

State of Alaska FY2007 Governor's Operating Budget

Department of Natural Resources Geological Development Component Budget Summary

Component: Geological Development

Contribution to Department's Mission

This component contributes to the Department's mission to develop, conserve, and enhance Alaska's natural resources by collecting, archiving, and distributing the geological information that will catalyze private-sector energy- and mineral-resource exploration and support wise land-use decisions. The mission of the Division of Geological & Geophysical Surveys is clearly defined in statute: "...determine the potential of Alaskan land for production of metals, minerals, fuel, and geothermal resources; the location and supplies of groundwater and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures..." (AS 41.08)

Core Services

- Functions as the state's lead source and repository of Alaska geologic information and the primary source of information concerning Alaska's energy resources, mineral resources, and geologic hazards.
- Provides the geologic information needed for economic diversification, revenue generation, hazards mitigation, infrastructure development, and resource management in the state of Alaska.
- Plays a strategic role in the generation and maintenance of Alaska's economy, and in the public safety of its citizens with respect to mitigating natural geologic hazards.
- Stimulates the discovery of minerals, coal, oil, gas, geothermal energy, construction-quality sand and gravel, and water by providing geologic-framework data on which to base industry resource-exploration programs
- Provides geologic data and assessments used by DNR management divisions (Mining, Land & Water; Oil & Gas; Parks & Outdoor Recreation; Agriculture; and Forestry), state departments (e.g., Community and Economic Development, Transportation & Public Facilities, Military and Veterans Affairs), and municipalities. Geologic information provided to users outside DNR has been used to catalyze private sector exploration investment, plan natural-hazard mitigation and disaster preparedness in cities and villages, select transportation-corridor lands for Alaska, and to better design roads and other infrastructure.
- Maintains the Geologic Materials Center, Alaska's archive of representative geologic materials from across the state. The collection, representing many millions of dollars in acquisition cost, includes oil- and gas-related samples, mineral-related and coal samples collected by DGGGS and donated by industry and numerous Federal agencies. The samples provide the reference collection of materials used by the petroleum and mineral industry to guide new exploration ventures.
- Works collaboratively with the other Divisions in DNR and with Alaska-based federal agencies to make all public sector geologic resource data accessible via the Internet.

End Results	Strategies to Achieve Results
<p>A: Provide hard-copy geologic reports and maps requested for use in exploring for and managing energy and mineral resources and for mitigating geologic hazards</p> <p><u>Target #1:</u> FY-07 Target: 700 requests filled for hard-copy geologic publications.</p> <p><u>Measure #1:</u> Number of requested geologic publications delivered during the fiscal year.</p>	<p>A1: Produce timely and reliable new energy-related geologic information in areas of poor geologic understanding and high energy resource potential, for both resource development and rural energy consumption</p> <p><u>Target #1:</u> FY-07 Target: Five reports on energy-related geology of state-interest lands</p> <p><u>Measure #1:</u> Number of new peer-reviewed geologic reports published during the fiscal year that assist the energy industry and state management agencies in developing conventional energy resources on state-interest lands.</p>

	<p><u>Target #2:</u> FY-07 Target: One report on unconventional gas resource potential of state-interest lands <u>Measure #2:</u> Number of new peer-reviewed reports or datasets released during the fiscal year that provide geologic information on unconventional gas resources.</p> <p><u>Target #3:</u> FY-07 Target: Six presentations on energy-resource geology <u>Measure #3:</u> Number of technical presentations made to industry, public, and government sectors during the fiscal year on energy-resource evaluations.</p> <p><u>Target #4:</u> FY-07 Target: 525 square miles of published, energy-related geologic mapping <u>Measure #4:</u> Number of square miles of new, peer-reviewed, energy-related bedrock geologic mapping published during the fiscal year.</p> <p>A2: Produce timely and reliable new minerals-related geological and geophysical information in areas of limited information and high minerals resource potential</p> <p><u>Target #1:</u> FY-07 Target: 240 square miles of published, minerals-related bedrock geologic mapping <u>Measure #1:</u> Number of square miles of new, peer-reviewed, minerals-related bedrock geologic maps published during the fiscal year.</p> <p><u>Target #2:</u> FY-07 Target: 750 square miles of published airborne geophysical maps <u>Measure #2:</u> Number of square miles of completed new airborne geophysical maps published during the fiscal year.</p> <p><u>Target #3:</u> FY-07 Target: 240 square miles of published, placer-mineral related geologic mapping <u>Measure #3:</u> Number of square miles of new surficial geologic maps published during the fiscal year that provide geologic information on placer-mineral potential and/or construction-materials resources.</p> <p><u>Target #4:</u> FY-07 Target: Three datasets of minerals-related geologic information made available online <u>Measure #4:</u> Number of legacy or private-sector datasets released during the fiscal year that provide minerals-related geologic information.</p> <p><u>Target #5:</u> FY-07 Target: Two reports on the Alaska minerals industry <u>Measure #5:</u> Number of reports published during the fiscal year providing statistical information on Alaskan mineral industry.</p> <p><u>Target #6:</u> FY-07 Targets: Four presentations on Alaska mineral-resource potential <u>Measure #6:</u> Number of technical presentations made to</p>
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	industry, public, and government sectors during the fiscal year on mineral-resource potential and the status of the Alaskan mineral industry.
End Results	Strategies to Achieve Results
<p>B: Provide timely online delivery of geological and geophysical information to support resource development, attract new industry and provide pre-disaster hazard mitigation for continued economic growth.</p> <p><u>Target #1:</u> FY-07 : 2 million visits (user sessions) <u>Measure #1:</u> Number of users requesting information and data from the DGGS and AVO Web sites.</p>	<p>B1: Produce reliable new information on geologic hazards in areas at risk of economic losses and casualties from disasters</p> <p><u>Target #1:</u> FY-07 Target: One report on geologic hazards <u>Measure #1:</u> Number of peer-reviewed reports or maps published during the fiscal year that provide improved assessment of geologic hazards that pose significant risks to public safety.</p>
End Results	Strategies to Achieve Results
<p>C: Respond on a timely basis to all public & agency requests for information and assistance on energy resources, mineral resources, geologic hazards, and engineering geology</p> <p><u>Target #1:</u> FY-07 Target: 100 percent response to requests for geologic information or assistance by date requested <u>Measure #1:</u> Percentage of timely responses during the fiscal year relative to the total number of requests.</p>	<p>C1: Provide improved public outreach and education regarding the geology of Alaska</p> <p><u>Target #1:</u> FY-07 Target: Ten public presentations on the geology of Alaska <u>Measure #1:</u> : Number of events during the fiscal year that involve preparing and manning public displays, speaking at or teaching classes, and delivering presentations about the geology of Alaska.</p>
End Results	Strategies to Achieve Results
<p>D: Provide improved public access to nonproprietary rock samples and to the corresponding processed samples (slides etc.) in support of private-sector resource exploration and geological education</p> <p><u>Target #1:</u> FY-07 Target: 100 percent satisfied users of the Geologic Materials Center <u>Measure #1:</u> Percentage of satisfied users of the Geologic Materials Center sample archives based on written evaluations.</p>	<p>D1: Provide increased availability of processed samples at the Geologic Materials Center</p> <p><u>Target #1:</u> FY-07 Target: 3,000 new processed samples <u>Measure #1:</u> Increase in total GMC processed collection (microfossil/petrographic slides, data reports), which increases available exploration data to industry, academia, and government agencies.</p>

Major Activities to Advance Strategies	
<ul style="list-style-type: none"> • Conduct field-geologic and laboratory studies needed to develop geologic maps and reports on the geology of Alaska • Develop energy basin geologic reports including reservoir and source rock characterization, paleontological, and structural cross sections • Publish minerals-related geologic reports, occurrence maps, geochemical data, geochronologic reports, structural cross sections, and databases • Deliver presentations at public and industry forums to improve understanding of energy- and minerals-related geology • Respond to public & agency requests for information 	<ul style="list-style-type: none"> • Deliver presentations at public and industry forums to improve understanding of mineral- and hydrocarbon-exploration geology • Publish maps and reports on placer-mineral and construction-materials resources • Publish maps and reports on the hazards associated with volcanoes, earthquakes, tsunamis, landslides, and other hazards • Deliver presentations to improve public understanding of geologic hazards • Design and maintain a Web site to provide online access to Alaska geologic data and publications • Maintain and organize an archive of publicly

