Appendix 6

Existing Approvals

A. Algar

1) EPEA Approval No. 240008-00-00
2) EPEA Amended Approval No. 240008-00-01
3) ERCB Licence No. F40209
4) ERCB Approval No. 11253
5) ERCB Approval No. 11253A
6) AUC Decision Report No. 2010-094
7) Water Act Licence No. 262807-00-00
8) Water Act Amendment No. 262807-00-01
9) Water Act Licence No. as Amended 00262534-00-00
10) Water Act Licence as Amended No. 00240527-00-00

B. Great Divide

1) EPEA Approval No. 223216-00-00
2) EPEA Amended Approval No. 223219-00-01
3) EPEA Consent to Transfer Approval No. 00223216-00-00
4) EPEA Amended Approval No. 00223216-00-03
5) EPEA Amended Approval No. 223216-00-04
6) AEUB Approval No. 10587
7) Water Act Licence No. 240458-01-00

Alberta Environment

APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 240008-00-00

APPLICATION NO. 001-240008

EFFECTIVE DATE: October 10, 2008

EXPIRY DATE: September 30, 2018

APPROVAL HOLDER: Connacher Oil and Gas Limited

ACTIVITY: **CONSTRUCTION, OPERATION AND RECLAMATION OF THE**

ALGAR SAGD pilot enhanced recovery in-situ oil sands or heavy oil processing plant

IS SUBJECT TO THE ATTACHED TERMS AND CONDITIONS.

Designated Director under the Act Ken Singh

Date Signed October 10, 2008

TERMS AND CONDITIONS ATTACHED TO APPROVAL

PART 1: DEFINITIONS

SECTION 1.1: DEFINITIONS

1.1.1 All definitions from the Act and the regulations apply except where expressly defined in this approval.

1.1.2 In all PARTS of this approval:

(a) "Act" means the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c.E-12, as amended;

(b) "affected lands" means lands which have received substances released from the plant;

(c) "air contaminant" means any solid, liquid or gas or combination of any of them in the atmosphere resulting directly or indirectly from human activities;

(d) "annulus gas" means gas from the annulus of the oil and gas well casing;

(e) "application" means the written submissions to the Director in respect of application number 001-240008 and any subsequent applications for amendments of approval number 240008-00-00;

(f) "CEM" means continuous emissions monitor;

(g) "CEMS Code" means the *Continuous Emission Monitoring System Code*, Alberta Environment, 1998, as amended;

(h) “central processing facility” means those buildings, structures, pollution abatement equipment, process and storage facilities and land use in and for the production of bitumen or heavy oil;

(i) "chemical" means any substance that is added or used as part of the treatment process;

(j) "commencing operation" means to start up the plant, process unit or equipment for the first time with the introduction of feed material, electrical or thermal energy and the simultaneous production of products for which the plant, process unit or equipment was designed excluding predetermined period of commissioning or testing;

(k) "day" means any sampling period of 24 consecutive hours unless otherwise specified;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(l) "decommissioning" means the dismantling and decontamination of a plant undertaken subsequent to the termination or abandonment of any activity or any part of any activity regulated under the Act;

(m) "decontamination" means the treatment or removal of substances from the plant and affected lands;

(n) “deep organic soil ” means soil with surface organic horizons that are greater than 40cm in depth;

(o) “direct placement” means a reclamation procedure where topsoil is replaced on disturbed land that is undergoing successive reclamation, within one year of salvage;

(p) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(q) "dismantling" means the removal of buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, railways, roadways, pipelines and any other installations that are being or have been used or held for or in connection with the plant;

(r) "disturbed land” means any land disturbed by the approval holder in any manner in association with the activity which is the subject of this approval;

(s) “effluent stream” means any substance in a gaseous medium released by or from a plant;

(t) "estimate" means a technical evaluation based on the sources contributing to the release, including, but not limited to, pump capabilities, water meters, and batch release volumes;

(u) "fugitive emissions" means emissions of substances to the atmosphere other than ozone depleting substances, originating from a plant source other than a flue, vent, or stack but does not include sources which may occur due to breaks or ruptures in process equipment;

(v) "Fugitive VOC Emissions Code" means the Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks, CCME-EPC-73E, as amended;

(w) "grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled;

(x) “grade” means the rise or fall of the land surface over a specified distance, measured in the same units;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(y) "industrial runoff" means precipitation that falls on or traverses the plant developed area;

(z) "industrial runoff control system" means the parts of the plant that collect, store or treat industrial runoff from the plant;

(aa) "industrial wastewater" means the composite of liquid wastes and water-carried wastes, any portion of which results from any industrial process carried on at the plant;

(bb) "industrial wastewater control system" means the parts of the plant that collect, store or treat industrial wastewater;

(cc) “ISO 17025” means the international standard, developed and published by International Organization for Standardization (ISO), specifying management and technical requirements for laboratories;

(dd) “land reclamation” means the stabilization, contouring, maintenance, conditioning, reconstruction, and revegetation of the surface of the land to a state that permanently returns the plant to a land capability equivalent to its predisturbed state;

(ee) “local study area” means the wildlife local study area described in the application;

(ff) "manual stack survey" means a survey conducted in accordance with the *Alberta Stack Sampling Code*, Alberta Environment, 1995, as amended;

(gg) "monitoring system" means all equipment used for sampling, conditioning, analyzing or recording data in respect of any parameter listed or referred to in this approval including equipment used for continuous monitoring;

(hh) "month" means calendar month;

(ii) "net or lower heating value" means the quantity of heat evolved on complete combustion where the combustion products remain as vapour at 15°C;

(jj) "pad materials" means all geotextile and fill materials used to construct plant facilities;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(kk) "plant" means all buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, roadways, pipelines and other installations, and includes the land, located on North ½ of Section 18, and Southeast ¼ of Section 19, Township 82, Range11, West of the 4th Meridian that is being or has been used or held for or in connection with the ALGAR SAGD enhanced recovery in-situ oilsands or heavy oil processing plant;

(ll) "plant developed area" means the areas of the plant used for the storage, treatment, processing, transport, or handling of raw material, intermediate product, by-product, finished product, process chemicals, or waste material;

