



2009 Archaeology Audit Program Final Report

May 2010

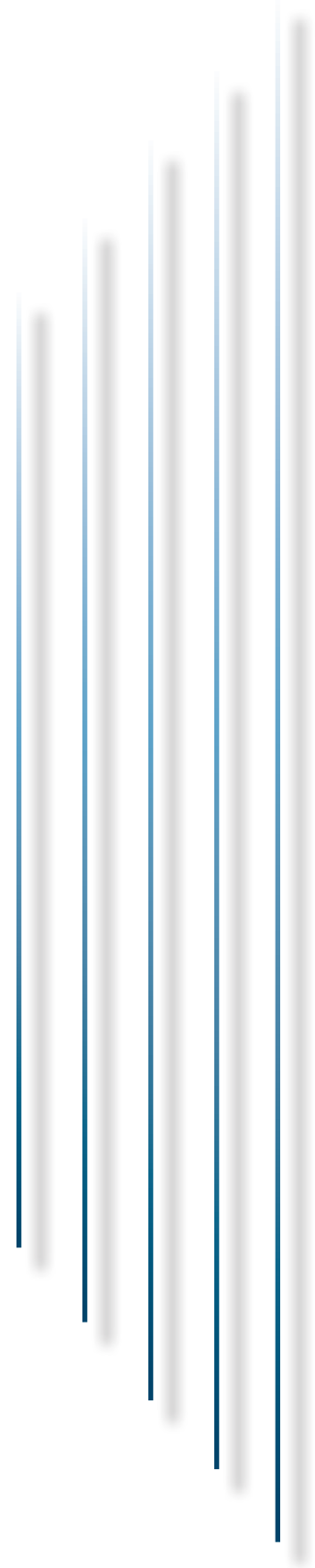


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1 Introduction

In 2008, the BC Oil and Gas Commission (Commission) introduced its annual Archaeology Audit Program (AAP) to review oil and gas companies' archaeology management systems. The review of management systems is performed through annual audits. Participation in the audit is compulsory.

In July of 2009 the second annual AAP audit commenced with 18 oil and gas companies being selected for an office document review and a corresponding field audit. Two of the companies merged just prior to audit and were reported on as a single entity. The 2009 audit results were generally positive. Three audited companies demonstrated proactive and innovative management plans and were afforded a rating of Good Management Practices. Thirteen companies were deemed to have Satisfactory processes and one company received an Opportunity for Improvement rating. It was found that the communications aspect of the management systems for several audited companies could be enhanced to better guard against potential system failure.

Discussions in this report include audit implementation, the process involved in assigning audit ratings, and general audit results. Recommendations for archaeology management system improvement are



Knoll with archaeology site.

provided in the concluding section of the report. Specific results and recommendations for each company participating in the 2009 AAP audit were detailed in individual reports and delivered to participating companies. The AAP facilitates a continual improvement environment for oil and gas companies; future audits will examine previously deficient management systems to determine if recommendations were implemented.

2 Background and Scope

In 2004, the Commission's archaeology review of oil and gas applications moved from a prescriptive process to a performance-based approach, placing responsibility and accountability for complying with policy and legislation such as the *Heritage Conservation Act* (HCA) on oil and gas industry applicants. The performance-based system is described in the BC Oil and Gas Commission Guidelines for the Performance-Based Approach to Archaeological Assessments (Guidelines), which provides direction and instruction to companies applying to develop oil and gas resources in British Columbia. The Commission AAP was created as a necessary component of the performance-based approach to archaeology resource management within the oil and gas sector.



BC Oil and Gas Commission staff inspecting the project areas.

The AAP is not structured to conduct compliance audits. The protocols of the audit are designed to examine oil and gas company management systems for effectiveness in satisfying archaeology requirements as they pertain to regulatory (Commission) and legislated obligations.

The audit is separated into an office component and a field component and consists of interviews of key personnel responsible for the archaeology aspects of application processes and construction activities. The office component is designed to examine general management systems as well as specific document tracking, file retention and report submissions.

Field inspections are file-specific and include an interview with the construction supervisor and a document review. A field inspection is conducted to confirm mitigation recommendations have been implemented on any areas that were identified by permitted archaeologists as having archaeology concerns. Figure 1 is a summary map of locations audited in the field and illustrates the combined field audits for 2008 and 2009.

Table 1 details the type of questions included in each audit module, their objective, and the protocol for execution. Table 2 provides descriptions used to assign a rating to audited archaeology management systems. The rating is based on a combination of results from all sets of questions and management system implementation, which is evaluated through field observations.

The audits are conducted by Commission Heritage Conservation Program staff, and are attended by oil and gas clients (auditees) and First Nations representatives from communities with interest in the audited locations. All First Nations communities were invited to observe the audit process with participation increasing from one community in 2008 to four communities in 2009.