Major Activities to Advance Strategies

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| <ul style="list-style-type: none"> • on energy resources, mineral resources, and geologic hazards • Conduct and publish airborne geophysical surveys • Publish annual Mineral Industry Summary Reports • Develop and maintain an enterprise database of geospatially referenced geological and geophysical information | <ul style="list-style-type: none"> • accessible geologic samples from industry, government, and academia. • Respond to legislative and administration requests for information and assistance on geological issues |
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FY2007 Resources Allocated to Achieve Results

<p>FY2007 Component Budget: \$5,875,600</p>	<p>Personnel:</p> <table border="0"> <tr> <td>Full time</td> <td style="text-align: right;">38</td> </tr> <tr> <td>Part time</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Total</td> <td style="text-align: right; border-top: 1px solid black;">38</td> </tr> </table>	Full time	38	Part time	0	Total	38
Full time	38						
Part time	0						
Total	38						

Performance Measure Detail

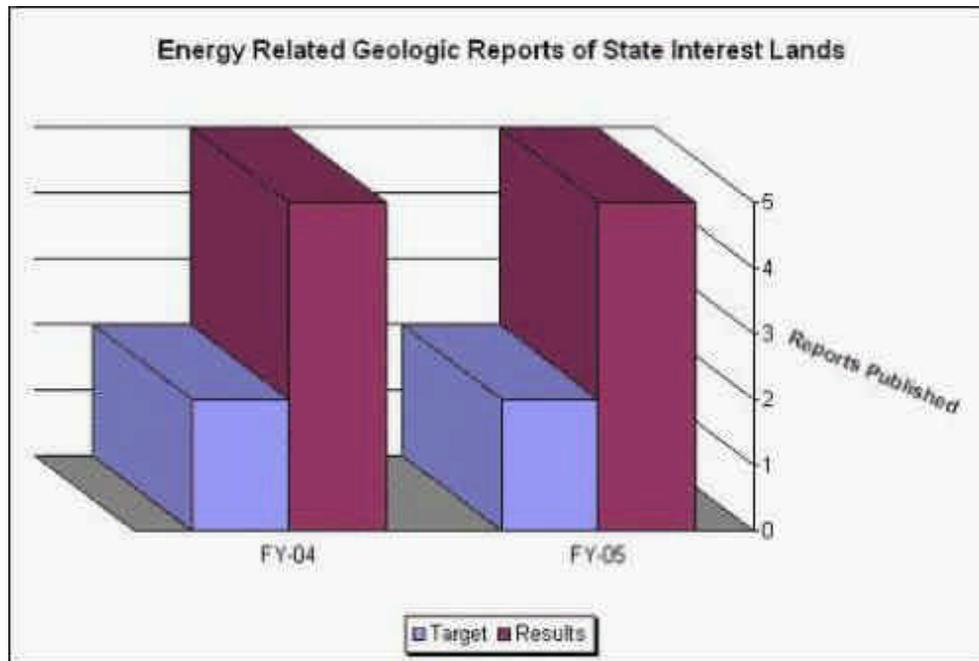
A: Result - Provide hard-copy geologic reports and maps requested for use in exploring for and managing energy and mineral resources and for mitigating geologic hazards

Target #1: FY-07 Target: 700 requests filled for hard-copy geologic publications.
Measure #1: Number of requested geologic publications delivered during the fiscal year.

Analysis of results and challenges: FY04 Result - 2,513 publications delivered (target not established)
 FY05 Result - 979 publications delivered (target not established)
 FY06 1ST Quarter Result – 292 publications delivered as of Sept 30

A1: Strategy - Produce timely and reliable new energy-related geologic information in areas of poor geologic understanding and high energy resource potential, for both resource development and rural energy consumption

Target #1: FY-07 Target: Five reports on energy-related geology of state-interest lands
Measure #1: Number of new peer-reviewed geologic reports published during the fiscal year that assist the energy industry and state management agencies in developing conventional energy resources on state-interest lands.



Analysis of results and challenges: Analysis of results and challenges: Dissemination of detailed geologic knowledge is critically important for responsible resource development. This information must be the result of the most modern analyses and incorporate all available data in order to identify frontier areas of exploration on state lands. A critical component of this effort is in the form of published reports on a wide range of geologic disciplines. DGGs has increased this effort over the past 2 years and has met or exceeded the target in both cases;

FY04 RESULT: Five reports (target two reports)

FY05 RESULT: Five reports (target two reports)

FY06 1ST Quarter Result – Two reports

Target #2: FY-07 Target: One report on unconventional gas resource potential of state-interest lands

Measure #2: Number of new peer-reviewed reports or datasets released during the fiscal year that provide geologic information on unconventional gas resources.

Analysis of results and challenges: An emerging frontier of energy resource development is unconventional gas. Examples of this potential include low permeability reservoirs, gas hydrates, and coal bed methane. This target is not only important for developing hydrocarbon basins, but also for the energy challenges faced in rural Alaska. DGGs will remain committed to acquiring and publishing pertinent geologic data concerning both the developed and rural areas of Alaska, especially in the light of energy shortfalls and commodity price increases.

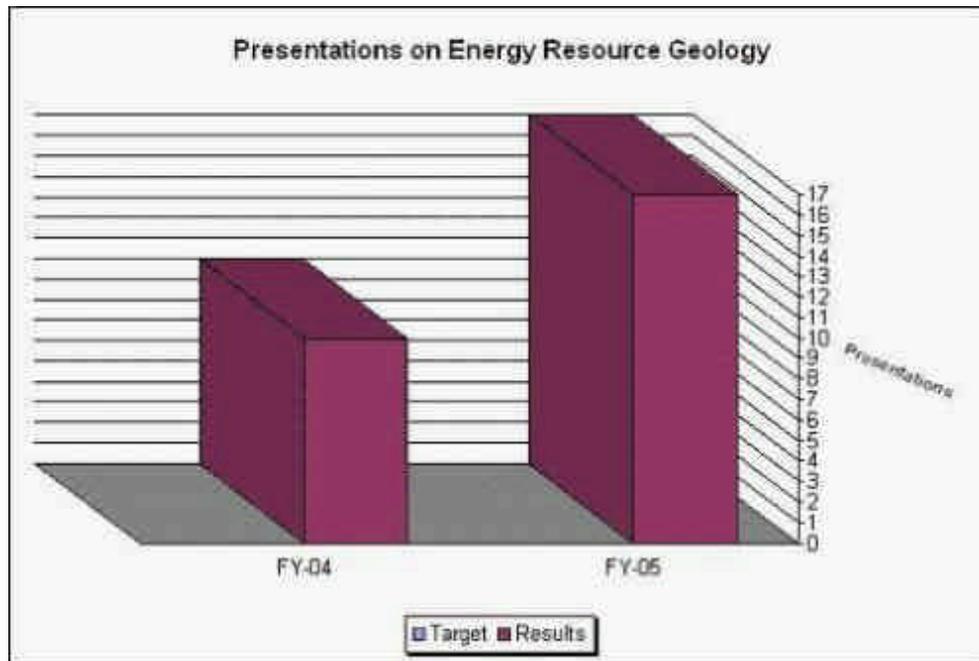
FY04 RESULT: Two reports (target two reports)

FY05 RESULT: One report (target two reports)

FY06 1ST Quarter Result – No reports as of Sept 30

Target #3: FY-07 Target: Six presentations on energy-resource geology

Measure #3: Number of technical presentations made to industry, public, and government sectors during the fiscal year on energy-resource evaluations.



Analysis of results and challenges: An important venue for releasing timely information for resource development and regulations is through public presentation at both local and national technical conferences. This avenue is often the most cost-effective and timely method of disseminating new findings to the broadest audience of end-users. Significant effort is placed on this method of knowledge transfer and will be followed up by publication of data and interpretations.

FY04 RESULT: Ten presentations (target not established)

FY05 RESULT: Seventeen presentations (target not established)

FY06 1ST Quarter Result – Five presentations

Target #4: FY-07 Target: 525 square miles of published, energy-related geologic mapping

Measure #4: Number of square miles of new, peer-reviewed, energy-related bedrock geologic mapping published during the fiscal year.