(mm) "produced gas" means all gas associated with the production and treatment of oil or bitumen including, but not limited to, gas liberated at storage tanks, heaters, treaters, produced water facilities;

(nn) "QA/QC" means quality assurance and quality control;

(oo) "regulations" means the regulations issued pursuant to the Act, as amended;

(pp) "representative grab sample" means a sample consisting of equal volume portions of water collected from at least four sites between 0.20-0.30 metres below the water surface within a pond;

(qq) “self-sustaining” means able to support various land uses after conservation and reclamation is complete without requiring the application of fertilizers or any other special treatment;

(rr) “shallow organic soil” means soil with surface organic horizons that are less than 40cm in depth;

(ss) "soil" means mineral or organic earthen materials that can, have, or are being altered by weathering, biological processes, or human activity;

(tt) "subsoil" means B horizons as defined in *Canadian System of Soil Classification*, 3rd Edition, 1998, and rated as good, fair or poor as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, 1987;

(uu) "tank" means a stationary device, designed to contain an accumulation of a substance, which is constructed primarily of non-earthen materials that provide structural support including wood, concrete, steel, and plastic;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(vv) "topsoil" means the undisturbed soil profile made up of the following, when present:

(i) all organic horizons as defined in the *Canadian System of Soil Classification*, 3rd Edition, 1998; and

(ii) A horizons as defined in *Canadian System of Soil Classification*, 3rd Edition, 1998, and rated as good, fair or poor as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, 1987;

(ww) "volume estimate" means a technical evaluation based on the sources contributing to the release, including, but not limited to, pump capabilities, water meters, and batch release volumes;

(xx) "weeds" means weeds defined as controlled, nuisance or noxious by the Weed Control Act, 1980, as amended;

(yy) "week" means any consecutive 7-day period unless otherwise specified;

(zz) “well pad” means those wells, pumps, buildings, structures, pollution abatement, process and storage facilities and land used in and for the production of bitumen; and

(aaa) “year” means calendar year, unless otherwise specified.

PART 2: GENERAL

SECTION 2.1: GENERAL

2.1.1 The approval holder shall immediately report to the Director by telephone any contravention of the terms and conditions of this approval at 1-780-422-4505.

2.1.2 The approval holder shall submit a written report to the Director within 7 days of the reporting pursuant to 2.1.1.

2.1.3 The terms and conditions of this approval are severable. If any term or condition of this approval or the application of any term or condition is held invalid, the application of such term or condition to other circumstances and the remainder of this approval shall not be affected thereby.

2.1.4 The approval holder shall immediately notify the Director in writing if any of the following events occurs:

(a) the approval holder is served with a petition into bankruptcy;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(b) the approval holder files an assignment in bankruptcy or Notice of Intent to make a proposal;

(c) a receiver or receiver-manager is appointed;

(d) an application for protection from creditors is filed for the benefit of the approval holder under any creditor protection legislation; or

(e) any of the assets which are the subject matter of this approval are seized for any reason.

2.1.5 If the approval holder monitors for any substances or parameters which are the subject of operational limits as set out in this approval more frequently than is required and using procedures authorized in this approval, then the approval holder shall provide the results of such monitoring as an addendum to the reports required by this approval.

2.1.6 All abbreviations used in this approval follow those given in *Standard Methods for the Examination of Water and Wastewater* published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation, 1998, as amended, unless otherwise specified in this approval.

SECTION 2.2: RECORD KEEPING

2.2.1 The approval holder shall record and retain all the following information in respect of any sampling conducted or analyses performed in accordance with this approval for a minimum of ten years, unless otherwise authorized in writing by the Director:

(a) the place, date and time of sampling;

(b) the dates the analyses were performed;

(c) the analytical techniques, methods or procedures used in the analyses;

(d) the names of the persons who collected and analyzed each sample; and

(e) the results of the analyses.

SECTION 2.3: ANALYTICAL REQUIREMENTS

2.3.1 With respect to any sample required to be taken pursuant to this approval, the approval holder shall ensure that:

(a) collection;

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(b) preservation;

(c) storage;

(d) handling; and

(e) analysis;

shall be conducted in accordance with the following unless otherwise authorized in writing by the Director:

(i) for air monitoring;

(A) the *Alberta Stack Sampling Code,* Alberta Environment, 1995, as amended;

(B) the *Methods Manual for Chemical Analysis of Atmospheric Pollutants*, Alberta Environment, 1993, as amended;

(C) the *Air Monitoring Directive*, Alberta Environment, 1989, as amended; and

(D) the *CEMS Code*;

(ii) for industrial wastewater, industrial runoff, groundwater and domestic wastewater parameters:

(A) the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended;

(iii) for waterworks parameters:

(A) the *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, American Water Works Association and the Water Environment Federation, 1998, as amended; and,

(B) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1, as amended;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(iv) for soil samples:

(A) *Soil Sampling and Methods of Analysis*, Lewis Publishers, 1993, as amended;

(B) the *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, USEPA, SW-846; September 1986, as amended;

(C) the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, as amended;

(D) the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volume I: Main Report*, CCME EPC-NCS62E, 1993, as amended; and

(E) the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volume II: Analytical Method Summaries*, CCME EPC-NCS66E, 1993, as amended;

2.3.2 The approval holder shall analyze all samples that are required to be obtained by this approval in a laboratory accredited pursuant to ISO 17025, as amended, for the specific parameter(s) to be analyzed, unless otherwise authorized in writing by the Director.

2.3.3 The term sample as used in clause 2.3.2 does not include samples directed to continuous monitoring equipment, until specifically required in writing by the Director.

2.3.4 The approval holder shall comply with the terms and conditions of any written authorization issued by the Director under 2.3.2.

SECTION 2.4: OTHER

2.4.1 All tanks shall conform to the *Guideline for Secondary Containment for Above Ground Storage Tanks,* Alberta Environment, 1997, as amended, unless otherwise authorized in writing by the Director.

2.4.2 All aboveground storage tanks containing liquid hydrocarbons or organic compounds shall conform to the *Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks*, CCME-EPC-87-E, as amended.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

PART 3: CONSTRUCTION

SECTION 3.1: GENERAL

3.1.1 If construction of the plant as described in application 001-240008 has not commenced by September 30, 2009, or as otherwise specified in this approval, the approval holder shall apply for an amendment to this approval unless otherwise authorized in writing by the Director.

