

**AP/AL:** Appropriation

**Project Type:** Planning

**Category:** Natural Resources

**Location:** Statewide

**Contact:** Leta Simons

**House District:** Statewide (HD 1-40)

**Contact Phone:** (907)465-2400

**Estimated Project Dates:** 07/01/2008 - 06/30/2011

**Brief Summary and Statement of Need:**

This project will assess potential carbon sequestration reservoirs within an appropriate distance from industrial CO2 emitters in Alaska. The project will characterize geologic sink type, geology and reservoir parameters of viable geologic formations that may be safely used for subsurface storage of industrial CO2 emissions. The project will involve a collaborative effort between DGGs, Division of Oil and Gas, DEC, UAF, industry including oil and gas producers and electrical power utilities and the Federal government and WESTCARB, a U.S. Department of Energy co-funded research partnership. This project will ensure that assessment and utilization of Alaska's resources for CO2 storage is based on sound science.

<b>Funding:</b>	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Fed Rcpts	\$200,000						\$200,000
Gen Fund	\$100,000	\$100,000	\$100,000				\$300,000
<b>Total:</b>	<b>\$300,000</b>	<b>\$100,000</b>	<b>\$100,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$500,000</b>

<input type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input checked="" type="checkbox"/> Phased - new	<input 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>	<u>0</u>	<u>0</u>
<b>Totals:</b>	<b>0</b>	<b>0</b>

**Additional Information / Prior Funding History:**

New Project - No Prior Funding History

**Project Description/Justification:**

Concerns about increased concentrations of carbon dioxide in the atmosphere have led to major efforts in reducing industrial carbon emissions to the atmosphere. The capture and storage of carbon dioxide, CO2 Sequestration, has the potential for reducing CO2 emissions from sources including fossil fuel power generation and other CO2 emitters. Roughly one third of the United States' carbon emissions currently come from power plants and fossil fuels will likely remain the mainstay of energy production well into the 21st century. Many power plants and other large point sources of CO2 emissions in Alaska may be located near geologic formations that are amenable to CO2 storage. Additionally, injection of CO2 into a geologic formation can enhance the recovery of oil and gas which can offset the cost of CO2 capture. In the United States during the year 2000, 34 million tons of CO2 were injected underground as a part of enhanced oil recovery and coal bed methane recovery operations. This is approximately equivalent to the CO2 emissions from six million cars in one year.

The federal government in partnership with industry, state governments and universities has established a major collaborative research effort through the West Coast Regional Carbon Sequestration Partnership (WESTCARB) in six western states and one Canadian province. WESTCARB was co-funded by the U.S. Department of Energy (DOE) to evaluate the potential to capture manmade CO2 and store it in underground "carbon sinks", to characterize these regional carbon sequestration opportunities and conduct pilot-scale validation tests.

Carbon sinks include natural sinks such as the ocean, terrestrial vegetation and soils, and geologic sinks that use natural pore spaces in geologic formations to serve as reservoirs for long-term carbon dioxide storage. To be considered for sequestration, geologic sinks must be

- 1) near a major source of CO<sub>2</sub> such as a fossil fuel power plant,
- 2) have the characteristics that can securely hold the CO<sub>2</sub> in place for long periods of time,
- 3) be considerably deeper than the deepest water well, and
- 4) be in a stable area not prone to earthquakes.

Types of geologic sinks include oil and gas pools and fields; unminable coal beds, deep saline aquifers, and unconventional reservoirs such as tight gas sands and organic shales.

This CIP would fund a phased three-year comprehensive investigation to better understand the potential for CO<sub>2</sub> Sequestration in Alaska.

- **Year 1 (FY 2009) Compilation of data on geologic sinks and CO<sub>2</sub> emitters:** The first year will consist of identifying the major CO<sub>2</sub> emitters in Alaska such as urban fossil fuel-fired power plants, oil and gas production facilities; and compiling the geologic data necessary to evaluate potential geologic sinks within an appropriate radius of these CO<sub>2</sub> emitters. This work will involve The Division of Geological and Geophysical Surveys (DGGS), the Division of Oil and Gas (O&G), University of Alaska (UAF) and the Department of Environmental Conservation (DEC). At the time of this writing, it is expected that federal Department of Energy (DOE) funds and/or industry sponsors and collaborative in-kind support may be received in FY09.
- **Year 2 (2010) Evaluation of geologic sinks:** The second year of this CIP will involve a comprehensive characterization and evaluation of the potential geologic sinks that are identified in year one. This work will require DGGS, O&G, UAF, independent geologic consultants and federal scientists (DOE and USGS).
- **Year 3 (2011) Economic evaluation of CO<sub>2</sub> Sequestration options:** Year three will complete the geologic sink evaluation and conduct an economic evaluation of the options for CO<sub>2</sub> sequestration near major point source emitters throughout Alaska. The University of Alaska Institute of Social and Economic Research (ISER), in partnership with industry will likely play a major role in conducting the economic evaluation of the CO<sub>2</sub> sequestration options in Alaska.

The proposed multiyear CIP project will provide the necessary seed matching funds for seeking available federal funds through DOE and WESTCARB. WESTCARB will evaluate and rank various CO<sub>2</sub> capture, transport, and storage combinations on the basis of technical feasibility, deployment timeframe, and cost. The partnership will also conduct pilot-scale validation projects, such as injection of a small quantity of CO<sub>2</sub> into suitable geologic formations and monitor its movement to ensure reliable storage. DOE will combine WESTCARB's findings with those of partnerships in other regions to create an interactive national "carbon atlas" (NATCARB) to better understand how sequestration technology can help the United States reduce the carbon intensity of its economy and mitigate changes in the climate. So that the data on Alaska that is gathered by WESTCARB and incorporated into NATCARB is accurate and based on sound science, it is important that DNR be involved in the process.

### Why is this Project Needed Now?:

The nationwide DOE assessment of the potential for CO<sub>2</sub> sequestration is currently underway and WESTCARB is currently evaluating the six western states. To ensure that the WESTCARB assessment of Alaska is a realistic and accurate representation of Alaska's true CO<sub>2</sub> sequestration potential it is important that DNR be fully involved in the process. Errors in data collection and a misinformed evaluation of carbon dioxide reservoirs could lead to potentially costly or even hazardous results. For example, CO<sub>2</sub> injection into fault-laden reservoirs that lack sufficient seal capabilities could lead to upward leakage of CO<sub>2</sub> into potable aquifers or even to the surface.

### Specific Spending Detail:

**CO2 Sequestration Assessment Phase 1****FY2009 Request: \$300,000**  
**Reference No: 45260**

<u>LINE ITEM</u>	<u>DOLLAR AMOUNT</u>	<u>DESCRIPTION (text)</u>
Personal Services	\$ 36,000	Geological Scientist and DGGS administration personnel, part time
Travel	\$ 20,000	Estimated travel costs to Anchorage and meetings with WESTCARB
Services	\$ 244,000	Contract for Consultants and RSA to UAF

**Project Support:**

Broad support can be expected from

- 1) Alaska residents,
- 2) energy industry utilities and oil and gas producers that could benefit from identifying potential carbon sinks,
- 3) agencies in the State and Federal government, including DGGS, O&G, DEC, DOE, WESTCARB, USGS, Minerals Management Service (MMS), BLM, and
- 4) research institutions, including UAF.

**Project Opposition:**

None expected