

HISTORICAL RESOURCES OVERVIEW

GRIZZLY OIL SANDS ALGAR LAKE SAGD PROJECT

Prepared For

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On behalf of

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January 2010



January 12, 2010

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Attention: Mr. Dane McCoy

Dear Mr. McCoy:

I am pleased to submit to you this report entitled ***Historical Resources Overview, Grizzly Oil Sands Algar Lake SAGD Project.***

Should you have any questions, please do not hesitate to contact me.

Sincerely yours,
FMA HERITAGE INC.

Jennifer C. Tischer, M.A.
/jt

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INTRODUCTION

At the request of Millennium EMS Solutions Inc., agents for Grizzly Oil Sands, a Historical Resource Overview (HRO) was prepared for the proposed Algar Lake SAGD Project ([Figure 1](#)). The proposed Project is situated within the Regional Municipality of Wood Buffalo, approximately 30 km southwest of Fort McMurray.

OBJECTIVES

The purpose of the HRO is to assess the scope and nature of previous studies and the archaeological potential of the area, in order to make recommendations as to the need for an Historical Resources Impact Assessment (HRIA) for the Project, or for *Historical Resources Act* clearance for the Project to proceed.

PROJECT BACKGROUND

Grizzly Oil Sands proposes to develop and operate a Steam-assisted Gravity Drainage (SAGD) Project with total production of 10,000 to 12,000 bpd. The proposed SAGD Project will be located in portions of Sections 10, 11, 14 and 15, Township 85, Range 11, West 4th Meridian. Associated facilities, including an access road, borrow sources, and a waterline, will run through portions of:

