

**Meeting Notes for the Sustainable Rangelands Roundtable (SRR)**  
**Jackson, WY– June 3-5, 2003**  
**Facilitated by Lou Romero, DeLaPorte & Associates, Inc.**

**Tuesday, June 3, 2003 3-5 pm**

**Welcome** – Tom Bartlett

**SRR Orientation and Overview for New Participants Introductions** –  
Lou Romero

**Participant self-introductions** – led by Lou Romero, Roundtable Facilitator

- Name, organization, position, location
- Familiarity with work of SRR (website, briefings, etc.)
- Interests you represent
- Any “burning questions”?
- Participation- this meeting? Future meetings?

A list of all participants can be found in Appendix A.

**SRR Background** – Tom Bartlett (See Appendix B)

**Research related to SRR** – John Mitchell (See Appendix B)

**Status of Criteria & Indicator work and Q&A** –Tom Bartlett, Dennis Thompson, Lori Hidinger, Larry Bryant

**John Mitchell:** We are not prioritizing indicators. Interested parties and institutions can make their own judgments of what is sustainable given the information provided through the indicators. The SRR is successful because we can agree that these indicators are important. Indicators that are not important may disappear. We are not assessing rangeland health. The purpose here is a framework for monitoring.

The SRR focus is monitoring, not assessment. We need to capture the state of knowledge in a consistent system so we can monitor across time.

**Dennis Thompson:** The timing is ripe for SRR C&I implementation across agencies. In the data phase we expect there will be further changes to indicators as we learn more about the data possibilities. The breadth of the C&I make the SRR suite of indicators useful for NRCS. With the current program, NRCS cannot prove impacts on private lands, we hope to do a better job with SRR indicators.

**Lori Hidinger:** Stakeholder input is scientifically based. Diversity of groups represented in SRR has been important. Where does it go from here? How do ecological indicators interact with economic and social indicators?

What happens after it’s published? This week’s meeting will focus on how to conduct outreach to agencies so that our indicators will be incorporated. We are hoping that the SRR will be a catalyst for change in monitoring.

**Wednesday, June 4, 2003**

**Welcome and self-introductions** – Tom Bartlett and Lou Romero

Thank you for the level of support and participation you have shown by your attendance at this and previous meetings. During this meeting we hope to conclude initial C&I identification phase, integrate new participants, focus and sharpen strategic plan and operational tactics, itemize, organize, and prioritize next steps.

New participants introduced themselves, with the following information:

- o Name, organization, position, location?

**SRR Update** – Tom Bartlett (Appendix B)

**Results of Washington DC outreach** (Talking points: Appendix C):

**By participants:**

**Bill Fox-** Worked with Stan Hamilton and Kristie Maczko to meet with House and Senate congressional staffers. Highlights: Met with some staffers who expressed a willingness to identify report language, had an opportunity to introduce SRR to the congressional staffers. Meetings with agency personnel provided an opportunity to thank agencies for their support in sending representatives, give feedback on products and encourage continued participation. Kristie lined up a full schedule for the five days. Met with VP Cheney's policy advisor. Western Senators offered a letter of support. Staffers offered to organize the hearing on the House side.

**Stan Hamilton-** Meetings were successful in presenting the work of the SRR. Many were already well versed on the concept of sustainability and some had previously heard of the Roundtable on Sustainable Forests.

**Lori Hidinger-** Tom Bartlett, Lori Hidinger, and Stacey Katseanes (NCBA) met with agency representatives/ leadership. They found varied levels of awareness of our process and sustainability issues. Meetings, especially with Lynn Scarlett of the Department of the Interior, were particularly productive. There was some success in promised future funding from ARS. The NGOs raised interesting questions at the luncheon. These comments should be considered and this group could possibly be brought in more to SRR work.

**Bob Welling-** GAO and OMB were particularly impressed that SRR had such success in bringing a diverse group together to produce this report. How do we maintain momentum of support for SRR and fulfill our vision of C&I that are widely accepted and used? We thanked agencies for their support. Tommy Thompson suggested that it is our challenge to get funding within the agencies. We will need to identify the cost-benefit to identify indicators to fill out data.

**By agency representatives:**

**Larry Bryant-** SRR representatives did a stellar job getting the SRR message out, putting in very long days. Agencies were impressed by the amount of participation in SRR and the number of different interests represented. Mark Rey –USFS is extremely interested in the linkages with ecological, economics, social aspects. How soon can we implement? When will it be available? We need a specific strategy with a budget to move forward. Mark Rey supports the idea that all agencies should participate. Needs to be sold at the local level.

**Dennis Thompson-** A symposium occurred at USDA with 4-5 agencies represented. At another meeting, three different deputy areas within NRCS were present; this should result in a greater NRCS commitment. SRR has been volunteered a couple more people who will be useful during the data collection phase. We still need to address how we talk about outcomes with the local level. Consistency of our SRR message to all agencies was important. SRR has a good beginning, agencies are now more aware of our work.

**Steve Borchard-** SRR met with Deputy director, he is very supportive of SRR and BLM's involvement in SRR. Lynn Scarlett (BLM) is extremely interested in monitoring and will help steer policy for the Department of the Interior.

**Paul Geissler-** Top levels of the USGS had a very positive reaction to the briefing by SRR. USGS has an increasing emphasis on accountability. Interior lands feed into efforts of this group.

#### **Follow up--**

Tom Bartlett- The level of awareness of rangelands seen in these meetings is new. We need to follow up with agencies that would support us. We need more equal support from all agencies, not just BLM and USFS. ARS has committed. More funding is crucial to continue our work. Mark Rey asked us to present our plan for products and outputs in July.

#### **Q&A--**

Were there any hard questions that we need to address?

1. How to measure social and economic indicators.
2. How to make this relevant to land management agencies and to BIA tribes ability to get funding to do land management.
3. How do we get the message across at the local level?
4. It is financially infeasible to fill out data for the 64 indicators. Which indicators are more important that will tell us the most about sustainable rangelands?
5. In the USDA seminar, Warren Flint raised the question of defining sustainability in relation to the criterion and indicators and how they are chosen.
6. The importance of defining rangelands was emphasized to the agencies.
7. Research needs.
8. How are we going to do this? How do we get the indicators implemented? What money, where do you expect it to come from? Raised the need for an operational plan to define what we expect to accomplish.

#### **Working Group Activity Reports:**

##### **Outreach Working Group – Lori Hiding**

DC meetings (see above), luncheon DC press-Greenwire, Environmental News release, policy newsletter for ABIS

##### **Scale Working Group- Paul Geissler**

The scale group will become more active in the data phase to clarify reliability, applicability, interactions, and interpretation (grain and extent) may be affected by scale.

##### **Definitions Working Group – Paul Geissler**

We have good conceptual definitions and there is general agreement on typical forests and rangelands. However to compare data and estimates, we need agreement on operational

definitions. The Oregon Demonstration Project found 10% to 15% difference in the areas of rangelands and forests depending on which definitions are used. There may be 40 to 60 million acres difference in the US, depending on which definition is used.

The FGDC vegetation subcommittee will meet in DC in August to better define the issue and develop an approach for agreeing on definitions. The first step of the 12-step process is to summarize the history of forest and rangeland definitions. This summary will allow the group to build on experience rather than repeating past attempts. FGDC has 18 participants representing a wide spectrum of involvement. For more information about the workgroup please visit the website at <http://www.pwrc.usgs.gov/brd/Definitions.htm>.

**John Mitchell**- Please see written examples of how SRR indicators will be used on the ground for drought and fire. Edits and comments are welcome (On the SRR website: [http://sustainable.rangelands.cnr.colostate.edu/more\\_information.htm](http://sustainable.rangelands.cnr.colostate.edu/more_information.htm))

**Critique of SRR Process** – led by Lou Romero  
Discussions were held at each table and reported to the whole group. The steering committee will consider the feedback for future meetings.

