NSSI Science Technical Advisory Panel
and Senior Staff Committee Joint Meeting

Wed, Sep 9, 2009
9:00 AM – 5:00 PM
Thu, Sep 10, 2009
8:00 AM – 4:00 PM
National Park Service Bldg., Fairbanks

MEETING NOTES

STAP Members Present*

Bill Streever, BP (Chair)
Robert Suydam, NSB (Vice Chair)
Dan Reed, ADFG
John Kelley, UAF
Matt Sturm, CRREL
Bob Schuchman, MTRI
Doug Kane, UAF
Wendy Loya, TWS
Al Ott, ADFG

Senior Staff Committee Present

Dave Yokel, BLM
Dee Williams, MMS
Tom Liebscher, NPS
Robyn Angliss, NOAA
Brian Person, NSB
Deborah Rocque, USFWS
Phillip Martin, USFWS
Tim Viavant, ADFG

***Sue Moore (NOAA) was not present, but had submitted her comments in advance.

NSSI Staff

John Payne
Denny Lassuy
Jess Grunblatt, GINA/NSSI

BLM Staff Support

Scott Guyer (Guest Presenter)
Annyn Vanderlooven (Recorder)

Welcome and Meeting Logistics:
Bill Streever welcomed all in attendance and had them introduce themselves**.**

Report on Oversight Group Meeting:

John Payne discussed updates from the Oversight Group (OG) meeting held July 22nd – 1) The Report to the Congress was presented; copies were distributed to the group. 2) The meeting also focused on the 2010 Annual Work Plan. It will include 1-page summaries of NSSI funded projects, with brief descriptions of the implications of continuing or failing to continue funding. The proposed budget for FY10 is still at the reduced level of $1M; level with FY09 and FY08, but half of the FY07 level. Because FY09 had been projected at $1.4M (adequate for ongoing projects) but was reduced to $1M, the land cover project had to be put on hold. 3) The most expensive project that may be in jeopardy for the future if there is no additional funding is the hydrological gauging stations on the Arctic National Wildlife Refuge. The unit cost of each gauge will reach $100K. The NSSI contributions in 2010 would be $176K, by 2012 the contribution would be over $200K. There was an OG discussion of the value of the hydrological stations versus the land cover and there seemed to be general consensus that the land cover effort was more broadly useful to NSSI members as well as more broadly supportive of emerging issues. However, there was also some sentiment that discontinuing funding for an ongoing project may not a good precedent.

Discussion ensued about making NSSI more widely recognized. John encouraged STAP and Staff members to emphasis the uniqueness of NSSI to make it more visible to the universities and other organizations. John mentioned that both Senator Murkowski and NSB Mayor Itta, among others, have talked about NSSI and ways to fund it. During a confirmation hearing, Sen. Murkowski urged a nominee for Assistant Secretary of Interior to more fully fund NSSI (to view a video of her questioning of the nominee, watch minutes 67:58 through 70:07 at: http://energy.senate.gov/public/index.cfm?Fuseaction=Hearings.LiveStream&Hearing_id=64ee896f-ce51-6db7-8991-8653e8138bcf). Bill Streever noted that the core purpose of NSSI is to coordinate and that he felt funding projects should reflect the overall value of the project to NSSI membership – for example, as with the land cover effort. John Payne added that land cover mapping is a challenge statewide, but that accuracy of the image interpretation (in LandFire) was particularly poor for the North Slope. NSSI will work with LandFire to correct the problems. Robert Suydam inquired about the 1-page project summaries for the OG and Wendy Loya noted that these should help communicate to the OG the fact that some of these projects may end unless they are funded, and what the consequences of that may be. John Payne noted that much of the language for the 1-pagers was from the projects' respective pieces in the Report to Congress. Finally, John Payne noted the intention for all Emerging Issue Summaries to be completed in time for them to be considered at the next OG meeting (Oct. 7-8 in Barrow).

Status of STAP Appointments:

John Payne said all background checks are completed. John has surnamed the letter for the Secretary's signature. The selectees have not yet been officially notified.

Status of Report to Congress:

John distributed copies of the report stamped "DRAFT" but noted that the report had been sent to the Department (DOI) for approval, along with letters of concurrence from all non-federal members of NSSI (ADNR, ADFG, NSB, and ASRC). Denny thanked the STAP and Staff members for all their contributions. The most significant new aspect of the 2009 Report to Congress was the agency contributions for the Coordination and Cooperation section. Last year this section discussed what the NSSI did as an entity; this year each member also provided information on their own coordination and its relation to NSSI. The package went out two weeks ago from the Special Assistant for Alaska Affairs (Pat Pourchot), has already been endorsed by the Senior Advisor for Alaska Affairs (Kim Elton), and it is now at the Department.