3.1.2 The approval holder shall notify the Director in writing at least 14 days before commencing operations of the plant.

3.1.3 The approval holder shall construct the plant as described in the application and shall include, at a minimum, all of the following:

(a) steam generation;

(b) production (bitumen, water and gas) treating;

(c) water treatment and disposal; and

(d) associated facilities;

unless otherwise authorized in writing by the Director.

SECTION 3.2: AIR

3.2.1 The approval holder shall construct all stacks according to the following height requirements as prescribed in TABLE 3.2-A, unless otherwise authorized in writing by the Director.

TABLE 3.2-A: STACK HEIGHTS

STACK	MINIMUM HEIGHT ABOVE GRADE (metres)
The two 73.2 MW Steam Generator Exhaust Stacks	30.0
The 2.94 MW Utility Boiler Exhaust Stack	8.5
The 2.61 MW Glycol Heater Exhaust Stack	8.2
The 823 kW Crystallizer Exhaust Stack	13.7
The Central Processing Facility Flare Stack	39.0

TERMS AND CONDITIONS ATTACHED TO APPROVAL

3.2.2 The approval holder shall install, at a minimum, the following systems on the central processing facility flare stack:

(a) wind guard;

(b) a continuously burning pilot light; and

(c) an electric (or equivalent) igniter;

unless an equivalent system is authorized in writing by the Director.

3.2.3 The approval holder shall design and construct all boilers at the plant to meet the requirements prescribed in the *National Emission Guideline for Commercial/Industrial Boilers and Heaters,* CCME-PN 1286, as amended, unless otherwise authorized or specified in writing by the Director.

MONITORING EQUIPMENT

3.2.4 The approval holder shall install, at a minimum, all of the following monitoring equipment, unless otherwise authorized in writing by the Director:

(a) a minimum of 4 passive exposure stations for measurement of hydrogen sulphide (H_2S) and total sulphation levels; and

(b) one ambient air quality monitoring station for measurement of nitrogen dioxide, sulphur dioxide, hydrogen sulphide, total hydrocarbons, wind speed, and wind direction.

3.2.5 The following stack(s) shall be equipped with sampling facilities:

(a) the two 73.2 MW steam generator exhaust stacks.

3.2.6 The sampling facilities required by 3.2.5 shall, at a minimum, be:

(a) installed;

(b) operated; and

(c) maintained;

to comply with:

(i) the *Alberta Stack Sampling Code,* Alberta Environment, 1995, as amended*;*

(ii) the *CEMS Code*; and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(iii) the *Air Monitoring Directive*, Alberta Environment, 1989, as amended.

SECTION 3.3: INDUSTRIAL WASTEWATER

3.3.1 The approval holder shall construct the plant according to the application and shall include, at a minimum, all of the following:

(a) the industrial runoff control system at the central processing facility which shall include, at a minimum, all of the following:

(i) a stormwater runoff pond which is sized to contain a 1 in 10 year, 24 hour precipitation event lined with a permeability of no greater than 1×10^{-6} cm/sec;

(b) the industrial wastewater control system at the central processing facility which shall include, at a minimum, all of the following:

(i) an evaporator system; and

(ii) a crystallizer system;

(c) incorporate in the design of the plant, equipment and operational procedures as described in the application for the minimization and recovery of spills of process wastewater and process liquids;

(d) above ground storage tanks in accordance with *Alberta Energy Resources Conservation Board (ERCB) Directive 055 Storage Requirements for the Upstream Petroleum Industry*, as amended;

(e) spill collection boxes at the hose connection point of any new liquid load-out or off-loading areas; and

(f) spill collection boxes shall have a cover and shall be positioned such that each of its sides and bottom can be visually inspected.

SECTION 3.4: WASTE MANAGEMENT

Not used at this time.

SECTION 3.5: DOMESTIC WASTEWATER

Not used at this time.

SECTION 3.6: WATERWORKS

Not used at this time.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 3.7: LAND CONSERVATION

3.7.1 The approval holder shall salvage merchantable timber as directed in writing by the Inspector.

3.7.2 The approval holder shall dispose of woody debris as directed in writing by the Inspector.

3.7.3 The approval holder shall not conduct tree and brush clearing activities between May 1st and August 15th annually, to protect nesting migratory birds, unless authorized in writing by the Inspector.

3.7.4 The approval holder shall salvage topsoil as follows, unless otherwise authorized in writing by the Director:

(a) on mineral and shallow organic soil areas, the approval holder shall salvage all topsoil;

(b) on areas of deep organic soil where pad materials will be left in place during final land reclamation, the approval holder shall:

(i) salvage topsoil to a minimum depth of 40 cm; or

(ii) provide to the Director for his authorization, an alternative plan for obtaining topsoil materials for the reclamation; and

(c) on areas of deep organic soil where pad materials will be removed during final land reclamation, the approval holder shall not salvage topsoil.

3.7.5 The approval holder shall conduct direct placement of salvaged topsoil on contoured portions of the disturbed land whenever possible.

3.7.6 The approval holder shall salvage, separately from topsoil, all subsoil from the central processing facility site to a maximum thickness of 30 cm, unless otherwise authorized in writing by the Director.

3.7.7 The approval holder shall stockpile salvaged topsoil and subsoil and the stockpiles shall be constructed as follows:

(a) topsoil and subsoil shall be stockpiled separately from each other and from other materials;

(b) stockpile foundations must be stable;

(c) stockpiles shall be stabilized to control water and wind erosion;

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(d) stockpiles shall be accessible and retrievable;

(e) stockpiles shall be revegetated and controlled for weeds; and

(f) stockpiles shall include signage that indicates, at a minimum, the type of reclamation material in the stockpile.

3.7.8 The approval holder shall immediately suspend topsoil and subsoil salvage when:

(a) wet or frozen field conditions will result in the degradation of topsoil or subsoil quality; unless otherwise authorized in writing by an Inspector; or

(b) high wind velocities, any other field conditions or operations will result in the degradation of topsoil or subsoil quality or loss of topsoil or subsoil; unless otherwise authorized in writing by an Inspector; or

(c) directed to do so in writing by an Inspector.