**A Strategic Course for the Future** – Tom Bartlett (Strategic Plan, Appendix D)  
Comments and Questions:

- Research goals should be more flexible.
- Funding required? Total of \$300,000, (\$200,000 for meetings and operational costs, \$100,000 for outreach activities); research funding would be additional.
- The primary goal of C&I of developing and filling in indicators needs to be further developed in the strategic plan.

**Explanation of Phases 1 and 2** – Lou Romero  
We have completed our report on C&I (phase I) and we are beginning the second phase.

<b>Groups/committees set up in phase I</b>	<b>Phase II objectives for each group/committee</b>
Steering committee	Steering committee will coordinate funding goal.
Coordination working group	Coordination goal
Outreach working group	Outreach goal
Scale working group	Needed for primary goal
Definition working group	Needed for primary goal
Five criterion groups	Work on primary goal
	Research goal

**CEQ Working Group on Sustainability** – Ted Heintz (Appendix B)

**Break into Goal Groups and work on Strategic Plan components**– Lou Romero  
Groups were asked to explicitly address:

- Products/outputs 2003-2004 and long-term
- Time schedules
- Budget estimates
- Lead responsibility
- Between meetings work logistics

**Group Reports and Discussion to Adopt Strategic Plan Improvements** – Lou Romero  
Four groups reported back: Primary Goal: Criterion and Indicators, Coordination, Outreach, Sustainability Research (see Appendix E).

**Thursday, June 5, 2003**

**ProgresSQL and ProgresGIS** – Bill Fox (Appendix B)

**Special Issue in JRM** - John Mitchell

- The editorial board of JRM will accept the articles as a special issue if accepted by peer review. The articles may include the following: Rigorous review of the literature to show why indicator is important, status of research on the indicator, need/lack of data, models, applicability of multiple scales, use of examples to synthesize indicator across indicators and show applicability at management level/ a cursory demonstration of applicability. May consider one indicator or two with results that show trends of that indicator. Each group can have review before JRM if desired.
- Data matrixes can be removed from the journal articles and the matrixes can be on website and put on CD or not publish at all. This would cut down on length of paper.
- Common denominator of articles will still be 6-point framework.
- John will hire editor to help with consistency across the board for integrated effort. Editor will be asked to look at all five papers for continuity and consistency in formatting and level of detail, so that there is consistency on addressing topic areas. Hopes to have editor turn them around in two weeks.

**Deadline:** Halloween, 2003. There should be a SRR meeting the week of October 20, which would allow for two meetings prior to this deadline.

**Original Criterion Groups data set identification and evaluation; JRM planning; and internal coordination/work plan development.**

**Criterion Group reports:**

**Soil and Water** - Sherm Karl

Discussed 3 issues:

- How to put the poster together for IRC, visuals, timelines
- JRM Article - need more guidance for restructuring article
- Data sets already in the article. Two members will push forward to improve one indicator by end of June.

**Plant and Animal** - Lori Hiding

IRC poster: discussed general content, examples, graphics. Assigned to: Robert Washington-Allen, Rod Heitschmidt, Bill Fox.

JRM article- data matrices should be cut out and put elsewhere to shorten article. Graphics, examples, format discussed to clarify content. Literature cited is present, perhaps overdone. Group will read document again for issues of flow, logic, and relevancy (Is it relevant at different scales? Ecological reasoning is relevant at different scales, but metrics may not be). Perhaps scale issues can be addressed with more depth in the introductory chapter.

**Productive Capacity** - Dennis Child

- IRC assignments: deadline 1 July for review.

- JRM: deadlines: comments and suggestions will be sent out July 10<sup>th</sup> and a rough draft by mid August (week before Portland meeting). Many members will not be present for that meeting. A list of outside reviewers will be made before the meeting to be reviewed at August meeting.
- Water capture and use indicator may be developed.

#### **Social and Economic** - Lou Swanson

- Initiate coordination with RSF indicators to take advantage of substantial overlap. The RSF is well ahead of SRR social and economic group in connecting national and local indicator efforts to standardize efforts and indicators. Ted Heintz will work with Ruth McWilliams and coordinate meeting among these groups. This should give a more robust review across indicator groups.
- Aaron Harp will take the lead for the JRM paper. Mark Brunson and John Tanaka will take lead on poster.
- How will definition of rangeland county be decided? If forestry and rangeland indicator groups are collaborating, the problem stops being a definitional problem and becomes a data problem instead.

#### **Legal and Institutional**- Stan Hamilton

- The paper will have a complete review again with emphasis on material to be added, improving the literature review, and reducing size by July 30. The paper will be reworked for Portland.
- Poster will include a summary table from introduction section of paper and will also use some graphics. Struggle with quantitative analysis, more discussion needed.

#### **Workshop Coordination** Research and Coordination group proposal (Appendix F):

##### Discussion:

Where will the money come from? This is a pre-proposal. Details need to be fleshed out in proposal, with possible sources of adequate funding. We will need substantial funding to move forward to generating report assessment of our rangelands.

We can present this proposal to Mark Rey for agency funding. We can sell these specifics given the background we already have. Private foundations might support this effort. SARE (sustainable agriculture research and education) supports national efforts in sustainable agriculture

#### **Review and discuss organizational structure and participant commitments** – Lou Romero

Participants filled out surveys to describe their future level of participation. The results are as follows:

##### Criterion data group participants (initial leaders in bold):

- Soil and water: Ron Shafer, Paul Tueller, **Sherm Karl**, Jerry Schuman, D.T. Booth, Robert Washington-Allen, Steve Borchard
- Legal/institutional: Tom Lustig, Ann Morgan, **Stan Hamilton**, Ken Nelson, Brian Czech
- Plant & Animal: Rene O'Brien, Ralph Crawford, Richard Mayberry, Bob Unnasch, John Spence, **Robert Washington-Allen**, Bill Fox, Doug Powell, Paul Geissler, Nelroy Jackson
- Productive Capacity: Bob Welling, Dennis Child, **Gary Evans**, Pat Johnson
- Social-Economic: Mark Brunson, Dan McCollum, **Lou Swanson**, Aaron Harp, Ted Heintz

#### Goal group participants

- Outreach: **Lori Hidinger**, Mark Brunson, Bob Welling, Tom Lustig, Bob Unnasch
- Coordination: **Larry White**, Paul Geissler, Steve Borchard, Doug Powell, Paul Tueller, Richard, Rene, Tom Lustig, Chase Huntley, Stan Hamilton
- Research: **Jerry Schuman**, Bob Unnasch, Lou Swanson, Dennis Child, Sherm Karl, Robert Washington-Allen, Bill Fox, Aaron Harp, Pat Johnson

**Note: The leaders indicated above are from those present at the Jackson Hole meeting. Leaders not present at this meeting will be contacted to see if they would like to continue as leaders of their respective groups.**

#### **Discussion:**

The “primary goal” group (Criterion and Indicators) will be the assemblage of criterion groups who will subsume responsibilities set forth in the Strategic plan. The work on the strategic plan conducted by the primary goal group will be incorporated into the plan, along with other adjustments to the plan and passed through the Delphi process.

Materials distributed before Congress and agencies in outreach efforts should be passed by SRR in advance, for possible input. Membership then has a chance to respond. This should be a guiding principle. Input from the beginning is also highly encouraged by the outreach group.

There was some debate over relevancy of the 64 indicators at the local level. Some participants were concerned that the emphasis on local relevancy undermined the initial goal of identifying regional and national indicators. They feared that this emphasis could make SRR susceptible for attack for not making indicators that are relevant at the local level, even though this was not the goal.