Review of FY09 STAP Activities:

Bill Streever expressed the gratitude the STAP had received from the OG; they value the job being done. Meeting on the North Slope at Deadhorse was held July 8-10. The next meeting of the OG is scheduled for Oct 7-8 in Barrow. Bill expressed his hope that additional STAP meetings might be held on the North Slope to help STAP members better understand some of the issues and the setting in which they are studied. STAP meetings will be held in Fairbanks as much possible because that is where most of the members are. The joint STAP, Staff and OG meeting is scheduled for January. Other accomplishments included observing the bathyboat in action (Scott Guyer to discuss later on agenda) and progress with GINA (Jess will discuss later on agenda). Bill summarized the meeting at Deadhorse. Participants had a chance to see the oil fields, some of the plants and wildlife, and then worked on the Emerging Issue Summaries. The lack of diversions made this a good location for a focused meeting. John Payne and Bill Streever will be doing presentations on NSSI in the coming weeks in Kotzebue (US Arctic Research Commission) and Juneau (AAAS), respectively. Bob Shuchman suggested having a standard briefing available for members to use when asked to do a presentation. It was agreed that this can be posted on the NSSI website (as pdf for public access, as ppt for NSSI associates).

Status of NSSI Conference Proposal:

Bill Streever forwarded the multidisciplinary symposium proposal to the OG, but has not received a lot of input back. Cost is apparently a significant concern to OG. There was also some question as to the value of a broad, interdisciplinary conference versus a conference focused on a specific issue. Bill noted that many such focused conferences and workshops are called for in the Emerging Issue Summaries and could address OG concerns for the need for that form of gathering. He suggested that perhaps the connectivities paper that would eventually accompany the Emerging Issue Summaries and help identify common themes and tie the issues together could help draw more OG interest in the proposed conference. The current feeling is

that the symposium would be in FY11. Deborah Rocque suggested that the resistance from some agencies may be due to a perception of competition with other coordination efforts trying to get an interdisciplinary team to inform on climate change in Alaska projects. Bill noted that NSSI is more than climate change and is more broadly about managing North Slope science.

Break

Permafrost Tunnel Update:

Matt Sturm presented updates on Permafrost research and description of how the tunnel works. He also shared a list of VIPs that have visited the tunnel and how this has raised awareness about both the research and the budget. Matt suggested having a field trip for the OG members to the tunnel.

Update on NSSI Data Catalogue & link to Emerging Issues:

Jess Grunblatt presented updates to the NSSI Data Catalogue. His presentation will be posted on the NSSI website. The frequency of data updates was discussed, with most concluding that annual rather than semi-annual requests would be more manageable. It was also suggested to include a tutorial for new users.

Update on NSSI Field Operations:

Scott Guyer gave an update on the water quality (ALWAS) project 2009 field work. His presentation will be posted on the NSSI website. Scott provided an information handout on the land cover and ALWAS projects. The ALWAS projects focus this year was on water depth, validating sensing, salt water intrusion and relating findings to yellow-billed loon habitat traits.

Status of Emerging Issues/Process/Timeline:

Denny Lassuy and Bill Streever noted that drafts of all Emerging Issue Summaries have been reviewed by the OG and their comments provided to the STAP. The goal of this meeting is to finalize all 13 summaries and submit them to the OG as finished products for their Oct. 7-8 meeting in Barrow.

Final Editing Sessions on Emerging Issues Summaries:

Bill Streever asked about time constraints and the order of discussion of the summaries was modified to accommodate those constraints. He also noted that at this stage there should be only minor changes needed, with no changes in meaning or general content, and that as we work through each one he hoped to get STAP agreement on the readiness of the summaries for final submission to the OG. He did note, however, that the group will revisit the summaries at the end of the meeting to verify final approval. The STAP and Staff then proceeded to work through

detailed edits to each of the Emerging Issue Summaries for the remainder of the day (with a break for scheduled public comment at 3:00 PM).

1. **Hydrology and Lake Drying-** Grammatical changes were suggested; some sections reworded (e.g.: expand lakes to include all wetlands); relative words made more specific; recommendations sections modified to reflect text changes. After reviews the paper was endorsed for submission.

3:00 PM Break for Public Comment: No public comments were made.

2. **Increasing Marine Activities –** Highlights were modified and some sections reworded (e.g.: replace "development trajectories" with scenarios, replace "census" and "numbers" with more precise terms). There was some concern about length of the summary, but it was noted that emphasis will be on highlights and recommendations. The paper was endorsed for submission.

3. **Coastal and Riverine Erosion –** There were some editorial comments and concern about sentence length and consistency in the use of citations. Few edits were made and the paper was endorsed for submission.

4. **Fire Regime –** There was brief discussion of differences between how STAP used the term "fire regime" and other uses of the term. In one place, fire regime was simplified to fire occurrence and the first recommendation was expanded to include its application to future fires as well. The paper was endorsed for submission.