Analysis of results and challenges: The publication of mapped geologic data in areas of high energy resource potential is critical for attracting new industry players and providing detailed information for government, academia and exploration companies. DGGS did not meet its published target in FY05. 480 square miles of mapping has been completed and is currently submitted for publication in FY06. Significant personnel changes in the energy section, as well as the back-log created for publication staff were the major challenges faced during this period. Re-staffing and re-structuring of the energy section, and a focused effort on the publication back-log will be the primary goal for FY06.

FY04 RESULT: no published maps (target 200 square miles)

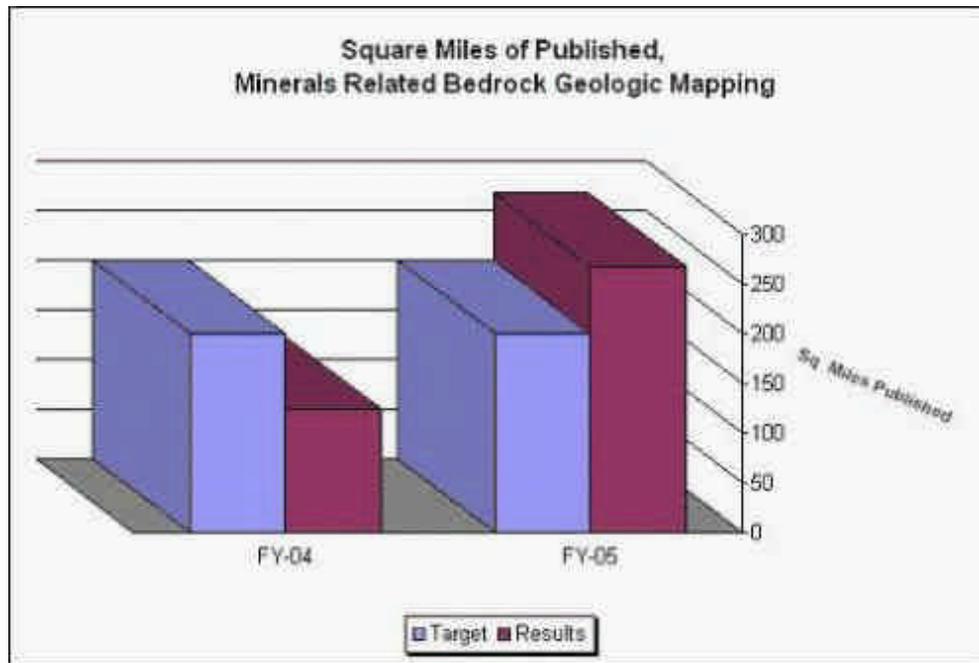
FY05 RESULT: no published maps; 480 sq miles submitted for publication (target 200 square miles).

FY06 1ST Quarter Result – No maps published as of Sept 30

A2: Strategy - Produce timely and reliable new minerals-related geological and geophysical information in areas of limited information and high minerals resource potential

Target #1: FY-07 Target: 240 square miles of published, minerals-related bedrock geologic mapping

Measure #1: Number of square miles of new, peer-reviewed, minerals-related bedrock geologic maps published during the fiscal year.



Analysis of results and challenges: The publication of mapped geologic data in areas of high minerals resource potential is critical for attracting new industry players and providing detailed information for government, academia and exploration companies. DGGs minerals section geologists have developed a methodology for increasing bedrock geological mapping by use of pre-flown remote sensing data to help identify poorly exposed bedrock data. DGGs has consistently exceeded its targets which vary year to year based on available funding.

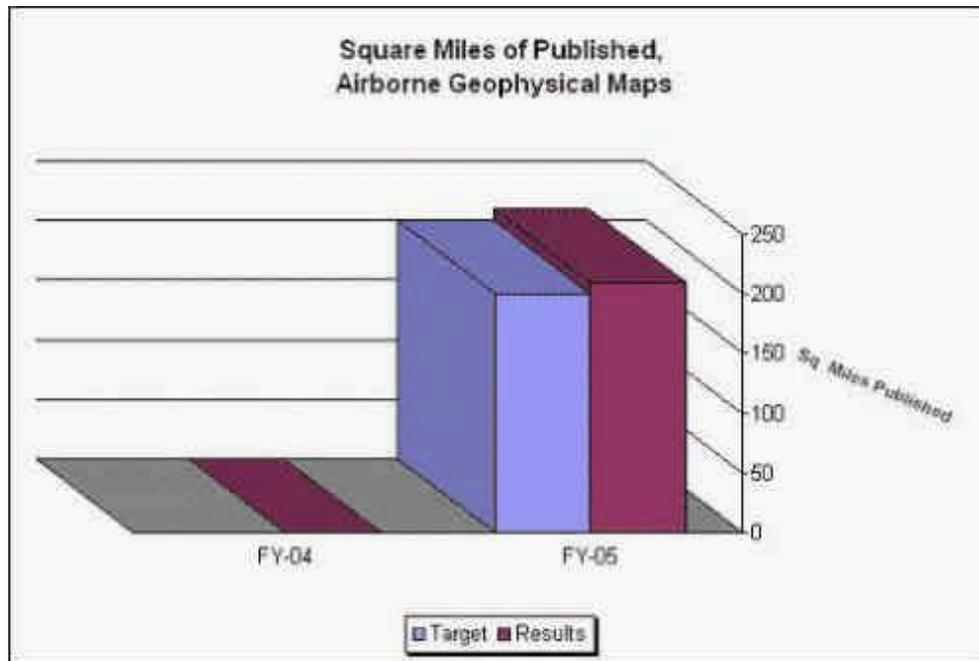
FY04 RESULT: 124 square miles (target 200 square miles)

FY05 RESULT: 268 sq miles published (target 200 square miles)

FY06 1ST Quarter Result – None as of Sept 30

Target #2: FY-07 Target: 750 square miles of published airborne geophysical maps

Measure #2: Number of square miles of completed new airborne geophysical maps published during the fiscal year.



Analysis of results and challenges: Much of Alaska's minerals potential lands have poorly exposed geology due to tundra and tree cover. Advancement in geophysical data acquisition has shown that much of this poorly exposed bedrock can be identified using aerial geophysical surveys and, in combination with ground-based geologic mapping, can provide reliable information for mineral resource assessment. Less than 20% of potential mineral bearing lands have been surveyed, and DGGGS is committed to prioritizing and finishing the acquisition of this important data. Funding for this work has historically been sporadic and partially dictates the amount of yearly coverage possible. Available equipment and personnel constraints also play major rolls in our ability to gather data. The FY06 target is 650 square miles of published airborne geophysical maps, compared to the FY05 target of 200 square miles, which DGGGS exceeded.

FY04 RESULT: Zero square miles (no funding for new surveys in FY04; completed 763 square miles of updated previous surveys)

FY05 RESULT: 210 sq miles published (FY05 target was 200 sq mi)

FY06 1ST Quarter Result – None as of Sept 30

Target #3: FY-07 Target: 240 square miles of published, placer-mineral related geologic mapping

Measure #3: Number of square miles of new surficial geologic maps published during the fiscal year that provide geologic information on placer-mineral potential and/or construction-materials resources.

Analysis of results and challenges: The publication of mapped geologic data in areas of high minerals resource potential is critical for providing detailed information for government, academia and explorationists. This information is also pertinent for land selection and land use managers. Although this resource has seen significant reduction in activity based on environmental concerns and commodity pricing, new techniques, environmental remediation standards, and higher commodity prices has renewed interest in the resource. DGGGS has completed mapping on over 1300 square miles of high potential area, but with limited personnel, has not completed final publication. The current renewed activity dictates that DGGGS identify the personnel and monetary resource to finalize the current publications and continue the mapping effort.