The general response was that there will be no change in actual indicators, their relevancy at the local level only needs to be communicated better to show relevancy. The indicators will still describe the regional scale, but not tell you what is on your ranch. The local relevancy is that it allows stakeholders to see their position in the regional and national context. This may serve as a warning system to suggest problems in a certain region.

Further, we cannot describe the nation without regional information. Certain indicators may differ for local and regional levels or may be measured differently according to scales and may or may not be aggregated. SRR wants to show how indicators can answer questions applicable at the local level.

In these examples, SRR should also address aspects that SRR will not cover. There should be explicit discussion on this topic.

Examples should add SRR information, website, at least.

**Review Accomplishments, Next Steps and Agenda for Next Meeting** – Lou Romero and Tom Bartlett

Staff will integrate the four goal products into the Strategic Plan (Appendix E) and send out in Delphi.

Portland brainstorm:

- Continue C&I work
- Adopt strategic plan with tactics
- Settle on JRM manuscripts
- Work on goal group tactics
- Prioritize work tactics and allocate money
- Identify sources of data management advise

Agenda ideas:

- Orientation
- Special forum for locals
- C&I work
- Goal group work
- Prioritization of tactics/funding
- Data management
- Delphi results and discussion on strategic plan and workshop

Comments:

- Field trips?
- Metrics/protocol emphasis?
- Need adequate review and cross discussion between groups.
- Will this be used as a forum for local reaction to FAR report and C&I?
- RSF held feedback workshop in Portland. To get meaningful feedback would require at least a day and would include a large audience.
- Need a half-hour to discuss whether our actions are in line with our goals.
- Orientation the afternoon before seemed time effective.
- Definition of rangelands report from Paul Geissler (too soon for an update, the scale group won't have met by that time.)
- Debrief IRC (future opportunity for C&I development).

Next steps:

- JRM papers
- Fall meeting suggestions- Hawaii, Knoxville, Rapid City, Las Vegas, San Antonio, Boise, Spokane, Oakland, Chicago, New Orleans
- Delphi on strategic plan and workshop proposal

## Appendix A: Jackson Hole Participants

1. Tom Bartlett, Colorado State University
2. Terry Booth, ARS
3. Steve Borchard, DOI-Bureau of Land Management
4. Mark Brunson, Utah State University
5. Larry Bryant, USDA-Forest Service
6. Dennis Child, Colorado State University
7. Ralph Crawford, USDA-Forest Service
8. Bill Fox, Texas A&M University
9. Paul Geissler, USGS
10. Stan Hamilton, National Association of State Foresters (NASF)
11. Aaron Harp, University of Idaho
12. H. Theodore Heintz, Jr., U.S. Department of the Interior
13. Lori Hiding, Ecological Society of America
14. Chase Huntley, General Accounting Office (GAO)
15. Nelroy Jackson, Invasive Species Advisory Committee
16. Pat Johnson, South Dakota State University
17. Sherm Karl, DOI-Bureau of Land Management
18. Stacey Katseanes, NCBA
19. Linn Kincannon, Idaho Conservation League
20. Dick Loper, Rangeland Consultant
21. Thomas D. Lustig, National Wildlife Federation
22. Kristie Maczko, Colorado State University
23. Dick Mayberry, DOI-Bureau of Land Management
24. Dan McCollum, USDA-Forest Service
25. John Mitchell, USDA Forest Service, Rocky Mountain Research Station
26. Ann Morgan, University of Colorado
27. Rene O'Brien, USGS
28. Doug Powell, BLM/SRM
29. David Pyke, USGS
30. Lou Romero, DeLaPorte and Associates
31. Helen Rowe, Colorado State University
32. Jerry Schuman, High Plains Grasslands Research Station
33. Ronald Shafer, EPA
34. John Spence, National Park Service
35. Lou Swanson, Colorado State University
36. Dennis Thompson, NRCS
37. Allen Torell, New Mexico State University
38. Paul Tueller, University of Nevada
39. Bob Unnasch, The Nature Conservancy
40. Robert Washington-Allen, Oak Ridge National Laboratory
41. Bob Welling, Ridley Block Operations
42. Larry White, Texas A&M University

## **Appendix B**

### **SRR Overview and Update - Tom Bartlett**

The purpose of the Sustainable Rangelands Roundtable (SRR) is to identify indicators for sustainable rangelands. The SRR process was initiated to bring focus on rangelands as a counterpart to the Roundtable on Sustainable Forests. These C&I should provide a common framework for monitoring and assessing progress towards sustainable rangeland management, expand the understanding of rangeland sustainability, and enhance the quality of debate about rangeland management issues. We include ecological, economic, and social aspects of sustainability. We hope that the C&I will improve the coordination, efficiency and quality of monitoring and data collection on our nation's rangelands. SRR gains from links with other indicator efforts, such as the Heinz Report, Roundtable on Sustainable Forests, Sustainable Minerals Roundtable, and others. The process values and respects all opinions and contributions of members and is intended to be open, positive, future focused, and dynamic.

In December 2002, the Steering Committee and at least one representative from each criterion group met to develop an ambitious strategic plan to map the future of SRR. The five goals for the SRR include a continuation of criteria and indicator development and refinement, including data sets, coordination, enhanced outreach, sustainability research funding and support. We also modified our vision and mission statements (see Appendix D for full text).

The SRR has held four meetings in 2001, five in 2002, and have four planned for 2003. Our next meeting will be in Portland, OR, August 20-21. We have over 100 members from over 50 organizations including Federal, state and local agencies, representatives from 16 universities, non-governmental groups & organizations. The group determines the outcomes; our meetings are facilitated and interactive. A Delphi process is used to continue collaborative decision-making between meetings. SRR organization includes a Steering Committee, 5 Criterion Groups, working groups (scale, outreach, coordination, definitions, examples), ad hoc groups based on specific events or needs, and SRR staff.

Our greatest support has been the time and effort of all individuals and organizations participating. Actual support is given by USDA Forest Service, Colorado State University, BLM, and USGS; additional partners are being sought. The SRR has worked hard to get outside feedback on our work through symposia (SRM annual meeting, 2002) and workshops (ESA 2002, Society for Natural Resources International meeting 2002; SRM annual meeting 2003). The SRR published a report on Criteria and Indicators for US Sustainable Rangelands in May 2003.

Past, present and future SRR Outreach Efforts:

- Presentation, NCBA, Denver, August 2001
- Symposium at Society for Range Management, Kansas City, Jan. 2002
- Washington, DC Briefing, May 2002
- Panel at NCBA, Reno, July, 2002
- Indicator Workshop at Ecological Society of America, Tucson, August 2002
- Tradeshow, American Farm Bureau, Tampa, Jan. 2003
- Workshop on Data Sets at Society for Range Management, Casper, Feb. 2003
- Booth, American Farmland Trust, Monterey, March 2003

- Meetings, Seminars, Luncheon, Reception, Washington DC, May 2003
- International Rangeland Congress, Durban, South Africa, July 2003
- Evening Session, Ecological Society of America, Savannah, August 2003
- Presentation & Tradeshow, Grazing Conference, Nashville, Dec. 2003

### **Sustainability Research for Rangelands - John Mitchell**

Research questions for the 21<sup>st</sup> century: Does the indicator assess the criterion? At what scales are the indicators valid? How do we come up with thresholds? How do we integrate the criteria?

The relationship between bare soil and erosion has been shown to be significant at multiple scales; thus, bare soil seems to be a valid indicator of the conservation and maintenance of soil and water resources of rangelands. Other indicators still require research to show that they assess their associated criterion at regional and national scales. The importance of better understanding these relationships is manifested in how the social and economic group has defined some community-level indicators; i.e., those that “might be relevant” to sustainability. The indicators include value produced by agriculture and recreation as percent of total economy, land tenure, land use, ownership patterns by size class, and population pyramid and population change.

