

Appendix A

AZGS-Economic Impact Assessment Survey Spring 2019

This 31-question survey was authored by the graduate student team from the University of Arizona's Eller School of Management. It was exposed for two weeks in February 2019. The scope and structure of the survey relies heavily on previous work by the Kentucky Geological Survey, the Indiana Geological Survey, and the Ohio Geological Survey.

Arizona Geological Survey (AZGS) Economic Impact Survey (31 questions)

Survey introductory text

Thank you for taking part in this important survey measuring the impact of the Arizona Geological Survey. Your valuable input will help AZGS to better understand and measure the ways in which our geologic products and services serve our stakeholders in industry, business, government, education, and the public. This survey should take 7 to 12 minutes to complete.

All responses are anonymous. The raw data will be shared solely with our collaborators at the University of Arizona's Eller College of Management.

Thank you completing this important survey.

Sincerely,
Phil Pearthree
Arizona State Geologist
Director, Arizona Geological Survey

Q1 Within the past 2 years, which of the following products or services did you use/obtain from AZGS? Check all that apply

- Bedrock lithologic or structural data (2)
- Natural resource extraction and use (energy, mineral, and water) (1)
- Geotechnical information (environmental, hazard, reclamation, sequestration, etc.) (3)
- Geologic materials (access, identify, analyze) (4)
- Archival data (images, pictures, data sets, etc.) (5)
- Research methodologies and strategies (6)
- Educational information and materials (7)
- Consultation(s) with AZGS Staff (8)

Q2 Please rate how essential the following AZGS products are to fulfilling your organization's mission.

	Rank			
	Rarely essential (1)	Sometimes essential (2)	Often essential (3)	Always essential (4)
Digital geologic maps (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper geologic maps (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geologic reports (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consultations with AZGS staff (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 Over the past 2 years, how many times per year did you use AZGS products and services?

- Less than 1 time per year (1)
 - 1 to 5 times per year (2)
 - 6 to 10 times per year (3)
 - More than 10 times (4)
-

Q4 Over the past 2 years, how many times per year did you access/use AZGS web based geologic products (e.g., AZGS portal page; AZGS Document Repository; AZGS Mining Data; Natural Hazards in Arizona viewer).

- Less than 1 time per year (1)
 - 1 to 5 times per year (2)
 - 6 to 10 times per year (3)
 - More than 10 times (4)
-

Q5 Please rate each of the items below based on your level of agreement.

	Agree (2)	Somewhat agree (3)	Disagree (4)
My work depends on information provided by the AZGS. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limitations on access to AZGS geologic products would reduce the amount of Arizona based work I/we would do. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limitations on access to AZGS geologic products would eliminate the Arizona-based work we do. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 Briefly describe how you typically use geologic/environmental information provided by AZGS.

Q7 Over the past 2 years, how many times per year have you used the following AZGS products?

	Never Used (1)	1 time per year (2)	2 to 5 times per years (3)	6 to 10 times per year (4)	11 to 20 times per year (5)	More than 20 times per year (6)
Digital geologic maps (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper geologic maps (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geotechnical reports (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mining data files (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geoscience education materials (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interactive maps (e.g. Natl. Hazards in Arizona viewer) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 What would your organization do if AZGS was no longer able to provide the following products?

	Not obtain the data (2)	Obtain data from another source (4)
Digital geologic maps (1)	<input type="radio"/>	<input type="radio"/>
Paper geologic maps (2)	<input type="radio"/>	<input type="radio"/>
Geotechnical reports (3)	<input type="radio"/>	<input type="radio"/>
Mining data files (4)	<input type="radio"/>	<input type="radio"/>
Geoscience educational materials (5)	<input type="radio"/>	<input type="radio"/>
Interactive maps (e.g., Natl. Hazards in Arizona viewer) (6)	<input type="radio"/>	<input type="radio"/>

Q9 If you answered "Obtained data from another source" for any of the products listed above, please estimate the anticipated cost of obtaining that information.

	Data would be free (9)	\$1,000 or under (1)	\$1,001 to \$5,000 (2)	\$5,001 to \$10,000 (3)	\$10,001 to \$20,000 (4)	\$20,001 to \$50,000 (6)	\$50,001 to \$100,000 (7)	Over \$100,000 (8)	N/A (5)
Digital geologic maps (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper geologic maps (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geotechnical reports (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mining data files (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geoscience educational materials (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interactive maps (e.g., Natl. Hazards in Arizona viewer) (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10

If you answered "Obtained data from another source", please estimate what you would have been willing to pay for the information.

	\$1,000 or under (1)	\$1,001 to \$5,000 (2)	\$5,001 to \$10,000 (3)	\$10,001 to \$20,000 (4)	\$20,001 to \$50,000 (5)	\$50,001 to \$100,000 (6)	Over \$100,000 (7)	N/A (8)
Digital geologic maps (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper geologic maps (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geotechnical reports (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mining data files (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geoscience educational materials (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interactive maps (e.g., Natl. Hazards in Arizona viewer) (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 If you answered "Obtained data from another source" for the products listed, please note the alternate source(s).