3 Audit Conduct

This audit is a systematic process relying on the principles of independence and objectivity. Specifically, the following principles guide the conduct of this audit and the presentation of audit results:

- Auditors shall act in an ethical manner and make decisions applying due professional care based on evidence obtained during the audit. Auditors will not act outside of their areas of competence and knowledge.
- Auditors will be impartial and independent of the activity that they are auditing, and act without bias or prejudice.
- Confidential information reviewed or obtained during the audit will be held in confidence by the auditors and only included in the audit report where the information is relevant to an audit finding.
- Audit results will be presented in a fair and accurate manner, and will truthfully reflect the audit activity and evidence.

4 Audit Objectives

The AAP has two primary objectives:

1. Ensure that the client management systems are adequate for compliance with legislative and regulatory obligations. This is accomplished by examining relevant documents and by conducting field inspections.
2. Gather baseline data to establish procedures for best management practices for archaeology within the oil and gas sector of British Columbia.

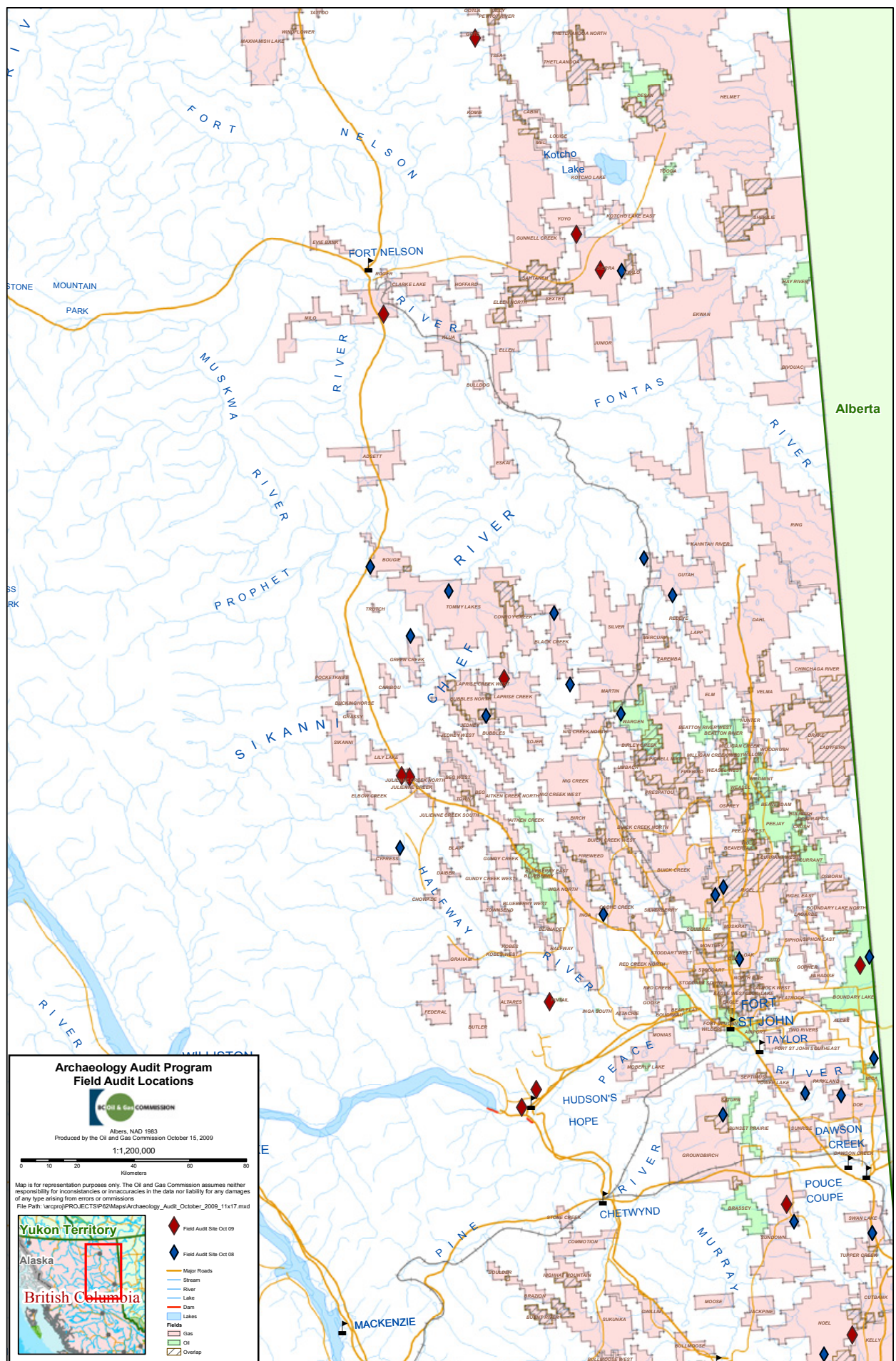


Figure 1: Geographic extent of 2008 and 2009 Field Audits.