3.7.9 The approval holder shall only recommence topsoil or subsoil salvage when suspended under 3.7.8 if:

(a) field conditions referred to in 3.7.8 no longer exist; or

(b) directed in writing by an Inspector.

3.7.10 The approval holder shall ensure that drainage control measures are in place to minimize erosion and sedimentation on disturbed land and adjacent land.

3.7.11 Unless otherwise authorized in writing by the Director, at least 6 months prior to any land disturbance, the approval holder shall provide the following to the Director for his authorization:

(a) a detailed Development Plan illustrating the locations of all facilities proposed for construction, including central processing facility sites, access roads, borrow pits and any other infrastructures;

(b) a detailed pre-disturbance assessment that includes:

(i) soil;

(ii) topography;

(iii) vegetation, including rare plants and wetlands;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(c) a classification of pre-disturbance conditions for affected lands using *Land Capability Classification for Forest Ecosystems in the Oil Sands Region, 3rd Edition,* Alberta Environment, 2006, as amended; and

(d) a detailed site-specific Conservation and Reclamation Plan.

3.7.12 The approval holder shall implement the plans referred to in 3.7.11 as authorized in writing by the Director.

SECTION 3.8:WILDLIFE

3.8.1 The approval holder shall submit a Caribou Protection Plan to the Director prior to infrastructure construction or by October 15th of each year, unless otherwise authorized in writing by the Director, that is consistent with the *Strategic Plan and Industrial Guidelines for Caribou Range in Northern Alberta*, Boreal Caribou Committee, September 2001, and associated approved *East Side Athabasca Caribou Range Plan*, as amended.

3.8.2 The approval holder shall conduct construction activities only as outlined in the most current Caribou Protection Plan and as provided for in the *Strategic Plan and Industrial Guidelines for Caribou Range in Northern Alberta*, Boreal Caribou Committee, September 2001, and associated approved *East Side Athabasca River Caribou Range Plan*, as amended.

3.8.3 The approval holder shall submit a Wildlife Mitigation Plan to the Director by December 31, 2008, unless otherwise authorized in writing by the Director.

3.8.4 The focus of the Wildlife Mitigation Plan required in 3.8.3 shall include a mitigation strategies for above-ground pipelines which outline the design and placement of effective crossings and passageways for wildlife, considering the following criteria:

(a) location (or habitat features);

(b) specifications (height and width);

(c) type of passageway (above or beneath);

(d) frequency of crossing placement; and

(e) above-ground pipelines must be consistent with the *Strategic Plan and Industrial Guidelines for Caribou Range in Northern Alberta,* Boreal Caribou Committee, September 2001, and associated approved *East Side Athabasca Caribou Range Plan*, as amended unless otherwise authorized by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

3.8.5 The approval holder shall implement the Wildlife Mitigation Plan submitted pursuant to 3.8.3 as authorized by the Director.

PART 4: OPERATIONS, LIMITS, MONITORING AND REPORTING

SECTION 4.1: AIR

OPERATIONS

4.1.1 The approval holder shall not release any effluent streams to the atmosphere except as provided in this approval.

4.1.2 The approval holder shall only release effluent streams to the atmosphere from the following sources:

(a) the two 73.2 MW steam generator exhaust stacks;

(b) the 2.94 MW utility boiler exhaust stack;

(c) the 2.61 MW glycol heater exhaust stack;

(d) the 823 kW crystallizer exhaust stack;

(e) the central processing facility flare stack;

(f) the space ventilation exhaust stacks;

(g) the space heater exhaust vents; and

(h) any other source authorized in writing by the Director or by an amendment to this approval.

4.1.3 Annulus gas and Produced gas shall be collected and only be burned as fuel, incinerated or flared.

4.1.4 The approval holder shall ensure that all oil production tanks are connected to the vapour recovery system.

4.1.5 The approval holder shall ensure the combustion of all combustible gases released to the central processing facility flare stack.

4.1.6 The approval holder shall ensure that all central processing facility pressure and safety valves in sour service shall be connected to the flare system.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.1.7 The approval holder shall equip and operate the central processing facility flare stack with the following minimum systems:

(a) wind guard;

(b) a continuously burning pilot light; and

(c) an electric (or equivalent) igniter;

unless otherwise authorized in writing by the Director.

4.1.8 The approval holder shall operate and maintain the following stacks according to the height requirements as prescribed in TABLE 4.1-A, unless otherwise authorized in writing by the Director.

TABLE 4.1-A: STACK HEIGHTS

STACK	MINIMUM HEIGHT ABOVE GRADE (metres)
The two 73.2 MW Steam Generator Exhaust Stacks	30.0
The 2.94 MW Utility Boiler Exhaust Stack	8.5
The 2.61 MW Glycol Heater Exhaust Stack	8.2
The 823 kW Crystallizer Exhaust Stack	13.7
The Central Processing Facility Flare Stack	39.0

4.1.9 Except as provided for by the Director in writing, the approval holder shall control fugitive emissions and any source not specified in 4.1.2 in accordance with 4.1.10 of this approval.

4.1.10 With respect to fugitive emissions and any source not specified in 4.1.2, the approval holder shall not release a substance or cause to be released a substance that causes or may cause any of the following:

(a) impairment, degradation or alteration of the quality of natural resources; or

(b) material discomfort, harm or adverse affect to the well being or health of a person; or

(c) harm to property or to plant or animal life.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.1.11 All aboveground storage tanks designed to contain hydrocarbons shall conform to the *Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks*, CCME-EPC-87-E, as amended.

4.1.12 The approval holder shall submit a Fugitive Emissions Leak Detection and Correction Program to the Director by November 30, 2010.

4.1.13 The Fugitive Emissions Leak Detection and Correction Program shall include the periodic inspection and repair of any equipment found to be leaking.

4.1.14 The approval holder shall implement the Fugitive Emissions Leak Detection and Correction Program as authorized in writing by the Director.

