

INSPECTION, MONITORING AND FOLLOW-UP

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8.0 INSPECTION, MONITORING AND FOLLOW-UP

This section describes the practices and programs EOG has developed to ensure that the recommended protection measures and commitments made in the EA are implemented throughout the construction and operation phases of the EOG Project.

8.1 Environmental Policy and Compliance

EOG has an Environmental Policy in place, which applies to all phases of EOG's work. EOG is committed to the implementation of the spirit and intent of the policy in regards to the Project.

Along with EOG's commitment to the implementation of the Environment Policy, EOG has agreed to follow the mitigative measures presented in Sections 6.0 and 7.0 of the EA to minimize the risk of adverse environmental effects associated with the EOG Project. In addition, EOG has agreed to follow protection measures outlined in the EOG Environment, Health & Safety Manual.

8.2 Environmental Protection Planning for Construction

In order to achieve the overall objective of minimizing environmental impact, the site-specific environmental mitigative measures described in Section 6.0 and Section 7.0 of the EA and those developed based on the findings of the supplemental studies will be implemented.

EOG will obtain and adhere to the requirements of all other required federal and provincial permits related to environmental matters as outlined in Section 1.0 of the EA.

8.2.1 Mitigative Measures

Section 6.0 of this EA outline measures that will be taken to avoid or minimize effects on the environment for every phase of the Project's construction which includes surveying; clearing; grading; topsoil salvage; stringing; welding; trenching; lowering-in; backfilling; testing; clean-up and reclamation. Section 7.0 of this EA describes additional mitigative measures to minimize the cumulative effects that may result from the Project. These measures generally adhere to the recommendations and guidelines contained in the Pipeline Associated Water Crossings, 3rd Edition (CAPP *et al.* 2005) water crossing procedures and the requirements of regulatory agencies.

Appendix 6A of the EA is the Construction and Reclamation Plan which consists of details to aid the contractor through a specific phase of pipeline construction (*e.g.*, topsoil salvage or water crossing). These details provide guidance regarding construction right-of-way configuration for that activity (*e.g.*, topsoil salvage) or a view of the activity itself as well as a chronological presentation of the mitigative measures associated with each activity of the specific phase of installation. The details were developed to address site-specific conditions wherever possible.

8.2.2 Contingency Plans

Appendix 6B of the EA includes contingency plans, measures or strategies to address the following conditions should they arise during construction:

- flooding and excessive flow;
- fire;
- wet/thawed soils;
- water in the trench;
- soil handling;
- soil erosion;

- soil/sod pulverization;
- siltation of watercourses;
- accidental spills;
- boring procedures and instream drilling mud release;
- discovery of wildlife species of concern and heritage resources during construction; and
- wildlife encounter contingency plan.

Along with specific protection measures, the contingency plans also outline the circumstances or conditions under which the plan will be implemented and which regulatory agencies will be notified and/or consulted upon implementation of the plan.

8.2.3 Management Plans

EOG will have a Waste Management Plan and an Emergency Response Plan. A Traffic Control Plan will also be developed to minimize the effects of equipment and vehicle traffic associated with pipeline development on native vegetation and watercourse crossings (boring locations).

8.3 Environmental Inspection During Construction

EOG will retain a minimum of one Environmental Inspector, with additional Environmental Inspectors and Resource Specialists when warranted, who will be present onsite when fully-functional construction spreads on the pipelines are at work and during topsoil salvaging activities.

The Environmental Inspector will monitor construction and prepare daily reports of activities and conditions. The environmental issues and the implementation of mitigative measures will be carefully monitored by the Environmental Inspector. If the mitigative measures are not found to be effective, the Environmental Inspector will consult with one or more of the following as required and as appropriate: Chief Inspector; and EOG's Project Engineer. The Environmental Inspector will also be responsible for enforcing compliance with environmental commitments, approvals and permits, recommending additional or alternative mitigative measures, noting potentially adverse environmental effects, identifying site-specific issues, and determining the status of environmental issues following construction of the pipelines. Section 8.4.2 of this EA outlines a more detailed list of the roles and responsibilities of the Environmental Inspector.

8.3.1 Environmental Inspection Program Description

The involvement of a full-time, highly qualified and well-trained Environmental Inspector is a key component of EOG's environmental compliance strategy. The Environmental Inspector will enforce continuous and consistent compliance with the EA, all permit/approval conditions, environmental laws and guidelines, and other environmental commitments. EOG's Project Engineer will be available to the Environmental Inspector for decision-making support and resolution of environmental resource issues arising onsite.

