PROFESSIONAL GEOSCIENTISTS ONTARIO

PROFESSIONAL GEOSCIENTISTS REVIEWING WORK PREPARED BY ANOTHER PROFESSIONAL GEOSCIENTIST

Updated: August 2019

This guideline was developed by the PGO's Professional Practice Committee

PROFESSIONAL GEOSCIENTISTS ONTARIO

TABLE OF CONTENTS

PROFESSIONAL GEOSCIENTISTS ONTARIO

Professional Geoscientists Reviewing Work Prepared by Another Professional Geoscientist

Summary of Key Points

Reviewing Geoscientists are expected to:

- Inform the Authoring Geoscientist about the review
- Clarify the scope of the review with the person requesting the review in writing
- Only conduct a review within your area of competence
- Maintain confidentiality with respect to the review
- Correct or report situations that may endanger the safety or the welfare of the public
- Use professional language (and avoid derogatory language) in reports
- Avoid commenting on the Authoring Geoscientist's compliance with the PGO's Code of Ethics
- Avoid conflicts of interest in conducting reviews

Authoring Geoscientists are expected to:

- Permit reviews of your work
- Cooperate with the Reviewing Geoscientist
- Provide relevant information to the Reviewing Geoscientist upon request
- Carefully consider any recommendations or feedback from the Reviewing Geoscientist

PROFESSIONAL GEOSCIENTISTS ONTARIO

Guideline

1. PGO Mandate and Framework for Guideline Development

PGO's mandate is to protect the public, the environment and investors by governing the practice of professional geoscience in Ontario. To accomplish this the Province of Ontario has entrusted the PGO with the responsibility to register geoscientists, admit only qualified persons who pass standards of knowledge and experience, maintain standards of practice and ethics, respond to complaints concerning our members, discipline when necessary and encourage continuing professional competence.

Self-regulation requires access to guiding principles applied to real-world situations. The Professional Geoscientists Ontario (PGO) produces guidelines to educate members and the public about standards of practice; this is done to fulfill PGO's legislated objectives. Guidelines also create heightened awareness to help the public to understand what it can expect of geoscientists in relation to a task within the practice of professional geosciences.

The PGO's Professional Practice Committee (PPC) is responsible for developing standards and guidelines for the practice of professional geoscience. According to the Terms of Reference for the PPC, an expected deliverable is the recommendation of and provision of professional practice standards, ethics and guidelines to be followed by PGO members – these deliverables add value to the professional geoscience certificate for registered geoscientists and for the public by outlining criteria for professional "best practices".

The present guideline is conducted in accordance with the PGO and PPC mandate.

2. Preface

The necessity of this peer review guideline was discussed within the PPC and select membership in 2016. Using the input from these discussions, a White Paper was submitted to Council on January 12, 2017 and approval was subsequently received to proceed to guideline development. Members of the PPC developed the first draft, submitted to Council in May 2018.

3. Purpose and Scope of Guideline

The purpose of the guideline is the following:

- Intended to aid geoscientists in performing their specified role.
- Provide criteria for expected practice by describing the required outcome of the process, identifying the geoscientists' duty to the public in the particular area of practice, and describing the relationships and interactions between the various stakeholders (i.e., government, architects, other geoscientists and clients).
- Guidelines add value to the professional geoscience certificate for registered geoscientists and for the public by outlining criteria for professional "best practices".
- Guidelines create heightened awareness to help the public to understand what it can expect of geoscientists in relation to a task within the practice of professional geosciences. By demonstrating that the task requires specialized knowledge, higher standards of care, and responsibility for life and property, guidelines help reinforce the public perception of geoscientists as professionals.
- Intended to support mobility agreements by addressing issues common to all jurisdictions.
- Not intended to establish a "one method of practice for all".
- A guideline may be considered in a disciplinary matter, but a failure to comply with a guideline does not necessarily amount to professional misconduct or negligence for a professional geoscientist.

4. Introduction

The Act[1] does not have specific parameters regarding the review of a geoscientist's work by another geoscientist. While the regulations under the Act define what constitutes professional misconduct and negligence for a professional geoscientist, these focus on a geoscientist's practice, ethics and professionalism, and do not provide guidance for technical or compliance reviews of work.