AIR LIMITS

4.1.15 Releases of air contaminants shall not exceed the limits specified in TABLE 4.1-B.

TABLE 4.1-B: LIMITS

EMISSION SOURCE	AIR CONTAMINANT	LIMIT
Plant	Sulphur Dioxide	0.14 tonnes per day
Each of the two 73.2 MW Steam generators	Oxides of nitrogen (expressed as NO_2)	10.6 kilograms per hour

4.1.16 The net or lower heating value of the combined gas stream released to the central processing facility flare stacks shall be maintained, at a minimum, at 12 MJ/m3 when adjusted for 101.325 kPa and 15°C by adding residue gas to the flare gas.

MONITORING AND REPORTING

4.1.17 The sampling required by 4.1.18 shall, at a minimum, comply with

(a) the *Alberta Stack Sampling Code,* Alberta Environment, 1995 as amended*;*

(b) the *CEMS Code;* and

(c) the *Air Monitoring Directive,* Alberta Environment, 1989, as amended.

4.1.18 The approval holder shall monitor the following emission sources as specified in TABLE 4.1-C.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.1.19 The approval holder shall report to the Director the results of the emission source monitoring as required in TABLE 4.1-C.

TABLE 4.1-C: AIR EMISSION SOURCE MONITORING AND REPORTING

EFFLUENT STREAM/ EMISSION SOURCE	MONITORING			REPORTING FREQUENCY		
	PARAMETER	METHOD	FREQUENCY	MONTHLY (on or before the end of the month following the month in which the information was collected)	ANNUALLY (on or before March 15th of the year following the year in which the information was collected)	TO
Produced gas and residue or fuel gas to the Central processing facility flare stack	Volumetric flow rates	Measured or Estimated	Continuously	No	No	Director
Central processing facility flare stack	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
Produced gas at the central processing facility	Hydrogen sulphide	Gas analysis	Monthly	Yes	No	
	Total hydrocarbons					
	Lower heating value					
Each 73.2 MW Steam generators	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
	Oxides of nitrogen (expresses as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning	Yes	Yes	
Any one of the 73.2 MW steam generators	Oxides of nitrogen (expresses as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once per year after initial commissioning manual stack survey	Yes	Yes	

4.1.20 The approval holder shall conduct the manual stack survey on a different 73.2 MW steam generator exhaust stack each year until all of the stacks have been surveyed.

4.1.21 The approval holder shall notify the Director in writing a minimum of two weeks prior to any manual stack survey that is required to be conducted by this approval.

4.1.22 The approval holder shall monitor ambient levels of the parameters as specified in TABLE 4.1-D, unless otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.1.23 The approval holder shall report to the Director the results of the ambient air quality monitoring as required in TABLE 4.1-D, unless otherwise authorized in writing by the Director.

TABLE 4.1-D: AMBIENT AIR MONITORING AND REPORTING

MONITORING STATION	PARAMETER	MONITORING PERIOD	REPORTING FREQUENCY		
			MONTHLY (on or before the end of the month following the month in which the information was collected)	ANNUALLY (on or before March 15th of the year following the year in which the information was collected)	SPECIAL
One continuous monitoring station as per *Air Monitoring Directive*	Sulphur Dioxide concentrations, hydrogen sulphide concentrations, nitrogen dioxide concentrations, wind speed and wind direction	Three months prior to commencing operations, and six months per year after commencing operations	Yes	Yes	No
	Total hydrocarbons concentrations	Continuously, during the first year of operation	Yes	Yes	No
Four passive exposure monitoring stations as per *Air Monitoring Directive*	Total sulphation levels, and hydrogen sulphide levels.	Monthly	Yes	Yes	No

4.1.24 In addition to the monthly reporting requirements in TABLE 4.1-C and TABLE 4.1-D, the monthly Air Emission Summary Report shall contain remarks on the performance of the air pollution control equipment including an interpretation of significant variations in equipment performance.

4.1.25 In addition to the annual reporting requirement in Table 4.1-C and Table 4.1-D, the annual Air Emission Summary and Evaluation Report shall contain:

(a) information related to the plant operation;

(b) the performance of air pollution control equipment;

(c) air contaminant emissions; and

any other information requested in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 4.2: INDUSTRIAL WASTEWATER

OPERATIONS

4.2.1 The approval holder shall not release any substances from the plant to the surrounding watershed except as authorized by this approval.

4.2.2 Industrial wastewater shall be managed as described in the application, unless otherwise authorized in writing by the Director.

4.2.3 All industrial wastewater and process liquids contained in above ground and below ground storage tanks, shall be contained in accordance with the *Alberta Energy Resources Conservation Board (ERCB) Directive 055 Storage Requirements for the Upstream Petroleum Industry*, as amended.

4.2.4 Industrial wastewater, produced water and boiler blowdown shall only be disposed of as follows:

(a) directed to the process pond;

(b) ERCB approved disposal well;

(c) ERCB approved Waste Processing and Disposal Facility; or

(d) as otherwise authorized in writing by the Director.

4.2.5 Industrial runoff for the plant shall be directed to the Industrial Runoff Control System, specifically one stormwater runoff pond.

4.2.6 The approval holder shall only release industrial runoff from the Industrial Runoff Control Systems.

4.2.7 All industrial runoff from the plant developed area shall be directed to the Industrial Runoff Control System.

LIMITS

4.2.8 Releases from the Industrial Runoff Control System shall not exceed the limits for the parameters specified in TABLE 4.2-A.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.2-A: INDUSTRIAL RUNOFF LIMITS

PARAMETER	PARAMETER OR CONCENTRATION LIMIT
Discharge Volume	-
pH	6.0 - 9.5 units
Oil and Grease	No visible sheen
Chloride	500 mg/L

4.2.9 Any release of industrial runoff shall be done in a manner, which will not cause flooding or erosion.

MONITORING AND REPORTING

4.2.10 The approval holder shall monitor the Industrial Runoff Control Systems as required in TABLE 4.2-B.

4.2.11 The approval holder shall report to the Director the results of the Industrial Runoff Control Systems monitoring as required in TABLE 4.2-B.