The SRR must consider sustainability in terms of ecological, economic, and social measures at multiple scales. When trying to incorporate multiple scales in relation to indicators of sustainability, it is important to understand limitations imposed by hierarchy theory. Three important scale-dependent attributes of data are grain, extent, and frequency behavior. These attributes explain, in part, why it is unfeasible to aggregate site-specific data to a national level. Nonetheless, some indicators are comprised of nested hierarchies, and can be aggregated across multiple scales. Remotely-sensed data can also be evaluated at different scales, depending upon its grain and accuracy of classification.

Research on benefits to management in the field can target scale and interactions among indicators. SRR has produced example sheets explaining the application of C&I to fire and drought and plans to prepare additional examples of how multiple indicators can be used in the field to address invasive species and exurban development issues.

Thresholds are discontinuities where the state of a system changes abruptly in response to continuous change in some driving variable. Understanding thresholds is difficult; none have been measured with certainty. Thresholds related to sustainability include the role of biodiversity in both ecosystem resilience and productive capacity. Further, at a certain threshold, fragmentation and invasive species can significantly alter biodiversity. Likewise, erosion can permanently alter a site once a threshold of bare soil has been exceeded.

Sustainability can be expressed by forms of capital. Capital has investment value and sustainability is attained when combination of investments provide for future needs of society. Different forms of capital (human, natural, social, financial) may provide a common currency to assess overall sustainability across the criteria. Ecological systems are more researched than the interrelationships of social and economic indicators as they interact with rangelands. What data can we retrieve from MODIS satellite data? What are the relationship between these indicators and social and economic indicators? Robert Washington-Allen has proposed a multi-discipline research proposal to investigate possible relationships among biophysical, economic, and social

indicators using remote sensing technology and data provided by the Moderate Resolution Imaging Spectroradiometer on the TERRA satellite.

**Toward a Vision for a National System of Natural and Environmental Resource Indicators**  
– Ted Heintz

We are working toward a Vision that can be a basis for the future tasks of outlining ways of organizing indicator categories and eventually data sources, addressing the design criteria and technical aspects of the system, and determining and coordinating the functions of various organizations. We began development of our Vision with some very general goals: Enable public discourse and leadership, improve policy and resource allocation, enhance government efficiency and accountability, and inform private decisions by citizens, consumers and businesses. The Federal Government and non-Federal partners will develop, maintain and continuously improve a national system to report indicators on natural and environmental resources, and indicators on closely related human health, social and economic factors. We recognize that information from a system of natural and environmental resource indicators can be used for public discourse at national, tribal, state and local levels, international reporting and discourse, tribal, state and local management. Range of uses and users of indicators include business investment and management, NGO activities, citizens' and consumers' education and decision-making, research. Federal agencies typically have headquarters functions and field units that perform quite different functions including policy and resource allocation decisions, strategic planning and performance management, agency management of resources and programs, and research.

As we develop a framework for an indicator system, we also want keep in mind the broad roles that indicators can serve in such uses, such as provide accurate feedback on the conditions of natural and environmental resources, promote learning that improves the effectiveness of decisions and actions, and provide a factual basis for development of various types of information people use.

An analogy to health care processes is one way to illustrate the various roles of information. The point of this medical analogy is that doctors use different types of information to perform different functions. In particular, assessment is usually based on a limited set of general indicators while diagnosis requires more detailed information focused on possible causes of observed symptoms. We have seen similar patterns in environmental and resources management and should design our indicator system accordingly.

A pyramid diagram was shown in the presentation with stories on the top, then widening with summary or core indicators, then more specific indicators, with detailed measurements at the bottom of the pyramid. This pyramid illustrates a general concept that has become well accepted as a basis for developing indicator systems. It shows a hierarchical arrangement with relatively general and simple stories that many people can absorb at the top and increasing detail, specificity and complexity at successively lower levels in the pyramid. The pyramid metaphor is based on the idea that there are more building blocks in the lower tiers of the pyramid.

The pyramid shows how we build indicators using more detailed measurements. It also shows different levels of detail that are appropriate to different uses and users. People who work for busy high level managers and people who communicate with the general public tend to use forms of information near the top. Experts and techies tend to use information near the bottom. An important feature of this figure is that stories rather than numbers are at the top. Stories - combinations of words, images and a few numbers - are the form of information that most

effectively communicates information and adds to peoples' knowledge. Stories are what most people pay attention to, what they remember best. There are always a lot of stories being told in a society like ours. Some are more realistic than others. Indicators help us to ground the stories being told, the knowledge being remembered, in measurable facts.

Stories can be assessments or diagnoses. As in the medical analogy, assessments are stories that are based on a few general indicators, while diagnoses require more detailed information.

Although we often think of management as the setting goals, objectives, and targets, evaluating alternative actions, and then making decisions, it is more realistic to recognize that every action follows a history of previous actions with consequences with which we are both pleased and displeased and from which we can learn.

The power of feedback is its potential to improve the knowledge on which decisions are based.

The power of indicators that will be reported repeatedly over a long period of time is the potential for continuous and systematic improvement. This diagram shows that indicators should address both the consequences of past actions and the processes of interaction through which they occurred.

The C&I system should provide information suitable for use in assessment of conditions and consequences of past actions, measuring performance of past policies and programs, and identifying and gauging the extent of problems that need to be addressed. The system should provide more extensive information for diagnosis of problems and prescription of actions to be taken, monitoring of implementation, and research to develop or improve capacities for assessment, diagnosis and forecasting. Characteristics of an effective indicator system: regularly publish a limited number of core national indicators, make widely available the data from which indicators are computed, data that measure related phenomena and data at scales relevant to different users. An effective system should be relevant to the intended uses and users and address key questions, provide consistent and scientifically credible indicators and data, be communicated to the public and to high level policy makers in concise forms, be flexible enough to respond to changing knowledge and conditions, and have the capacity for continuous improvement of indicators and data.

Questions for Discussion:•Does this Vision for an indicator system have appropriate goals?

•Are the roles of indicators appropriately described?

•Is the range of uses and users too broad or too narrow?

•Have we omitted anything important?

•Are there particular topics related to non-Federal users of indicators that need more emphasis?

•Does this Vision raise any concerns?

•Of what pitfalls should be Working Group be wary?

SRR Q&A:

Q: How will agencies measure all of these indicators?

A: We have to start one at a time.

Q: How will we measure indicators over time if the indicators keep changing?

A: I see this as a 100 year process of slowly developing the indicators, as similar to the economic statistical system.

### **Cubes data management system - Bill Fox**

CUBES (City management Urban planning Business development Environmental monitoring Social services) is a spatially enabled information system tool for managing, assimilating, integrating and analyzing varied data types from multiple sources. A database is a collection of

information arranged in a table that makes information retrieval easy and fast. A relational database stores information in tables that are linked or “related” through key fields and allows the use of indexing to speed up searches for data values. A database management system is a set of software programs that control organization, storage and retrieval of data, which offers ad hoc query facilities to many users. A relational database management system (RDBMS) dynamically manages a relational database and discovers the locations of related records during retrieval process. CUBES is not the only product available for this type of data management, integration and analysis. CUBES is an open sources software, which allows more developers to work on it, making it more advanced. CUBES is a relational database management system and an object relational database management system which incorporates the concept of inheritance and ability to define complex data types with special functions. It integrates data from multiple sources, supports myriad data formats, distributes data through the internet, and can be customized to fit user needs.

Three components comprise CUBES the relational database management system, the data distribution system and the data editor. RDBMS forms the backbone of CUBES because it controls the flow of data to users. It connects users not only to CUBES own relational database, but it is what allows users to connect to any available database. The data distribution system supplies the user interface for CUBES, is internet based, can be accessed from virtually anywhere, allows users to retrieve, analyze, and manipulate data stored in the RDBMS. It displays spatial data as maps, and related data are linked to map features. The data editor is being developed to allow users to modify data stored in the RDBMS.