The only specific reference to reviews is found in the Code of Ethics Regulation (O Reg 60/01), section 5(3), which states: *"A Professional Geoscientist shall … (c) if asked to review the work of another professional geoscientist at the request of that person's client, inform the other professional geoscientist, whenever possible, before undertaking the review."* This is limited and specific guidance.

Professional geoscientists should not object to their work being reviewed or to reviewing work of a colleague. Review of a practitioner's work by a member is reasonable and in many cases necessary practice. This is the case provided that the review is conducted objectively, fairly and within the professional's ethical obligations.

[1] *Professional Geoscientists Act 2000,* SO 2000, c. 13

5. Definitions

Authoring geoscientist – the geoscientist responsible for preparing work that is reviewed.

Geoscience – the study of the principles of the earth sciences operating now or in the past, such as geology, geophysics, geochemistry and geomorphology, in a manner that affects the welfare of the public or life, health or property, including the natural environment.

Practice of geoscience - An individual practices professional geoscience when he or she applies the principles of the earth sciences operating now or in the past, such as geology, geophysics, geochemistry and geomorphology, in a manner that affects the welfare of the public or life, health or property, including the natural environment, including, without limiting the above:

(a) Sampling, analyzing, interpreting, reporting or providing an opinion on the discovery, development or management of oil, natural gas, metallic or non-metallic minerals, precious stones, water or other natural resources in the surface or subsurface of the earth;

(b) Sampling, analyzing, interpreting, reporting or providing an opinion on the storage, management or disposal of waste materials or other materials that could have a detrimental impact to the natural environment or the public; and,

(c) Sampling, analyzing, interpreting, reporting or providing an opinion on the discovery, development or management of natural geological processes and hazards produced by the interaction of the geosphere, hydrosphere, atmosphere, and biosphere at the Earth's surface, including human impacts.

Compliance Review – a review of work to determine if the work complies with applicable regulations, bylaws, policies or standards employed by that body.

Review – an examination of the content of the work prepared by or under the direct supervision of the Professional Geoscientist.

Reviewing geoscientist or reviewer – the geoscientist conducting the review of the work.

Technical Review – a review of the work to determine whether the geoscience content represented in the work is correct, complete and/or suitable for the intended purpose for which is was prepared.

Work – a piece of written, printed or electronic matter that provides information or evidence or that serves as an official record of geoscience conclusions or opinions.

6. Reviewing Professional Geoscience Work

6.1 Purpose and Type of Review

A review of a practitioner's work can be undertaken for various reasons and in many different relationships and jurisdictions. Reviewers can be colleagues in an organization, employees of government regulatory bodies, employees of client firms or other organizations using the geoscientist's work, or third-party geoscientists retained by a client to provide an independent assessment of the work. There are numerous circumstances, from corporate quality assurance to litigation against a practitioner, that can prompt a review; however, the present guideline does not necessarily apply to reviews conducted for litigation and/or evaluation of geoscience practice for disciplinary purposes.

6.2 Technical Review

A Technical Review is undertaken to determine whether the geoscience content represented by the work is correct, complete and/or suitable for the intended purpose for which is was prepared. These reviews may be limited to performing random or methodical checks of geoscience work, looking for technical errors. Technical reviews may also be extensive investigations of the methodology, design criteria and calculations or assumptions used by the authoring geoscientist, depending on a client's requirements. Technical reviews may investigate the correctness, appropriateness, economic viability or other attributes of the work product. Technical reviews should also check to see that the applied regulations, standards, and other guidance documents are appropriate and were used correctly.

Technical reviews are intended to make the following assessments:

- Whether the objectives set out for the work were reasonable;
- Whether the completed work has met the objectives;
- Validity of any assumptions, conclusions and/or calculations made by the authoring geoscientist;
- Validity of the recommendations and fitness to the objectives; and,
- Whether there were other options that should have been considered by the authoring geoscientist.

In the case of a technical report, the reviewer should comment on whether the recommendations are justified by the analysis or facts provided in the report. Cost considerations may be considered as part of the review of options, conclusions or recommendations if applicable. Normally, a technical review would not be as comprehensive as an original analysis. In most cases, checks of portions of the work would be performed rather than a review of every aspect of the authoring geoscientist's work. However, the thoroughness of the review must be left to the discretion of reviewers, based on what they believe is necessary to adequately undertake the assignment and satisfy themselves that they have enough information to make sound conclusions. If warranted based on concerns identified in the review, the reviewing geoscientist may advise the client or employer that a more comprehensive review is needed.