The Environmental Inspector will report directly to the EOG Chief Inspector and indirectly to EOG's Project Engineer. They will be recognized as an integral part of the construction management team. Their role will be well defined within the chain of command. The Environmental Inspector will have crew shut-down authority for environmental reasons. A responsibility of the Environmental Inspector will be to make recommendations to the Chief Inspector with regard to environmental shut down (e.g., wet weather shut-down).

8.3.2 Environmental Inspector Qualifications and Duties

The Environmental Inspector will have a minimum of three years experience in pipeline environmental inspection, preferably in landscapes similar to those within which the pipeline route is located. The Environmental Inspector will have in depth knowledge of pipeline construction techniques and will take a preventative approach rather than a reactive approach to environmental issues. The Environmental Inspector must have a demonstrated positive attitude toward environmental protection and a track record of successful environmental issue resolution resulting in satisfactory resource protection. In addition, the Environmental Inspector will be supported by appropriate Resource Specialists who will be available onsite, when warranted, and have expertise in the particular issues associated with the spread (*i.e.*, soil scientist, botanist, wildlife biologist, archaeologist, reclamation specialist, etc.).

In general, the Environmental Inspector will be responsible for:

- ensuring familiarity with all related environmental documents and decisions, and commitments relating to those documents;
- ensuring that work proceeds in compliance with all environmental commitments contained within the EA, conditions of the approval, as well as other environmental laws, regulations and guidelines that apply to the pipelines;
- working directly with other activity inspectors and contractor supervisory staff to assist in the interpretation and implementation of environmental mitigation and reclamation measures;
- monitoring of activities which could result in potentially adverse environmental effects and overseeing the implementation of mitigative measures specifically intended to minimize those effects;
- proactively identifying new environmental issues that may arise and recommending suitable mitigation;
- assessing the effectiveness of mitigative measures and recommending alternative measures, in consultation with EOG's Project Engineer and, where warranted, with government agencies such as Manitoba Conservation and Manitoba Energy and Mines to achieve the desired result;
- providing advice and recommendations for major decisions, such as courses of action to deal with unexpected environmental conditions, including requiring work stoppage;
- suspending operations where unacceptable situations with serious environmental implications arise (*e.g.*, where fish or fish habitat may be at risk, where plant species of special status or bird nests are encountered or where there is substantial siltation of a watercourse or erosion of soils);
- implementing and ensuring compliance with contingency plans, as required;
- reporting any spills in accordance with provincial regulations, and providing advice with regards to the clean-up and disposal of the material and any affected soils or vegetation;
- coordination and facilitation of any water, soil and biological monitoring or sampling, if required;
- maintaining and documenting liaison with government agencies, as stipulated in permit conditions, as well as responding to any noncompliance issues raised by the agencies;
- participating in ongoing liaison with other stakeholders when warranted;
- preparing daily reports and keeping other records (*e.g.*, photographic record) with regards to construction activities;
- tracking environmental issues, including noncompliance issues; and
- preparing the Environmental As-Built Report.

8.3.3 Communication and Reporting

The Environmental Inspector will report directly to EOG's Chief Inspector in matters relating to environmental construction and reclamation requirements. Environmental issues and non-compliances, the reasons for the noncompliance, and the measures undertaken for the resolution of each issue and noncompliance will be recorded and tracked in daily reports. Serious non-compliances will be immediately reported to EOG's Project Engineer. If issues remain unresolved following the implementation of remedial measures, the issue and location(s) in question and measures proposed to resolve the issue will be recorded in an Environmental As-Built Report.

8.3.4 Environmental As-Built Report

Following completion of construction, the Environmental Inspector will prepare an Environmental As-Built Report making use of daily reports, photos and records of government liaison. The Environmental As-Built Report will be submitted to EOG's Project Engineer.