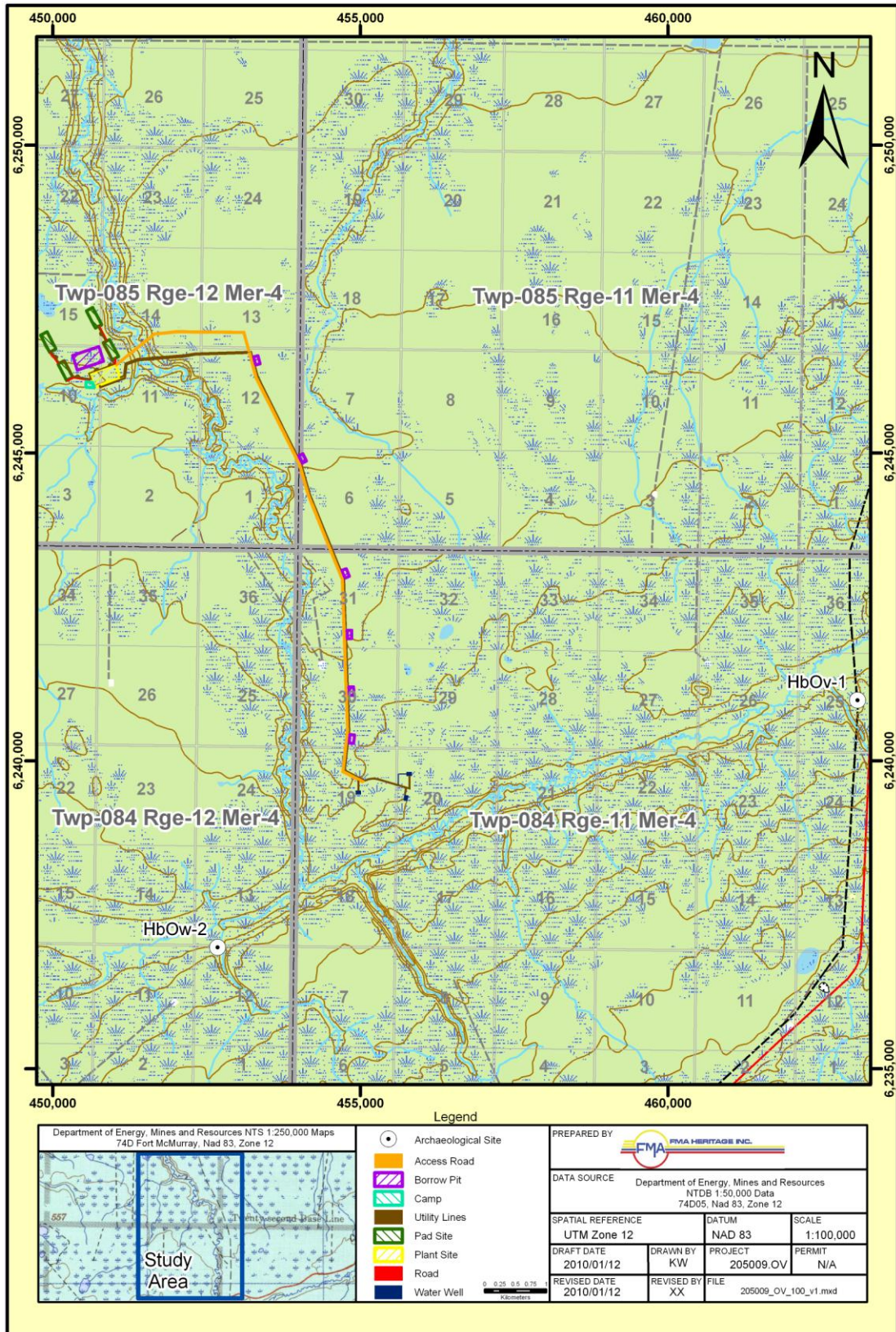


Figure 1 Grizzly Algar Lake Project

- Sections 19, 30 and 31, Township 84, Range 11, West 4th Meridian
- Section 6, Township 85, Range 11, West 4th Meridian
- Sections 1, 11, 12, 13 and 14, Township 85, Range 12, West 4th Meridian

Figure 1 illustrates the project footprint; Table 1 provides the project components and the approximate size of each (ha).

Table 1 Algar Lake SAGD Project components

SAGD Project Component	Size (ha)
Plant Site	10.8
Pad A	3.5
Pad B	3.6
Pad C	3.6
Pad D	3.6
Borrow Pit S1	11.3
Access	2
Camp	1.1
Pipeline	3.7
Subtotal	43.2
Associated Facilities	Ha
Access Road	40.1
Borrow Pit A1	1
Borrow Pit A2	1
Borrow Pit A3	1
Borrow Pit A4	1
Borrow Pit A5	1
Borrow Pit A6	1
Gas line	5.3
Waterline	22.1
WSW (4)	2.3
Subtotal	75.8
TOTAL	118.5

PREVIOUS STUDIES

In 2008, an HRIA was conducted for the Grizzly Algar Lake SAGD Project study area, located in portions of Sections 11, 13, 14, 15, 22, 23 and 24, Township 85, Range 12, West 4th Meridian (Youell 2009). At the time that the HRIA field studies were undertaken, the project footprint had not been finalized; as such, the HRIA was conducted on a larger study area that would encompass the entire project footprint. Prior to initiation of those field studies, a model of archaeological potential was developed, and resulted in a map illustrating the potential for the study area to contain historical resources sites. The model was used to select and target those areas that would require detailed field assessment, including a shovel testing program to identify archaeological sites. Based on the model and based on in-field visual assessment of the terrain by the archaeological field crew, a total of 166 shovel tests were excavated in the areas of highest archaeological potential within the study area.

Overall the terrain was observed to be of lower archaeological potential than reflected in the original model developed. The terrain was generally of low to moderate archaeological potential based on the relatively low relief of the terrain, the limited relief along watercourses, and the overall saturated nature of the terrain. However, smaller areas of moderate to high potential were also observed. No archaeological sites were identified during the HRIA studies of targeted landforms within the study area.

Subsequent to completion of the field studies, the model of archaeological potential was revised to better reflect the overall low archaeological potential observed during field studies. The final HRIA report was submitted to ACCS in July 2009; in the report *Historical Resources Act* clearance was requested for the entire study area defined for the project. To date, no documentation has been issued by the Alberta Culture and Community Spirit (ACCS) Land Use Planning section regarding *Historical Resources Act* clearance.

