

Statewide Digital Mapping Initiative Phase 2**FY2008 Request: \$4,000,000**
Reference No: 42062**AP/AL:** Appropriation
Category: Public Protection
Location: Statewide
House District: Statewide
Estimated Project Dates: 07/01/2007 - 06/30/2011**Project Type:** Health and Safety
Contact: Nico Bus
Contact Phone: (907)465-2406**Brief Summary and Statement of Need:**

This project will develop a digital elevation and an ortho-imagary map of the entire State of Alaska. This project is a collaborative effort between the Department of Military and Veterans Affairs, the Department of Natural Resources, and the University of Alaska. Project oversight is provided by an Executive Steering group made up from the Department of Military and Veterans Affairs, the University of Alaska, and the Department of Natural Resources. This base map will be the foundation for many organizations to build their GIS data layers and assist in field operations. It does compliment the DMVA AK Aviation Safety Program.

Funding:	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	Total
Fed Rcpts	\$4,000,000	\$8,325,000					\$12,325,000
Gen Fund		\$2,775,000					\$2,775,000
Total:	\$4,000,000	\$11,100,000	\$0	\$0	\$0	\$0	\$15,100,000

<input type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input checked="" type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

Operating & Maintenance Costs:

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	50,000	1
One-Time Startup:	0	
Totals:	50,000	1

Additional Information / Prior Funding History:

SLA06/CH82 - \$10,325.0 (includes \$2,000.0 GF and \$8,325.0 Federal).

Prior year appropriations to the Department of Military and Veterans Affairs were for the Alaska Aviation Safety Program which are closely tied to this effort.

Project Description/Justification:

Currently, the US Geological Survey (USGS) topographic maps of Alaska are over 40 years old, inaccuracies of up to a quarter mile or more are commonplace and these maps do not meet National Map Accuracy Standards (NMAS). Modern mapping methods require satellite imagery and a **Digital Elevation Model (DEM)**, which are processed into a highly accurate terrain model. The required satellite imagery and DEMs, which are needed to create the base map, are virtually non-existent in Alaska.

This base map is critical in order to apply modern day layers of GIS data (Geospatial Information Systems) used across all disciplines both public and private. None of the modern disaster preparedness and emergency management systems being deployed elsewhere in the nation will work in Alaska until the need for an accurate base map is resolved.

Alaska is the only state in the United States of America that has not been digitally mapped on a detailed state-wide basis. Most states have completed or are refreshing their existing data. The fact Alaska does not have a statewide digital map and is lagging behind other states which are in some cases 20 years ahead of Alaska is unacceptable.

Current priorities for mapping include:

- Aviation Safety
- Emergency Response
- Gas Line Route: routing and permit support; public hearings
- Oil and Gas Infrastructure Management and Monitoring
- Large Mining Projects and Prospects:
- Land Planning; Corridor Analysis and Statewide Land Sales Program
- Fire Hazard Mapping for Critical and High Value Protection Areas
- Forest Resource Mapping in Southeast, Northern, and South Central regions.
- Land Use Permit Authorizations with Commercial Recreation Permits
- Land Cover and Terrain for major State Parks
- Coastal Resources and ACMP shore zone mapping project

This document addresses two essential core elements that need to be addressed in a strategic plan:

1. **THE BASE MAP:** The acquisition of the **Digital Elevation Model** DEMs and **Ortho Imagery**, required ground control, and image processing necessary to create the base map;
2. **THE ARCHIVE:** The development of the physical infrastructure to store and serve the base map and GIS data using open source protocols, and to maintain this service over time.

Currently the state lacks an accurate statewide base map. Geospatial information, where it exists, is spread across many levels of government. As a result the economic benefits, disaster recovery initiatives, and governmental efficiencies go largely unrealized.

Background

On previous occasions, statewide digital mapping initiatives have been undertaken but were not successful. To advance the goal the following actions have been taken:

- 1) In March of 2005 a Memorandum of Agreement (MOA) was drafted to establish a coalition between the State of Alaska (executive branch), the University of Alaska, the Department of Natural Resources (DNR) and the Department of Military and Veteran's Affairs (DMVA) to develop a strategic plan to digitally map the State of Alaska. On January 19th 2006 all representative parties of the MOA had agreed to and signed the MOA. The executive committee resulting from the MOA has been designated as the Statewide Digital Mapping Initiative (SDMI).
- 2) In the third quarter of 2005 funding in the amount of \$2.0 million in the form of a capital project was requested and a corresponding SFY2007 request for appropriation.

The SDMI strategic plan approaches the overall development plan based upon the premise of completing two objectives. They are: 1) the development and creation of the base map; 2) the construction of the infrastructure to serve, store, and maintain the data electronically.

1- BASE MAP

A) STAKEHOLDER RELATIONS:

This aspect of the proposed plan will consider all aspects of stakeholder relations such that the SDMI aligns its efforts to the needs of the stakeholders and receives stakeholder support.