The Environmental As-Built Report for each pipeline construction spread will contain the following:

- a project description including what portion of the work was conducted, the construction kick-off and completion dates, and the names of the activity inspectors and other key construction supervisory personnel with whom the Environmental Inspector had regular dealings;
- the general procedures, equipment used and mitigation measures implemented for each activity for which environmental inspection was required;
- the procedures that were implemented in the case of any unforeseen environmental issues that arose, as well as a discussion of the decision making process involved in arriving at those procedures;
- a detailed record of any discussions and decisions made regarding conflicting permit requirements or requests from government agencies;
- a description of problems encountered (e.g., equipment breakdown) which may have been detrimental to the efforts to implement mitigative measures and a discussion of any measures taken to alleviate or counteract those problems;
- a detailed record of any instances where recommendations (e.g., use of a specific type of seeding equipment) could not be implemented and the circumstances and location of the event as well as the decision-making rationale;
- a discussion of specific mitigation techniques and any field adaptations which were used to make the mitigation more effective;
- a record of government and stakeholder liaison;
- a photo record;
- selected Pipeline Construction Plans with hand-written notes pertinent to the Environmental As-Built Report such as areas where extra temporary workspace was taken, sites where a spot spill occurred, where erosion control measures were installed, location of heritage resources or wildlife or plant species at risk discovered during construction, etc.;
- a list of environmental issues and their respective status (*i.e.*, resolved and unresolved); and
- in the case of unresolved issues, the steps EOG proposes to take to resolve those issues.

Any pertinent paperwork such as memos and permit revisions will appear as an appendix to the Environmental As-Built Report.

8.4 Issue Monitoring During Construction

EOG will strive to carry out each component of the Project in an environmentally responsible manner through the assessment of environmental issues, the planning and implementation of mitigative measures as well as contingency plans to address those issues, and the establishment of compliance initiatives such as environmental inspection.

In the event that an unforeseen environmental issue arises during construction for which no mitigative measures have been approved, EOG's Project Engineer and the Environmental Inspector will formulate a plan of action in consultation with the appropriate government agencies. Representatives of Manitoba Conservation or others (where appropriate) will be invited to participate. The plan of action will include measures to both assess and mitigate the environmental impact.

No substantial changes to the mitigative measures as they appear in this EA or regulatory permits will be made without the approval of the appropriate government authorities having jurisdiction.

If the requirements of permits or the direction given by regulators are found to be conflicting, an attempt will be made to resolve the discrepancy or disagreement with available representatives of affected government agencies. The Environmental Inspector will participate in the discussions and record the outcome in the Environmental As-Built Report.

8.5 Post-Construction Monitoring

The Post-Construction Monitoring Program (PCMP) will include an assessment of reclamation, revegetation, erosion control and any weed problem areas along the pipeline right-of-way. Reclamation monitoring involves an assessment of the final clean-up along the right-of-way, which includes: grade restoration; topsoil material replacement; seeding; drainage restoration; debris removal; trench settlement; and slope stability. Revegetation monitoring involves an assessment of the re-establishment of vegetation and success of revegetation as well as the identification of any weed infestations along the right-of-way. Erosion monitoring involves an assessment of the effect of wind and water along the right-of-way as well as the assessment of effectiveness of any erosion control measures implemented during construction.

EOG will commission two post-construction monitoring programs to be conducted during the first and second complete growing seasons following construction. By initiating these programs in years one and two, issues identified and remedial actions taken during the first year can be assessed and any residual outstanding issues can be dealt with during the next year. Any corrective actions taken will be documented. Outstanding right-of-way issues arising after the first two years of construction will be identified through EOG continuous monitoring of all aspects of right-of-way integrity and addressed as warranted.

The purpose of the post-construction monitoring program will be to:

- evaluate the recovery of the areas disturbed during construction of the pipelines;
- assess the status of outstanding environmental issues identified in the Environmental As-Built Report (Section 8.4.4 of this EA);
- identify any new environmental issues that may have arisen; and
- recommend and coordinate the implementation of any remedial measures that are warranted and additional special measures to address any outstanding or new environmental issues.

8.5.1 Reclamation Specialist

Site inspections along the pipeline right-of-way will be conducted by a qualified Reclamation specialist. Additional expertise will be sought to assess other issues that may arise, if necessary (e.g., wildlife

issues). The appropriate specialists will recommend and oversee the implementation of any remedial measures and conduct follow-up site inspections.

8.5.2 Post-Construction Soils Assessment

During the first growing season after construction, soil sampling will be conducted, if warranted, at sites along the pipeline right-of-way identified in the Environmental As-Built as having issues and where reclamation problems are identified through landowner consultation, operation and maintenance reports, or aerial and ground reconnaissance. Observations and measurements to assess reclamation success will be collected and documented.