5. **Coastal Salinization** – Very few edits were made and the paper was endorsed for submission.

The meeting adjourned at 4:55 PM. Start time for next day moved up to 8:00 AM.

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6. **Permafrost –** The sequence of the highlights was changed and a new paragraph and related recommendation were added to note the relation between permafrost and hydrology. After other editorial changes, the paper was endorsed for submission

7. **Vegetation Change –** One highlight was simplified and the term "plot" was generalized to "site" in several locations through the text. Anote on accessibility was added to a recommendation on monitoring. The paper was endorsed for submission.

8. **Migratory Birds –** A new highlight was added to add focus to the need to understand factors outside the North Slope; new material was added to clarify the utility of

breeding bird surveys; and one lengthy recommendation was split into two separate recommendations. The paper was endorsed for submission.

9. **Changing Sea Ice/Ocean Conditions** – Several highlights were modified to increase focus on the need for higher resolution data, add information sources, and clarify the use of historic information. One highlight was deleted as redundant. Reference was added to link sea ice observation with traditional knowledge and modifications of two recommendations were made to add attention to accessibility and relevance to North Slope users. The paper was endorsed for submission

10. **Environmental Contaminants –** A new highlight was added to link contaminant monitoring to co-management councils; language linking consumption of higher trophic level marine mammals to human health issues, clarification on the health value of a subsistence diet, and new references to data sources were added to the text; and details on mercury studies were moved from a lengthy recommendation to the text and a simpler recommendation substituted. The paper was endorsed for submission

11. **Caribou –** There was some initial discussion about sensitivities among managers about this issue summary, but it was agreed that the focus here would be on content of the summary itself and where useful the language adjusted to lessen any tensions. One highlight was adjusted regarding management language and another adapted to add emphasis on user group access to information; edits were made in the language regarding specific herds and in the listings of specific study and data needs; and one recommendation was clarified regarding seasonal range use and harvest. The paper was endorsed for submission.

Lunch

12. **Weather and Climate –** It was noted that the OG seemed to especially like this summary and had even quoted it in other forums. However, they also wanted to see a clearer link between the weather discussion and climate considerations. The relevance of weather and climate to other species, beyond humans, was also noted and added early in the Overview section. One of the "anecdotal bullets" underlining the importance of this issue was simplified and another was deleted from the text. The recommendations section was slightly re-ordered, one simplified, and a new one added to help clarify the link between weather and climate. The paper was endorsed for submission.

13. **Marine mammals –** Minor edits were made to the highlights; emphasis on working with Alaska Natives was added; discussions of the use of models were clarified and strengthened; notes on integration and multi-year nature of some studies was added; and some sections were shortened. The paper was endorsed for submission.

Closing Statement on Emerging Issue Summaries by STAP Chair:

Bill Streever asked for and confirmed that there is agreement that what was discussed is complete and ready for presentation to the OG. An introductory paper to accompany the Emerging Issue Summaries has been drafted by Bill and will be finished for submission to the OG. This introduction and all of the summaries will be sent together to the OG well in advance of their Oct. 7-8 meeting in Barrow.

SHARED TELEMETRY SYSTEM FOR DATA RETRIEVAL, NORTH SLOPE, ALASKA:

Dave Yokel (BLM) will develop a briefing paper on this issue and provide it to the BLM's OG member and send presentation notes to STAP. The briefing paper was submitted to the STAP, but discussion was tabled until next meeting (briefing paper entered into record).

Meeting adjourned at 4:00 PM.

Briefing Paper: Submitted to the NSSI STAP, September 10, 2009 by Dave Yokel, BLM

SHARED TELEMETRY SYSTEM FOR DATA RETRIEVAL, NORTH SLOPE, ALASKA

Many researchers collect data on the North Slope or offshore, and some do so with various devices which collect data in the researcher's absence. The data can be retrieved by visiting the site and physically downloading the data, or through various telemetry strategies. Could efficiencies/economies be improved by establishing some type of shared system for retrieval of data through telemetry or physical collection, and could NSSI play a useful role in establishing and maintaining such a system? It is unlikely that a single telemetry system could work for all researchers, due to differing needs related to differences in type and amount of data being collected and transmitted; very different levels of funding available for data retrieval among various projects; and perhaps unwillingness, at least initially, of some researchers to coordinate and share efforts and expenses. It is likely however, that better communication among researchers could lead to more efficient sharing of logistics and funding, reducing the total number of systems and expense for North Slope data retrieval while increasing reliability and user safety. Roles NSSI could play to help realize shared data retrieval include, in increasing levels of complexity and expense, facilitating a discussion among researchers leading to sharing of data retrieval; coordinating the work of running a shared system; and providing financial assistance for a shared system. Regardless of what role, if any, NSSI chooses to pursue, in its planning and discussions it should involve the entire community of North Slope telemetry users to minimize duplication of effort and maximize utility of one or more telemetry systems to the users.