Q12 If you answered "Not obtain the data" for any of the products listed above, which outcome is most likely?

- Would not have proceeded with the project (1)
 - Absence of geologic information would not have had an impact (2)
 - Project would proceed with increased uncertainty regarding project success (3)
 - Project would proceed with increased risk of environmental damage (4)
 - Project would proceed with increased risk of safety concerns (5)
-

Q13 Think of the last time you used an AZGS geoproduct. How important was that product to that project? Please check all that apply.

- Legally required (1)
 - Crucial to project success (2)
 - Useful but not crucial to project success (4)
 - Not at all useful (5)
-

Q14 Can you think of a specific instance when products of the AZGS (maps / reports / consultations) saved you or your organization money?

- Yes (1)
 - No (2)
 - Not sure (3)
-

Q15 If you answered yes, can you provide an estimate of how much you saved. Please feel free to provide an approximate range, e.g., \$40,000 to \$60,000, of savings.

Q16 If AZGS products had not been available, please estimate how much you would have allocated to purchase the information? Please feel free to provide a dollar range, e.g. \$25,000 to \$35,000.

Q17 What percent of your work in the past 2 years required 1:24,000-scale geologic quadrangle maps?

- 1-25% (4)
- 26-50% (5)
- 51-75% (6)
- 76-100% (7)
- 0% (8)

Q18 What percent of the geologic quadrangle maps used in the past 2 years were published by the AZGS?

- 1-25% (4)
- 26-50% (5)
- 51-75% (6)
- 76-100% (7)
- 0% (8)

Q19 On a typical project for which AZGS maps or reports were not available, what percent (%) of your project budget would be spent on obtaining the required geological information?

- less than 5% (1)
- from 5% to 10% (2)
- from 11% to 25% (3)
- from 26% to 50% (4)
- From 51% to 75% (5)
- Not sure (6)
- Project work could not be completed without information from the AZGS (7)

Q20 Roughly, what was the total cost of your last project that required geological information?

Q21 What type of organization(s) do you represent?

- Govt. - Federal (1)
 - Govt. - State (2)
 - Govt. - Tribal (3)
 - Govt. - County (4)
 - Govt. - Local (5)
 - Industry - Mining (6)
 - Industry - Environmental (hydrology) (7)
 - Industry - Energy (8)
 - Industry - Construction (9)
 - Industry - other (10)
 - Academic - University/College (11)
 - Academic - K-12 (12)
 - Non-Profit Organization (13)
 - Individual - Consulting (14)
-

Q22 From the lists below, select those activities of your organization that require AZGS geologic products, information, or expertise. Please check all those that apply.

Q23 For those in exploration & development

- Mining - mineral extraction (1)
 - Mineral exploration (2)
 - Industrial minerals (3)
 - Groundwater (4)
 - Oil & Gas (5)
 - Realty (6)
 - Other (7)
-

Q24 For those in the environmental/hydrologic consulting industry

- Gila River and Little Colorado River General Stream Adjudications (7)
 - Arizona's Groundwater Act of 1980 (AMA) (6)
 - National Environmental Protection Act (1)
 - Resource Conservation & Recovery Act (3)
 - Safe Drinking Water Act (4)
 - Clean Water Act (2)
 - Other (5)
-

Q25

For those engaged in evaluating, assessing or communicating natural hazards, please select all applicable hazards.

- Earth fissure and/or subsidence (1)
 - Post-wildfire debris-flows (5)
 - Earthquakes (2)
 - Landslides (3)
 - Sinkholes (karst) (4)
 - Radon (6)
 - Flooding (8)
 - Other (7)
-

Q26 For those engaged in engineering applications, please select all applicable activities

- Buildings (1)
- Railroads (3)
- Land subsidence (4)
- Roads / highways (2)
- surface water management (5)
- Other (6)

Q27 For those engaged in Education

- Earth science education (1)
 - Environmental education (2)
 - Geological engineering (3)
 - Other (4)
-

Q28

Approximately how many Arizona-based employees work in your agency, company or organization? Please enter a number in the box below.

- 1 to 5 (4)
 - 6 to 20 (5)
 - 21 to 50 (6)
 - More than 50 (7)
-

Q29 Is there anything else you would like to share regarding how AZGS geologic products or services contribute to your work?

Q30 Would you be willing to participate in either a roundtable discussion or one-on-one interview to further discuss your experiences using AZGS information?

- Yes (1)
 - Maybe (2)
 - No (3)
-

Q31 If you selected Yes or Maybe, please provide an e-mail address or phone number so we can contact you.

End of Survey
