**PPMP Template for Small to Medium Geoscience Firms (Change to Title of Your PPMP e.g. “ABC Geoscience Professional Practice Management Plan”)**

Title Page

***This template (Version 0.2) has been developed for firms that employ multiple geoscientists. Separate templates are available for engineering sole practitioners and firms that employ a combination of engineers and geoscientists.***

***Delete this table, it is for information about the template only, it should not appear in a firm’s PPMP.***

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| **PPMP Template Revision Table** | | |
| Version # | Date | Description |
| V 0.0 | 2021.04.29 | Initial Release for Use |
| V 0.1 | 2021.05.21 | Removed "and reviewing" from Checking section & general formatting |
| V 0.2 | 2022.07.04 | Adapted for use by AME Corporate Members employing geoscientists |
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***This template is provided as an example of a typical generic PPMP for sole practitioners. Firms are free to develop their PPMP from scratch, from existing documents, or from this template. Regardless of how a firm’s PPMP is developed it must meet the requirements in the Bylaws of Engineers and Geoscientists BC. If this template is used to develop your firm’s PPMP, you are free to modify it in any way, however it must still meet the requirements in the Bylaws of Engineers and Geoscientists BC.***

## PPMP Review and Revision Record

This PPMP must be reviewed annually and updated as required to document evolving business practices of [the firm].

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| **Annual PPMP Review Record** | | | |
| Date | Reason | By | Comments |
| yyyy.mm.dd | Annual Review |  |  |
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When this PPMP is revised, the PPMP Version Table below must be updated to reflect the changes. Previous versions must be retained for a minimum of 10 years.

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| **PPMP Version Table** | | | |
| Version # | Date | By | Description |
| V 1.0 | yyyy.mm.dd | xxx | Initial Release for Use |
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## Introduction

This PPMP has been developed to meet the requirements set out in Section 7.7.3 of the Bylaws of Engineers and Geoscientists BC.

As the Bylaw mandates, this PPMP includes the following sections or elements:

* Firm organizational structure.
* Name of the Responsible Officer.
* Name(s) of the Responsible Registrant(s) and the division, department or practice area for which they are responsible.
  + Include a table showing each group (department, division, function), discipline or practice area and the Responsible Registrant named for each if applicable. Depending on the size and breadth of the firm and how it is structured, a Responsible Registrant can be named for the entire firm, a group, department, division, function, discipline, or practice area. This decision is up to the firm.
* Practice areas or scope of geoscience in which the firm operates.
* Ethical Conduct in keeping with:
  + Engineers and Geoscientists BC’s Code of Ethics.
  + Engineers and Geoscientists BC’s Human Rights and Diversity Practice Guidelines.
  + Ethical business practices addressing corruption, conflict of interest, and contractual matters.
* Continuing education/professional development policies and procedures including how they align with the Engineers and Geoscientists BC Continuing Education Program and help employees particularly professionals remain competent in their roles and practice areas.
* Quality Management policies and procedures covering the following required areas:
  + Professional Practice Guidelines
  + Retaining Project Documentation
  + Checking Engineering and Geoscience Work
  + Independent Review of High-Risk Activities or Work (should be tailored to suit the nature of the firm’s work)
  + Authenticating Documents
  + Direct Supervision (may be eliminated if no delegation of geoscience to others)
  + Field Review During Construction or Implementation (may be eliminated if practice does not include design)

This PPMP will undergo an annual review and revision, as needed, to incorporate input from any applicable regulatory changes, root cause analyses of nonconformances, internal and external audit findings, client feedback, user suggestions and management reviews.

All revisions made to this PPMP must be reviewed and approved in writing by the Responsible Officer and Responsible Registrant(s). Refer to the Issue/Revision Record at the front of this PPMP for the status.

Sections in this PPMP have been prepared as follows:

* Introduction and Purpose are Engineers and Geoscientists BC explanations and use Engineers and Geoscientists BC terminology. They are provided to help educate those using this PPMP.
* Policy, Guidelines for Detailed Procedures and Standard Operating Procedures are (firm name)’s and use (firm name)’s terminology. They are provided for use by all employees.

## [The Firm]

Include the following content in this section:

* What is the firm? (brief 1-2 sentence overview)
* Document who is the Responsible Officer and Responsible Registrant(s) for the firm.
  + Document the firm’s organizational structure. Include an organization chart of entire firm (leadership and divisions, departments or functions)
* Who are the firm’s clients (can be internal and external) and what types of projects are undertaken?
* In which geoscience practice areas does the firm operate?
* How long has the firm been operating?