FY04 RESULT: Zero square miles published (1,052 square miles of mapping currently in review; FY04 target 200 square miles)

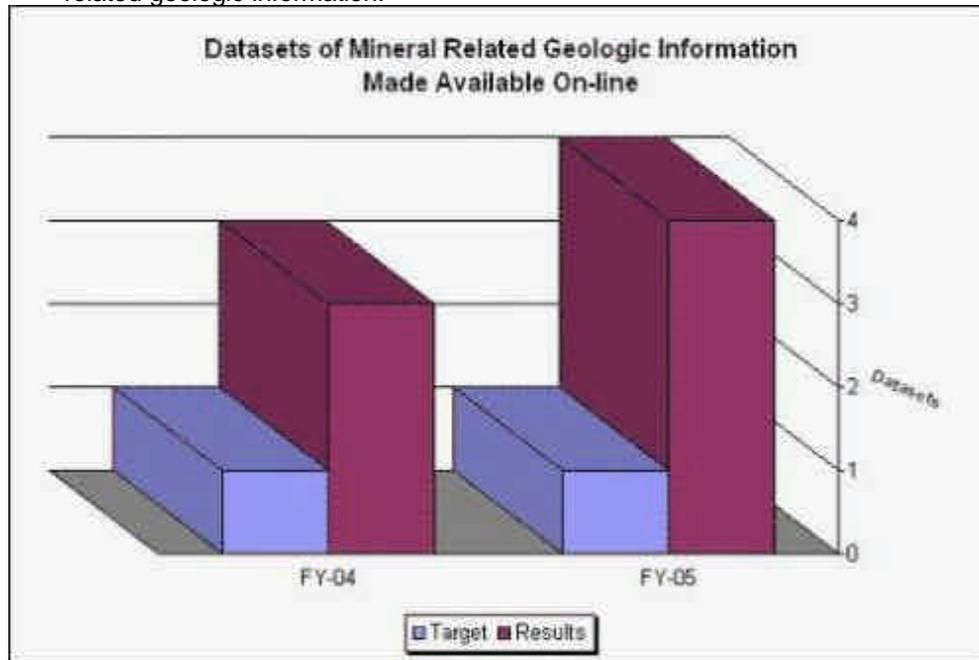
FY05 RESULT: None published (268 square miles of field work completed; FY05 target 200 square miles)

FY06 1ST Quarter Result – None as of Sept 30

Target #4: FY-07 Target: Three datasets of minerals-related geologic information made available online

Measure #4: Number of legacy or private-sector datasets released during the fiscal year that provide minerals-

related geologic information.



Analysis of results and challenges: The advent of the digital information age has placed significant demand on information availability and feasibility of warehousing hardcopy documents. As a result, a significant body of data in the public and private sectors is at risk of loss due to budget constraints and physical space requirements. DGGs has been employing considerable effort to recover and transfer these documents to digital format and provide them electronically in order to capture the wealth of information available, and distribute it to a broader user base.

FY04 RESULT: Three releases of legacy data. Also released three new datasets from current projects. (target one dataset)

FY05 RESULT: Four datasets made available online (target one datasets)

FY06 1ST Quarter Result – Three datasets

Target #5: FY-07 Target: Two reports on the Alaska minerals industry

Measure #5: Number of reports published during the fiscal year providing statistical information on Alaskan mineral industry.

Analysis of results and challenges: An important source of minerals information can be obtained through the statistical study of industry trends and information. DGGs, in collaboration with DML&W and Department of Commerce, Community, and Economic Development compiles, publishes, and distributes this information for both governmental and industry use. This document is widely used and considered a critical source of information for planning.

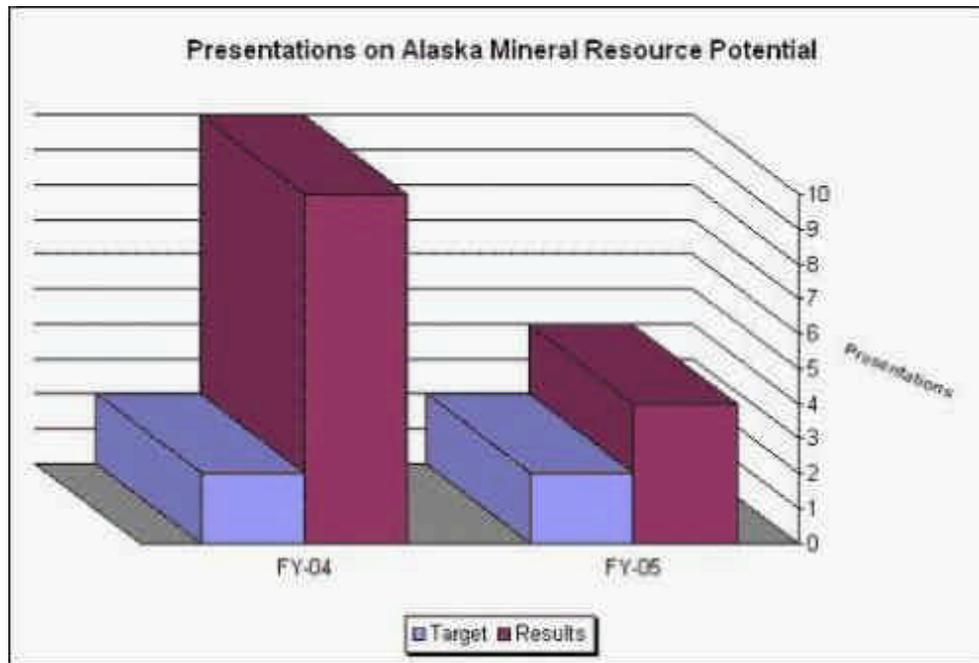
FY04 RESULT: Two reports (target two reports)

FY05 RESULT: Two reports (target two reports)

FY06 1ST Quarter Result – None as of Sept 30

Target #6: FY-07 Targets: Four presentations on Alaska mineral-resource potential

Measure #6: Number of technical presentations made to industry, public, and government sectors during the fiscal year on mineral-resource potential and the status of the Alaskan mineral industry.



Analysis of results and challenges: An important venue for releasing timely information for resource development and regulations is through public presentations at both local and national technical conferences. This avenue is often the most cost-effective and timely method of disseminating new findings to the broadest audience of end-users. DGGs places significant effort on this method of knowledge transfer and will follow up by publishing data and interpretations.

FY04 RESULT: Ten presentations (target two presentations)

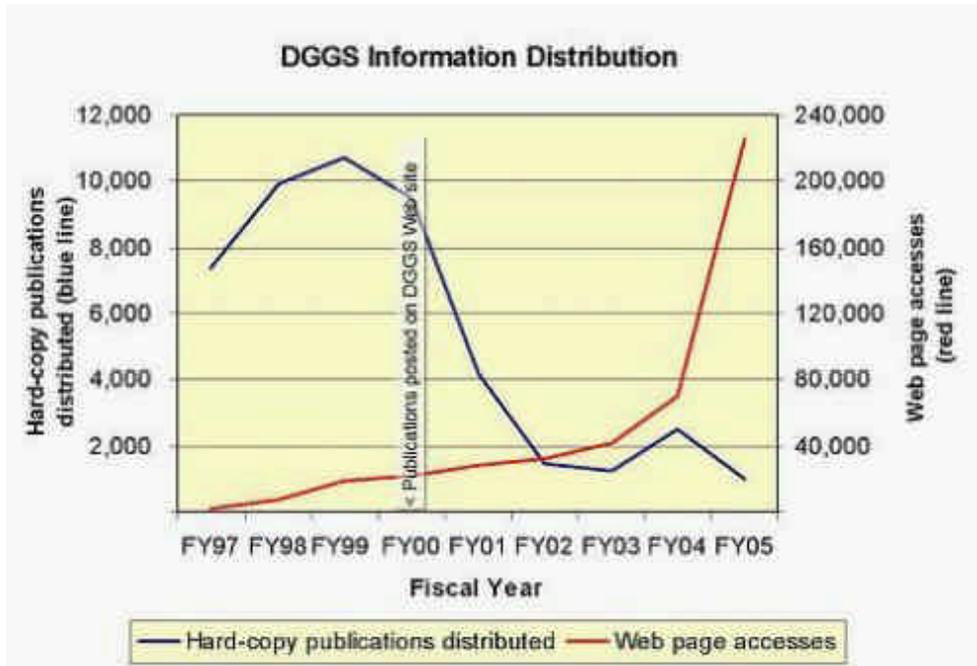
FY05 RESULT: Four presentations (target two presentations)

FY06 1ST Quarter Result – One presentation

B: Result - Provide timely online delivery of geological and geophysical information to support resource development, attract new industry and provide pre-disaster hazard mitigation for continued economic growth.