Note: While the AAP was not implemented to conduct compliance audits, it is the duty of the audit team to notify Commission enforcement staff of any breaches in legislation or policy, as outlined in section 1.5 of the Guidelines.

5 Audit Sampling and Methodology

The target population for the 2009 archaeology audit program consisted of projects applied for during the 2008 calendar year. This time lag allowed for greater potential of the projects being completed prior to the audit; i.e., the lag provided time from application approval stage to actual construction of the projects. The sample is determined randomly with the probability of selection being directly related to the number of projects applied for that year by an oil and gas client. Future AAP audits will consider past audit results and may exempt applicants that have consistently earned a rating of GMP within the previous several years.

The approvals issued by the Commission in 2008 were divided into non-geophysical and geophysical groups:

- 2,521 unique non-geophysical projects approved in 2008, from a total of 115 applicants.
- Seventy unique geophysical projects were approved in 2008, from a total of 30 applicants.

The sample populations for each group were randomized:

- Ten per cent of applicants from the non-geophysical sample population were drawn for audit; for each company, a sample of 25 per cent of approved projects (to a maximum of five projects) were selected for audit.
- Twenty per cent of applicants from the geophysical sample population were drawn for audit; for each geophysical company, a sample of 50 per cent of that applicant's projects (to a maximum of five projects) were selected for audit.



Tree with 'No Work Zone' flagging visible, demarcating archaeological site boundary.

Eighteen oil and gas companies were randomly selected for the 2009 AAP audits, of which 12 were selected for non-geophysical modules and six were chosen for geophysical modules. Sixty-eight unique developments were selected for the project-specific component of the audit, and 13 developments were selected for field inspection.

Developments selected for field audit were chosen based on risk of impact to archaeological resources or areas assessed as containing archaeological potential. Efforts were made to select projects representing the full geographic extent of oil and gas related development in northeastern B.C. (Figure 1, pg. 7). During the 2009 audit, the field inspections of three developments could not be completed due to adverse road conditions, but interviews of field personnel were conducted off site.

Module Type	Objective	Protocol
General Management System Questions	To ensure that applicants have adequate management and control systems in place	Required to be answered once by applicant / operator during AAP
Archaeological Site Mitigation Questions	To ensure practices and procedures are established to properly address found archaeological resources	Required to be answered once by applicant / operator during AAP
Project-Specific Questions	To ensure required documentation exists on file	Will be required for every project selected
Field Specific / Field Related Questions	To ensure management and control systems are employed	Selected during the audit process, either concurrently or after completion of the documentation and management system reviews

Table 1: Module Protocols

6 Finding Determination Process

The Commission's 2009 archaeology audit was comprised of several modules with each module containing questions used to identify design gaps that may lead to management system failure (Table 1). Each question was pre-assigned an ideal answer established by a team of three Commission archaeologists and a process improvement specialist. These modules were separated into non-geophysical and geophysical projects with questions designed specifically for each group. Specific questions asked during the audit are detailed in Appendix A of the 2009 Archaeology Program Procedure Manual and can be referenced at:

<http://www.ogc.gov.bc.ca/documents/AAP%20Procedure%20Manual.pdf>.

General management system and *archaeological site mitigation process* questions are designed to examine the structure and quality of formal or informal management and control systems utilized by oil and gas operators. The questions target management system principles and controls such as responsibility assignments and tracking of documents.

The project-specific portion of the audit consists of a review of specific files and field inspections of projects containing archaeological concerns. The information gathered during this phase allows the Commission to assess the effectiveness of clients' document controls and archaeological management system implementation.

The information gathered during interviews, document examinations and field inspections is then compared to recommended practices identified by the Commission's archaeology and process improvement staff. Audit findings are then assigned according to the best fit in one of the four categories illustrated in Table 2.

Where weaknesses in management systems are detected, details and recommendations are provided in individual company reports. Proactive and innovative system designs are also identified and referenced during the formation of the Commission's system improvement recommendations.

Finding Category	Description
Good Management Practice (GMP)	Process or practice is considered to be beyond the required process or practice
Satisfactory (S)	Practices are sufficient to deliver compliance with legal and other requirements
Opportunity for Improvement (OI)	Describes an area of potential improvement in management practices or potential weakness in the implementation of controls, such that the auditee may continue to improve their system and their performance
Non-Conformance (NC)	Specific legal or other requirements are not met, or the ability of the company to comply with legal or other requirements is jeopardized

Table 2: Findings Categorization

7 Audit Findings

The rating categorization descriptions for the annual AAP audit results are detailed in Table 2. The 2009 AAP audit results are as follows:

Good Management Practice:	Three companies
Satisfactory performance:	Thirteen companies
Opportunity for Improvement:	One company
Non-Conformance:	No companies

The three companies that exhibited **good management practices** each have archaeology resource management plans in place guiding them successfully through legislative and regulatory requirements.

