

North Slope Science Initiative (NSSI)
Science Technical Advisory Panel (STAP)
Recommendations
February 6 and 7, 2008, Fairbanks, Alaska

Subject: Geographic Information Network of Alaska (GINA)
Due Date: April 22, 2008

The STAP was asked to provide guidance to University of Alaska GINA staff concerning the NSSI On-line Data System with the goal of ensuring that this system is as comprehensive, useful, and user-friendly as possible. The STAP first recognized that the NSSI GINA on-line Data System is already a good system, well implemented and designed by the staff at GINA, with input from the GIS/Remote Sensing STAP subgroup, but that the value of any on-line data base system increases rapidly as it becomes more comprehensive. To that end, the STAP recommends to the Oversight Group (OG):

- That the OG institute policies that encourage the deposition of data on the NSSI Data System by agency staff, including implementing rules that require researchers on staff, or researchers funded by the agencies, to deposit their data and appropriate descriptions of the data (metadata) on the NSSI Data System.
- Direct that the GINA staff begin an effort to actively recruit data from key research projects that might otherwise not be placed on the NSSI Data System, as well as develop collaborative relationships with other data systems that have extensive North Slope data (i.e., BAID, NSIDC, National Archive).
- That the STAP, in concert with senior staff and the GIS/Remote Sensing subgroup, produce a coordinated priority list of data sets currently held by the GINA staff that lack sufficient metadata to allow them to be made publicly available at this time. The STAP should also at the same time provide to the GINA staff functional guidance on website design and use (i.e., suggest additional search capabilities). These tasks are to be done by April 22, 2008. Based on the prioritization supplied by the STAP, and available funds, the GINA staff will conduct the necessary research to complete the metadata where possible and host the data on-line.
- That the NSSI Data System could be a major outreach component of NSSI, and that advantage be taken of this aspect of the project by developing some simple but effective user-friendly modules, including a link to the public NSSI website, and that when these are ready, they be announced in public way that garners positive attention for NSSI.

Subject: Investigate technologies that could be utilized as an alternative to traditional stream gauging.
Response to STAP Task Order ____.
Due Date: TBD

The STAP was asked to investigate technologies related to stream gauging that might augment and/or replace the expensive and labor-intensive operation of traditional hydrologic stations (i.e., stilling wells, flow meters, staff gauges and so on). The STAP recognized that this is a technical question that requires a careful response, and that it will take some time to answer properly. It also requires expertise outside the immediate STAP

membership. The STAP wishes to draw the attention of the OG to the fact that this specific issue is part of a larger issue: that North Slope development relies on, and could easily be limited in the future, by the availability of fresh water. The STAP notes that the developments in Prudhoe Bay were made possible in part by the fact that this sector of the North Slope has some of the most extensive water resources of the whole region. Therefore, the STAP believes monitoring water resources is an important activity. To answer the specific question posed to the STAP, two preliminary steps are necessary:

- Potential development areas on the North Slope be identified, classified as to whether they are fresh-water rich or poor, and prioritized (from an agency standpoint) as being of immediate, or long range concern.
- Before alternate technologies be assessed, explicit agency needs and requirements related to hydrology be clearly identified (i.e., flood plain extent, peak discharge, real-time stage and flow, low flow and pool formation).

We believe that these preliminary steps are best accomplished by having agency staff engaged in hydrologic monitoring organize a workshop, to be attended by both agency staff and the wider Arctic hydrologic community. The workshop will have as its overall goal to assess the short and long term requirements for hydrologic monitoring on the North Slope, as well as assessing whether alternate technologies represent a reasonable and cost-effective alternative. The workshop should address:

- How alternate technologies can be used in lieu of, or in concert with traditional hydrologic methods in an effective manner, and in so doing, what risks (in the form of less accurate results) and benefits (better area coverage) will accrue.
- The costs, capabilities, and accuracies of these alternate technologies.
- Recommendations as to the immediate additions/alterations to the existing hydrologic networks needed to manage new developments.
- A generalized plan or blueprint for an optimized, sustainable hydrologic network on the North Slope.

The products from the workshop will be a cost-benefit analysis of the new technologies presented through the STAP to the OG, a report on the current state of North Slope hydrologic monitoring, and recommendations as to how best to improve the monitoring network in 2, 5 and 10 years.

Subject: Development of a comprehensive land cover map for the entire North Slope. Movement from land cover development to change detection methodology.