- Identify and attract stakeholders to the process while acquiring their input and endorsement through surveys, public forums and the creation of a stakeholder advisory board maintaining a balanced representation of the stakeholder community.
- Review and make recommendations to improve stakeholder relations through a planned web site currently under design.
- Plan and host a preliminary design review to seek stakeholder input and receive feedback. Based upon reasonable and useful feedback make changes to the planning elements accordingly.
- Plan and host a final design review.

- Seek stakeholder support in the form of funding alliances and make recommendations to improve funding initiatives utilizing stakeholder support.
- Recommendations for other strategies or elements as advised.

B) EXISTING INVENTORY/GAP ANALYSIS:

This aspect of the plan seeks to review, plan and document the best methods to determine what is currently available as useful inventory to the base map then catalogue and display the inventory electronically thereby developing a gap analysis. Data standards and requirements will be determined, licensing issues resolved or amended as required to meet the goal of broad public access.

The objective of this element of the planning process is to determine the state's requirements and needs with respect to ortho and DEM data. Furthermore it will evaluate standards in three categories: remote, rural and urban. Transportation corridors (air, land and rail), economic zones, communities, and other areas legitimately of high value albeit cultural or economic value will be identified.

Once this element of the planning process has been completed a graphical display of the results will be illustrated on the project web site along with a determination quantifying the total square kilometers of the needed data for each classification: urban, rural and remote. At this point a projected budget can be determined with respect to data acquisition.

C) BUSINESS CASE/FINANCIAL ANALYSIS/FUNDING EFFORTS:

The business case becomes the basis for establishing a multi-year budget to support the acquisition of sustainable financial commitments from a variety of funding sources. Based upon the recommended resolutions and geographic priorities, a competitive process will be used to assess the range of options and associated costs that align with the goals established under steps A and B above.

D) ADOPTION OF BEST METHODS FOR IMAGE PROCESSING & GEODETIC CONTROL:

Much of Alaska is unique in that it is very large and much of it is remote. Ground control targets typical of the Lower 48 do not exist in these remote expanses. The state seeks recommendations for a comprehensive image and control strategy as an element of the overall planning process.

The project seeks guidance in developing requirements, quality control measures and work flows with respect to processing raw data (Imagery and DEM) to create a quality ground terrain model in the most cost effective manner. The state seeks counsel for review of best methods to accomplish and manage this objective. The completion of this element of the planning effort shall result in a comprehensive plan and cost structure to address these elements.

2- ARCHIVE: SERVING, STORING AND MAINTAINING THE BASEMAP

To assure broad public access and use by the full range of stakeholders, the project must assure that the base map data is served, stored, and maintained over time. A separate study to define and document a system needs analysis and design requirements for first responders and emergency management shall be conducted outside the parameters of the SDMI but will be conducted in coordination with the SDMI. The systems architecture will incorporate interoperability standards and assure access to stakeholders who host their own mapping sites, as well as regional and national elements of the National Spatial Data Infrastructure and the National Map.

The plan will address redundancy requirements, hardware and software requirements as well as security requirements for all components that comprise and interface to the statewide GIS system. The present model is to leverage existing investments, this advances the use of the GINA facility at the University of Alaska Fairbanks, and the DNR mapping center in Anchorage.

Upon acceptance of the final design review and upon receipt of the funding elements necessary to build out the first stage of the infrastructure, construction will commence. In conjunction with these efforts all necessary documentation and training materials for the statewide system will be generated.

This portion of the plan may require the creation of a body with the clearly defined authority and responsibility to coordinate the state's geospatial information technologies and data production. This body through executive order or

legislative mandate would be responsible for the ongoing maintenance and management of the data under the governing guidelines decided upon in this portion of the planning stage.

Why is this Project Needed Now:

The state has not undertaken a base map project in over 25 years. In the 1980s the state teamed up with USGS and NASA to deliver statewide aerial photos at 1:60,000. These images receive little use today because of their age, limited accessibility (need to check out through USGS or a local firm for a fee); and lack of ability to integrate with existing databases such as land ownership. Alaska needs an accurate basemap to meet the fundamental requirements of government.

Specific Spending Detail:

Line Item Expenditures:

Personal Services	\$340,000.	Project Management
Travel	\$30,000.	Stakeholder meetings, community meetings in all regions of the state
Services	\$3,450,000.	Data acquisition and processing contracts
Commodities	\$180,000.	Description-Hardware and Software to assure serving and storage

Project Support:

Other state Agencies to benefit include Dept. of Transportation, Public Safety, Fish and Game, Environmental Conservation, Commerce and Economic Development, Labor, Health and Social Services, and any other dept. using location based services to meet its mission. Local Governments from all boroughs covered by the imagery support this effort; many have data to provide in partnership with the state (Kenai, Mat-Su, and Fairbanks as examples). Federal Government collaboration includes USGS, BLM, other Dept of Interior, US Forest Service, Natural Resources Conservation Service, other US Dept of Agriculture, NOAA, and NASA.

Project Opposition:

None known.