TABLE 4.2-B: INDUSTRIAL RUNOFF CONTROL SYSTEMS MONITORING AND REPORTING

MONITORING						REPORTING	
PARAMETER, TEST, EVENT, STUDY PROPOSAL OR REPORTING REQUIREMENT	PRIOR TO RELEASE		DURING RELEASE			ANNUALLY	TO
INDUSTRIAL RUNOFF							
Discharge volume (in cubic meters)	-	-	Once/day	Volume estimate	A	Industrial Wastewater and Runoff Report (On or before March 31st of the year following the year in which the information was collected)	Director
pH	Once	Representative grab	Once/day	Grab	A		
Oil and Grease	Once	Representative grab	Once/day	Grab	A		
Chloride in mg/L	Once	Representative grab	Once/day	Grab	A		
A= Discharge point of industrial runoff control system (stormwater runoff pond)							

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.2.12 In addition to the annual reporting in Table 4.2-B, the annual Industrial Wastewater and Industrial Runoff Report shall include, at a minimum, all of the following information:

(a) a current contact for the plant;

(b) a summary and evaluation of management and disposal of the following for the previous year:

(i) industrial wastewater;

(ii) industrial runoff;

(iii) domestic wastewater;

(c) an overview of the operation of the plant; and

(d) any other information required by the Director.

SECTION 4.3: WASTE MANAGEMENT

Not used at this time.

SECTION 4.4: DOMESTIC WASTEWATER

OPERATIONS

4.4.1 The approval holder shall not release any substances from the domestic wastewater system to the surrounding watershed except as authorized by this approval.

4.4.2 All domestic wastewater shall be directed to a septic tank and field system or to an approved disposal location.

4.4.3 Sludge produced by the domestic wastewater system shall be disposed of at a domestic wastewater treatment facility holding a current approval under the Act.

MONITORING AND REPORTING

4.4.4 The approval holder shall report a summary of any domestic wastewater directed off-site and report as per 4.2.12(b)(iii), including details regarding wastewater volumes and the facility the domestic wastewater is directed to.

SECTION 4.5: WATERWORKS

Not used at this time.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 4.6: GROUNDWATER

4.6.1 The approval holder shall develop a proposal for a Groundwater Monitoring Program for the plant which shall include, at a minimum, all of the following:

(a) a conceptual development of the local groundwater monitoring network;

(b) a description of the regional hydrogeology;

(c) a hydrogeologic description and interpretation of the plant;

(d) a map and description of surface water drainage patterns for the plant;

(e) a lithologic description and maps, including cross-sections, of the surficial and the upper bedrock geologic materials at the plant;

(f) maps showing depth to water table, patterns of groundwater movement and hydraulic gradients at the plant;

(g) the hydraulic conductivity of all surficial and bedrock materials at the plant;

(h) a map showing the location of existing and additional proposed groundwater monitor wells at the plant;

(i) lithologs of all boreholes drilled at the plant;

(j) construction details of existing groundwater monitor wells;

(k) a rationale for proposed groundwater monitor well locations and proposed completion depths of those wells;

(l) a description of groundwater monitor well development protocols;

(m) a list of parameters to be monitored and the monitoring frequency for each groundwater monitor well or group of groundwater monitor wells at the plant;

(n) a description of the groundwater sampling and analytical QA/QC procedures;

(o) details of a groundwater response plan specifying actions to be taken should contaminants be identified through the Groundwater Monitoring Program; and

(p) any other information relevant to groundwater quality at the plant.

4.6.2 The approval holder shall submit two copies of the proposal for the Groundwater Monitoring Program to the Director on or before March 31, 2009.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.6.3 If the Groundwater Monitoring Program proposal is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within 120 days of the deficiency letter.

4.6.4 The approval holder shall implement the Groundwater Monitoring Program for the plant as authorized in writing by the Director.

4.6.5 The approval holder shall conduct at least six sampling events before any new production wells are steamed.

4.6.6 The sampling events referred in 4.6.5 shall be at intervals of not less than two months.

4.6.7 The samples extracted from the groundwater monitor wells shall be collected using scientifically acceptable purging, sampling and preservation procedures so that a representative groundwater sample is obtained.

4.6.8 All groundwater monitor wells shall be:

(a) protected from damage; and

(b) locked except when being sampled; unless otherwise authorized in writing by the Director.

4.6.9 If a representative groundwater sample cannot be collected because the groundwater monitor well is damaged or is no longer capable of producing a representative groundwater sample:

(a) the groundwater monitor well shall be cleaned, repaired or replaced; and

(b) a representative groundwater sample shall be collected and analyzed prior to the next scheduled sampling event; unless otherwise authorized in writing by the Director.

4.6.10 In addition to the sampling information recorded in 2.2.1, the approval holder shall record the following sampling information for all groundwater samples collected:

(a) a description of purging and sampling procedures;

(b) the static elevations, above sea level, of fluid phases in the groundwater monitor well prior to purging;

(c) the temperature of each sample at the time of sampling;

(d) the pH of each sample at the time of sampling; and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(e) the specific conductance of each sample at the time of sampling.

4.6.11 The approval holder shall compile an Annual Groundwater Monitoring Program Summary Report which shall include, at a minimum, all of the following information:

(a) a legal description of the plant and a map illustrating the plant boundaries;

(b) a topographic map of the plant;

(c) a description of the industrial activity and processes;

(d) a map showing the location of all surface and groundwater users, and, a listing describing surface water and water well use details, within at least a three kilometre radius of the plant;

(e) a general hydrogeological characterization of the region within a five kilometre radius of the plant;

(f) a detailed hydrogeological characterization of the plant;

(g) a geological cross-section(s) of the plant;

(h) a map of surface drainage patterns located within the plant;

(i) a map of groundwater monitor well locations and a description of the existing groundwater monitoring program for the plant;

(j) a summary of any changes to the groundwater monitoring program made since the last groundwater monitoring report;

(k) analytical data recorded as required in 4.6.4 and 4.6.10;

(l) a summary of fluid elevations recorded as required in 4.6.10(b) and an interpretation of changes in fluid elevations;

(m) an interpretation of groundwater flow patterns;

(n) an interpretation of the analytical results including the following:

(i) diagrams indicating the location of any contamination identified;

(ii) probable sources of contamination; and

(iii) the extent of contamination identified;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(o) a summary and interpretation of the data collected since the groundwater monitoring program began including:

(i) control charts which indicate trends in contaminant concentrations; and

(ii) the migration of contaminants;

(p) a description of the following:

(i) contaminated groundwater remediation techniques employed;

(ii) source elimination measures employed;

(iii) risk assessment studies undertaken; and

(iv) risk management studies undertaken;

(q) a sampling schedule for the following year;

(r) recommendations, as follows:

(i) for changes to the groundwater monitoring program to make it more effective; and

(ii) for remediation, risk assessment or risk management of contamination identified.