Target #1: FY-07 : 2 million visits (user sessions)

Measure #1: Number of users requesting information and data from the DGGs and AVO Web sites.



Analysis of results and challenges: Dissemination of information via the web has seen a dramatic increase over the past 8 years. This is especially true of detailed technical reports and large datasets that were previously difficult to obtain outside a local distribution center. Although the initial development costs are high, the dramatic decrease in hardcopy requests, as well as the much wider distribution of information (see graph), will pay large dividends in the form of increased knowledge transfer to a much broader base of users. DGGGS has focused a significant effort on developing and maintaining this service, and as a result, has seen a dramatic increase in geologic data inquiries over the past 2 years. This trend will likely increase; DGGGS is committed to continuing and improving this important service.

FY04 RESULT: 248,806 hits on home page (target not established)

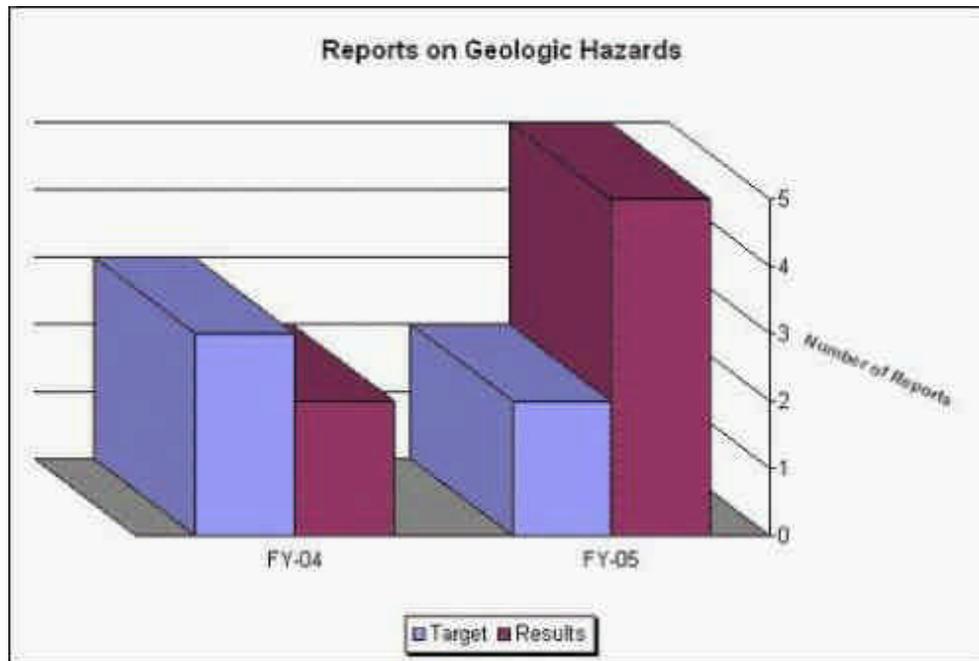
FY05 RESULT: 1,670,802 user sessions (target not established)

FY06 1ST Quarter Result – 516,509 user sessions as of Sept 30

B1: Strategy - Produce reliable new information on geologic hazards in areas at risk of economic losses and casualties from disasters

Target #1: FY-07 Target: One report on geologic hazards

Measure #1: Number of peer-reviewed reports or maps published during the fiscal year that provide improved assessment of geologic hazards that pose significant risks to public safety.



Analysis of results and challenges: Public safety and preventing economic disasters caused by natural phenomena are distinctly tied to our understanding the risks associated with the complex geology in Alaska. Mitigation of these risks can only come about through detailed mapping and understanding of the natural processes, and timely distribution of that information to the public and government planners. Increasing population and development in Alaska create significant demands for acquiring geologic data and distributing it in a timely fashion. DGGs will continue in its attempt to keep pace with the growing need for information through collaborative projects, publication, and community outreach.

FY04 result: Two reports (target three reports)

FY05 result: Five reports (target two reports)

FY06 1ST Quarter Result – None as of Sept 30

C: Result - Respond on a timely basis to all public & agency requests for information and assistance on energy resources, mineral resources, geologic hazards, and engineering geology

Target #1: FY-07 Target: 100 percent response to requests for geologic information or assistance by date requested

Measure #1: Percentage of timely responses during the fiscal year relative to the total number of requests.

Analysis of results and challenges: Current, timely geologic information is critical to public safety scientific organizations, resource planners, land managers, and developers. Regardless of the amount of information gathered, the distribution of that knowledge is key in providing the desired outcome. The division is committed to continuously providing a 100% timely response to requests for information.

FY04 RESULT: Will begin reporting in FY05 (target 100 percent timely responses)

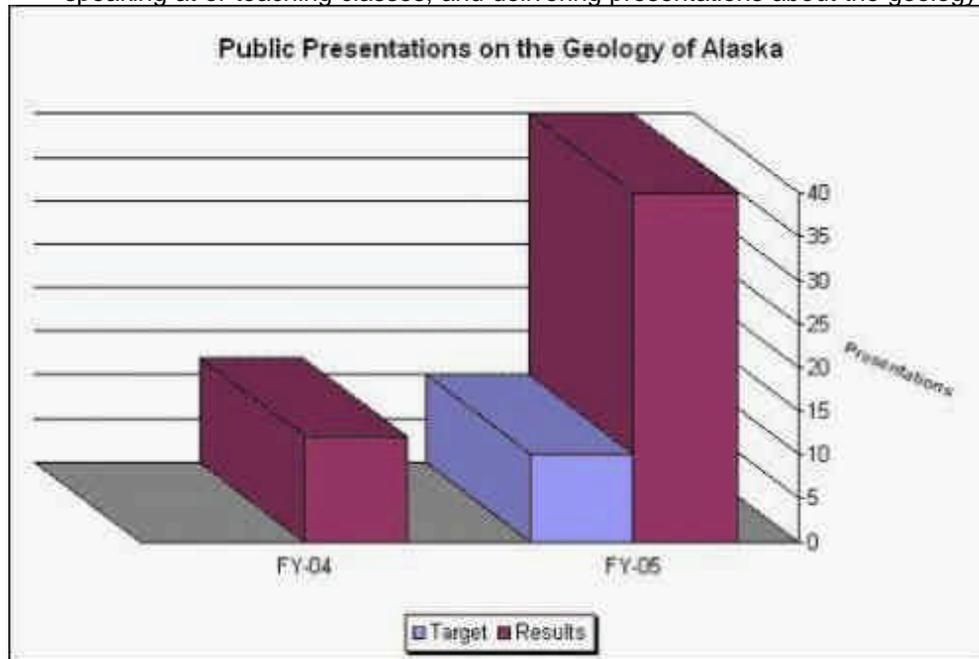
FY05 RESULT: 100 percent timely response (702 total responses; target 100 percent)

FY06 1ST Quarter Result – 100 percent timely responses (119 responses as of Sept 30)

C1: Strategy - Provide improved public outreach and education regarding the geology of Alaska

Target #1: FY-07 Target: Ten public presentations on the geology of Alaska

Measure #1: : Number of events during the fiscal year that involve preparing and manning public displays, speaking at or teaching classes, and delivering presentations about the geology of Alaska.



Analysis of results and challenges: Public awareness and knowledge of the division's activity and database is paramount to success of the organization's mission. Although the web site is an important tool to that end, the power of physical presence at public forums cannot be underestimated. DGGs employs significant effort in presenting geologic knowledge in a wide range of public venues including schools, trade shows and community meetings. The number of presentations made reflects the commitment to that outreach.

FY04 RESULT: Twelve presentations (target not established)

FY05 RESULT: Forty presentations (target ten presentations)

FY06 1ST Quarter Result – Five presentations as of Sept 30

D: Result - Provide improved public access to nonproprietary rock samples and to the corresponding processed samples (slides etc.) in support of private-sector resource exploration and geological education

Target #1: FY-07 Target: 100 percent satisfied users of the Geologic Materials Center

Measure #1: Percentage of satisfied users of the Geologic Materials Center sample archives based on written evaluations.