METHODOLOGY

In order to meet the objectives of the HRO, the following tasks were conducted: 1) updated site file search, 2) updated model of archaeological potential, 3) a limited literature review, and 4) evaluation of archaeological potential and formulation of recommendations.

For the updated site file search, data on file at ACCS was acquired and reviewed to determine the number and nature of previously recorded sites in the general area. The *Listing of Historical Resources* (September 2009 Edition) was also consulted.

A revised model of archaeological potential was developed for the project footprint, including SAGD Project area and the associated facilities. The model was based on the updated ecosite data provided by MEMS as well as existing data (distance to watercourses, slope, and aspect). The updated model developed for this HRO also incorporated the final model presented in the 2008 HRIA, which was revised based on the field observations of the archaeological crew during the 2008 studies.

Subsequent to completion of the site file search and development of an updated model, some literature review was completed to provide the archaeological and historical context for the area and to determine whether significant and/or sensitive historical sites may be present in the Project area. Review of the 2008 Algar Lake SAGD HRIA report (Youell 2008) was the main focus of the review. NTS maps and aerial photography were also reviewed to provide information regarding current land use and terrain features in the study area.

The site file search, literature review, mapped data and model of archaeological potential were used to assign archaeological potential to the terrain associated with the proposed SAGD and associated facilities, and to determine assessment coverage of previous studies. Subsequently, recommendations were formulated as to the need for an HRIA, or for *Historical Resources Act* clearance for the Project to proceed.

RESULTS

SITE FILE SEARCH

The site file search revealed that the proposed Project lies within Archaeological Borden Blocks HbOw and HcOw. Two precontact sites have been recorded within Borden Block HbOw, and none have been recorded in Borden Block HcOw. Just two precontact period sites are on record within the four Townships that encompass the project. Site HbOw 2 is a precontact lithic scatter identified in seven positive shovel tests; the site is undisturbed and has moderate to high heritage value. Site HbOv 1 is a precontact lithic scatter identified in the disturbed deposits of an existing pipeline; this site has low heritage value. These sites are illustrated in [Figure 1](#); both sites are located over two km from the Grizzly project. No historic period sites are on record within proximity of the project.

The most recent *Listing of Historical Resources* (September 2009 edition) lists no sections with Historical Resource Values (HRV) within Townships 84 and 85, Ranges 11 and 12, West of the 4th Meridian. Section 12, Township 84, Range 12, West 4th Meridain, which contains Site HbOw-2 (recorded relatively recently, in fall 2009), will likely be added to the next edition of the *Listing of Historical Resources* (March 2010), as the site will require additional study prior to any impact. The lack of any sections on the current *Listing of Historical Resources* within proximity of the Project is due partially to the limited number of previous historical resources studies conducted in the area, and due partially to the overall low archaeological potential of the area.

UPDATED MODEL OF ARCHAEOLOGICAL POTENTIAL

The map created using the updated model of archaeological potential is presented in [Figure 2](#). The figure illustrates that the overall archaeological potential of the area is low; small areas of moderate to high potential are present, however, reflecting better elevation and drainage, and proximity to watercourses. The project footprint lies almost entirely in areas deemed to be of low archaeological potential, but small areas of low to moderate, moderate and moderate to high potential are present.

LITERATURE SEARCH

PREVIOUS STUDIES

In 2008, an HRIA was conducted for a study area surrounding the proposed location of the Grizzly Algar Lake SAGD Project (Youell 2009). During that assessment, targeted areas of moderate to high archaeological potential within the study area were assessed based on a model of archaeological potential and based on in-field observations. Ground inspection was undertaken and 166 shovel tests were excavated in these target areas. During that study, no historical resource sites were identified associated with the Grizzly Algar Lake SAGD study area; *Historical Resources Act* clearance was requested for the Grizzly study area as defined during the 2008-191 study. The study area assessed with an HRIA in 2008 is illustrated in [Figure 3](#) along with the shovel tests conducted under that permit. The current project footprint is also illustrated.

