FRAMEWORK FOR THE DEVELOPMENT OF GEOSCIENCE PROFESSIONAL PRACTICE GUIDELINES

Geoscientists Canada* is a national consortium whose constituent associations are the independent self-governing bodies that regulate geosciences practice in Canada's provinces and territories.

The mission statement of Geoscientists Canada is "*to develop consistent high standards for the licensing and practice of geosciences, facilitate national and international mobility, and promote the recognition of Canadian professional geoscientists.*"

In consultation with its constituent associations, Geoscientists Canada has prepared this framework to facilitate the development and maintenance of geosciences professional practice guidelines in Canada.

Although many Geoscientists Canada associations have already developed professional practice guidelines for their jurisdiction, the consistency and content vary. Working together to provide a framework for developing and maintaining geosciences professional practice guidelines will help ensure the creation of consistent high-quality guidelines covering the many areas of geosciences practice that are similar across all jurisdictions in Canada. Guideline consistency will also improve professional practice among geoscientists transferring between or working in different jurisdictions.

This framework builds upon the Association of Professional Engineers and Geoscientists of British Columbia *Council Policy on the Development of Practice Guidelines* of April 25, 2008.

(*Geoscientists Canada is the business name of the Canadian Council of Professional Geoscientists.)

PURPOSE

The purpose of this framework is to help the profession develop and maintain consistent standards of practice to protect the public. Guidelines articulate a common level of expectation for the client, the practitioner, the public, the profession, government and other entities.

Because each constituent association creates and is responsible for its own professional practice guidelines, having an agreed-upon framework brings consistency to the development and maintenance of practice guidelines across the country. This framework is not intended to set out prescriptive standards of practice or provide specifics regarding the content of professional practice guidelines, since this information is often jurisdiction-specific.

Constituent associations are strongly encouraged to consult legal counsel so that their professional practice guidelines are always aligned with, and do not contravene, the laws in that jurisdiction. Constituent associations should also regularly consult with their legal counsel to understand what the common law standard of care is (as determined by the federal or provincial courts in Canada) which is applicable at any given time to geoscience professionals in the province in which they practice.

SCOPE

Information on the following aspects of guideline development and maintenance are included in this framework:

- Need Identification;
- Process and Methodology;
- Structure and Components; and
- Suggested Table of Contents.

NEED IDENTIFICATION

There are generally three ways in which the need for professional practice guideline development or maintenance can be identified:

1) *Demand Based* – as a result of a request or recommendation from a group of practitioners, a committee, division or task force, or experts in the field at the provincial or territorial association level, or from government;

2) *Practice Support Based* – to support geoscientists in various fields of practice by proactively addressing practice quality and skill set issues (training, education and experience) brought to an association's attention through practice inspections, practice reviews, disciplinary proceedings, and industry or public feedback; and

3) *Strategic Needs Analysis Based* – as a result of a strategic analysis in response to specific initiatives being taken by government, industry or the professional community.

To support Demand-Based need identification among practitioners, associations are encouraged to provide facilities (such as on-line suggestion forms) so that practitioners can submit requests for improving guidelines already in effect, developing new guidelines, or adapting existing guidelines from other jurisdictions.

All decisions on the developing, adapting or maintaining professional practice guidelines are the concern of the constituent association. It is the constituent association alone that ultimately approves a guideline for use in that jurisdiction.

PROCESS AND METHODOLOGY

The process for developing and maintaining practice guidelines should include consulting legal counsel in the applicable jurisdiction. It is highly recommended that guidelines undergo a legal review to ensure they are consistent with all applicable local laws, such as the governing Act, Regulations, Bylaws, Code of Ethics and other pertinent legislation. Guidelines should be consistent with this framework and other existing guidelines in effect elsewhere in Canada that cover the same or related topics (See Section "Existing Geoscience Professional Practice

Guidelines in Canada" below for further details). The legal review should also address other matters as deemed appropriate, including considerations such as intellectual property rights and infringement.

In addition, the process for developing and maintaining practice guidelines may also include the following:

- Developing a consultative approach, working with the relevant association practice committees, divisions, task forces, experts in the field and external stakeholders. However, the association council retains ultimate control of the structure and content of practice guidelines and identifies responsible individuals and timelines for the process.
- Ensuring that practice guidelines be results- or performance-based, rather than being overly prescriptive, except where defined procedures are specified in the applicable legislation (for example health and safety), or specified for the performance of a specific test or analysis. An appropriate level of flexibility should be established in guidelines to help practitioners exercise professional discretion and independent judgement when providing solutions or recommendations related to professional activity.
- Ensuring that practice guidelines be based on scientific data available at the time of implementation and thereafter.
- Ensuring that each set of guidelines is clearly named, has a version number, and identifies the date on which it was approved for use by the association; and that previous guidelines or guideline versions that are being replaced are withdrawn with notice.
- Establishing a communication strategy before and after guidelines are released, to ensure all practitioners, as well as government, industry and the public, are aware the guidelines are being introduced and how they affect their practice. For example, associations should post their guidelines on their website; publish the guidelines in their correspondences, newsletters and magazines; circulate their guidelines to Geoscientists Canada and to geoscience societies; and generally raise awareness through seminars and presentations at conferences.
- Undertaking usage and performance reviews, following a defined period after releasing guidelines, and periodically thereafter. These reviews will determine the level of usage and effectiveness, and identify any improvements to the guidelines that may be required. For example, associations should provide facilities to allow practitioners to volunteer comments and feedback concerning their experiences using the guidelines. This approach will increase awareness among practitioners and allow improvements to be identified on an ongoing basis.
- Undertaking guideline maintenance as and when required, following the same Process and Methodology steps outlined above.

