

Geological Mapping for Energy Development (USGS STATEMAP)

FY2021 Request: \$600,000
Reference No: 60937

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:** Raquel Solomon-Gross
Estimated Project Dates: 07/01/2020 - 06/30/2025 **Contact Phone:** (907)465-2422

Brief Summary and Statement of Need:

This project will leverage federal funds from a USGS STATEMAP grant to produce a 1:63,360-scale bedrock geological map of the Rooftop Ridge area, in the southern foothills, that will cover economically important formations including the Nanushuk, Seabee, and Tuluvak, and Schrader Bluff Formations. The formations are known to host billions of barrels of oil in the subsurface.

Funding:	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	Total
1002 Fed Rcpts	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$1,800,000
1004 Gen Fund	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$1,800,000
Total:	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$3,600,000

<input checked="" type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input type="checkbox"/> Phased - underway	<input checked="" type="checkbox"/> Ongoing
100% = 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
One-Time Startup:	0	0
Totals:	0	0

Prior Funding History / Additional Information:

Sec1 Ch19 SLA2018 P8 L24 SB142 \$600,000
 Sec1 Ch1 SLA2017 P6 L12 SB23 \$2,100,000
 Sec1 Ch2 SLA2016 P5 L27 SB138 \$200,000
 Sec1 Ch38 SLA2015 P5 L21 SB26 \$800,000

Prior to FY2016 (SLA2015) STATEMAP grant funds were included in the operating budget.

Project Description/Justification:

Federal STATEMAP grants are an annual funding opportunity with a mandatory 1:1 state match requirement to receive the federal funds. The Division of Geological and Geophysical Surveys (DGGS) has received STATEMAP funds every year since 1993.

Northern Alaska is a world-class petroleum province, and experts agree that it is one of the most prospective onshore regions remaining in North America. This promise has been recently affirmed by several newly announced oil discoveries, some of which may prove to be among the largest in North America in decades. Completing a geologic map of the North Slope oil and gas province at a scale of 1:63,360 is an organizational goal of the division, and it is considered essential to facilitate oil and gas exploration.

The primary purpose of this project is to acquire a comprehensive new geologic data set that will catalyze private-sector oil and gas exploration beyond the core Prudhoe Bay area. In addition, this information will provide a sounder technical basis for estimates of undiscovered resources.

The primary focus of this project is the collection and interpretation of sufficient surface geologic data to create a detailed, high resolution geologic map covering more than 525 square miles of the central North Slope foothills. This is a geologically important region to map as it includes excellent exposures of the Nanushuk Formation—the same unit that serves as the reservoir in two of the recent large discoveries to the north. Work will provide critical insight into this rapidly emerging play in northern Alaska. Completion of these maps will compliment available detailed DGGs mapping to the south, north, and east-northeast, ultimately moving toward DGGs's long-term goal of creating a near continuous sequence of geologic maps of prospective State of Alaska lands between the National Petroleum Reserve in Alaska (NPR-A) and Arctic National Wildlife Refuge (ANWR).

The reduction in oil-generated revenue has adversely affected Alaska's economy. This project is expected to encourage new exploration, thus accelerating capitalization of the state's petroleum resources and indirectly contributing to future revenue payments to the State of Alaska. Execution of this project will directly benefit the private sector through the employment of Alaska-based contractors. More than 80% of the expenditures in this proposal will be spent in Alaska, benefiting state commerce (a small portion goes to outside laboratories for sample analyses).

Alaska's North Slope is an expensive area to conduct field work and DGGs regularly seeks external funding from the federal government and private sector to support petroleum geology studies. Funds for this project will be leveraged with these other sources to more efficiently execute program objectives.

The primary accomplishment of this project will be the production of a detailed geologic map covering two inch-to-mile quadrangles in the central North Slope foothills; an area of intense interest to industry, and adjacent to the FY2020 STATEMAP map area. The map will be published through DGGs as a freely downloadable digital product; all files will be available in ARC-GIS format. During the process of geologic mapping, additional data will be collected on subjects such as reservoir quality and source rock potential. These topical results will be published in technical reports through DGGs and supplement the geologic maps.

Furthermore, the map and analytical data will allow for more robust correlations of the subsurface stratigraphy across the North Slope. This is especially relevant as it permits instructive correlations between the poorly understood frontier foothills province and the much better studied producing areas to the north, which are well constrained by a higher density of well and seismic data. Recent examples of this type of regional surface to subsurface correlation have been published by DGGs (in collaboration with the Division of Oil and Gas) and have been very well received by industry geologists attempting to synthesize the complex geology in support of their exploration efforts.

All data collected during this project will be publicly available via DGGs technical reports and other peer-reviewed scientific literature. These publications are highly valued by petroleum companies exploring for oil and gas in northern Alaska, particularly by smaller independents that often lack the proprietary database and staff with Alaska-specific geological knowledge to effectively explore. The

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establishment of a more robust knowledge of North Slope geology will provide an incentive to companies seeking to reduce their investment risk. Many foreign governments provide voluminous publicly available geologic data to entice companies to explore for oil and gas resources. Increasing the availability of high-quality data will make the exploration landscape in Alaska more globally competitive and attractive to new companies.

The proposed budget is based on experience mapping in this area. Mapping this particular area has not been previously proposed; an adjacent area was proposed and funded for mapping in 2019. That mapping was completed.

What was accomplished with prior funding?

Funding from the U.S. Geological Survey (USGS) under STATEMAP is available annually to the DGGS and the division has obtained these grants yearly since 1993. The funding allows DGGS to map portions of the state with high energy or mineral resource potential and use the information to stimulate natural resource development. Each year geologic maps are produced and provided to the USGS as a condition of the STATEMAP grant. FY2016 was used for geologic mapping for energy development in the Red Glacier area in Cook Inlet, FY2017 was used for geologic mapping for mineral development near Tok, FY2018 for geologic mapping in the Tuxedni Bay area for energy development, and FY2020 was used for geologic mapping in the Shale Wall Bluff—Big Bend area on the North Slope. Since 1993, DGGS has received a total of \$4,739,174 in federal funds under STATEMAP. This has been used to geologically map approximately 16,000 square miles of Alaska, resulting in the production of over 150 geologic maps and reports.

Position Detail

- Full-time Petroleum Geologist I (10-X013), range 26, located in Fairbanks
- Full-time Geologist IV (10-2133), range 21, located in Fairbanks
- Full-time Geologist IV (10-2016), range 21, located in Fairbanks
- Full-time Geologist IV (10-2227), range 21, located in Fairbanks
- Full-time Geologist III (10-2008), range 19, located in Fairbanks
- Full-time Geologist II (10-2124), range 17, located in Fairbanks
- Full-time Geologist II (10-2035), range 17, located in Fairbanks

Line Item Detail

Line Item	Amount (use whole dollars)
1000 Personal Services	\$250,000
2000 Travel	\$25,000
3000 Services	\$275,000
4000 Commodities	\$50,000
5000 Capital Outlay	
7000 Grants	

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