ARCHAEOLOGICAL OVERVIEW

The proposed Algar Lake Project lies within the boreal forest culture area; cultural materials from the southern boreal forest share characteristics with the northern plains as well as with the northwestern boreal forest and the adjacent barrenlands to the northeast. Consistencies in cultural materials and dates in these areas bear witness to the movements and cultural influences between these zones through time.

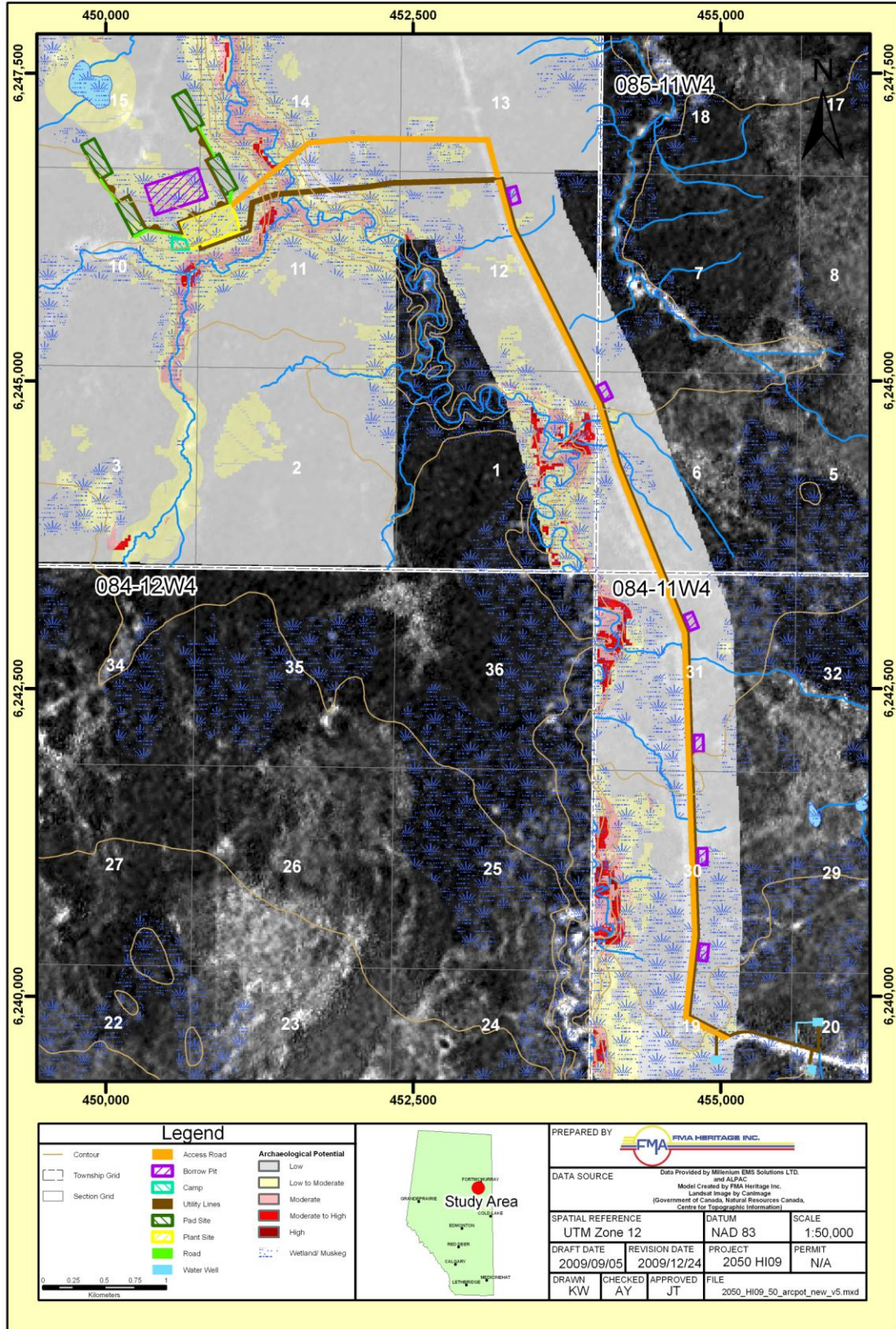


Figure 2 Archaeological potential of the Grizzly Algar Lake SAGD Project

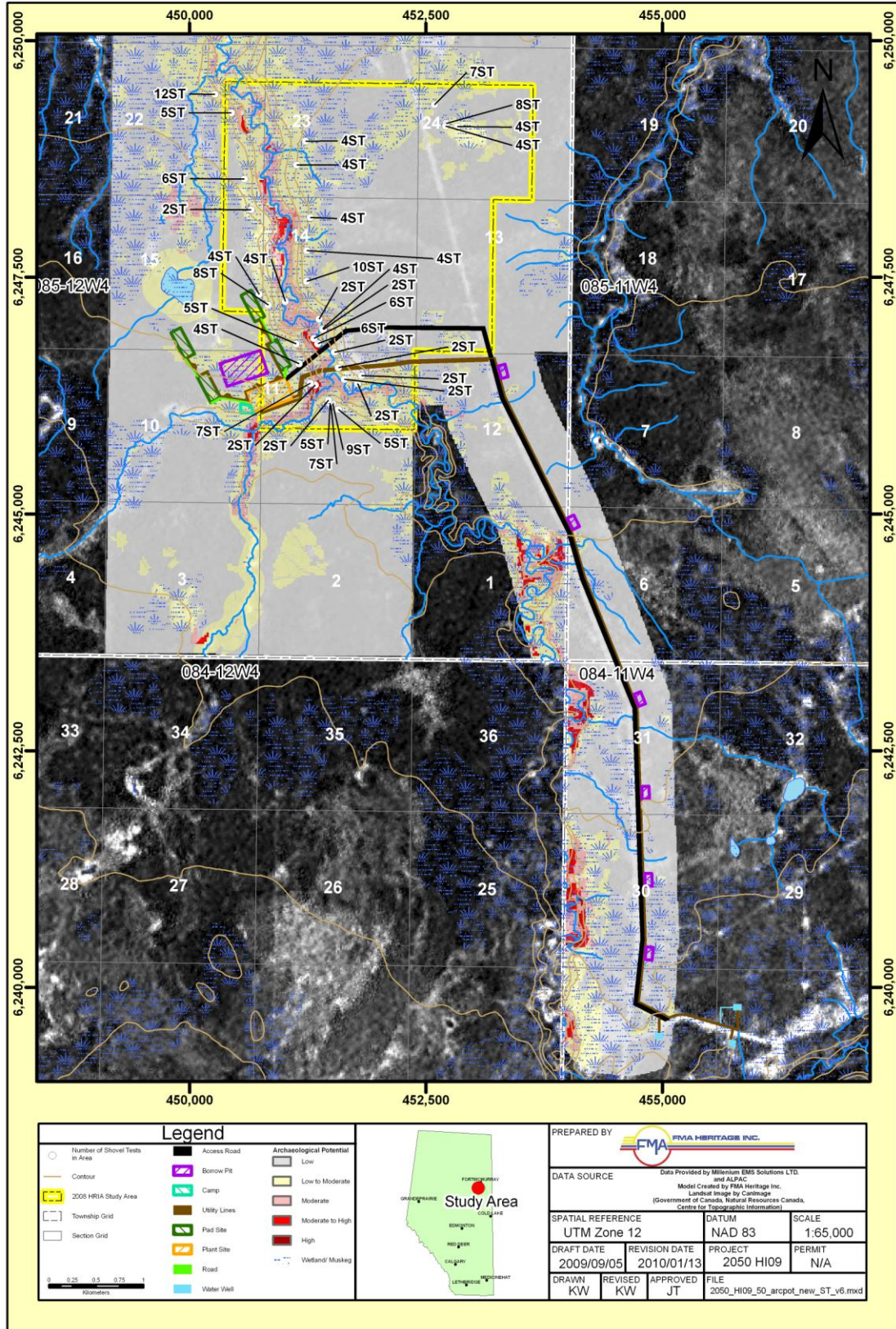


Figure 3 2008 study area and shovel tests, and the current Project footprint

Although numerous studies have been undertaken to the northeast of the study area in the Athabasca Oil Sands region north of Fort McMurray, the cultural chronologies that have been established for that area are not anticipated to be similar to the Grizzly study area due to the differing resource base between these two areas. Very few studies have taken place within north-central Alberta in which the Project is situated, and the studies that have been undertaken have generally been small in scale. As such, little is known about the precontact cultural sequences of this region.

