

Geologic Hazard Avoidance or Minimization Planning Guidance Document

Bureau of Oil and Gas Planning and Program Management
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Outline

- Background
- Purpose
- Geotechnical/geological Evaluations
- Avoidance/minimizations Measures/Strategies
- Avoidance/minimizations Plan Development
- Reference
- Questions



Background

- Why is environmental due diligence regarding geologic formations and soil conditions required?
 - It is required under 25 Pa. Code §§ **102.4(b)(5)(xii)** and **102.8(f)(12)** to prevent potential pollution and its impacts

- What is environmental due diligence regarding geologic formations and soil conditions?
 - An applicant of an E&S permit must identify naturally occurring geologic formations or soil conditions that may have the potential to cause pollution during earth disturbance activities and include BMPs to avoid or minimize potential pollution and its impacts from the formations

- Geologic Hazard Avoidance or Minimization Plan

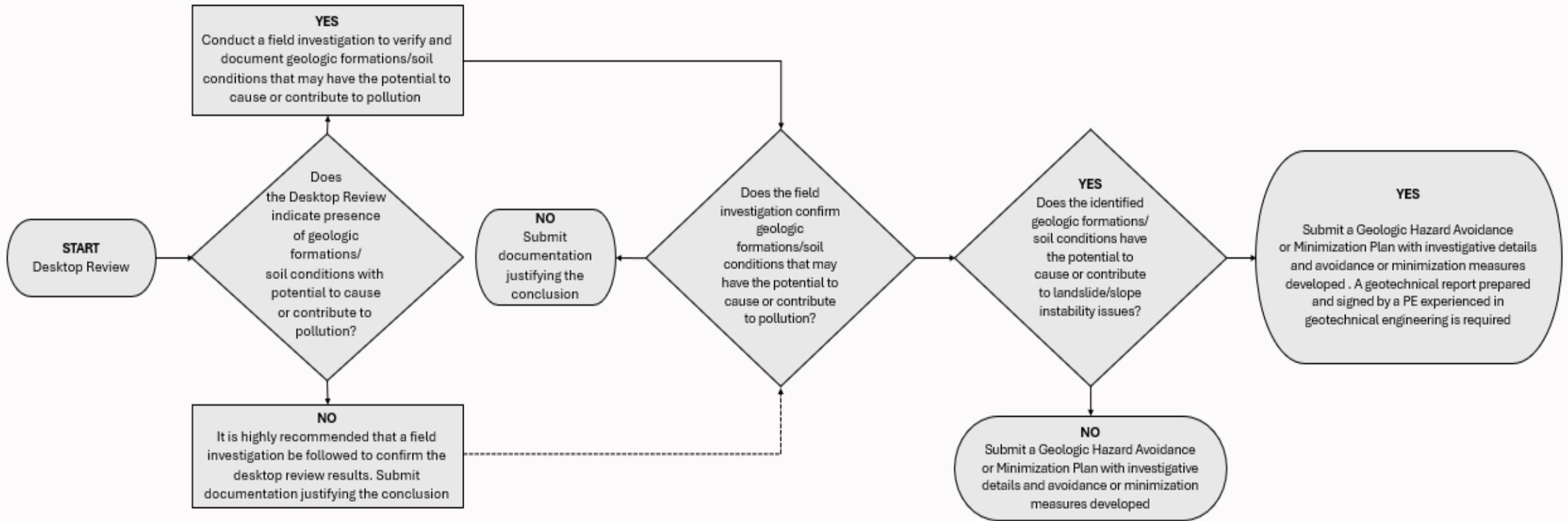


Purpose of the Document

- To help compliance with 25 Pa. Code §§ 102.4(b)(5)(xii) and 102.8(f)(12)
- To encourage a commonwealth-wide consistent approach for meeting the environmental due diligence regarding geologic formations and soil conditions requirements
- To set minimum expectations for geotechnical/geological investigations and preparing the avoidance or minimization plan



Geotechnical/Geologic Evaluations





Geotechnical/Geologic Evaluations

Desktop Reviews

- Review of available information about the geologic formations, soil conditions, and aquatic resources in proposed project area
- Review of available materials such as literature, maps, reports, publications, and photographs to develop an understanding of site geological formations and soil conditions
- Information gathered should be used to develop a strategy for potential field investigations
- Appendix A has a list of resources that may be reviewed



Geotechnical/Geologic Evaluations

Field Investigations

- All geologic/soil issues identified during the desktop reviews must be verified and documented during the field investigations
- Field investigations should be performed at the direction of a licensed professional(s) familiar with geological and soil related issues
- The field team is advised to look for and note additional geological/soil features not identified during the desktop reviews with potential to cause pollution
- The field team should be equipped with a sampling plan, relevant maps, field sampling and testing equipment



Geotechnical/Geologic Evaluations

Laboratory Analysis

- Necessary laboratory analysis and testing should be performed to supplement observations made during desktop reviews and field investigations
- Representative number of samples should be tested to determine site soil and/or rock properties
- Use accredited laboratories and standard methods for testing
- Appendix B lists some suggested tests that may be done based on the investigative objectives



Geotechnical/Geologic Evaluations

Suggested Investigative Features

- Soils
- Hydrologic features
- Seasonal High Groundwater Table (SHWT)
- Area of Fill Soils
- Geologic formations
- Land subsidence and sinkholes
- Mine subsidence

Suggested Investigative Features

- Landslide Hazards and slope stability
- Seismic Hazards
- Acid Forming Materials
- Arsenic Formations
- NORM
- Contaminated soil



Avoidance/Minimizations

Expectations

- The avoidance/minimization techniques suggested in the document are not exclusive
- Some suggestions presented in the document may be superseded by latest information/practices. Use caution
- Engineering controls (PCSM only) must be designed and installed under responsible charge of a licensed professional experienced in the relevant fields
- Avoidance or minimization BMPs proposed should be consistent with both the E&S and PCSM/SR plans



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Geologic Hazard Avoidance/ Minimization Plan

- Describe the investigations including Desktop reviews, Field investigations, and laboratory analysis
- Describe all geologic/soil issues found
- Describe avoidance or minimization measures developed based upon best environmental practices and sound scientific and engineering principles
- Provide justifications for issues that didn't require any avoidance/minimizations measures
- Include investigative procedures, test methods, and test results



References

Appendix A - Sources

- Include sources used to develop this document
- Sources can be consulted for more or updated information

Appendix B - Suggested Tests

- Include some of the test methods that can be done based on the needs of the investigation
- Additional tests may be needed to be conducted
- ASTM, AASTHO, or other generally accepted industry test standards



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Get In Touch

Ann Mathew, P.E.
Office of Oil and Gas Management
P.O. Box 8765
Harrisburg, PA 17105-8765

Ph: 717-772-2199
amathew@pa.gov

The Department of Environmental Protection's mission is to protect Pennsylvania's air, land and water resources and to provide for the health and safety of its residents and visitors, consistent with the rights and duties established under the Environmental Rights Amendment (Article 1, Section 27 of the Pennsylvania Constitution).