CUBES integrates raw data from separate databases into maps or charts. CUBES has great possibilities for collaboration amongst higher education, NGOs, government agencies, and the private sector. It is not a centralized database, anyone can host a server and individual participants maintain propriety over their data management.

For more information contact the project manager, Dr. Doug Loh ([loh@tamu.edu](mailto:loh@tamu.edu)) or Dr. Bill Fox ([w-fox@tamu.edu](mailto:w-fox@tamu.edu) or 979-845-1851). Visit <http://cubes.tamu.edu> for a demonstration on how CUBES works..

## Appendix C: DC Briefing Talking Points

### Importance of Rangelands

- ❖ Rangelands account for 1/3 of U.S. lands
- ❖ Rangelands provide commodity, amenity and spiritual values
- ❖ Ecological, economic, and social sustainability data for this resource are not consistently collected or reported
- ❖ Sustainable Rangelands Roundtable (SRR) criteria and indicators address this gap and will improve rangeland assessment at multiple scales

### SRR Process and Participants

- ❖ Collaborative partnership of over 100 participants from more than 50 organizations, including public and private land managers, ecologists, sociologists, economists, environmentalists, and industry representatives.
- ❖ These experts have volunteered two years of time and effort
- ❖ Open, inclusive process designed to improve stakeholder dialogue

### **First Approximation Report on Criteria & Indicators for Sustainable Rangelands**

- ❖ Five criteria and 64 indicators addressing ecological, socio-economic, and legal aspects of rangeland sustainability at multiple scales
- ❖ Identifies available data sets and sources for indicators, and notes significant data gaps
- ❖ Provides a framework for standardized, periodic monitoring and reporting across agencies and organizations at multiple scales

### Future Plans and Priorities

- ❖ Criteria and indicator application and revision
- ❖ Data set identification, evaluation, and analyses
- ❖ Outreach, education, and coordination
- ❖ Identification and prioritization of research needs
- ❖ Continued funding and resources to support rangeland monitoring and assessment

**For additional information: Dr. Tom Bartlett, 505-649-2174, [et101@zianet.com](mailto:et101@zianet.com),  
or  
Kristie Maczko, 970-295-5985, [kmaczko@lamar.colostate.edu](mailto:kmaczko@lamar.colostate.edu)**

**Appendix D: Draft Strategic Plan  
Sustainable Rangelands Roundtable  
“A Strategic Course for the Future”**

The quality of life we enjoy in this country depends in part upon our Nation’s rangelands (grasslands, shrublands, deserts, tundra and alpine meadows). However, most Americans are not aware of the contributions that these lands (which make up one third of the country) make to our every day lives. Reliable sources of clean water, habitat for wildlife, forage for livestock, minerals and energy, a wide variety of recreational opportunities, and areas for solitude and spiritual interaction are some of the goods and resource values derived from rangelands. Growing demands for these goods and values services have led to a need to better understand the relationships among environmental, social, and economic factors related to sustaining rangelands. Key to this understanding is being able to measure the components of these factors.

Accordingly, of the Sustainable Rangelands Roundtable (SRR), a group of resource professionals, government policy makers, academics, researchers, conservation and environmental groups, and industry representatives met in Denver in April 2001. Participants at that meeting provided strong support for begin the work to develop a set of measures of the environmental, economic and social components of rangeland sustainability (called criteria and indicators (C&I)) that would apply to all U.S. rangelands.

Since that time, ten meetings have been held in a variety of locations across the country. The meetings have been open to anyone that wished to contribute or just become aware of the ongoing effort. During this two-year period, the participants have successfully developed the criteria and indicators and will complete the SRR First Approximation Report in May 2003.

In December 2002, SRR leaders met to review the original mission and vision of the SRR and to map operational plans for the future. This group decided that while the C&I had been identified and adequately described, they were still not yet **widely accepted** as specified in our vision statement. In fact, the group felt that the C&I not only needed broad acceptance, but also needed to be **widely used**. As a result, he group developed strategic goals, objectives and action plans necessary to facilitate acceptance and use of the C&I. This strategic plan provides a bold course for the SRR to achieve its mission.

**I. Mission**

The SRR will promote social, ecological, and economic sustainability of rangelands through the development and widespread use of the criteria and indicators for rangeland assessments, and by providing a forum for dialogue on sustainability of rangelands.

**II. Vision**

We envision a future in which:

- Rangelands in the U.S. provide a desired mix of economic, ecological, and social benefits to current and future generations.
- Criteria and indicators for monitoring and assessing the economic, social, and ecological sustainability of rangelands are widely accepted and used.

### III. Guiding Principles:

1. Collectively, indicators should guide monitoring efforts to measure rangeland sustainability in the U.S. at the national scale. Where possible, indicators should guide monitoring efforts to measure rangeland sustainability at multiple scales.

1-2. Ensure that indicators employ the appropriate temporal and spatial scales for assessing criteria.

1-3. Collectively, criteria and indicators will address social, ecological, and economic aspects of sustainability.

1-4. Use a criteria and indicator framework as a common language and operational framework for defining and assessing sustainability. Begin by considering the criteria and indicator framework of the RSF.

1-5. Review and consider, as appropriate, other indicator initiatives.

1-6. There are numerous policy questions related to rangelands. We will focus on the vision-mission agreed to by the SRR.

1-7. The Roundtable process will feature outreach to stakeholders, open dialogue, and respect for differing opinions.

1-8. The SRR will be supportive of and compatible with improve on-the-ground management of rangelands.

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### IV. Strategic Goals -- Key Objectives/Commitments -- Tactical Actions

SRR's primary goal continues to be criteria and indicator development and refinement. Additionally, the SRR will expand efforts to identify data sets and data needs for indicators. However, for the work of the SRR to make an impact on decisions relating to the Nation's rangelands and to insure that rangeland systems are sustained, the leadership has identified the following additional goals, objectives and actions.

#### Coordination Goal – The SRR will:

Within the next year, participate in the establishment of institutional arrangements among key organizations supporting C&I efforts to develop a national strategy for C&I/Assessment programs that integrates across (does not mean combine) environmental and natural resource systems and that defines the role of SRR and other efforts within the next year;

Initiate a review of the data acquisition and assessment efforts of various organizations addressing rangeland C&I to be completed within 2 years; and

Continue to provide a forum for dialogue among stakeholders addressing criteria, indicators and assessment of rangeland sustainability at different scales for the next 3 years.

**Objective 1.** Obtain commitment from Federal government agencies to establish formal agreements with SRR and sponsoring entities to describe their roles and responsibilities, within 6 months, which includes implementation of periodic reporting for interpretation and assessment of rangeland sustainability.

**Tactics** - Discuss the institutional arrangements with other roundtables at next roundtable network meeting or conference call.

- Develop and promote assessment capabilities among a wide range of users.

**Objective 2.** Convene a workshop of scientists and organizations collecting rangeland and rangeland related data to identify available data sets, data sources, data gaps, data incompatibilities, and data quality in order to build future SRR efforts.

**Tactic** - Obtain commitment from agencies in next 6 months, in principal, to support and sponsor some costs of the workshop. Consider a symposium with registration.

**Objective 3.** SRR will communicate with ongoing local and regional C&I/assessment efforts to initiate in a local and regional stakeholder dialogue to gauge acceptance and use of national-level C&I, and relationships to on-the-ground management assessments.

**Tactics** - Initiate one pilot by early 2004. A pilot project could be contracted by a sponsor(s)/agency(ies) instead of initiated by SRR.

- Identify stakeholders doing their own thing plus those organizations not yet involved.
- Use SRR report to reach out to stakeholders.
- Initiate a cooperative program with agencies developing local, management-unit C&I to better understand how the C&I are interrelated across multiple scales.
- Use empirical data to facilitate dialogue on rangeland sustainability.
- Allow any pilot to continue over a two-year period.
- Consider scope involving scale, natural resources and other to be defined.

