

Chapter 1 Introduction

1-1. Purpose

This manual provides an introduction to geophysical exploration for engineering, geological, and environmental (to include Hazardous, Toxic and Radioactive Waste) investigations. Descriptions and guidance are provided for geophysical methods typically used in these investigations. The manual furnishes a broad overview of geophysical applications to common engineering, environmental and geological problems. Descriptions of the most commonly conducted geophysical procedures are given. These contents are not proposed to explicitly develop field procedures and data reduction techniques for geophysical surveys. Chapter 2 develops the procedural evaluation, use, and deployment of the generalized geophysical approach. Subsequent chapters address particular geophysical methodologies.

1-2. Applicability

This manual applies to Headquarters, U.S. Army Corps of Engineers elements, major subordinate commands, districts, laboratories, and field operating activities having responsibilities for civil works and/or military programs.

1-3. References

References are listed in Appendix A.

1-4. Worker and Environmental Safety

This manual does not purport to address the safety risks associated with geophysical exploration. Geophysical

surveys have their own associated hazards, particularly with active energy sources. Some active sources are: shallow explosions for seismic methods; applied electrical current with resistivity methods; and, pulsed electromagnetic fields for ground-penetrating radar. These hazards are addressed regularly by the geophysical survey crew during planning and field deployment. The addition of environmental site hazards (such as unexploded ordnance) may compound the risks of geophysical exploration. Every instance of compounded hazard cannot be uniquely addressed in this manual. Geophysical personnel and the survey customer must have a continuous dialogue and flexible plan to consider and accommodate the aspects of environmental hazards. In addition, that plan should incorporate health and safety practices in accordance with applicable regulations and expert guidance.

1-5. Glossary

Appendix B is a list of terms used in seismic processing and well-logging.

1-6. Proponent

The U.S. Army Corps of Engineers' proponent for this manual is the Geotechnical and Materials Branch, Engineering Division, Directorate of Civil Works (CECW-EG). Any comments or questions regarding the content of this Engineer Manual should be directed to the proponent at the following address.

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