Analysis of results and challenges: A significant amount of effort and capital has been spent over the past 60 years to obtain rock and mineral samples throughout Alaska. Some of these samples are irreplaceable, or currently very difficult and expensive to acquire. The Geologic Materials Center archives geologic samples and provides a wide range of users (industry, government, academia, and public) access for identifying new resource prospects and increasing our geologic knowledge of the state. This is all done under a very limited budget in a sorely inadequate and outdated facility. It is very important that this access is user-friendly and allows for new technological analyses to be performed in a timely manner. Although satisfaction is currently 100%, a noted challenge has been to document user feedback through written evaluations. DGGs will initiate new methods of acquiring that information and making improvements where warranted.

FY04 RESULT: Will begin reporting in FY05 (target 100 percent satisfied users)

FY05 RESULT: 100 percent satisfied users (12 evaluations received of 360 distributed; target 100 percent)

FY06 1ST Quarter Result – 100 percent satisfied users (one evaluation received as of Sept 30)

D1: Strategy - Provide increased availability of processed samples at the Geologic Materials Center

Target #1: FY-07 Target: 3,000 new processed samples

Measure #1: Increase in total GMC processed collection (microfossil/petrographic slides, data reports), which increases available exploration data to industry, academia, and government agencies.

Analysis of results and challenges: Constant access to new geologic samples is very important to increasing our knowledge of Alaska's complex geology. Specialized sub-samples of the GMC collection provide information to geologists that can mean significant economic impact to the state. DGGs is committed to providing those specialized samples, but budget and personnel constraints limit our ability to significantly increase the archived collection. The target increase has not been reached in two consecutive years and the current challenge is to develop a more realistic target within the constraints of existing staff and budgets.

FY04 RESULT: Began reporting in FY05 (target ten percent increase)

FY05 RESULT: Five percent increase (12,314 processed; target ten percent increase)

FY06 1ST Quarter Result – 0.4 percent increase (1,044 samples processed as of Sept 30)

Key Component Challenges

Trends in the Reduction of Federally Funded Appropriations

- Federal budget initiatives have shown recent trends towards budget reduction across the board. Examples of proposed presidential budget cuts that will directly affect DGGGS include: 1) zeroing out of the DOE's budget, and 2) reduction of the USGS Minerals Section budget by \$28 mm, or 53%. The USGS Statemap cooperative geologic mapping program has also seen substantial cuts over the last few years.
- Recent changes in the chairmanship of critical US congressional committees has had a dramatic affect on our ability to secure funds through special appropriations. Of the 4 appropriations (totaling \$9.7 mm) requested for FY05 through DGGGS and DOG, only one request for \$500,000 was approved.
- Many DGGGS programs, that are critically important to the state and allow fulfillment of the division's mission, are partially funded by these dollars via collaborative work. For example, the FY05 DGGGS expense budget was nearly 51% federal receipts and included funding for the MIDIRA project, Statemap geologic mapping programs, and minerals potential identification in collaborative work with MMS, BLM, and USGS.
- Identifying new funding sources, improving our documentation and lobbying effort, and reallocating personnel to critical areas will be a key component of the coming fiscal year.

Updating and Improving the Geologic Materials Center

- A repository of rock core, samples, and data is critical for any state (or country) that relies on resource development as a key component of its economy
- The Geologic Materials Center (GMC), located in Eagle River, is Alaska's rock data repository and is the "first stop" for any industry or academic researcher that is attempting to identify and understand the complex geology in the numerous resource-rich areas throughout the state.
- Providing efficient and comprehensive access to these data is critically important for viable exploration programs, for both seasoned Alaska explorers and newcomers that are trying to identify potential entry areas
- Although the current condition of the GMC is 'usable', and will remain so (barring any further budget cuts), it is an embarrassment to the state when compared with other resource-rich areas that explorationists consider spending significant company capital.
- The GMC currently employ's 45 semi truck "connexes" as temporary storage facilities that are un-lighted and un-heated and house thousands of feet of core (some of which will disintegrate with repeated freeze-thaw cycles) These collections represent millions of dollars of acquisition and preservation costs.
- The core and sample observation areas are essentially unusable for confidential work and description of anything but a few feet of core length. A company's ability to keep control of their activities is critical to exploration success in a fiercely competitive environment. Often the core must be taken off-site for substantial projects which creates a significant security threat to the unique core, and an expensive alternative for the exploration company.
- A significant challenge for the DGGGS over near term will be to educate lawmakers and government officials as to the importance of upgrading this facility and providing the funding necessary to keep this important data source.

Sustained High-level Commodity Prices

- Although this is very good news for the State as a whole, increased price structure in most natural resource commodities presents a challenge for DGGGS.
- Dramatic increases in minerals and oil & gas exploration efforts by independent industry puts a noticeable strain on all facilities and programs. Our effort to provide critical data to these entities will be challenged as more and more end-users of our products demand quicker and more comprehensive response. The main challenge will arise from a static state budget and our ability to plan for the rapidly changing needs of the resource development community.
- Spikes in the exploration cycle also create a situation where high-paying jobs become abundant, and opportunities for experienced geoscientists become commonplace. A significant challenge for DGGGS will be our ability to attract and retain key personnel in this very competitive environment.

Communities at Risk

- Continued population growth and development in Alaska will continue to encroach on areas with heightened geohazard risk.
- The documented warming of the arctic climate will create dramatic changes in many surficial processes that have remained unchanged for many decades. Glacial melt-back and surges, changes in permafrost, heightened coastal and river erosion are just a few of the potential hazards that will affect the many communities and infrastructure around the state.
- Recent media coverage of these phenomena points out the necessity of acquiring data, producing maps, and identifying risks that can be used in both short and long term planning. In some cases it will be critical to have this data available in a crisis situation.

- DGGS will be challenged to provide pertinent and timely data on numerous fronts and plans to initiate a long-term program that addresses this important issue.

Geologic Mapping and Field Operations Cost:

- Rising costs of field operations, general fund budget reductions, and a tightening of federal funding sources decrease DGGS' ability to accomplish its mission.
- Much of DGGS's most valuable work in Alaska is done in the frontier areas of the state. Our work provides the geologic framework that is used by the private sector to guide new energy and mineral investments. Providing this kind of information means that our field work is moving farther away from the state's limited transportation infrastructure. This, alone, adds to logistical supply costs.
- During the past 5 years, DGGS field operation costs have risen about 50 percent for geologic mapping and over 40 percent for airborne geophysical surveys.
- All our remote field programs require fixed-wing and helicopter support for daily operations and these costs continue to rise dramatically; most specifically associated with increased fuel costs.
- A significant and continued challenge will be to provide comparable levels of this critical research, while limiting the impacts to a relatively constant budget.

Limited Detailed Geologic Mapping Coverage

- Alaska is a unique place in the United States. Geologically, Alaska contains (by far) the most diverse distribution of geologic provinces.
- When compared to any other state, Alaska is critically under-mapped at a reasonable scale for planning and resource exploration.
- Currently the coverage of 1:63360 geologic maps is less than 10% of the total acreage. This provides a unique opportunity for resource explorers and land owners alike; limited data and geologic knowledge in vast areas provides significant potential for discovery when the mapping and studies are completed.
- No where else in the United States are there areas that are so poorly understood geologically.
- This limited coverage, when combined with escalating field costs and declining budgets, presents a major challenge to DGGS in its mission to cover the critical areas and identify the potential resources contained within.
- One of the key sources of funding has historically been a fund matching USGS program that is very competitive and pits the baseline mapping needed in Alaska, against very detailed, computer based hydrogeologic modeling projects in states that have been completely mapped at a very detailed scale. This makes comparing competing proposals with Alaska like comparing apples and oranges and at times can create difficulties for the fund managing groups. Even with that, Alaska has succeeded in securing its share of the funding, but the stipulations can become quite onerous. The challenge here is to continue education of the decision makers and modify the program to better fit Alaska's needs.
- DGGS will continue to look for innovative ways to attain its goal of mapping the critical areas of the state and will work towards securing both governmental and industry funds in this effort.