6.3 Compliance reviews

A compliance review is conducted to assess compliance with applicable regulations, bylaws, policies or standards. While it may have elements of a technical review, it is limited in scope and not in itself a technical review. This type of review is a legal matter and not a geoscience matter. As such, individuals conducting compliance reviews must refrain from making geoscience judgements. The compliance review must only compare information in the geoscience work with standards, codes, policies or legislated requirements.

When conducting compliance reviews, the reviewing geoscientist should report non-compliance issues to the practitioner and associated Certificate of Authorization holder.

Occasionally, regulatory bodies undertake more rigorous reviews for technical adequacy, to determine whether the content of the work meets performance standards or to assess the reasonableness of opinions that are not subject to prescriptive standards. Reviews of this kind must be performed by a geoscientist and should be done according to the terms of a technical review as described in this guideline. PGO understands that regulatory bodies have written policies that specify the purpose of the review and the rules governing the procedures for carrying out the review.

6.4 Geoscientists conducting reviews inside organizations

Geoscientists employed by an organization may be called on to review the work of colleagues for various reasons. Such internal reviews can be practice reviews to ascertain whether the authoring geoscientist is capable of doing assigned work or for personnel performance grading purposes, or technical reviews for quality assurance purposes. When reviews are conducted by a colleague within an organization, the reviewer might act like a problem-solving consultant and it is expected that the relationship between the practitioners will be very cooperative because the firm will ultimately be responsible for the outcome of the geoscience work. For this reason, the authoring geoscientist's judgement may be overridden by a practitioner with more authority in the firm. If the reviewer is a non-geoscientist, the reviewer may override the authority of the geoscientist for matters involving the contractual arrangements upon which the work is conducted, but may not override the judgement or opinion of the geoscientist on geoscience content. If the authoring geoscientist does not agree and is not willing to accept responsibility for the changes imposed by the reviewing geoscientist, the reviewing geoscientist should take responsibility for the entire geoscience work by affixing his or her seal or indicate and take responsibility for the changes to the work in which case both practitioners will seal the work.

7. Review Procedures

7.1 General Principles

Peer review should be appropriate to the scope and type of review required; it should be project specific. Reviews should be based on the principles of objectivity and fairness such that reviews must be thorough enough to provide information to resolve outstanding questions and to warrant the opinions made by the reviewer about the quality of the work. A reviewer must be comfortable that the material is within their realm of expertise and comprehension. A reviewer must use reasonable discretion and judgment on how best to undertake a review and must be satisfied that the conclusions, either positive or negative, regarding the quality of the work or of the authoring geoscientist's service are based on proper assessment of the items under review.

7.2 Basis for review

Professional geoscientists may be asked to review the work of other practitioners for many reasons and under various employment arrangements. Peer reviews may occur internally within companies or organizations, between two parties or as third-party reviews. Although each type may require less or more formal arrangements, a similar process should be followed for each situation. A reviewing geoscientist, in consultation with the client or employer, should clearly identify the type of review to be undertaken, the reason for the review, the work that will be reviewed and the current relationship between the authoring geoscientist and the client.

7.3 Scope of Work

The scope of work should define how thorough a review should be. A plan should be prepared that identifies the work to be reviewed, resources available to the reviewer, methodology of the review, format of the review report, protocol of communications between the reviewer and other parties, confidentiality considerations, schedule for the review, and other relevant considerations. Such a plan, submitted to a client (where appropriate) prior to undertaking a review, will establish the independence of the reviewing geoscientist and minimize the risk of potential conflicts of interest or misunderstandings. Fundamentally, the reviewer should not be anonymous to the authoring geoscientist.

A reviewing geoscientist may need to examine supporting documents and/or other information used by the authoring geoscientist to prepare the work to be reviewed. Such materials should be made available to the reviewer except where legal limitations or possible litigation prevent their inclusion in a review. If information needed to assess the work is not available, a reviewing geoscientist should not provide an opinion or assessment or should limit the scope of review to issues that can be properly assessed with the reasonably available information. A review should not be based on speculation about the data, client instructions or other data used by the authoring geoscientist(s).

