

**Strategic and Critical Minerals Assessment****FY2013 Request: \$2,730,000****Reference No: 51052****AP/AL:** Appropriation**Project Type:** Research / Studies / Planning**Category:** Natural Resources**Location:** Statewide**House District:** Statewide (HD 1-40)**Impact House District:** Statewide (HD 1-40)**Contact:** Jean Davis**Estimated Project Dates:** 07/01/2012 - 06/30/2017**Contact Phone:** (907)465-2422**Brief Summary and Statement of Need:**

This project will provide important geologic data for assessing Alaska's Strategic and Critical Minerals (SCM) potential. It is needed to help the State address the U.S. domestic needs for these essential elements. Many areas of Alaska are permissible for hosting SCMs, but the lack of basic data statewide hinders evaluation of Alaska's SCM potential. Conducting field work and obtaining relevant geologic data will advance the state's knowledge of its geologic resources, promote informed state management decisions, spur mineral industry exploration, and advance the department's mission of conducting geological and geophysical surveys to determine the potential of Alaskan land for production of metals.

<b>Funding:</b>	<u>FY2013</u>	<u>FY2014</u>	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>Total</u>
Gen Fund	\$2,730,000						\$2,730,000
<b>Total:</b>	\$2,730,000	\$0	\$0	\$0	\$0	\$0	\$2,730,000

<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:	0	0
<u>One-Time Startup:</u>	0	
<b>Totals:</b>	0	0

**Additional Information / Prior Funding History:**

SLA2011/CH05 \$498,000

**Project Description/Justification:**

Strategic and Critical Minerals (SCM) are essential for our modern, technology based society. For example, platinum-group elements are extensively used in electronics and catalytic converters for vehicles. Rare Earth Elements (REEs) are necessary for military and high-technology applications, as well as clean/renewable-energy technologies such as wind turbines, solar panels, and batteries for electric vehicles. Liquid-crystal displays for computer monitors and televisions use the REE europium, which produces the color red; there is no known substitute. REEs are used to convert heavy crude oil into gasoline and other products, and are also used to make small permanent magnets, which enable miniaturization of electronic components like cell phones. Current technology and system designs of U.S. defense systems depend heavily on REEs, for which there is a lack of effective non-REE substitutes.

The *Strategic and Critical Minerals Assessment* project is a continuation and expansion of the FY2012 *Rare Earth Elements and Strategic Minerals Assessment* project. This expanded project will

provide information critical for comprehensively assessing Alaska's statewide SCM potential. The current United States Geological Survey (USGS) list of SCMs includes the REEs, the platinum-group elements (PGEs), antimony, barium, chromium, cobalt, fluorine, gallium, graphite, indium, niobium, rhenium, tantalum, titanium, tungsten, and yttrium. The U.S. is more than 70 percent dependent on imports for 13 of these 16 elements and elemental groups, and 100 percent dependent on imports for seven. This leaves the U.S. vulnerable to disruptions in the SCM supply chain, particularly from unreliable and adversarial trade partners such as Russia and China. At least nine bills are currently pending in the U.S. Congress to address the nationally important SCM issue. The Alaska Division of Geological and Geophysical Survey's (DGGS) *Strategic and Critical Minerals Assessment* project is in line with the Alaska Legislature's House Resolution (SLA10/House Resolve 11/HR16) urging Congress to advance development of new REE reserves in the U.S., and continued exploration for REE deposits in Alaska.

Many areas of Alaska are geologically permissible for hosting SCMs, but the lack of basic data statewide hinders evaluation of Alaska's SCM potential. Alaska has hundreds of known SCM occurrences, and millions of acres of selected or conveyed lands with the potential to contain SCMs, but the mineral-resource potential of these occurrences and lands is poorly understood; there has been no modern, systematic resource evaluation for SCMs in Alaska. The DGGS *Strategic and Critical Minerals Assessment* project is specifically designed to address this data and knowledge gap. By assessing Alaska's potential for SCMs, the State of Alaska will benefit from expanded mineral-industry investment in exploration and development and associated employment, better understand the natural resources of its lands for land-management purposes, and contribute to the nation's need for domestic supplies of these critically important elements.