## Code of Conduct

### Policy

The firm] Code of Conduct sets out the behaviour and actions required of individuals employed by or under contract with [the firm]. It applies to all employees and contractors working for [the firm].

Ethics must be incorporated into daily decision-making. All employees or contractors acting on behalf of [Firm] must comply with the [Engineers and Geoscientists BC's Code of Ethics](https://www.egbc.ca/getmedia/81f5d90e-eed6-4118-b431-10978c03720d/Code-of-Ethics-Print-Version-Feb-5-2021.pdf.aspx).

All employees and contractors working for [Firm] must comply with Engineers and Geoscientists BC guidelines related to human rights, equity, diversity, or inclusivity.

[Firm] and its employees and contractors will abide by governing law and ethical business practices when marketing [firm]’s services, submitting proposals and signing contracts with clients and all other business activities. The following practices are not permitted:

* Efforts to seek unfair advantage in a selection process.
* Fees paid to individuals outside of published fees to secure projects.
* Proceeding with a proposal or contract with an undisclosed conflict of interest.
* Others? E.g. Confidentiality, buying or selling stock based on non-public information, etc.

### References

* [Engineers and Geoscientists BC's Code of Ethics](https://www.egbc.ca/getmedia/81f5d90e-eed6-4118-b431-10978c03720d/Code-of-Ethics-Print-Version-Feb-5-2021.pdf.aspx)
* [Engineers and Geoscientists BC's Guide to the Code of Ethics](https://www.egbc.ca/getmedia/33d03861-5d04-43e9-b76b-ff57ba8b9bdb/EGBC-Guide-to-the-Code-of-Ethics-V2-0.pdf.aspx)
* [Engineers and Geoscientists BC's Code of Ethics FAQ’s](https://www.egbc.ca/Complaints-Discipline/Code-of-Ethics/Frequently-Asked-Questions)
* [Engineers and Geoscientists BC's Human Rights and Diversity Professional Practice Guidelines](https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW3QAYXGAM5PGZHJJFFPSNEOROY3/Human%20Rights%20and%20Diversity%20Guidelines)

Firms can also add context on any social responsibility practices they follow.

## Continuing Education

### Policy

Professionals are required under the Engineers and Geoscientists BC Code of Ethics to “maintain competence in relevant specializations, including advances in the regulated practice and relevant science”. To support this important principle of professional practice, professionals are required under the *Professional Governance Act* and the Bylaws of Engineers and Geoscientists BC to create continuing education plans and meet mandated levels of continuing education.

Professional Registrants employed by [firm] must develop annual continuing education plans complying with the Engineers and Geoscientists BC Continuing Education Program requirements to maintain competence in their practice areas.

Managers must conduct and document annual performance reviews [use firm’s terminology] with all their direct reports that will include (add items here, including ensuring competence for their role is maintained).

For professionals registered with Engineers and Geoscientists BC, performance reviews and learning plans should align with the Engineers and Geoscientists BC Continuing Education Program.

Continuing education/professional development will be supported through [choose the ones that apply or draft new]:

* Paid time off for approved continuing education/professional development.
* Tuition or participation fees approved for programs, courses, or training.
* Registrations fees for approved conferences.
* In-house webinars, seminars, training, and workshops.
* Mentoring program.
* Career coaching.

### Procedure

Professional development and reporting must be in keeping with the requirements set out in the [Engineers and Geoscientists BC Continuing Education Program](https://www.egbc.ca/Continuing-Education/Continuing-Education/Program-Overview).

Document procedures, timing etc. for the documented annual reviews, including how/where these will be recorded. Refer to the [Guide to the Continuing Education Program](https://www.egbc.ca/getmedia/86710280-a428-4035-b596-e495bf36249d/EGBC-Guide-to-the-CEP-V1-0.pdf.aspx), particularly the appendices which provide templates that can be used for the Continuing Education Plans.

## Professional Practice Guidelines and Practice Advisories

### Policy

Projects undertaken will meet all regulatory and statutory requirements, and applicable professional practice guidelines including meeting the intent of relevant Engineers and Geoscientists BC Professional Practice Guidelines and Practice Advisories.

All professional employees or contractors will stay informed of, knowledgeable about, and meet the intent of all applicable standards, policies, plans, and practices established by the government or by Engineers and Geoscientists BC, including Professional Practice Guidelines and Practice Advisories relevant to their practice.