**B. Outreach Goal** – The SRR will conduct bold and aggressive outreach and marketing initiatives, resulting in the recognition of the importance of sustainable rangelands and the wide acceptance and use of SRR ecological, economic, and social C&I for rangeland sustainability. By June 2005, SRR will be recognized as the source of sustainable rangeland information. Outreach and marketing success will be evidenced by: (1) increases in the number of publications involving SRR C&I and associated applications; (2) education entities recognition of values of SRR C&I and incorporation of C&I into their curricula; (3) government agencies, environmental organizations, industry, and researchers use of C&I to assess rangelands and associated human communities; and (4) existence of a constituency that actively champions SRR C&I within agencies

**Objective 1.** The Outreach Working Group and Steering Committee will finalize the communications plan by March 2003.

**Tactics** - Communications Plan outline was completed on 19 Dec 2002.

- It identifies the different constituencies and stakeholders, and prioritizes efforts.
- Draft Communications Plan will be sent to Outreach working group for feedback.
- Finalize Communications Plan.

**Objective 2.** Implement Communications Plan

**Tactics** - Identify budget needs by month and activities for 2003 to implement Communications Plan.

- Implement Communications Plan timeline in 2003 by assigning appropriate members to tasks.

**Objective 3.** Develop suite of materials for different constituencies and stakeholders by 2004.

**Tactics-** Promote greater utilization of government and public educational institution communication capacities for educating the public on SRR C&I instruments.

- Characterize groups by mission/vision and personal contacts by March 2003.
- Identify relationship between each group and SRR mission/vision by March 2003.
- Identify best method to reach each group and SRR contact by March 2003.

- Draft and finalize materials and presentations by May 2003 and revise over 2003.
- Polish and develop the summary of the 2003 report into four pages. Needs to be professional and succinct. Hire writer, marketer to help draft this package. Summary must be finished in time for the briefing.
- Distribute/present over 2003 and beyond.

**Objective 4.** Develop examples of interpretations and assessments using SRR C&I at multiple scales by June 2005.

**Tactics** – Begin with first approximation report.

- Task each criterion group to identify a person to work with an Example Working Group by March 2003.
- Example Working Group develops and provides tentative examples by June 2003.
- Incorporate into future communications plans and materials/presentations (as appropriate).

**Objective 5.** Meet individually with agency heads and relevant Congressional staff once a year.

**Tactics** - Identify by January 2003 relevant agencies and Hill staffers with whom it is important for us to meet (BLM, FS, USGS, EPA, FWS, ARS, NRCS, Ag Stats, NPS, DoD, BIA, BoR, etc.).

- Identify relationship between each agency and SRR mission/vision by March 2003.
- Identify the appropriate SRR representative(s) and other partners to meet with each agency head by March 2003.
- Develop schedule for meetings for 2003 by March 2003.
- Identify agency contacts to help set up meetings with agencies and Hill staffers (grease the skids) by March 2003.
- Set up meetings and go wow them during the week of May 19, 2003, over the course of 2003, and annually.

**Objective 6.** Encourage environmental, scientific, academic and producer groups to champion the importance of ecological, social and economic sustainability of rangelands in the U. S.

**Tactics** - Package good product that synthesizes the 2003 report (See objective 3)

- Assess who is not involved now that should be brought into this process as champions. Include state agricultural directors, Western Governors, Sportsmen's caucus.
- Sell our product to the leadership of our SRR participants to make them champions. Also target others not included in our participation as champions. Invite leadership of our participants and targeted others to May briefing in DC to unveil the product—the making of champions. Our participants must make sure their leadership attends May briefing.
- Championing must be done by August for 2004 budgets and November for 2005 budgets. Champions will inform Congress and the Administration of the importance of C&I for sustainable rangelands.
- Follow up, prod, plead our champions to take up the cause.

### **C. Sustainability Research Goal**

The SRR will promote research to develop methodologies in which to measure and collect data for sustainable rangeland indicators, as well as identify priority research on the interrelationships of ecological, economic, and social indicators and their appropriateness to sustainability of rangeland systems.

**Objective 1.** By 2008 all research funding organizations have a defined, stable and long-term program emphasizing sustainable rangeland C&I research.

**Tactics** - Develop a national database of rangeland indicator protocols and indicator research projects from existing sources to supplement comparable private sector information sources (relates to coordination workshop objective 2).

- Assess the proportion of ongoing research and funding that now support SRR indicators.
- Prioritize researchable questions related to SRR indicators and encourage the shifting of rangeland research to provide understanding requisite to this goal. Factors to be considered during this process include: benefit-cost analysis for effort invested; assessing the probabilities for successful indicator application and stakeholder acceptance of C&I.
- Work with NAS, USDA, USGS, NSF, and other research or research-funding groups to implement changes in existing natural resource research programs. This includes foundations, NGO's, and appropriate agencies.
- Work with research agencies (universities, labs, etc.) to shift priorities.

**Objective 2.** Periodically review developed C&I and determine, through research methods, if improvements can be made to the indicators and methodologies to measure the indicators.

### **D. Stable and Adequate Funding Goal**

SRR will secure stable and adequate funding over the next five years to 1) promote sustainability of rangelands through the development and widespread use of C&I, and 2) provide a forum for continued and expanded dialogue on sustainability of rangelands. Funding will support ongoing SRR efforts, further implementation of SRR's revised vision, and accommodate future reporting needs.

**Objective 1.** Increase the amount of funding from current federal agencies supporting SRR.

**Tactic** - Utilize SRR agency personnel to secure continued funding (this should be supported by SRR participants via letters of institutional and personal support, public presentations, website, professional organizations, etc.)

- Develop a detailed long-term (5 year) budget which includes all funding needs to accomplish the mission, vision, strategic goals and objectives to show a well thought out plan (for example, how much needed for reports, workshops, marketing items, etc.)

**Objective 2.** Expand the number of agencies funding SRR.

**Tactic** - Utilize SRR agency personnel to secure continued funding (this should be supported by SRR participants via letters of institutional and personal support, public presentations, website, professional organizations, etc.)

**Objective 3.** Establish recurring federal multi-agency cooperation and pooling of funding to complete SRR goals

**Tactic** - Institutionalize inter-agency cooperation through MOUs tied to line item budget allocations (these should be pooled to support SRR activities)

**Objective 4.** Establish recurring NGO cooperation and pooling of funding to support dialogue on usefulness of C&I for rangeland sustainability.

**Tactics** - Recruit private groups – industry and NGOs – and foundation involvement with explicit intention for them to cooperatively provide funds and other resources to support broad stakeholder forums (from local to national scales) that integrate SRR

- Identify one or more NGOs and/or Foundations committed to sustainable rangeland use and establish a five-year grant dedicated to public forums on C&I usefulness for different scales.

**Objective 5.** Provide champions (agency, industry, NGOs, and Congressional) with convincing information on SRR funding needs.

**Tactics** - none identified.

## Appendix E: Goal Group Products

### Primary Goal:

**Strategic Goal:** SRR will expand efforts to identify data sets and data need for indicators and develop cross roundtable avenues.