4.6.12 The approval holder shall submit two copies of the Annual Groundwater Monitoring Summary Report to the Director on or before March 31 of the year following the year in which the information on which the report is based was collected, unless otherwise authorized in writing by the Director.

4.6.13 The approval holder shall participate in regional groundwater initiatives of the Athabasca oil sands region on an ongoing basis including:

(a) regional groundwater quality assessment studies;

(b) the development and implementation a regional groundwater monitoring network;

(c) continuous improvements or changes to the network;

(d) continuous monitoring of the network; and

(e) the assessment of potential groundwater quality impacts to groundwater resources in the region.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 4.7: SOIL

MONITORING

4.7.1 The approval holder shall develop and document proposals for the Soil Monitoring Program in accordance with the *Soil Monitoring Directive*, Alberta Environment May 1996, as amended.

4.7.2 The approval holder shall submit the Soil Monitoring Program proposals to the Director for authorization in writing according to the following schedule:

(a) for the first soil monitoring proposal, no later than January 31, 2011; and

(b) for the second soil monitoring proposal, no later than January 31, 2016; or

unless otherwise authorized in writing by the Director.

4.7.3 If the Soil Monitoring Program proposals are found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director within 120 days of the deficiency letter.

4.7.4 The approval holder shall implement the Soil Monitoring Program proposals as authorized in writing by the Director.

4.7.5 The approval holder shall implement QA/QC provisions in accordance with the *CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites, Volume I*, Report CCME EPC-NCS62E, Winnipeg, Manitoba, December 1993, as amended.

STANDARDS

4.7.6 For the purpose of soil monitoring reports, the approval holder shall compare the concentration of substances in soil to the corresponding concentrations set out in or derived from the following:

(a) *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, Alberta Environment, June 2007, as amended; or

(b) *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*, Alberta Environment, June 2007, as amended.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

REPORTING

4.7.7 The approval holder shall submit two copies of each Soil Monitoring Program Report to the Director summarizing the data obtained from the soil monitoring referred to in 4.7.4 according to the following schedule:

(a) for the first soil monitoring report, no later than January 31, 2012; and

(b) for the second soil monitoring report, no later than January 31, 2017; or

unless otherwise authorized in writing by the Director.

4.7.8 The Soil Monitoring Program reports shall be as prescribed in the reporting requirements of the *Soil Monitoring Directive*, May 1996, as amended.

SOIL MANAGEMENT PROGRAM

4.7.9 If the Soil Monitoring Program, or any other soil monitoring, reveals that there are substances present in the soil at concentrations greater than the applicable concentrations in 4.7.6, the approval holder shall develop and document a Soil Management Program Proposal in accordance with the *Guideline for Monitoring and Management of Soil Contamination Under EPEA Approvals*, Chemicals Assessment and Management Division, May 1996, as amended, or as otherwise authorized in writing by the Director.

4.7.10 If required pursuant to 4.7.9, the approval holder shall submit a Soil Management Program Proposal to the Director within six months after the date that the Soil Monitoring Report referred to in 4.7.7 is due.

4.7.11 The Soil Management Program Proposal shall include, at a minimum, all of the following:

(a) steps to be taken to control sources of contamination;

(b) remediation objectives for substances identified by soil monitoring as exceeding the applicable maximum standards in 4.7.6;

(c) proposed steps for management of soil contamination; and

(d) a schedule for implementing the Soil Management Program.

4.7.12 If the Soil Management Program Proposal is found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director by the date specified in the deficiency letter.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.7.13 The approval holder shall implement the Soil Management Program as authorized in writing by the Director.

4.7.14 If the approval holder must implement a Soil Management Program pursuant to 4.7.13, the approval holder shall submit a written Soil Management Program Report to the Director on or before March 31 of each year, unless otherwise authorized in writing by the Director.

4.7.15 The Soil Management Program report shall include, at a minimum, all of the following information:

(a) a summary of actions taken under the Soil Management Program during the previous year;

(b) a description and interpretation of results obtained, including any soil testing, from the Soil Management Program; and

(c) events planned for the current year including any deviations from the program authorized in writing by the Director.

SECTION 4.8: WILDLIFE

4.8.1 The approval holder shall submit a Wildlife Monitoring Program to the Director by April 30, 2009 unless otherwise authorized in writing by the Director.

4.8.2 The Wildlife Monitoring Program required in 4.8.1 shall include, at the minimum, the following:

(a) a long term plan to monitor the responses of wildlife to above-ground pipelines and features associated with these pipelines, and analyze the effectiveness of wildlife crossings implemented as mitigation; and

(b) the approval holder's commitment to participate, with other operators, in regional initiatives that facilitate the integration, maintenance and monitoring of connectivity in the region, when such initiatives are established.

4.8.3 The approval holder shall implement the Wildlife Monitoring Program submitted pursuant to 4.8.1 as authorized in writing by the Director.

4.8.4 The approval holder shall submit a Biodiversity Monitoring Program to the Director by November 30, 2009, unless otherwise authorized in writing by the Director.

4.8.5 The Biodiversity Monitoring Program shall include a plan for participating in, and enhancing, programs to monitor long-term cumulative effects on biodiversity in the region, in cooperation with other oil sands developers, and using established Alberta Biodiversity Monitoring Program protocols where feasible.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.8.6 The approval holder shall implement the Biodiversity Monitoring Program submitted pursuant to 4.8.4 as authorized in writing by the Director.

4.8.7 The approval holder shall apply the Best Management Practices for Camps, Fences and Barriers as described in the *BearSmart: Best Management Practices for Camps*, Alberta Sustainable Resource Development, 2004, and ensure that garbage shall be stored in secure bear proof containers.