A departure from any relevant portion of a Professional Practice Guideline must be documented in writing.

### Procedure

[The firm] and anyone acting on its behalf must have regard for applicable standards, policies, plans, and practices established by the government or by Engineers and Geoscientists BC, including Professional Practice Guidelines and Practice Advisories by:

* Staying informed of, knowledgeable about, and meeting the intent of all applicable standards, policies, plans, and practices established by the government or by Engineers and Geoscientists BC including:
  + Monitoring communications about changes to regulations, guidelines and standards including those from [Engineers and Geoscientists BC](https://www.egbc.ca/).
  + Reviewing related websites including the Engineers and Geoscientists BC website to retrieve the current versions and staying informed about updates to regulations, guidelines and standards.
  + Determining what impact any changes will have on [the firm]’s related practices and work.
  + Supporting related professional development to reinforce the use of Professional Practice Guidelines.
* Before starting work on any project, geoscientists of record will identify, confirm and document regulatory and statutory requirements. <Documenting and filing for each project is not a requirement, however is an easy way to show an auditor that the process is taking place, if not documenting for each project have a process that will enable you to demonstrate to an auditor the standard of practice is being met.>
* During the work, geoscientists of record will:
  + Conduct the work to meet all regulatory and statutory requirements including those found in Professional Practice Guidelines and Practice Advisories.
  + Carry out or have carried out reviews to confirm that all requirements have been met.
  + Document in writing the reasons for departures from any Professional Practice Guidelines or Practice Advisory.

### References

***Edit to include those references to regulations, legislation, standards and guidelines applicable to the firm or provide a link to where applicable references are listed or stored****:*

* [Engineers and Geoscientists BC Professional Practice Guidelines and Practice Advisories](https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW3QAYXGAM5PGZHJJFFPSNEOROY3/Human%20Rights%20and%20Diversity%20Guidelines)
  + (example)[Legislated Landslide Assessments for Proposed Residential Development in BC](https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW2FC5GZAROI4ZBZ7KMIRPIFG7JN/Legislated%20Landslide%20Assessments%20for%20Proposed%20Residential%20Development%20in%20BC)
  + (example)[Professional Services in the Forest Sector – Terrain Stability Assessments](https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW6LIO6ETQANTVGI5KSQS3HSCISW/Professional%20Services%20in%20the%20Forest%20Sector%20-%20Terrain%20Stability%20Assessments)
* (example)[National Instrument 43-101 - Standards of Disclosure for Mineral Projects](https://www.osc.ca/sites/default/files/pdfs/irps/ni_20160509_43-101_mineral-projects.pdf)
* (example)[National Instrument 51-101 Standards of Disclosure for Oil and Gas Activities](https://www.albertasecurities.com/-/media/ASC-Documents-part-1/Regulatory-Instruments/2018/10/5189463-v1-51-101-NI-Consolidation-Eff-July-1-2015.ashx)
* (example)[CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards)](https://www.albertasecurities.com/-/media/ASC-Documents-part-1/Regulatory-Instruments/2018/10/5189463-v1-51-101-NI-Consolidation-Eff-July-1-2015.ashx)
* (example)[CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines](https://mrmr.cim.org/media/1129/cim-mrmr-bp-guidelines_2019.pdf)

## Document and Records Management

### Policy

Records will be managed according to the following procedures.

Records are to be preserved and retained for {a minimum of 10 years after a project is closed out OR a longer period OR permanently}.

Electronic records will be backed up [define period, e.g., daily, weekly, etc.] and stored securely [onsite OR offsite OR in the Cloud].

### Procedure

**File Management**

Describe file management system e.g., electronic, hardcopy or combination of the two. Describe file naming standards used, and standard file structure.

**Preparing Documents**

* Document standard templates for types of documents used by firm, e.g. letters, reports, drawing title blocks, etc.
* As applicable document procedures for using client document templates, e.g., reports, drawing title blocks, etc.
* Use validated and approved software and media for creating and maintaining documents.
* Use standard file naming conventions to save document files.
* Include document identifiers (project name, project number, filename, file directory) in the document, as appropriate.
* Include project name, project number and topic in the subject line of project or work-related e-mail containing information that must be retained.
* Spellcheck, review and check documents to confirm they are correct, complete and ready to issue.
* Check deliverables, as required. Refer to [Checking Geoscience Work](#_Checking_and_Reviewing).