A common denominator in the success of the three management systems were sound practices for ground crew orientation prior to project commencement. These three companies also have detailed tracking systems that ensure all archaeological requirements have been met.

The 13 companies that maintained **satisfactory** systems displayed a variety of approaches for management of archaeological resources. Most notable was the variation in detail and effort expended on pre-work orientation meetings for construction crews. These companies also exhibited various levels of paper information transfer between office and field staff. A minimal transfer of paper documents was noted for a few auditees.



Flagging marked 'No Work Zone' on area to be avoided during construction.

The rating of **opportunity for improvement** was assigned to one company. In one of the company's developments, ground crews failed to adhere to archaeology site management recommendations. Because no illustrated instructions were present during construction, the site was not avoided according to Commission and archaeologist recommendations. Although the site area was not directly disturbed, a buffer zone was not given to the site. The company has since developed a management plan and checklist that includes additional paper documentation being forwarded to the construction supervisor. Because of remedial action to the management system by the company, the incident is not likely to reoccur.

8 Conclusions and Recommendations

The results from the 2009 audit were generally positive and identified a number of proactive processes within individual company practices. Weaknesses were detected in several companies' management systems, with communications being of the greatest concern. Commission investigations of trespass and accidental archaeology site disturbances have shown that the overwhelming root cause for these incidents is communication issues. The two most frequent deficiencies are found to be a breakdown in information transfer either between the land agent / surface land administrator and the project construction crews or lands staff and their consulting archaeology company.



In the spirit of continual improvement to business practices, the Commission suggests that oil and gas companies review recommendations for improvements to archaeological management systems provided in this summary report and in reports issued to individual companies. The following recommendations were compiled from auditor observations from both the 2008 and 2009 audits and are designed to support information flow and tracking. Implementation of these recommendations will facilitate general system improvements. Some of the suggestions come from individual companies that demonstrated exceptional and detailed approaches to their management systems.

1. There should be an on-site construction supervisor to provide field orientation for ground crews prior to project start-up when archaeologically sensitive areas exist within a development.

2. Specific individuals should be assigned responsibility for ensuring all regulatory and legislated archaeological requirements are met within project developments.
3. Transfer and receipt of required paper documentation to construction crews should be made prior to project commencement. The documents should include archaeology reports and Commission accepted site mitigation strategies if applicable. The Commission issues a letter of acceptance for each archaeology site recovered during the course of an archaeological assessment. Receipt of this acceptance letter is required prior to job start up and should be included with the archaeology report when transferring documents to construction supervisors.
4. Upon receipt of audit selection letter, companies should contact the Commission to discuss scheduling. Participation in the audit is mandatory as the audit is a key process within the performance-based assessment system. Companies cannot remain in a performance-based system without participating in the archaeology audit.
5. Companies should develop a written archaeology resource management plan and formalize standard operating procedures already in use. The management plan should fully address and include the following:
 - Relevant legislative and regulatory requirements.
 - Processes for ensuring the completion of archaeological assessments and the timely submission of archaeological reports to the Commission.
 - Checklists to ensure that all archaeological requirements are completed prior to construction activities.
 - Processes for fulfillment of requirements surrounding archaeological assessment and site avoidance requirements should range from high level planning to individual task assignments.
 - All staff, contractors and land agents should be familiar with the contents of a management plan.
6. Create or refine existing tracking systems to include project status and archaeology report submission dates. Emphasis should be placed on tracking and ensuring information regarding archaeology assessments and site management is accurately and graphically related to field staff.
7. Develop a communication record, summarizing dates and information exchange. A project communication record serves as a valuable reference for project details and transactions. As well, it is the basis for development or improvement of data distribution processes, as the record illustrates where any breakdown in communication may have occurred.

The AAP receives an internal annual review. Processes and procedures used throughout the 2009 audit will be examined and revised prior to commencing the 2010 audit. Clients should expect to



View down pipeline right of way, re-routed to avoid archaeology sites.

see an expanded audit period in 2010 with strict adherence to audit schedules set out in individual selection letters. Additionally, audit questions will be closely reviewed and revised to better capture deficiencies in oil and gas company archaeological management systems. It is anticipated that these changes will provide an enhanced and comprehensive support framework for our clients within a continual improvement context. This will ultimately serve to better protect heritage resources within the oil and gas sector of British Columbia.