Due Date: TBD

The STAP was briefed on on-going NSSI land cover mapping efforts and asked for recommendations of how to proceed, and what tasks might come next. Information delivered at the meeting indicated that a land cover map as base for research studies, legal issues, outreach, and host of other NSSI-related activities is not only essential, but long overdue. Many technical issues remain related to completion of the map however, the STAP notes that even a flawed, but available, map, would be better than no map at all.

- The STAP therefore recommends that the OG direct that the land cover map be finished as quickly and efficiently as possible, and that as soon as it is done, it be ingested into the NSSI Data System and made widely available.

The STAP wishes to draw the attention of the OG to the fact that in this era of climate change, the thrust of the NSSI mapping effort needs to change from that of land classification to Change Detection. We believe that this will be an ever more important activity that the NSSI agencies will be asked to do in the future, and it is not too early to begin thinking about what activities would be needed to redirect the mapping efforts in this direction. A number of technical issues related to mapping for change detection must also be addressed as this fundamental change in focus takes place.

- The STAP recommends NSSI, utilizing the GIS/Remote Sensing subgroup, the greater STAP membership as appropriate, and on-going efforts through International Polar Year investigate methodologies and technologies currently used elsewhere in the Arctic to design a change detection program that can be used to detect change so managers can readily have the necessary information to adapt management.

Subject: Comment on tundra fire proposal/prospectus related to fire on the North Slope

Due Date: TBD

The STAP was asked to comment on a proposal/prospectus related to tundra fires on the North Slope. The STAP response to the authors of the proposal/prospectus is:

We agree with the authors that the unprecedented North Slope tundra fire of 2007 represents a real opportunity for research that would put us out in front of what may be a new climatically driven trend toward increasing tundra fires. We should take advantage of that opportunity. However, while the background information in the proposal/prospectus is excellent, the outlined activities and methodology are not sufficiently mature to move forward at this time. Moreover, the potential pool of researchers with interest in the fire is larger than the group currently represented in the proposal. A more inclusive approach, and one that includes a wider diversity of disciplines (including climate science), is likely to produce a better understanding of this potentially new development in climate change. We would ask the authors to revisit the issue, expand the consortium of scientists involved, broaden the disciplines covered, and develop a more rigorous plan of action.

The STAP recommendation to the OG relating to the proposal/prospectus is:

- This is an excellent area in which NSSI can show that is nimble, and able to coordinate research efforts in a way that is beneficial to all agencies and stakeholders. The OG should consider supporting an improved and expanded version of the type of program suggested in the proposal/prospectus, and doing so in an expeditious manner, as some activities related to understanding the implications and significance of the fire need to take place in spring and summer of 2008.
- To facilitate this process of jump-starting the research, we suggest that a focus/core group, including the authors of the current proposal/prospectus, meet to discuss research related to the fire, and to strengthen the science that would be done to understand this phenomenon. The focus/core group should: a) work to develop one or several proposals related to the fire that might be submitted to

DOI and state agencies, NSSI, or other granting entities; and, b) develop a plan for a more extensive workshop on tundra fires that could address some of the larger issues of concern to NSSI. In developing these plans, the core and larger groups should keep in mind that climate change is a key aspect of the fire and needs to be a critical component of the research done.

Subject: Social science project to determine the effect of oil and gas mitigation on the community of Nuiqsit

Due Date: April 22, 2008

MMS would like the NSSI to endorse an approved project and establish a sub-committee to oversee the project. This project is already approved by the internal MMS process, but needs additional support in the form of endorsement. The study focuses on whether mitigation measures are working. This would involve creating a pilot study to focus on looking at the community of Nuiqsit. This is a good area because of all the oil and gas activities by state and federal agencies, etc. This would be a demonstration project of larger efforts. There has been preliminary contact with BLM and they were willing to provide labor effort to the project. In order to make the study worthwhile, there would need to be support at agency head levels. This is a long-term, long-range vision and would be a good vehicle for NSSI to be involved in social research efforts. The study would look at cumulative impacts and the mitigation of those impacts in the community of Nuiqsit. Recommendations from the STAP:

- The STAP considered the proposal from the MMS to investigate the proposed environmental mitigation study of the community of Nuiqsit in relation to oil and gas activities on the North Slope of Alaska to include the OCS and on-shore activities. The STAP recognizes the need to verify and improve the effectiveness of mitigation strategies and post-lease operations for future development activities on the North Slope of Alaska, including the OCS. It is further recognized that collaboration through partnership and association will be highly beneficial to the outcome of this investigation and be pursued.
- John Kelley will draft a letter of support from the STAP for this project and establish a subcommittee to provide recommendations. This would be a panel of 5-6 people, consisting of MMS, BLM, ADF&G, ADNR and the Borough.