**Filing Documents**

* Documents must be filed in their appropriate directory OR file folder in the standard project file structure.
* File all project or work e-mail messages that must be retained in the appropriate folder of their related project or work file structure. Email may be filed in any of several ways so that email records are with the retained project records by the time of closeout ***{Select the one(s) used}***:
  + Saved to the project filing when sent or received.
  + Stored in a project-labelled Personal Folder or similar throughout the project and moved at closeout.
  + Periodically, converted and saved to a portfolio PDF and saved to the project filing.
  + Printed and save to hard copy project files.
  + Other means to assure that project records retained at closeout include email records.
* File issued electronic documents in PDF/A exactly as issued. (PDF/A is not a requirement however is a recommended best practice. PDF/A is an ISO-standardized version of the Portable Document Format (PDF) specialized for use in the archiving and long-term preservation of electronic documents.)

**Revising Documents**

* Include a revision record (indicating revision number or letter, and date), what was revised and by whom, on documents where version control is required (maps, drawings, reports, etc.).
* Clearly identify what was revised for documents subject to version control.
* Check all revisions.

**Issuing Documents**

* Include an issue record, indicating purpose for issuing and when issued, on documents where version control is required (maps, drawings, reports, etc.). The revision and issue records may be combined into one record.
* When issuing electronic documents, provide and retain the file in a secure format. (e.g., PDF/A or other format appropriate to the nature of the document/record)
* Document what form of transmittal/record of issuance (form, e-mail or other) will be retained as a record of what was sent to whom and when.
* Create an audit trail to record who receives which document revisions and when.
* Make sure the most recent or current revisions of documents are issued to those who require them

**Receiving Documents**

* Determine whether the document is a record to be retained or a document that is kept for convenience until no longer needed.
* Store documents in the project file to record when documents are received.
* If receiving in hard copy, code and file in hard copy project file structure, OR scan, name and file in electronic file structure, OR code and store in the hard copy filing.
* If receiving electronic documents, name, as appropriate or leave with originator’s filename and file in electronic file structure OR print and file in the hard copy system.
* As needed, set up a standard distribution indicating expectation of those receiving the document (e.g., approve, action by, information only, etc.).
* As needed, record actions taken based on received documents.

**Archiving Records**

* Cull non-records and convenience copies from files.
* For hard copy records, group, label and log records (as appropriate with their date of destruction).
* Indicate media and location (onsite, offsite, cloud, OneDrive, etc.) for archiving and storing electronic files (separate server, separate drive, cloud services, OneDrive, etc.).
* On project closeout (or at predefined intervals), transfer records to their storage medium and location.
* Secure access as read-only to prevent inadvertent alteration of records (document how this is to be done).
* For physical documents, document for storage with environmental controls to preserve records (protection from moisture, fire, etc.).
* Document archive retention e.g.: Retain records for a minimum of 10 years after project closeout.

**Destroying Records**

If applicable, document destruction policy:

* Destroy all records that have met all retention requirements and that are not under a legal hold for pending litigation or a regulatory requirement.
* Keep a record of what was destroyed and when.

## Checking Geoscience Work

### Policy

Documented checks must be carried out to confirm that the work is complete, correct, meets all input requirements and is suitable for its intended purpose.

The responsibility for carrying out, or arranging to have carried out, required checks of geoscience work rests with the geoscientist of record.

Those preparing geoscience work are required to check their work before providing it to others for review and not rely solely on checkers to find errors and omissions.

Self-Checking as the only check, will not be allowed when:

* The work is complex or innovative.
* A risk assessment determines additional checking is appropriate.
* The required standard of care would suggest an independent check is required.
* Applicable Professional Practice Guidelines or Practice Advisories recommend or require independent checking.
* The work involves high-risk professional activities that require an independent review.

### Procedure

Before proceeding with the work:

* Assess the capability required to confirm that professionals qualified to perform the work are available. Only proceed with projects, where qualified professionals are available.
* Assess the risk (refer to risk assessment process and template internally or use those in Guide to the Standard for Documented Independent Review of High-Risk Professional Activities or Work) and use it to determine the extent and levels of checking required.
* Determine if self checking is appropriate, if not, identify qualified checker(s) to carry out the required checks.
* Include enough time for all checks in the project plan and budget.
* Identify, confirm, and document all input requirements to reference and use for the work and required checks.
* Identify, receive, or collect and check all input data to confirm it is complete, correct, current, and suitable before using it in any work.
* Validate spreadsheets and software before using them in analysis or calculations.
* Check spreadsheet and software output using random hand calculations, site measures, seasoned reviews of the output or other means suitable to the work being undertaken.
* Plan when, how, by whom and to what extent checks will occur during the work.
* Plan for independent review of activities or work assessed as high-risk.
* Check all work, as planned.
* Always self-check work before handing work off for others to check.
* Arrange for or review all work to confirm that it is complete, meets all input requirements and is suitable for its intended purpose.
* When checking or reviewing one discipline or practice area in a document that includes other disciplines or practice areas, qualify the check or review to indicate what the review covers.
* Have all deliverables and professional documents, such as reports checked to confirm that they are correct, complete, and consistent.
* Review, authenticate (seal) and have Permit to Practice number applied to all professional documents before they are delivered to others who will rely on them.
* When self checking is the only check, check the work in a moment removed in time, e.g., the next day, etc.

Checks MUST be documented, at a minimum the checking record must include:

* Who conducted the check;
* When the check was conducted;
* What was checked; and
* Any issues identified (or no issues identified)

[firm] requires checks to be documented using the following process/procedure

* Identify the method for recording checks, it could be a standard form, checking ledger, recording the required information on a checking copy of the document, etc. This should be developed to be an in-process function suited to the type of work being done. The process may be different depending on what is being checked, e.g., calculation checking record may vary from a report checking record or input data checking record.

## Independent Review of High-Risk Professional Activities or Work

### Policy

Risk assessments will be conducted for all professional work and activities as follows:

* For low-risk work, risk assessments will be carried out, documented, retained as a record and updated annually. The initial low risk assessments and subsequent annual assessments are to be filed (enter location… drive, folder, etc.; i.e. a location where professionals relying on those assessments have access to them and can reference them).
* For medium and high-risk work, assess the risk before proposing or accepting contracts. The risk assessments are to be filed (enter location in project filing system)

Where work is deemed to be high-risk or where mandated by regulation or Bylaws of Engineers and Geoscientists BC, an independent review must be carried out.

Where [the firm] does not have experience with the type and scale of the professional activities or work, or the work is innovative and complex, involves emerging technology or does not have well-defined solutions, a qualified independent reviewer must be sourced externally. Otherwise, the independent reviewer can be a qualified geoscientist or licensee, outside of [the firm], or employed by [the firm], who has not been involved in the work.

Records of risk assessments and independent reviews must be retained in project file where specific to a project or in firm files where specific to a practice area rather than a project.

### PROCEDURE

The geoscientist of records must:

* Conduct a risk assessment that considers:
  + Hazards associated with the work.
  + Severity and likelihood of consequences.
  + Complexity of the work.
  + Effect of errors or omissions on hazards during construction or implementation.
  + Nature of the assumptions made during the work.
  + Innovation or departure from previous practice.
  + Regulations or authorities requiring independent review of the work.
* For work deemed high-risk due to the severity of consequences resulting from errors or omissions, plan the work to allow for an independent review.
* Where [the firm] does not have experience with the type and scale of the work, or the work is innovative and complex, involves emerging technology or does not have well-defined solutions, identify and engage a qualified external resource to carry out the independent review.
* To avoid surprises and significant rework, confirm the various stages, from concept to construction or implementation documents, when the work will be independently reviewed.
* Arrange to have the work checked to confirm that the work and documents meet all requirements and are suitable for their intended purpose.

(It is recommended that a standardized risk assessment record be developed to suit the nature of the firm’s work and be referenced here)

(A generic example is provided below. If it applies to the type of work done by your firm include or modify it to suit the type of work your firm carries out. If it does not apply draft requirements suitable to your operations that meet the requirement of your operation and the Standards of Competence - Quality Management Requirements Section 7.3 in the Bylaws of Engineers and Geoscientists BC and specifically under section 7.3.6, Standard for Independent Review(s) of High-Risk Professional Activities or Work.