Tactically-this leads to identifying where indicators fall within coordination and/or research goals

### Objective 1: Further define Data Availability and begin Compartmentalization

Compartmentalization from the groups perspective fell into four categories similar to the A-D ratings from the 1<sup>st</sup> Approximation

- Data identified and available
- Data identified and available but not sure it is applicable to the regional/national scale
- Do not know if data is available
- Know that data is not available

Tactic 1 – Potentially expand the external review to further identify what is available for individual indicators...expand on the Casper workshop

Tactic 2 – Compartmentalize indicators into categories defined above

Tactic 3 – Begin internal review of data set identified for individual indicators and how data from various data sets within on indicator can be synthesized or if it needs to be synthesized

Tactic 4 – Review Heinz Center survey and focus group comments to identify what data gaps are present in an effort to provide ideas on how we could begin prioritizing indicators

### Objective 2: Linkages Across Roundtables with similar indicators in criteria groups

Tactic – Ask the Roundtable Network to bring various Roundtable Working Groups together to discuss similarities in indicators and a common approach to populating indicators

### Objective 3: Coordination of Data Management System

Tactic – Bring together a scoping committee to continue defining what a data management systems would be like for use to integrate across criteria and indicators

Objective 4: Continue working with Ted Heintz and the CEQ national indicator program including other roundtables

### Long-term Objective:

- 2008 First report on rangelands based on C&I
- Continue to work with other roundtables including National System on Natural and Environmental Indicators

### Outreach Goal:

#### Outreach Goal Discussion

June 4, 2003

Lori H., Tom L. Bob W., Mark B., Linn K., Stacey K.

**B. Outreach Goal** – *No changes to goal*

**Objective 1:** Finalize existing communications plan (attached) and associated audience/activity master matrix by October 2003 meeting and revise/update as move forward (staff and Outreach Working Group volunteer time)

Tactics:

1. draft outline completed on 19 Dec 2003 which identifies goals of outreach and different constituencies and stakeholders
2. complete audience and activity matrix—work on at August meeting, have complete by October 2003
  - a. Integrate audience and activity matrices (attached) into a master matrix including approach/activity + funding for each audience
  - b. Characterize groups by mission/vision and person contacts by October 2003
  - c. Identify relevance of SRR C&I and activities to various audiences/ stakeholders
  - d. Identify relationship between each group and SRR mission/vision by October 2003
  - e. Identify best method to reach each group and SRR contact/point person by October 2003 (still need consistent message across groups even with varying approaches)
3. begin to prioritize efforts (October 2003 and on a regular basis)
4. identify budget needs for each activity (October 2003)—see Kristie’s budget for now
5. have review of communications plan and master matrix by full SRR following August meeting
6. have comments on communications plan and master matrix from SRR to Outreach Working Group by mid-September
7. revise and produce “final” communication plan and master matrix by October 2003 meeting

**Objective 2:** Implement Communications Plan

Tactics:

1. implement communications plan by assigning appropriate SRR members to tasks and allocating funds as appropriate (see 4. above)—see Kristie’s budget for now
2. Steering Committee and Outreach Working Group inform all SRR membership of outreach activities before they occur so they can inform their organizations and help identify any hidden issues which may be problematic and opportunity to provide guidance/input for dealing with them
3. Develop a process for SRR participants to inform each other as to their activities on behalf of SRR (e.g., outreach efforts, discussion of C&I in classes, etc.)
  - a. Develop a web-based form/log to keep track of contacts and activities by January 2004 (approximately \$1000)
4. encourage environmental, scientific, academic, and producer groups to champion the importance of ecological, social, and economic sustainability of rangelands in the U.S.
  - a. periodically assess who is not involved now that should be brought into the process as champions (such as state agricultural directors, Western Governors, Sportsmen’s Caucus and Foundation, etc.)—see 6a below
  - b. constantly encourage SRR participants to work with their leadership to be champions of the SRR C&I and rangeland sustainability
5. meet individually with agency heads and relevant Congressional staff once a year (approximately \$10,000/year)
  - a. follow-up on 2003 activities
  - b. identify relevant folks to meet with two months before meetings
  - c. identify SRR representatives two months before meetings

- d. send out letters one month before meetings
- e. schedule meetings two-three weeks before meetings
- f. attend meetings
- g. follow-up with thank you letters and materials to address questions/offers
- 6. meet annually with NGO leadership (tie into agency/Congressional meetings – approximately \$5,000 per year)
  - a. decide forum 3 months before
  - b. make logistical arrangements 2-3 months before
  - c. identify invitees 2 months before
  - d. identify speakers/SRR participants 2 months before
  - e. send out invitations 1 month before
  - f. send reminder emails 2 weeks before
  - g. conduct activity
  - h. follow up as necessary
- 7. promote greater utilization of government and institution communication capacities for educating the “interested” public (or appropriate organizations) on SRR C&I
  - a. add educational institutions (NASLG, organizations of Deans, etc.) to the master matrix and identify as such
    - i. Including education arms of agencies, societies, environmental groups (need to identify which of those are appropriate to work with)
  - b. identify appropriate approaches to and materials for working with these groups
  - c. inform public education entities about the existence of the C&I – need to “grow” researchers and managers to do the monitoring and analyses of indicators
    - i. Educate groups who will use information on behalf of the public, training current and future researchers and managers
  - d. Provide appropriate SRR materials (see Objective 3) to government and educational institutions to drive education of interested public through groups listed in audience master matrix
- 8. continue to monitor and revise communication plan and master matrix over time
  - a. monitor client environment (audiences) overtime
    - i. have a dedicated part or full-time staff person to track audiences and keep tabs on what doing in terms of when best times for us to interact with them; would also serve as point person for SRR members to contact in regard to activities; where located? Salary, benefits, infrastructure - \$50-75K
  - b. add outreach and communication activities to address other SRR activities as they are developed (link to activities of other Goal Groups)

**Objective 3:** Develop suite of materials for different constituencies and stakeholders by 2004.

- 1. Identify materials available, under development, and needed in master matrix for outreach to various audiences
  - a. Available:
    - i. First Approximation Report
    - ii. Executive Summary
  - b. Under Development:
    - i. One-page examples (drought, fire, invasive plants)
    - ii. *Journal of Range Management* articles
    - iii. Article on research needs to support C&I and rangeland sustainability for *Frontiers in Ecology and the Environment*
  - c. Needed:
    - i. Additional examples
    - ii. Materials which explain the connection between national/regional indicators and local decision-making
    - iii. Others to be identified

2. Finalize materials under development and develop additional needed materials
  - a. Examples (approximately \$1000 each)
    - i. Form an Example Working Group with volunteers from criteria groups and others at August 2003 SRR meeting
    - ii. Refine existing examples by October 2003
    - iii. Identify other possible examples (such as native vegetation, T&E species, fish and wildlife, clean water, water quantity, etc.; at local and other scales) via a brainstorming activity by SRR (in a Delphi?) by August 2003
  - b. *JRM* articles (\$19,000)
    - i. Flow edit, June 2003
    - ii. Criteria groups complete manuscripts by October 31, 2003
    - iii. Technical edit November 2003
    - iv. Submit in late fall 2003
    - v. Possible publication fall 2004
    - vi. Purchase extra copies/reprints for use in outreach activities (is this a cost above the \$19,000?)
  - c. *Frontiers* article (Bill Fox, John Mitchell, Mark Brunson; submission winter 2003?)
  - d. "Relevance" materials for various stakeholders as appropriate - TBD
  - e. Identify other outlets for briefing pieces/news releases in master matrix and develop pieces as appropriate
3. Develop a library of SRR presentations/posters for use by other SRR participants
4. Develop a read-only trainer's/teacher's CD on rangeland sustainability and SRR C&I with a standardized presentation, supporting text, and other supporting materials (FAR, examples, etc.) by Fall 2004 (\$10,000-30,000 depending on how "sophisticated" we want it to be)

#### **OTHER ISSUES THAT CAME UP DURING THE DISCUSSION THAT ARE OUTSIDE THE STRATEGIC PLAN**

- Concerns about how to keep ecological indicators linked to social economic indicators
- Prioritization of indicators?
  - How to do? Tie in across goals
  - As starting place have criteria groups identify top priorities
  - Some sort of matrix for evaluation
  - Don't want to base on data have (b/c then continue to measure what already measure what don't work)
  - Job for steering committee to start to address (August meeting) – Delphi
- when conflicts develop over resources, don't want funding for implementation of indicators to take away from other activities (particularly backlog of monitoring need to do)
  - through Delphi? –need to talk about how we don't want need for data to hold off "promised" data collection by agencies
  - Let roundtable participants know issues coming up where might create a conflict
  - Where data collection is occurring should use indicators
  - (appropriations language)
  - shouldn't be confused with day-to-day monitoring

#### **Coordination Goal:**

#### **NOTES ON COORDINATION SESSION**

#### **Coordination Goals:**

1. Ask federal agencies to establish a formal agreement that describe roles and responsibilities contributing to the implementation of the SRR C&I. An appropriate starting point could be the MOU on Sustainable Forest Management Data. This will be accomplished by sending a letter to the Agency Heads requesting the MOU. The letter will offer the SRR as a forum for bringing all

interested organizations and stakeholders to the table. It will also point out that such an agreement is different than the MOU to coordinate ecological site and soil classification. The letter should be submitted by 1 August 2003.