**Scope of Work to be Performed:**

This five-year project will determine the potential of state lands for hosting SCM deposits. Planned work by DGGS includes conducting geologic field work throughout Alaska, obtaining appropriate supporting data (geophysical surveys, geologic mapping, geochemical analyses, and other scientific data), evaluating currently available and newly collected data, determining Alaska-specific SCM ore-deposit models, communicating the results of our work to the public, and publishing all of the data and results of our studies on the DGGS web site (free access). Up to eight non-permanent Geologists and Natural Resource Technicians or contract positions will be needed to implement this project.

**End Results Achieved:**

Mineral resources comprise a major part of Alaska's economic assets. The location and size of these resources are largely unknown, yet that knowledge is key to orderly development of the state and maintenance of a stable economy. The State of Alaska cannot efficiently manage or develop assets that are unknown and not quantified. The benefits of a thorough mineral resource information database include:

- 1) Enhancing community and local government economies and revenue opportunities;
- 2) Stimulating private-sector exploration and competitive development of Alaska's mineral resources;
- 3) Developing transportation corridors and infrastructures, which always requires cost justification based on prior knowledge of resources; and
- 4) Developing long-term decisions on management of state-interest lands.

Specifically, the *Strategic and Critical Minerals Assessment* project will achieve the following important end results:

- The State of Alaska will develop a better understanding of SCM resources on state lands to help with land-management decisions.
- Data generated will be useful for attracting mineral exploration companies to Alaska, which is competing with other countries to attract industry investment dollars.
- The project will likely catalyze private sector investment and job generation at a level that far surpasses the cost of the *SCM Assessment* project. Jobs for the Alaskan public are created both as a direct result of the project's execution and as a result of the knowledge generated during the project about Alaska's SCM resources. During execution of the project, immediate jobs are created in the private sector in the form of helicopter, logistical, lodging, analytical, and various small contracts. Jobs are also generated in the private sector from the typical increase in the amount of exploration dollars spent and in the number of mining claims staked. Significant job creation by the mineral exploration industry is expected, both immediately upon release of this project's data, and for many years into the future.
- The true economic benefits in terms of future job generation and revenue for the State of this project are impossible to predict. Although mineral development is a high-risk enterprise, there is a good probability that one or more of the prospects identified with the help of data generated by this project will become major mines and thus return the amount of the state's data generation investment many times over.
- Potentially leverages private sector funds in the form of donations of private industry and native corporation data to support this project.
- Encourages exploration for REEs, which is the first step in reestablishment of the U.S REE supply chain, and which may lead to creation of additional domestic jobs in the mining, refining, alloying, and technology manufacturing industries.
- Reduces U.S. vulnerability to disruptions in SCM supply and enhances national security.

#### **Identify How Project Meets Statutory/Constitutional Responsibilities:**

The *Strategic and Critical Minerals Assessment* project addresses the statutorily mandated mission of the DGGs to: "Conduct geological and geophysical surveys to determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources...and...such other surveys and investigations as will advance the knowledge of the geology of the state" (AS 41.08.020).

Conducting field work and obtaining relevant geologic data on SCMs in Alaska will directly promote informed state management decisions, spur mineral industry exploration, and will advanced the state's knowledge of its geologic resources. .

#### **Why is this Project Important Now?:**

The *Strategic and Critical Minerals Assessment* project is needed now to address U.S. domestic needs for these essential elements. For example, currently the U.S. has no functional domestic REE supply chain. The U.S. is nearly 100 percent dependent on imports of REEs and REE-bearing manufactured goods, primarily from China, which controls the REE market. China is rapidly building its' high-technology industry to create domestic jobs, and is restricting export of REEs in order to reduce global competition, leverage its supplies of REEs, and force companies to move to China to have access to REEs. China's future export policies are unpredictable, but they are expected to favor China's domestic interests, needs, and economic development. In the next five years, the expected REE production from China (and other international sources) is predicted to be insufficient for

worldwide demand. This presents national security concerns for the U.S., whose military heavily relies on REE-based technology, and diminishes its ability to be the world's high-technology leader.

