest Service on this. Rick said the Forest Service is now doing assessments of its programs and the biggest headache is that OMB had different approached to assessment.

Ellen Tarquino said that EPA has experience in monitoring the effectiveness of its programs. Rick and Nancy said they would like to meet with EPA to explore how the experience and indicators used at EPA can be applied at their agencies.

Jawed Hameedi of NOAA said that collaboration is not limited to federal agencies working together but there are also advantages of working with private industry. NOAA shares information on navigation channels and weather with companies and the information exchange can work both ways. For example, companies with offshore oil rigs can not only benefit from NOAA's severe weather warnings but can also contribute the readings of their own instruments to the overall data base.

There were comments that regional and local collaboration is also important: the overall data on water and environment so vast that it makes sense to clip it down to the state and local level. One participant said it is appropriate to work at the state level but also work with data across boundaries since water sheds and natural features don't follow state lines.

There was a discussion of moving toward the ideal of a central data warehouse that was Internet accessible. The data gateways of each agency or organization represent just small pieces of the total picture. Such a central data base would like to be updated regularly. For example the list of impaired streams changes frequently. It would require a concerted effort to get this done but worth the effort since if all organizations had access to the same data sets they would be supported in better decision making. The degree of difficulty to implement is clear when we remember that there are struggles even within organizations for this level of cooperation.

Suggestions of useful things to do for the next Sustainable Water Resources Roundtable meeting:

- Presentations on more effective public education and briefing of decision makers
- A session on the Alliance for Water Stewardship's plan for development of global certification of water professionals and water authorities
- Invite the participation of the Army Corp of Engineers. It was pointed out that the Corps was a founding member of SWRR but has not participated much in the last few years
- Broadcast the meeting over internet
- Include local groups and county planning offices who need better information on water sheds when planning where to put schools and commercial facilities

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The SWRR steering committee will plan the next meeting to take place in the first few months of FY 2010, perhaps November.