In general in Alberta, the cultural sequence of the precontact era is segmented into three periods: the Early Period, the Middle Period, and the Late Period. The boundaries between these periods are recognized by changes in trends in projectile point styles, as well as other technological innovations of introductions and general economic orientations. Although this model is used by archaeologists mainly for the Plains area, it is often extended to the Subarctic cultural region to the north.

EVALUATION OF ARCHAEOLOGICAL POTENTIAL

During the 2008 HRIA of the Algar Lake SAGD study area, 166 shovel tests were excavated in the areas of best archaeological potential (Figure 3). Based on the negative results, and based on in-field observations, the model of archaeological potential was revised to better reflect the overall low archaeological potential of the area. The revised model was presented in the HRIA report and is reflected in this HRO.

SAGD PROJECT

Figures 2 and 3 illustrate the overall archaeological potential for the currently proposed project footprint. Relative to the SAGD footprint, those areas of highest potential lie along the creeks to the east and south of the project footprint; these areas were targeted for assessment in the 2008 HRIA of the study area; no historical resources sites were recorded. However, portions of the revised SAGD footprint fall within the low to moderate rating for archaeological potential (shaded yellow in Figures 2 and 3), but were not assessed in 2008. Similar areas (as reflected in the model) were deemed suitable for shovel testing during the 2008 HRIA of the SAGD

area (see [Figure 3](#)) and are well drained and suitable for habitation. The presence of a proposed borrow source location is also suggestive of well drained terrain. In addition, the footprint is located near a confluence of creeks; this factor is also reflective of increased archaeological potential, but is not incorporated into the model methodology. Based on these criteria, there is potential for archaeological sites to be present within the revised SAGD footprint.

ASSOCIATED FACILITIES

The access road was not assessed during the 2008 studies. Recommendations formulated in the 2008 HRIA report for the SAGD Project were for an HRIA of areas of moderate to high archaeological potential along the access road.

[Figures 2](#) and [3](#) illustrate that the archaeological potential along the access road and associated facilities is overall low. Small areas of low to moderate potential (shaded yellow in the [Figures 2](#) and [3](#)) are present at the southern end of the road in section 19, Township 84, Range 11, West 4th Meridian, at an unnamed drainage in Section 6, Township 85, Range 11, West 4th Meridian, and approaching the SAGD footprint in Section 11, Township 85, Range 12, West 4th Meridian. Although these areas are of low to moderate potential, similar areas were deemed suitable for shovel testing during the 2008 HRIA of the SAGD area (see [Figure 3](#)) and are well drained and suitable for habitation. In addition, small areas of moderate potential that are not reflected in the model map due to the scale of the map and the scale of the data sets may also be present. Borrow sources are also typically placed on areas of better elevation which are more likely to contain archaeological sites than the surrounding terrain. Finally, the recent identification of a significant site in the general area (site HhOw-2, located approximately two km from the Grizzly access road footprint) indicates that this general area does contain significant sites, although the distribution of such sites may be sparse. As such, there is potential for archaeological sites to be present within the associated facilities.

HISTORICAL RESOURCE RECOMMENDATIONS

Based on the potential for archaeological sites to be present within the revised SAGD footprint and within the associated facilities footprint, it is recommended that an HRIA of the project footprint be undertaken, focusing on areas with moderate potential. Areas that were previously assessed during the 2008 HRIA studies are not recommended for further assessment.

References Cited

- Youell, A. J.
2008 *Historical Resources Impact Assessment Grizzly Oil Sands Algar Lake SAGD Project Final Report, Permit 2008-191.* Consultant's report prepared by FMA Heritage Inc. for Millenium EMS Solutions on behalf of Grizzly Oil Sands. Report on file, Historic Resources Management Branch, ACCS.