The number of, and distance between, sample locations along the right-of-way will be determined by the Reclamation Soil Specialist conducting the sampling. It is anticipated that sampling will be more frequent in complex landscapes and less frequent in homogeneous landscapes. Criteria will include, but not be limited to, the following:

- visual indications of potential issues;
- landscape variation;
- changes in construction procedures;
- changes in vegetation species composition; and
- changes in soil moisture.

Where issues are identified through this assessment, every effort will be made to implement mitigative measures as soon as feasible. Issues that cannot be mitigated immediately (for example, subsoil compaction may be identified but soils may be too wet for effective subsoil plowing to be implemented) will be documented in an Environmental Issues Tracking List for mitigation and follow-up monitoring in year two as soon as conditions allow.

8.5.3 Landowner/Government Agency Consultation

EOG and/or their land agent, will initiate a post-construction dialogue with each landowner along the pipeline route during the first and second growing seasons after construction to discuss reclamation progress on their land to date and to address and/or resolve any reclamation problems noted by the landowner.

8.5.4 Vegetation Monitoring

The pipeline right-of-way will be visually inspected by a Reclamation Specialist during the first growing season following construction for vegetation issues such as weed infestations or poor vegetation establishment along the right-of-way. Timing will be in the late summer/early fall when vegetation is mature enough for accurate identification and evaluation. Particular attention will be given to areas of terrain instability that may be prone to erosion. Detailed vegetation assessments will be conducted, if warranted, at sites where reclamation problems are identified. The above process will be continued during the second-year after construction assessment.

8.5.5 Operations and Maintenance Activities

After the first spring and summer following construction, EOG's Operations and Maintenance personnel will monitor the pipeline right-of-way as needed to ensure any issues related to trench subsidence, slope or bank erosion or wind and water erosion of soil are identified early and mitigative measures implemented in a timely basis. Following the second year after construction, routine monitoring by EOG personnel will be continuous for the life of the pipelines.

8.5.6 Documentation and Reporting

The PCMP will document, using the Environmental Issues Tracking List, all environmental issues identified for the pipelines or other Project component. Issues that have been successfully mitigated will be listed as resolved. The Environmental Issues Tracking List will also identify any locations with unresolved environmental issue and the mitigation activities planned by EOG to resolve these issues.

8.5.7 Issue Tracking and Reporting

The status of environmental issues addressed during the PCMP will be tracked through the use of an Environmental Issues Tracking List. This list or database will be updated on an ongoing basis. The Environmental Issues Tracking List will form the basis of a post-construction monitoring report, which will be prepared at the end of the first-year and second year after construction. Issues that are completely resolved will be removed from the list of the following calendar year.

8.6 Company Management Plans

EOG will have an Emergency Response Plan. The plan will include standards and procedures for:

- pre-emergency preparedness including general site security, support equipment and services and Emergency Response Plans and maps;
- emergency response actions including standards for emergency notification, first responder, incident command system safety precautions, site security and control, public relations, wildlife management, waste management, incident records, post-emergency reviews; as well as procedures for decontamination;
- other emergencies including: releases, hazardous material spills, bomb and security threats, medical emergencies, security threat condition levels, natural disasters, radiation sources; and containment, recovery and clean-up of spills in all possible scenarios including: on land, in wetlands and rivers as well as on and under ice, during freeze-up or break-up and in sensitive areas.

8.7 Follow-Up

Monitoring is an integral part of the follow-up program. In addition to the specific mitigative measures provided in Sections 6.0 and 7.0 of this EA, environmental inspection and preparation of an Environmental As-Built Report (Section 8.4 of this EA) to be undertaken as part of compliance monitoring, EOG will conduct a PCMP over a two-year period as described in Section 8.6 of this EA. This program will be used in determining the effectiveness of measures taken to mitigate the adverse environmental effects of the EOG construction program.

No element-specific follow-up programs under the *CEA Act* were deemed warranted for the Project since the mitigation proposed is frequently used and has been proven to be effective.

8.8 References

Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association and Canadian Gas Association. 2005. Pipeline Associated Watercourse Crossings. Prepared by TERA Environmental Consultants and Salmo Consulting Inc. Calgary, Alberta.

Canadian Environmental Assessment Agency. 2002. Operational Policy Statement Follow-up Programs under the *Canadian Environmental Assessment Act*. October 2002 OPS/EPO-6-2002.