***For Work Involving Assessments, Investigations, Reviews, or Reports***

The independent reviewer must:

* Assess and document the risks to determine the extent of review required and record the rationale for this determination.
* Review hazards identified in the risk assessment (including risks imposed by the work of other professionals and risks from external sources).
* Review the context or situation, available data, and performance criteria for the work.
* Where applicable, review geographical and/or environmental requirements and conditions.
* Where applicable, review test/experimental procedures and results.
* Where applicable, review the integration of third-party components and artifacts into the work.
* Review appropriateness and implementation of mitigation measures.
* Review the assumptions made by the geoscientist of record for the work.
* Review the concept and integrity of the result of the work.
* Review supporting documents to determine whether they are sufficient to identify the result of the work, and, where applicable, provide sufficient information to guide the construction or implementation.
* Review statutory and regulatory requirements.
* Evaluate documents related to the work to ensure they are complete, consistent, coordinated and in general compliance with the appropriate codes, standards, and other requirements.
* Document additional steps taken as well as steps which were deemed not applicable to the work and discuss them with the geoscientist of record.
* Discuss any concerns with the geoscientist of record. The geoscientist of record must adequately resolve concerns noted in the independent review.
* Provide a formal record of the independent review to the geoscientist of record highlighting any concerns (refer to Appendix A: [Checklist and Signoff for an Independent Review of High-Risk Activities and Work](#_CHECKLIST_AND_SIGNOFF_1)). If significant concerns are noted, the geoscientist of record must revise the work and resubmit it for an independent review.
* The independent reviewer must provide the review record to any authority charged with approving the work upon request.
* Retain record of the risk assessment and independent review for a minimum of 10 years.

### References

* [Checklist and Signoff for Independent Review of High-Risk Activities and Work](#_CHECKLIST_AND_SIGNOFF_1)

## Authenticating Documents

### Policy

Any professional document that a geoscientist prepares or directly supervises must be authenticated before it is issued to others who will rely on its geoscience content.

[The firm]’s Permit to Practice number must appear on all authenticated documents. All individuals authenticating documents to which the firm’s Permit to Practice number will be affixed, must be listed on the firm’s roster provided to Engineers and Geoscientists BC. The Responsible Registrant is responsible for authorizing the application of the Permit Number. The Responsible Registrant must set or agree to policies regarding the application of the Permit Number in professional documents for the area(s) of practice for which they are responsible. (set policy here, for example as a sole practitioner having the permit number already in document templates in the direct vicinity of the sealing area may be appropriate)

The seal must remain in the care and control of the geoscientist to whom it was issued and may only be signed and dated, or digitally certified, by that individual.

### Procedure

The geoscientist of record will:

* Maintain the care and control of their professional seal.
* Review all professional documents to the extent they deem necessary to take professional responsibility for the geoscience content.
* Confirm that all Permit to Practice requirements have been met and that the Permit to Practice number is included on all authenticated documents.
* Decide when and whether a professional document is ready to be authenticated.
* Use a signed and dated ink stamp seal or apply a digital seal with digital certification approved by Engineers and Geoscientists BC to authenticate all professional documents that they prepare or directly supervise before those documents are delivered to others who will rely on them. (this bullet should be edited to document what seal is used i.e. physical stamp or digital)
* For physical seals, the date must be the date the seal was applied.
* Authenticate all professional documents that:
  + the Professional Registrant has prepared in their professional capacity or has been prepared under their direct supervision,
  + contain content related to the regulated practice, and
  + will be relied on by others.
* Any email correspondence which contains professional geoscientist advice, or decisions issued in a professional capacity will be followed up with an appropriately authenticated document.
* Retain a record copy of all authenticated documents in the project file. (clearly define the format of the record copies e.g. originally sealed documents, photocopies or scans of sealed documents, or digitally sealed and certified PDF files. [choose appropriate ones for firm])

## Direct Supervision

If the firm (sole practitioner) will not be delegating ANY geoscience work, the recommendation is to keep this section but only leave the following text:

All geoscience work conducted by [firm] will be conducted solely by <name & designation>, if at anytime in the future geoscience work will be delegated to a non-professional, it will be done in accordance with the Standards of Competence - Quality Management Requirements Section 7.3 in the Bylaws of Engineers and Geoscientists BC and specifically under section 7.3.8, Standard for Delegation and Direct Supervision and this PPMP will be updated to reflect this change.

### Policy

Geoscientists must directly supervise any geoscience work that they delegate to a subordinate. When doing so, geoscientists must retain appropriate control of and take professional responsibility for that work.

A subordinate may be a Trainee (Geoscientist in Training/GIT), technologist, a non-professional or a less experienced professional, to whom a geoscientist delegates geoscience work or activities.