The plan and/or scope of work for the review might need to be modified if additional items of concern are identified as the review progresses. Though time allocated for review should be discussed and agreed upon at the start, provision for the reviewer to request and be granted additional time and changes to the scope of work should be an option.

It is important that the mandate given to a reviewer, both orally and in writing, is worded neutrally and does not suggest the desired outcome. If a client or employer states or implies that a reviewer should slant the review in any way, the reviewing geoscientist should inform the client or employer that the reviewer is professionally obliged to remain independent and unbiased in performing the review. Reviewing geoscientists must identify and clarify at the outset of an assessment the end use(s) of the findings of a technical review. Reviewing geoscientists should inform clients of any disclaimers or limitations that might be included in their review reports.

Peer review must be objective and fair. To be objective, due diligence must be applied to evaluate the technical aspects of the Work and to measure these aspects against best practice and accepted industry and regulatory codes and standards. The reviewer must consider if the appropriate methodology was used to collect and process data. Collecting representative samples may be necessary to verify calculations and to test conclusions based on these calculations. A reviewer should ascertain if the concepts, opinions and underlying assumptions are technically sound, appropriate and substantially correct to justify the conclusions. A reviewer may require research to substantiate their own views. This research may include reviewing publications by standard-setting organizations, geoscience textbooks, professional literature and consulting with other practitioners for a sense of the generally accepted view within the profession. Comparison of the reviewed work with similar examples of good geoscience practice should be used to support a reviewer's comments.

A reviewer should follow a consistent procedure that is appropriate to the type of work under review. The procedure should be impartial and clearly articulated to all parties. Errors and omissions in data must be clearly identified and explained and are often expressed in the form of disclaimers in the case of consulting reports. Poor or inaccurate interpretations should be identified, if present, with an explanation as to their limitations or inadequacies if not already identified by the authoring geoscientist. All negative comments should be explained and supported with examples. If, on the other hand, a reviewer determines the work to be substantially accurate and well-reasoned, positive support should be offered as well. In all cases, a reviewer should strive to offer constructive criticism, consider the scope of work and separate facts from opinion.

7.4 Communications between professionals

Upon accepting an assignment to review work, reviewing geoscientists should ensure that they fully understand the intent and scope of work. This is best achieved with direct communication, in writing, with the client or employer and, if the client or employer approves, with the authoring geoscientist.

It is not unusual for a client to be in possession of a data set from different sources for the same property and possibly make comparisons. It is within the right for a client who owns data to make a comparison and share it with a third party for opinion.

Should, during the review, communications with professionals such as other subject matter experts become necessary, the client should be informed and written permission received before other subject matter experts are contacted. The reviewer should maintain a record of all significant communications with the client, the authoring geoscientist and any other party contacted during the review. Significant communications should be confirmed by a letter, fax or email.

Discrepancies or disputes between parties should be noted without comment by the reviewer in their final report.

If a reviewer is an employee of a government agency or regulatory authority, the reviewer, depending upon his or her position in the organization, should be able to communicate with the authoring geoscientist.

7.5 Reporting

A written report should be provided on completion of the review. The review report should contain an introduction that identifies the individual who authorized the review, the authoring geoscientist and the purpose of the review. The report should also describe the basis under which the review was conducted, including a brief description of the item under review, a summary of documentation provided to the reviewer and of communications made during the review, and a description of the reviewer's methodology for conducting the review. The review should document the reviewer's findings and should fully describe the information upon which opinions are based; the reviewer should reference legislation, codes or standards upon which findings are based.

The only output of a peer review is a report. Technical reviews should only identify problems and concerns regarding errors, omissions, failure to meet client expectations or noncompliance with standards and regulations. A reviewer should deal only with the presented data and should neither make suggestions about better methods nor report how the reviewer would have approached the task differently unless specifically requested of the reviewer.

Reviewing geoscientists should clearly distinguish among facts, assumptions and opinions in their reports and professional statements. Professional opinions should be clearly stated and should include clear indications of the constraints, within which an opinion holds, and the relevant qualifying circumstances, facts and assumptions.

Reviewers should use professional, objective and neutral language in their reports and in related conversation with clients and third parties. While it may be appropriate to criticize details, methodology or content of work, care must be exercised not to use derogatory or inflammatory language directed against an authoring geoscientist.