Subject: Outreach Activities

Due Date: Completed.

A STAP member recommended NSSI expand its outreach efforts to local schools on the North Slope. Recommendation:

- The STAP recognizes the need for outreach activities in relation to NSSI activities and this need is addressed in the current business plan; however, at this time the group feels there is no need to provide educational outreach.

Subject: Oil and Gas Best Practices Forum**Due Date: February 29, 2008**

Canada sponsored an *Oil and Gas Best Practices Forum* in Whitehorse, YT last year. Several members of industry and STAP attended the Whitehorse forum and felt a joint forum, co-sponsored by industry and NSSI would be beneficial for Alaska to host. A request from Canada has been made to industry to host such a conference. Recommendation:

- The STAP recognizes the value of information sharing on oil & gas activities. They recommend the formation of a sub-committee to further investigate this proposal. Additional information will be provided to the STAP chair by the due date above.

Subject: Fisheries Workshop**Due Date: April 22, 2008**

NSSI has already planned for a Fisheries Workshop in FY 2009. Several STAP and senior staff committee members suggested a subcommittee for planning such a workshop. Recommendation:

- The STAP supports NSSI in planning a Fisheries Workshop for FY 09. The STAP chair has assigned Dan Reed to identify potential participants and products for such a workshop and report back at the April meeting.

Subject: Development and use of community based knowledge**Due Date: April 22, 2008**

The challenge presented to the STAP was how to incorporate community based knowledge into study designs at a time when there is increasing pressure on communities to articulate their observations in the arena of climate change. This pressure comes at a time when oil and gas development, proposed monitoring studies and research are also placing strains on communities. Recommendations:

- Establish a subcommittee that will explore the following set of activities:
 - Dbase dimension
 - Science and monitoring
 - Communities & observation systems
 - Better understanding of opportunities and challenges associated with doing it
 - Guidance on how to do it
- Prepare a white paper regarding opportunities to better integrate community based knowledge into monitoring, research and decision making

Subject: Monitoring and Data Needs**Due Date: April 22, 2008**

The STAP recognizes monitoring as an important component to understanding management actions and in developing environmental trends. STAP also understands each of the member agencies are responsible for monitoring within the framework of their agency mandates and permitted activities. This drives agencies to ask different questions of their monitoring programs. It may also lead to varied definitions of monitoring that are not standard across agencies. The STAP understands the need for data in making better management decisions, but cannot tell NSSI what their data needs may be in the future without understanding the types of questions management needs answered in the short term (two years), mid-term (five years) and the long-term (ten plus years). Recognizing the above, the STAP recommends:

- Take two subjects from the OG list and development an understanding of information needs as they relate to agency missions and NSSI mandates. The initial two subjects chosen are permafrost and coastal/riverine erosion.
- The STAP should work directly with the senior staff committee to better flush out the information needs and monitoring topic and get specific management questions identified before attempting to address recommendations. Test what the STAP come up with to see if the information would actually be used to address a question. The focus should be on what the questions to be addressed are and whether it is short-mid or long-term. The types of questions STAP will be trying to address in this exercise are:
 - Who is monitoring in this subject area?
 - Are agencies doing the monitoring independently or utilizing information from other sources?
 - How will the information be utilized if collected or monitored?
 - Identify the management questions to be addressed.

General STAP Organizational and Functional Comments

Comment: The fact that this proposal/prospectus was presented to the STAP highlights that there will be an increasing number of proposals sent to NSSI in the future, and to the STAP as well. There is a general plan in place for handling these proposals, but it is not well articulated yet, nor are there adequate guidelines for handling specific types of support and financial requests. It would be helpful if the OG, through senior staff, would articulate how it wishes to address unsolicited proposals, evaluate those proposals, while still increasing coordination and collaboration between agencies and projects. The procedures need to be transparent and clearly communicated to the pool of researchers from which proposals are likely to arise.

Comment: There is risk in both action and inaction. As NSSI moves into its 3rd year, the individual agencies continue to face the same difficult problems they have in the past in managing North Slope lands, but in addition, climate change, and all that implies for the North Slope, is adding even more challenges. On the STAP there is an increasing sense of urgency to be more proactive, more thoughtful, in our approach in dealing with these heightened issues. The STAP looks forward to partnering more closely with the NSSI in developing a response that deals with both immediate and longer range issues.