Commercial Energy:

- New oil and gas exploration in Alaska is increasingly being undertaken by smaller, independent petroleum companies that lack the depth and experience of the major oil companies. The independent companies rely heavily on publicly available geologic data on Alaska's sedimentary basins. In addition to providing this information, DGGS makes available the opportunity for these companies to sponsor and participate in field studies that provide a better understanding of the geologic framework of potential hydrocarbon sources in active and future lease areas. To this end, we actively seek both independent and major company partners in this program through frequent meetings with industry groups.
- DGGS responds to many inquiries from companies seeking the geologic information that will assist their exploration efforts in Alaska. The challenge for DGGS is to meet the geologic needs of accelerated leasing and exploration licensing with limited staff and financial resources. We have redirected internal resources toward oil & gas geology to the extent possible and have been successful acquiring external funding from the federal government and industry. One way in which we have met these challenges with minimal increase in permanent state staff is to involve contract geologists, university faculty, student interns, industry partners, and occasional nonpermanent employees in multi-organization cooperative projects. A modest increase in the FY06 budget for this program will allow DGGS to provide the exploration-critical geologic data to meet the needs of the state's accelerated leasing schedule.

Infrastructure Projects:

- Alaska may be on the threshold of a major development cycle similar in scale to the construction of the trans-

Alaska oil pipeline. There is increasing activity among industry and government to seek ways to expedite the construction of a delivery system to the Lower-48 for North Slope natural gas and possible extension of the Alaska Railroad to Canada. A fundamental and prudent first step in undertaking infrastructure development enterprises of this magnitude is a comprehensive, public geologic resource evaluation and geologic hazard assessment of the greater land corridors through which such construction must pass. Such assessments should be made prior to finalizing detailed alignments and prior to detailed geotechnical engineering assessments of those alignments and as a basis for evaluating permit applications. By statute AS 41.08 DGGs is charged to determine the potential geologic hazards to buildings, roads, bridges, and other installations and structures as well as inventorying the state's geologic resources, but current and projected funding is inadequate to meet this mandate.

- Prior knowledge of the kind and extent of geologic hazards affecting these projects is the first step in reducing future economic losses and casualties from the hazards. Such knowledge can be factored into design criteria to improve public safety, decrease long-term maintenance costs, and decrease the cost of reconstruction resulting from encountering unforeseen obstacles. Additionally, knowledge of geologic resources in the vicinity of the transportation corridors may improve their projected economic feasibility and identify sources of construction materials.

Significant Changes in Results to be Delivered in FY2007

There are no significant changes anticipated. See our M&M's for the results to be achieved.

Major Component Accomplishments in 2005

Energy Resources

- Completed Year 1 of a two-year geologic mapping project in the **Siksikpuk River area** in the central Brooks Range foothills area of the North Slope. The new bedrock mapping is conducted in conjunction with ongoing petroleum-resource evaluations and will be released in 2006 for use by industry and government in lease sales on state and federal lands.
- Completed geologic field studies of reservoir quality in the central **Brooks Range foothills** and released a report (DGGs PIR 2004-5) summarizing three years of reservoir characterization studies. This work is supported by state and industry funds and is focused on evaluating the natural-gas potential of the foothills, which are estimated to contain many trillions of cubic feet of gas.
- Conducted field-based analysis of petroleum geology in the **central North Slope, principally in the Chandler Lake quadrangle**. A critical structural transect along Tiglukpuk Creek was completed, highlighting the style and geometry of folding and faulting in this petroleum province. A preliminary report on this transect will be released by the end of FY 2005.
- Convened a gathering of industry geologists and state oil and gas officials in Umiat to present recent technical results bearing on the petroleum geology of northern Alaska. Conducted a two day geology tour of North Slope field localities that illustrate structural and stratigraphic relationships that are key to oil and gas exploration.
- Received federal funding for geologic evaluation of petroleum potential in the Bristol Bay region and completed first half of year 1 field program in May-June 2004. This field work addressed the source rock potential along the margins of the basin in the **Alaska Peninsula region**. The data were released in DGGs report RDF 2004-3.
- Initiated the **Cook Inlet Tight Sands Project** with support from the U.S. Department of Energy. Examined 50 core samples from the Alaska Geologic Materials Center to assess the natural-gas reservoir potential in parts of the Cook Inlet basin. Final DGGs Report of Investigations is scheduled for November 2005.
- Completed the permitting and field logistics planning for a 3-year U.S. Department of Energy-funded project to **conduct slim-hole drilling at Fort Yukon** to assess coalbed methane potential. Drilling at Fort Yukon was planned for the first quarter of FY05 and preliminary results on coalbed gas content and water quality will be released in the fourth quarter of FY05.
- Conducted new field examinations of **coal outcrops in the Angoon and Kake areas** of southeastern Alaska as years 1 and 2 of a three year project funded by the U.S. Geological Survey's National Coal Resource Data System program. This project will provide new information on the energy potential of a poorly understood area of southeastern Alaska. Reports on new analyses of coal samples collected during the field studies, along with a paleontologic study of Tertiary host rocks, will be released as a final report in first quarter of FY06.

Mineral Resources

- In collaboration with the Alaska Department of Commerce, Community and Economic Development, published the annual Mineral Industry Summary (Special Report 57), an objective, authoritative synopsis of statewide mining activity.

- Completed the ground-truth geologic mapping of **the northern half of the Livengood mining district airborne-geophysical survey tract**, including bedrock- and comprehensive-geologic maps and supporting geochemical and geochronologic data.
- Published the final version of the bedrock geologic map of the majority of **the Salcha River—Pogo geophysical survey tract**. This project includes the Pogo area and provides new interpretations to help the mining industry.
- Initiated the ground-truth bedrock- and surficial- geologic mapping project of about 250 sq miles of the Council mining district airborne-geophysical survey tract. These maps and data will be released to the public by end of FY05.
- Released 17 maps and 5 CD-ROMS containing updated geophysical maps and digital data for Fairbanks, Richardson, Circle, Valdez Creek, and Nyac mining districts (total of 1359 sq. miles), bringing the previously released data more in accord with present geophysical survey standards. Data for the Nome, Rampart-Manley, Chulitna, and Petersville geophysical projects will be updated in FY05.
- In collaboration with DNR's Land Records Information Section (LRIS), released a Web interface (<http://maps.akgeology.info>) to a geographical index of geologic maps produced by DGGs throughout its history, which will be expanded by FY06 to include all published state and federal geologic maps for Alaska.
- Compiled mineral deposit data files for public access for **the Tanana quadrangle** (about 6,000 square miles) for inclusion in the USGS Alaska Mineral Resource Data Files web site.
- Completed the second and final year of geologic ground-truthing in **the Council mining district, Seward Peninsula**, in support of a NASA-funded project to use high-resolution remote-sensing data and field-geologic mapping to identify previously unrecognized deposits that may be favorable sources of placer minerals.

Engineering Geology & Construction Materials

- Completed ground-truth surficial- and engineering-geologic field mapping in the Salcha River - Pogo mining district and Livengood airborne-geophysical survey area, and in the Kanayut River area, Brooks Range foothills as part of USGS funded Statemap projects.
- Published 1:250,000-scale geologic strip maps for over 6,000 miles of transportation corridors considered for state selection. A total of 376 maps in 78 quadrangles includes geology, geologic hazards, geologic materials, and data quality for the 10-mile-wide corridors and are available via internet for printing and download.
- Awarded funding by the National Science Foundation (NSF) to develop the pilot program *Mapping Technology Experiences with Alaska's Cultural Heritage*, or MapTEACH, in collaboration with the University of Alaska Fairbanks and University of Wisconsin Madison. With the support of 10 partner organizations (including private sector, non-profit, and educational institutions), the 3-year MapTEACH project will develop an educational program for middle- and high-school students in Alaska emphasizing hands-on experience with spatial technology (GPS, GIS, and remote sensing imagery) in conjunction with traditional activities.
- Participated in USGS- and Alyeska-supported studies of the 2002 Denali Fault earthquake and hazard evaluations of Denali, Totschunda, Susitna Glacier faults.
- Completed field studies of volcano hazards and volcano geology at Veniaminof and Okmok volcanoes.
- Provided helicopter and ship logistical coordination for Alaska Volcano Observatory (AVO) field operations, including a major expansion of AVO volcano monitoring capabilities on the Alaska Peninsula. Currently 27 of Alaska's historically active volcanoes are being seismically monitored, compared to four that were monitored in FY96.
- Coauthored volcanic hazard assessments and geologic maps of Great Sitkin and Kanaga Volcanoes as well as two scientific papers in international journals. Continued development of the Geologic Database of Information on Volcanoes in Alaska (GeoDIVA) and a whole-rock geochemical database, which has resulted in the single largest body of geochemical data on Alaska volcanoes.
- Continued maintenance and construction of the AVO internal and external World Wide Web sites, helping to improve public safety by providing timely and accurate information for AVO scientists, the general public, management agencies, the aviation industry, local communities, and others who may be impacted by the nearby or distant effects of volcanic eruptions. These pages have become instrumental in daily monitoring of volcanoes and are technologically at the cutting edge worldwide. Each month the AVO Web site is accessed about 10,000 times and about 45,000 pages are viewed.