### Procedure

To delegate work to a subordinate, the geoscientist of recordwill:

* Assess the work that may be delegated to confirm the knowledge, experience and capabilities required, and any tools or resources (e.g., standards, guidelines, etc.) that can be used to successfully implement the work.
* Assess the subordinates to confirm that they have the required knowledge, capability and experience and to identify any gaps that must be addressed.
* Make required tools and resources available and address any gaps in them, including identifying subject matter experts to be consulted during the work.
* Address gaps in the subordinate’s knowledge, skills and experience by setting up a monitored learning experience.
* Establish the subordinate’s scope of work, duties, responsibilities, authorities, and limits on acting alone.
* Create a plan defining when and how the subordinate’s work will be reviewed.
* Delegate the work to the subordinate and communicate the scope of work, duties, responsibilities, authorities, limits on acting alone, and the timing and process for required reviews.
* Be available to answer questions.
* Be involved in all geoscience decisions.
* Review the subordinate’s work, as planned.
* Retain documentation to demonstrate that professional reviews of the subordinate’s work took place.
* Include context regarding field crew contractors (e.g., technicians, drillers)

## Field Reviews

If the firm’s professional practice does not require field reviews, i.e., no site implementation, the field review requirements may not apply. In this case, this section should be a clear concise explanation of the firm’s operations and an explanation of why field reviews do not apply. Registrants (individuals and Firms) cannot simply choose to not conduct field reviews or have the client dictate to them that field reviews are not required. In addition to the explanation, the following statement should be included:

If at anytime in the future any professional work will be conducted by [firm] that requires field reviews as per Standards of Competence - Quality Management Requirements Section 7.3 in the Bylaws of Engineers and Geoscientists BC and specifically under section 7.3.3, Standard for Field Review this PPMP will be updated to reflect this change.

An example of geoscience related design would be, the design of a mineral exploration program, the field review would be focused on confirming the exploration program as designed was executed in the field appropriately.

### Policy

The geoscientist of record must carry out or directly supervise field reviews during implementation or execution of any work they specify.

Field reviews determine whether the implementation or execution of the geoscience work or activities, substantially complies with the documents prepared for the work.

### Procedure

The timing of field reviews must take into consideration and reflect the following:

* The number of field reviews that are deemed necessary, based on a professional exercising reasonable professional judgment, to ascertain whether the implementation or execution of work substantially complies in all material respects with the concepts or intent reflected in the documents prepared for the work.
* The level and nature of risk, complexity, unknown conditions, and duration of the implementation or execution.
* The standard of practice for the type and nature of work to be reviewed.
* The requirements of related Professional Practice Guidelines and/or Practice Advisories.
* The legislation, codes, standards, or other regulatory requirements that may be relevant and applicable to the nature of the field review to be carried out.
* The level of detail provided in the documentation prepared for the work.
* The experience, reputation, and method of selection (that is, public tender, prequalified bidders, or negotiated) of those implementing or executing the work.
* The number of deficiencies found early in the work.
* The experience of the geoscientist of record

***For Mineral Exploration***

The geoscientist of record will:

* Assess the nature of the geoscience work involved, and the complexity of the services to be completed, during the execution phase.
* Determine the number, timing and focus of field reviews required to meet the standard of care for the work and adjust the extent of reviews as needed during construction.
* Determine whether field reviews are suitable for delegation and determine whether qualified subordinates are available.
* Document, and agree on the scope of required field reviews.
* Before the work begins, communicate to the party responsible for the execution the specific aspects of the exploration activities that must be reviewed and requirements of when to provide notice to the geoscientist of record.
* Where field reviews will be delegated to a subordinate, provide direction about the required efforts, reporting detail, specific aspects of the activities to be observed, tested or surveyed, and limits of acting alone.

The field reviewer will:

* Carry out field reviews as required and planned.
* If any equipment is used during the field review, ensure the equipment is maintained and calibrated as per the manufacturer’s recommendations, and maintain a record of the maintenance and calibrations.
* If not the geoscientist of record, as directed by the geoscientist of record, adjust the extent of field reviews required based on the number of issues observed.
* Document all field reviews, including date, time, location, work reviewed, observations and directions given.
* Where appropriate, take photographs or videos to capture and document observations made during field reviews and create an audit trail for any photographic or video records by:
  + Checking the equipment, date and time settings before taking photographs.
  + Including a description of what was photographed along with the date, time, location and photographer.
  + Enhancing, cropping or otherwise editing photographs only for clarity, and retaining the original, unaltered photo along with the edited photo.
  + Downloading and storing all photographs taken to their appropriate subdirectory in their respective project directory.
  + Creating a non-editable back-up of all photographs.
* Provide directions about nonconforming work and required resolution to the contractor or party responsible for the execution in writing.
* Leave the means and methods for correcting nonconforming work to the contractor or party responsible for the execution.
* If not the geoscientist of record, notify the geoscientist of record of any required or proposed revisions to the work that will result in changes in the cost, schedule, or function to seek and receive approval to proceed before proceeding to have the work revised.
* If not the geoscientist of record, involve the geoscientist of record in decisions resulting from field reviews.
* Continue to report nonconforming work observed in field reviews until it is rectified.
* Confirm and document how the contractor or party responsible for the execution has addressed any nonconforming work observed in field reviews.
* Retain all field review records in (describe or indicate where files are to be retails).