It takes many years for the mineral industry to explore for, identify, investigate, permit, and develop mineral resources. Without new SCM exploration and discoveries, the U.S. will not be able to reestablish its REE supply chain, and may have difficulty obtaining the other SCMs it needs. Although Alaska has one REE property with significant reserves (Bokan Mountain in Southeast Alaska), Alaska's statewide potential for hosting other SCM deposits is largely unknown and needs to be assessed.

The *Strategic and Critical Minerals Assessment* project will provide information that will help encourage resource development, create Alaskan jobs, and help Alaska with state land-management decisions. This strategic and effective investment will aid in identifying SCM resources in Alaska, and likely expand an industry that annually contributes millions of dollars in direct revenue to the State and municipalities, and employs thousands of people statewide. This project is a cost-effective method for State government to increase knowledge that will aid state planning, resource development, and land management. In order to make appropriate land-relinquishment decisions over the next few years, State land managers should be aware of what SCM resources are present on state-selected land. Products from this project will allow the state to look beyond the short-term rise and fall of commodity markets in formulating mineral-resource policies and in responding to related issues, such as land trades, corridor development, and area plans.

**Impacts of Not Funding This Project:**

The present lack of geologic knowledge about Strategic and Critical Minerals in Alaska is a formidable impediment to long-range planning for both the mineral industry and the State of Alaska. The lack of SCM-resource knowledge discourages private-sector investment in Alaska, and instead favors capital allocation to other areas of the world where comprehensive mineral-resource assessments exist or are being actively generated. Major mining companies rely on government-supplied exploration-scale (1:63,360) geological maps, and geophysical and geochemical surveys, to design and implement their exploration programs. Mining companies expect at least this level of effort from any government that seriously desires mineral industry investment. If the industry invests its exploration dollars elsewhere, the state will lose job-generation opportunities and future state revenues from mine production.

Without this project, the State of Alaska will continue to be unaware of what SCM resources it may possess, leading to poor land-management decisions. For example, as the state makes relinquishment decisions in the next few years regarding its land over selections, the state may unknowingly relinquish potential revenue-generating land that hosts SCM deposits.

**Specific Spending Detail:**

<u>LINE ITEM</u>	<u>DOLLAR AMOUNT</u>	<u>DESCRIPTION</u>
Personal Services	\$ 537,525	Partial support for existing staff, and non-permanent employees
Travel	\$ 31,000	Field work and meetings
Services	\$ 2,090,000	Field work and contract services; contract staff,

		geophysical surveys, field logistical services, scientific analyses, misc. contracts
Commodities	\$ 71,475	Helicopter fuel, field and office supplies, computers, software, additional office space

**State Match Required:**

- NO**
- YES**

**Project Support:**

Agencies and groups known, or considered likely to support this project, include:

- Mineral companies interested in exploration opportunities for SCM in Alaska will welcome the data and interpretive results generated through this project.
- Department of Natural Resources, Divisions of Mining Land and Water and Oil and Gas will support the project as it will provide them with information needed to make wise land-management and on-going land-relinquishment decisions.
- Local communities and private businesses statewide will benefit from the direct purchase of contract services to support this project. Future purchases and local employment opportunities throughout Alaska are expected, as mineral exploration companies utilize the data and interpretive results generated through this project.
- Federal agencies (such as the U.S. Geological Survey) compiling mineral-resource data, and conducting national strategic- and critical-mineral assessments, will welcome the creation of baseline geologic data for Alaska.
- The U.S. Department of Defense will be better able to assess its SCM- and REE-related vulnerability and potential SCM sources.
- Various regional native corporations hold surface and subsurface rights to large land positions, and will benefit from improved understanding of the SCM-resource potential of their lands.
- The Alaska Minerals Commission and the Alaska Miners Association support this project.
- University of Alaska faculty and students benefit from state-administered investigations of this type, which create academic-research and educational opportunities.

**Project Opposition:**

None anticipated.