Geologic Information Management and Delivery

- Produced 83 new geologic maps and 9 new reports for publication, including Alaska's Mineral Industry annual report for 2003 and two newsletter issues.
- Updated and reprinted the popular *Guide to Alaska Geologic and Mineral Information* (Information Circular 44) with funds provided by the Minerals Data & Information Rescue in Alaska (MDIRA) program. It will be distributed at no charge at libraries and public information centers and is available in digital form on the DGGs Web site.

- Sold 2,130 professional maps and reports, distributed approximately 225 free educational publications, and responded to about 1,000 significant geologic information requests.
- Expanded GERILA (Geologic & Earth Resources Information Library of Alaska) database into a multiple environment database and began populating it with datasets including geologic information and the DGGS publications index.
- With federal funding, completed the work to put the final group of DGGS publications online, achieving the objectives of the DGGS scanning project. Scanned all USGS Professional Papers and Bulletins on Alaskan geology to prepare to make them available on the DGGS Web site.
- Added maps to the Web-accessible Map Index application for all published geologic maps in Alaska.

Geologic Materials Center

- Hosted 427 visitations to the Alaska Geologic Materials Center in Eagle River by industry, government, and academic personnel to examine rock samples and processed materials. These visitations generated 1,242 new processed oil & gas related microscope slides and 7 hard-rock mineral and oil & gas technical data reports that are now available for public examination.
- Received, stored, and inventoried five 40 ft trailer loads of rock samples representing collections from BP Exploration (Alaska) for arctic Alaska, Union Oil Co. of California Amoco for Cook Inlet, CIRI hard-rock mineral core and oil/gas well-sample collections, Kinross Gold Corp. and Kennecott hard rock mineral core collections, a major part of the DGGS surface-rock collection, and the released Alaska Oil and Gas Conservation Commission and U. S. Minerals Management Service well samples. In total, rock samples for over 163 oil & gas wells, representing 1,073,907 ft of well samples, and 21 hard-rock mineral holes representing 6,294 ft of hole sample in 665 core boxes, were received during FY 2004.
- Received for storage the Anaconda geologic/technical map collection for Alaska that was donated to the University of Alaska Anchorage by Cook Inlet Region Inc. The Alaska GMC will house this map collection for the Alaska Resources Library and Information Services (ARLIS).
- Completed an inventory of the U. S. Geological Survey oil/gas well rock-sample collection at the GMC; this inventory has been added to the master GMC digital inventory database.

Statutory and Regulatory Authority

AS 41.08

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**Geological Development
Component Financial Summary**

All dollars shown in thousands

	FY2005 Actuals	FY2006 Management Plan	FY2007 Governor
Non-Formula Program:			
Component Expenditures:			
71000 Personal Services	2,514.0	3,176.8	3,368.3
72000 Travel	154.7	123.5	166.5
73000 Services	1,466.2	1,937.4	2,062.4
74000 Commodities	270.3	248.8	267.3
75000 Capital Outlay	12.0	11.1	11.1
77000 Grants, Benefits	0.0	0.0	0.0
78000 Miscellaneous	0.0	0.0	0.0
Expenditure Totals	4,417.2	5,497.6	5,875.6
Funding Sources:			
1002 Federal Receipts	1,507.3	1,947.4	2,204.6
1004 General Fund Receipts	1,680.9	2,197.4	2,388.7
1005 General Fund/Program Receipts	17.3	40.1	30.0
1007 Inter-Agency Receipts	550.7	358.9	358.7
1061 Capital Improvement Project Receipts	525.8	677.5	643.5
1108 Statutory Designated Program Receipts	135.2	276.3	250.1
Funding Totals	4,417.2	5,497.6	5,875.6

Estimated Revenue Collections

Description	Master Revenue Account	FY2005 Actuals	FY2006 Management Plan	FY2007 Governor
Unrestricted Revenues				
None.		0.0	0.0	0.0
Unrestricted Total		0.0	0.0	0.0
Restricted Revenues				
Federal Receipts	51010	1,507.3	1,947.4	2,204.6
Interagency Receipts	51015	550.7	358.9	358.7
General Fund Program Receipts	51060	17.3	40.1	30.0
Statutory Designated Program Receipts	51063	135.2	276.3	250.1
Capital Improvement Project Receipts	51200	525.8	677.5	643.5
Restricted Total		2,736.3	3,300.2	3,486.9
Total Estimated Revenues		2,736.3	3,300.2	3,486.9

**Summary of Component Budget Changes
From FY2006 Management Plan to FY2007 Governor**

All dollars shown in thousands

	<u>General Funds</u>	<u>Federal Funds</u>	<u>Other Funds</u>	<u>Total Funds</u>
FY2006 Management Plan	2,237.5	1,947.4	1,312.7	5,497.6
Adjustments which will continue current level of service:				
-Transfer Program Receipt Authorization to Claims, Permits and Leases component for Building Lease Costs	-10.1	0.0	0.0	-10.1
-FY 07 Wage Increases for Bargaining Units and Non-Covered Employees	42.9	12.8	3.7	59.4
-FY 07 Health Insurance Cost Increases for Bargaining Units and Non-Covered Employees	5.0	1.3	0.4	6.7
-FY 07 Retirement Systems Cost Increase	77.0	20.5	7.0	104.5
Proposed budget decreases:				
-Reduce authorizations to reflect anticipated receipts	0.0	0.0	-72.8	-72.8
Proposed budget increases:				
-Geologic Materials Center Operations	50.0	0.0	0.0	50.0
-Increase federal authorization for anticipated increases in existing federal grants	0.0	218.0	0.0	218.0
-Risk Management Self-Insurance Funding Increase	16.4	4.6	1.3	22.3
FY2007 Governor	2,418.7	2,204.6	1,252.3	5,875.6

**Geological Development
Personal Services Information**

Authorized Positions		Personal Services Costs		
	<u>FY2006</u> <u>Management</u> <u>Plan</u>	<u>FY2007</u> <u>Governor</u>		
Full-time	38	38	Annual Salaries	2,232,407
Part-time	0	0	COLA	60,540
Nonpermanent	10	10	Premium Pay	0
			Annual Benefits	1,203,507
			<i>Less 3.67% Vacancy Factor</i>	<i>(128,154)</i>
			Lump Sum Premium Pay	0
Totals	48	48	Total Personal Services	3,368,300

Position Classification Summary

Job Class Title	Anchorage	Fairbanks	Juneau	Others	Total
Administrative Assistant	0	1	0	0	1
Administrative Clerk II	0	1	0	0	1
Administrative Manager I	0	1	0	0	1
Analyst/Programmer III	0	1	0	0	1
Analyst/Programmer IV	0	1	0	0	1
Cartographer III	0	1	0	0	1
College Intern I	0	9	0	0	9
Division Director	0	1	0	0	1
Geologist I	0	1	0	0	1
Geologist II	1	3	0	0	4
Geologist III	1	9	0	0	10
Geologist IV	1	7	0	0	8
Geologist V	0	3	0	0	3
Geologist VI	0	1	0	0	1
Micro/Network Spec I	0	1	0	0	1
Micro/Network Tech I	0	1	0	0	1
Natural Resource Tech II	0	1	0	0	1
Publications Spec III	0	1	0	0	1
Publications Tech II	0	1	0	0	1
Totals	3	45	0	0	48