- Seeking complete or partial funding from industry, business, government or other professional associations as deemed appropriate in order to offset cost and maximize quality. Cost recovery may also be considered through providing seminars.

STRUCTURE AND COMPONENTS

Professional practice guidelines should reference the relevant Act, Regulations, Bylaws or Code of Ethics that gives the association power to create guidelines, or where applicable, Federal Regulations. Set out below are the principal features of professional practice guidelines.

They:

1) Describe context (i.e. why the set of professional practice guidelines was developed, for example - in response to legislation, or as support to practitioners); reference other relevant guidelines, where appropriate; and describe the process and method that was followed.

2) Describe and/or reference the expected practices to be followed by members in providing professional services in the particular field of practice as they relate to the relevant Act, Regulations, Bylaws or Code of Ethics (e.g. maintenance of files and records, appropriate supervision, signing and sealing documents).

3) Specify the tasks (including the preparation of a project health and safety plan, if required, for all work undertaken) practitioners should perform to meet a standard of care consistent with the professional geoscientist's obligations under the applicable laws, including the professional's primary duty to protect the safety, health and welfare of the public and the environment.

4) Outline the professional services and scope of work that the practitioner should provide in order to carry out the particular professional activity.

5) Describe (where appropriate) the roles and responsibilities of the various participants/stakeholders involved in such work, and address matters of practice overlap when relevant, including the role of other geoscience or non-geoscience specialists in multidisciplinary teams.

6) Identify (where appropriate) additional skill sets (including education, training and experience) recommended for those practising in the particular area.

7) State that scientific conclusions and recommendations be supported by an appropriate level of investigation and analysis.

8) Identify considerations regarding when a peer review may be appropriate.

9) Identify levels of detail and the nature of information to be presented in scientific documents and reports (e.g. analytical procedures followed, scientific methodology, survey specifications, QA/QC, models applied).

10) Indicate the required scope of work a practitioner needs to provide to a client when carrying out the particular professional activity to ensure that the level of due diligence exercised is consistent with the requirements under the applicable laws.

11) Address the elements involved in performing the particular professional activity without being overly prescriptive and regulation-neutral, if possible (so the document does not become dated as soon as legislation changes). While practice guidelines include consideration and/or discussion of alternative methods of analysis (when more than one method is available), they are not all inclusive and other techniques may also be applicable based on professional judgement in specific circumstances, and do not describe technically or scientifically how to carry out the particular professional activity, as that should be left to the professional's discretion.

12) Indicate that, while the guidelines are not intended to set out prescriptive standards of practice or to set a standard of care to which a practitioner must adhere, a practitioner that fails to conduct his or her activities in accordance with the guidelines runs the risk of being found to be practicing in an unprofessional manner and could attract civil liability or be subject to professional discipline.

13) Consider relevant provincial and federal regulations.

14) As appropriate, outline the basic format and content of an assurance statement that the practitioner may be expected to complete and sign.

SUGGESTED TABLE OF CONTENTS

Taking into consideration the typical components of practice guidelines built on this framework, the following is an example of a table of contents for a hypothetical professional practice guideline for the evaluation of groundwater resources:

NAME: *Professional Practice Guideline for the evaluation of groundwater resources* (*date of effect and version number, as applicable)*

INTRODUCTION *(guideline scope)*

BACKGROUND *(guideline origin, legislative context, history of the guideline documentation)*

AREAS OF PROFESSIONAL PRACTICE IN GROUNDWATER RESOURCES

Wells And Well-head Security

Aquifer Definition and Characterization

Groundwater Resources Management and Development

Groundwater Protection

Construction Dewatering and Groundwater Control

PROJECT ORGANIZATION AND RESPONSIBILITIES *(creation, review and update process for these guidelines)*

GUIDELINE IMPLEMENTATION *(education and enforcement)*

TECHNICAL/SCIENTIFIC CONTENT *(several sections to cover technical aspects of groundwater resources)*

GENERAL METHODOLOGY

Review of Existing Information

Data Collection

Analysis and Interpretation

Technical Reporting

Protection of the Public and the Environment

QUALITY ASSURANCE / QUALITY CONTROL

SKILL SETS AND COMPETENCIES

REFERENCES AND RELATED DOCUMENTS

APPENDIX A: GLOSSARY OF SELECTED TERMS

APPENDIX B: AUTHORS AND REVIEWERS

APPENDIX C: ASSURANCE STATEMENT TEMPLATE

EXISTING GEOSCIENCE PROFESSIONAL PRACTICE GUIDELINES IN CANADA

Information on existing geoscience professional guidelines in Canada, together with links to the constituent associations and other organizations where the practice guidelines may be viewed, can be found at the Geoscientists Canada website www.ccpg.ca .