Reviewing geoscientists should consider including a disclaimer limiting the use of the report to the client for the stated purpose.

8. Qualifications of Reviewer

The reviewer shall be a member with expertise in the same discipline as the subject matter to be reviewed. The reviewer shall be competent to perform the review by virtue of his or her knowledge and experience and shall prepare his or her review and express opinions on geoscientific matters only on the basis of adequate knowledge.

9. Ethical Obligations

9.1 General

The reviewer is bound by the PGO Code of Ethics with respect to professionalism, protection of the public and interactions with fellow professional geoscientists.

Both the reviewing and authoring geoscientists are obliged to follow the Code of Ethics, with attention to the sections on cooperation (section 5(3)(a) and section 5(4) of O.Reg. 60/01):

> *(3) A professional geoscientist shall,*
>
> *(a) act towards other professionals with courtesy and good faith;*
>
> *(4) A professional geoscientist has a duty to co-operate with other professionals with whom he or she is called upon to work…*

9.2 Obligations of Reviewing Geoscientist

The reviewing geoscientist should notify the authoring geoscientist whose work is being reviewed as per the Code of Ethics, O.Reg. 60/01, section 5:

> *(3) A professional geoscientist shall,*
>
> *(c) if asked to review the work of another professional geoscientist at the request of that person's client inform the other professional geoscientist, whenever possible, before undertaking the review;*

The reviewing geoscientist must evaluate and declare any conflict of interest with respect to the review assignment (Section 9 of the Code of Ethics).

As with any geoscientific work, the reviewer shall undertake only work (including reviews in this case) that he or she is competent to perform.

Reviews should be conducted in an objective and consistently applied manner. It is understood that a reviewer will sometimes need to report negatively on a report by another professional geoscientist; that is their role. A reviewer should ensure that the way negative comments are reported is consistent with the sections in the Code of Ethics describing a geoscientist's duties to his/her peers. The reviewer is professionally obliged to remain independent and unbiased in performing this service.

The scope of work for the review should address expectations with respect to confidentiality. Generally, the reviewer must treat the review as confidential, although there are exception(s) where there is a professional/legal duty to disclose. Specifically, the Disciplinary Matters Regulation[2] under the *Professional Geoscientists Act, 2000* requires professional geoscientists *"to correct or to report a situation that the member or certificate holder believes may endanger the safety or the welfare of the public."*

If, while conducting a review, a reviewer finds work that is of such unprofessional quality or content that the reviewer believes the authoring geoscientist is practicing professional geoscience in a manner that may endanger the safety or welfare of the public, the reviewer is obligated to inform the PGO and/or another appropriate body (if the situation cannot be corrected by the reviewer). It is important for the reviewer to carefully consider the matter as the disclosure is only justified where the criteria set out in the Disciplinary Matters Regulation is met.

The reviewer should maintain a record of all communications, including with the authoring geoscientist. It is recommended that a reviewer and the person requesting the review have a written contract that ensures the reviewer treats all the information obtained during the review as confidential, subject to legal or professional obligations to disclose.

A peer review report that contains statements of geoscientific judgment is geoscience work and must be signed and stamped if it is provided to someone outside the reviewer's firm. This will be the case for technical reviews but may not be for regulatory reviews. By signing and stamping a peer review report, a reviewing geoscientist is accepting professional responsibility for only the opinions in the peer review report, not for the work that was reviewed.

9.3 Obligations of an Authoring Geoscientist

Professional geoscientists should not object to having their work reviewed. The authoring geoscientist (or reviewee) is to act professionally and with integrity during the review process and should be willing to provide relevant information related to the report being reviewed. This includes accepting constructive criticism and engaging in professional dialogue with the reviewer. Decisions on how to revise the work to deal with non-compliant issues must be left to the authoring geoscientist.

[2] *Disciplinary Matters - Complaints and Disciplinary Proceedings Relating to the Practice of Professional Geoscience*, O. Reg. 258/02, made under the *Professional Geoscientists Act, 2000*, section 16(2)2

10. References

Professional Geoscientists Act, 2000, SO 2000, c. 13

O Reg 258/02, made under the *Professional Geoscientists Act, 2000*

O Reg 60/01, made under the *Professional Geoscientists Act, 2000*