2. To plan, coordinate, and hold a workshop to identify available data sets, data sources, data gaps, and institutional gaps (no institution is responsible for data). This will require an organizing committee and achieving commitments from federal agencies and other stakeholders interested in rangeland data.

3. Initiate a review of the data acquisition and assessment efforts of various organizations addressing rangeland C&I. This activity could help further a national strategy for C&I development. Undertaking this review exceeds the short-term capability of the SRR to undertake, and may require a collaborative effort with other interests.

4. Form a work group to plan, budget, and undertake a pilot study that evaluates the applicability of the SRR C&I at local scales. If this objective is to be undertaken, consensus must be achieved within the entire SRR, and the SRR must be involved with all aspects of the pilot study.

#### Time Schedule:

1. Letter requesting MOU: 1 August 2003
2. Draft plan of workshop: 1 November 2003  
Obtain agency funding support: 1 January 2004  
Report status of workshop at SRM Annual Meeting: 25 January 2004  
Hold workshop: Summer or fall 2004
3. Review will logically come after the workshop.
4. Proposal written requesting funding by 1 July 2004.

#### Leadership Responsibilities:

1. First draft of letter: Paul Geissler
2. Draft plan of workshop: Larry White. Representatives from each criterion group and BLM, FS, and NRCS will work on a planning committee. SRR staffing will also be needed and should be budgeted.
3. NA

#### Budget: TBD

#### **Research Goal:**

##### **Sustainable Research Group**

Bob Unmasch, Nature Conservancy

Terry Booth, USDA-ARS

Ralph Crawford, USDA-USFS

Alan Torrell, New Mexico State University

David Pyke, USGS BRD

Pat Johnson, S. Dakota State University

Jerry Schuman, High Plains Grassland Research Station

Dan McCollum, , USDA-USFS

John Spence, National Park Service  
Robert A. Washington-Allen, DOE Oak Ridge National Laboratory

**Research Program: Products/Outputs**

1. Complete description of Data Sets in terms of data matrix characteristics, e.g.,
  - a. Determine what is available?
  - b. What is the detail of these data sets?
  - c. Are these data sets compatible?
  - d. Are these data sets adequate to answer questions pertaining to linkages to sustainability?
  - e. What data is being collected? Who is collecting it?
  - f. What data needs to be collected? (New Indicators)
2. Use data sets to re-evaluate and prioritize the indicators within each criterion group.
  - a. Determine and compare protocols for minimum standards
  - b. Coordination and feasibility of collecting data across agencies and regions
  - c. Cost-benefit relationships of specific indicators
3. Identify data gaps that require additional research
4. Identify and Initiate a few of pilot projects
  - a. Determine relationship between Indicators within criterion group.
  - b. Determine relationship between Indicators between criterion groups.

**Time Schedules to 2008**

24 - 36 month research period

**Budget Estimates**

1. Workshops with Data Collectors (Meeting of experts for each group and subject matter/outside specialists)
2. Meetings
3. Travel
4. 8 - 10 Research Assistants and Consultants
  - a. Preparation of Technical Documents

**Lead Responsibility**

Criterion Groups  
Steering Committee/ Funding Groups  
NGO/Federal Agencies supervise Ras

**Between Meetings Work Logistics**

Needed

Objective 2 is accomplished within the framework of objective 1, where new data sets are developed by additional research/monitoring needs.

**Discussion**

Use of present data  
Future research

Jerry Schuman:

Data Review  
Reduction of Indicators

Alan Torrell:

Phoenix did not emphasize research: a product is necessary  
Relationship of Indicators  
Reduce Scope of Indicators

Bob Unnasch:

Linkage of Indicators between Groups  
Relationship of Indicators

What data is available?

What data is being collected?

Is the data useful?

What is the scope of the data?

What is the scale of the data?

Are the formats compatible?

Is the data comparable?

What additional data needs do we have?

Ralph Crawford:

Forest Research Plans any experience  
FGDC: data compatibility, sets criteria/common protocols

Dan McCollum:

Review past efforts  
Common format of data

Bob Unnasch

Terry Booth USDA-ARS

Jerry Schuman: Uniform protocols for indicator data collection: example: soil organic matter

## **Appendix F: C&I Dataset and Protocol Assessment - Workshop and Pilot Phase**

The First Approximation Report (FAR) has established a firm basis for future development, refinement and validation of C&I in moving forward to a comprehensive assessment of the sustainability of the Nation's rangelands. The next phase will continue assessment of data sets, etc. with more detailed evaluation and development of recommendations (synthesis workshop) for the pilot phase and conduct of additional studies as needed:

- Building on the data summaries in the FAR, additional work is needed to evaluate the protocols and data available for some indicators and to develop a synthesis report and recommendations on how the indicators can be measured. Some can be measured with existing data, but others will need further research and protocol development. Much has been done with volunteer efforts, but it is unreasonable to expect volunteers to do the amount of work required to develop these syntheses and recommendations. After they have been developed, a workshop of technical experts will be required to review and revise the plans for measuring the indicators.
- The synthesis workshop will provide recommendations for additional research, and appropriate protocols and procedures for initiation of pilots to validate the measurements in the field and value of the C&I for sustainable indicators. We believe that this approach will provide a path for the SRR to move beyond identification of indicators to actually measuring them and verifying their value, relevancy and applicability for national adoption.
- The pilot and research phase will be fully developed following the synthesis workshop to validate and refine all aspects from field collection to summarization and reporting of indicators and any interpretative aspects as well as recommendations for improvement. Initial scoping will be concurrent with development of the synthesis reports, etc.

An initial planning group with representatives of the Coordination and Research Goal Groups met and prepared the following suggested approach. The Group included Larry White (Chair), Jerry Schuman, Bob Unnasch, Dave Pyke, John Spence, and Paul Geissler.

We suggest that this planning group be expanded to include a representative from each Criterion Group for the purpose of developing a pre-proposal for presentation at the August SRR meeting and then a detailed proposal.

We suggest that two research assistants will be required to develop the syntheses and recommendations for each criterion (ten total). The effort would be coordinated by the SRR through the Planning Group, with the criterion representatives providing technical oversight of the research assistants for their criteria. The research assistants would present the syntheses and recommendations to the workshop of technical experts and prepare a report of the workshop and plans for pilots. The research assistants will continue to implement the pilots.

We suggest that \$1m per year for four years will be required to accomplish this phase. A major effort will be required to develop this level of support, but we believe that it is possible and necessary if SRR is move beyond talking to actually measuring sustainability. Clearly, a solid proposal and suggested implementation mechanism will be required. The planning group will work with the Steering Committee to develop these for presentation to the SRR for approval. Please send suggestions on this approach and suggestions for funding sources and tactics to the Chair.