## Appendixes

Documented Risk Assessment (Page 1 of 3)

*[Print clearly and legibly]*

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | PROFESSIONAL OF RECORD |
| RE: |  |  |  |
|  | Name of project, activity, or work |  | Name of professional and designation  (P.Eng., P.Geo., P.L.Eng., or P.L.Geo.) |
|  |  |  |  |
|  | Address of project, activity, or work |  | Firm name |
|  |  |  |  |
|  |  |  | Permit to Practice number |
|  |  |  |  |
|  |  |  | Address of firm |
|  |  |  |  |

**Table A: Type of Risk Assessment**

|  |  |  |
| --- | --- | --- |
| TYPE OF RISK ASSESSMENT | | |
| Global | Repetitive/Iterative | Project-Specific |

**Table B: Considerations for Risk Assessment**

|  |  |
| --- | --- |
| CONSIDERATIONS FOR RISK ASSESSMENT | REMARKS (INITIAL CONDITION) |
| Expertise of Professional of Record |  |
| Experience of subordinates |  |
| Previous experience with similar projects |  |
| Level of complexity |  |
| Innovative features |  |
| Departures from previous practice |  |
| Applicable codes, standards, and regulations that define Risk tolerance |  |
| Formal Hazard identification techniques used (i.e., FMEA, FTA, ETA, HAZOP, STPA, SWIFT) |  |

Documented Risk Assessment (Page 2 Of 3)

**Table C: Hazard Identification**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **HAZARD NUMBER** | **HAZARD IDENTIFICATION** | **CONSEQUENCE** | **SEVERITY OF CONSEQUENCEa** | **LIKELIHOOD OF CONSEQUENCEb** | **LEVEL OF RISKc** |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |

a See Appendix B, Section B2 of the *Guide to the Standard for Independent Review of High-Risk Professional Activities or Work* (*Guide*), and Table D of this Risk Assessment.

b See Appendix B, Section B3 of the *Guide* and Table D of this Risk Assessment.

c See Appendix B, Section B4 of the *Guide* and Table D of this Risk Assessment.

**Table D: Individual Hazard and Overall Risk Assessment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **INDIVIDUAL HAZARD AND OVERALL RISK ASSESSMENT** | | | | | |
| Severity of Consequencea | Insignificant | Minor | Moderate | Critical | Catastrophic |
| Likelihood of Consequencea | Improbable | Remote | Occasional | Probable | Frequent |
| Level of Riska | Minimal | Low | Moderate | High | Extreme |

a  As described in Appendix B of the *Guide* *to the Standard for Independent Review of High-Risk Professional Activities or Work*, and the tables and Risk matrix set out there, or based on another procedure developed by the Professional Registrant or Firm.

**Table E: Type of Independent Review Required**

|  |  |  |
| --- | --- | --- |
| **TYPE OF INDEPENDENT REVIEW REQUIRED**a | | |
| None | Type 1 | Type 2 |

a The type of Independent Review must be determined after the initial Risk Assessment, thereby allowing any mitigation measures applied to the Professional Activity or Work to be part of the scope of the Independent Review.

Documented Risk Assessment (Page 3 Of 3)

**Table F: Applying Mitigation Measures**

|  |  |  |  |
| --- | --- | --- | --- |
| **HAZARD NUMBERa** | **MITIGATION MEASURES PROPOSED/IMPLEMENTED** | **REMARKS/JUSTIFICATION** | **REVISED LEVEL OF RISKb** |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |

a See Table B of this Risk Assessment.

b See Appendix B, Section B4 of the *Guide* *to the Standard for Independent Review of High-Risk Professional Activities or Work* and Table C of this Risk Assessment.

**Table G: Final Remarks**

|  |
| --- |
| **FINAL REMARKS** |
| (For example, recommended timing and/or intervals for Independent Review; reference supporting documents used for Hazard identification or Risk Assessment) |
|  |
|  |
|  |
|  |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Date: (yy/mm/dd) |  | Signature |