The basic trade-off in development of an automated telemetry system is that expense increases as the needed capacity for data transfer increases. For instance, Geostationary Operational Environmental Satellites (GOES) can provide a relatively inexpensive means of retrieving data from remote sites, but the user would be limited to very small amounts and rates of data transfer. This might be adequate for a site, such as a river gauge, that does not require data transmission on an hour by hour basis. Alternatively, a satellite internet base station at a data collection site, could broadcast high resolution images in real time (i.e. live) every few minutes, representing large amounts and high rates of data transfer. For example, photos from a remote airstrip might be needed for air traffic planning. Equipment for the latter system may cost tens of thousands of dollars, with additional costs per unit of data transmitted.

Some researchers, with perhaps academic grants or agency funding, cannot even afford to consider telemetry and must resort to using data loggers they must visit and manually download. On the other end of the spectrum, geophysical exploration companies may carry with their operations mobile, high bandwidth, satellite internet systems to transmit multi-gigabyte seismic profile datasets in real time to their headquarters. Most likely the majority of researchers are somewhere in between.

Following are some trade-offs of various, potential telemetry systems:

GOES (mentioned above): The necessary hardware is relatively inexpensive, but achieves low data transfer rates for relatively small amounts of data.

Iridium base stations: The hardware is again relatively inexpensive, but requires a significant power source. Its main downside is the extreme expense to transfer large amounts of data on a consistent basis without an exemption from the federal government for per minute usage.

ARGOS (run jointly by the U.S. and French governments): The hardware is relatively inexpensive and the power requirements are not too taxing. However, each station/site must pay a significant annual fee that is beyond the funding scope of many users. This system does not lend itself well to "shared," large networks and possible rates of data transmission may not allow for uses such as remote cameras.

Spread Spectrum Radios: The hardware is again relatively inexpensive. Data transfer rates are only limited by the amount of power at a site to keep the radios operating. Remote images, and even remote internet at modest speeds, are possible over a spread spectrum radio network. The trade-off is that all data must go to a relatively permanent base station connected in some way to phone lines or the internet. Since the radios transmit over “line of sight” distances only, multiple repeater sites, each with its own power source, are needed between data collection points and the base station.

Satellite internet: Transmission of just about any data type is possible when connected to a broadband satellite internet base station. The equipment is expensive to purchase and maintain, and requires either AC power or very large solar/wind/battery power sources. The large satellite dishes needed on the North Slope tend to be blown out of alignment during wind events.

Cellular phone modems: Cell signals can handle a wide range of data types and transfer rates, and different users can be provided different packages for different types of activities and funding. However, the cell tower network on the North Slope would not currently accommodate data collection at many remote sites.

Regardless of the telemetry system used, any shared or cooperative network must overcome some common hurdles to succeed. Requirements for data standards can be a block to partnering, as having one set of data standards is neither scientifically valid nor politically feasible; multiple standards would allow each group to justify their funding contributions. The users must desire to cooperate with one another. Funding and logistical support issues may not be well understood at the upper management levels of the entities involved causing difficulties in problem resolution. Good data collection and transmission requires regular maintenance visits to remote sites. Any shared network needs an operations and business plan, with a focus on how to maintain the network over its lifetime in addition to the science and data involved. Finally, the shortage of information on many North Slope subjects means that to be viable, many stations need to serve purposes related to a variety of issues.

There are two “shared” telemetry networks in two different regions of the North Slope that serve as examples of what is possible, but which might also benefit from increased, shared funding and use. A system in the NPR-A shared by USGS, BLM, university researchers and private industry, uses a combination of spread spectrum radios and satellite internet base stations. The partners share the expensive logistical costs among groups to maintain a network that benefits all parties. Among other data, this system currently reports basic meteorological information from 25 stations once per hour. Several of the stations have cameras that send images several times per day. This system could be improved with the installation of two to three 50-100 foot radio repeater towers located in such a way as to serve both the spread spectrum radio network of the meteorological stations, as well as a voice over radio communications network for use during the summer field season.

The Water and Environmental Research Center (WERC) at the University of Alaska, Fairbanks, operates a radio telemetry system in the vicinity of the Dalton Highway between the Brooks Range and Deadhorse. The system supports about 60 data loggers measuring environmental parameters at fixed sites. All of the sites use radio modems which can link to a base station through up to four repeaters, and transmit data at fairly low rates. Three base stations can connect to the internet through the fiber optic cable running the length of the highway. WERC is the only user, but the system is "shared" in that there are many points of data collection. Because of its narrow bandwidth, this system might not lend itself well to being shared by additional users with different data needs. However, a system with wider bandwidth could perhaps accommodate these 60 data collection points and others with larger data streams and provide efficiencies through cooperative financing and management.