SECTION 4.9: ALTERNATIVE REPORTING

4.9.1 Notwithstanding the annual report requirements specified in 4.1.19, 4.1.23, 4.1.25, 4.2.11, 4.2.12, 4.6.11, 5.3.19, 5.3.20, the approval holder may request written authorization from the Director in order to implement an alternative reporting mechanism. The request must be made in writing, must include any information requested by the Director, and shall include the following:

(a) a request to modify the requirement for annual written reports, to a submission frequency of once every two years; and

(b) a proposal to substitute verbal presentations about environmental performance in lieu of the annual written reports that would otherwise have been required.

4.9.2 The Director may issue or refuse to issue a written authorization for any request that is made by the approval holder under 4.9.1. If the Director issues a written authorization, the approval holder shall complete the alternative reporting as specified in the written authorization by the Director.

PART 5: RECLAMATION

SECTION 5.1: GENERAL

5.1.1 Six months prior to the plant ceasing operation, except for repairs and maintenance, the approval holder shall apply for an amendment to this approval to reclaim the plant by submitting a Decommissioning and Final Land Reclamation Plan to the Director.

5.1.2 As required in 5.1.1, the approval holder shall develop a plan for the final land reclamation phase which shall include, at a minimum, all of the following:

(a) the final use of the reclaimed area and how equivalent land capability will be achieved;

(b) removal of infrastructure;

(c) restoration of drainage;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(d) soil replacement;

(e) erosion control;

(f) revegetation and conditioning of the plant including:

(i) species list, seed source and quality, seeding rates and methods;

(ii) information about areas where reforestation will occur;

(iii) justification for areas where reforestation is not proposed;

(iv) fertilization rates and methods;

(v) a vegetation management plan;

(vi) wildlife habitat plans where applicable; and

(g) reclamation sequence and schedule.

5.1.3 The approval holder shall implement the Land Reclamation Plan as authorized in writing by the Director.

SECTION 5.2: DECOMMISSIONING

5.2.1 As required in 5.1.1, the approval holder shall develop and submit a plan for the Decommissioning phase to the Director which shall include, at a minimum, all of the following:

(a) a plan for dismantling the plant;

(b) a comprehensive study to determine the nature, degree and extent of contamination at the plant and affected lands;

(c) a plan to manage all wastes produced at the plant during operation and decommissioning;

(d) evaluation of remediation technologies proposed to be used at the plant and affected lands;

(e) a plan for decontamination of the plant and affected lands in accordance with the following:

(i) for soil or groundwater, *Alberta Tier 1 Soil and Groundwater Remediation Guidelines,* Alberta Environment, June 2007, as amended;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(ii) for soil or groundwater, *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*, Alberta Environment, June 2007, as amended;

(iii) for drinking water, *Canadian Environmental Quality Guidelines*, Canadian Council of Ministers of the Environment, PN1299, 1999, as amended; and

(iv) for surface water, *Surface Water Quality Guidelines for Use in Alberta*, Alberta Environment, November 1999, as amended;

(f) confirmatory testing to indicate compliance with the remediation objectives;

(g) a plan for maintaining and operating contaminant monitoring systems; and

(h) any other information as required in writing by the Director.

5.2.2 If the Decommissioning Plan is found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director by the date specified in the deficiency letter.

5.2.3 The approval holder shall implement the Decommissioning Plan as authorized in writing by the Director.

5.2.4 All analytical protocols shall be in accordance with the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites - Volume 1: Main Report,* CCME EPC-NCS62E, as amended.

5.2.5 The approval holder shall submit an Annual Decommissioning Report to the Director by March 1 of each year after decommissioning had begun until decommissioning is complete which shall include, at a minimum, all of the following:

(a) summary of decommissioning activities conducted during the reporting period;

(b) status of decommissioning;

(c) decommissioning activities planned for the following reporting period;

(d) summary and interpretation of monitoring data collected for the reporting period; and

(e) interpretation of monitoring data collected historically.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 5.3: LAND RECLAMATION

GENERAL

5.3.1 The approval holder shall conduct land reclamation activities in an on-going and progressive manner.

5.3.2 The approval holder shall reclaim land through appropriate conservation and reclamation methods to construct land having characteristics (soils, topography and drainage) that results in a return of land capability equivalent to that existing prior to disturbance.

5.3.3 The approval holder shall remove all watercourse crossings as part of the final reclamation, unless otherwise authorized in writing by the Director.

5.3.4 Unless otherwise authorized in writing by the Director, the approval holder shall reclaim all access roads and haul roads, including removal of culverts and other structures, recontouring, restoration of drainage, decompaction of subsoil, replacement of topsoil and revegetation.

5.3.5 The approval holder shall progressively re-establish surface drainage on all reclaimed plant areas such that it is integrated with the adjacent land.

CONTOURING AND MATERIALS PLACEMENT

5.3.6 The approval holder shall contour disturbed land such that the reclaimed landforms approximate the natural landforms in the areas adjacent to the plant or as authorized in writing by the Director.

5.3.7 The approval holder shall ensure that reclaimed slopes shall be no steeper than 3:1.

5.3.8 The approval holder shall cap any unsuitable material, as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, where unsuitability is not related to contamination, with 1.0 metre of soil material having a good, fair or poor rating, as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, prior to subsoil and topsoil replacement.

5.3.9 The approval holder shall replace all salvaged subsoil on the decommissioned, contoured, and decompacted central processing facility site.

5.3.10 The approval holder shall replace all salvaged topsoil on all recontoured areas.

(a) The average depth of the replaced topsoil in the reclaimed profile for each reclamation area shall be equivalent to or greater than 80% of the original topsoil depth, or as otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

5.3.11 The approval holder shall immediately suspend topsoil or subsoil replacement when:

(a) wet or frozen field conditions will result in the degradation of topsoil or subsoil quality; unless otherwise authorized in writing by an Inspector;

(b) high wind velocities, any other field conditions or operations will result in the degradation of topsoil or subsoil quality or loss of topsoil or subsoil; unless otherwise authorized in writing by an Inspector; or

(c) directed to do so in writing by an Inspector.

5.3.12 The approval holder shall only recommence the topsoil or subsoil replacement when suspended under 5.3.11 if:

(a) the conditions specified in 5.3.11 no longer exist; or

(b) directed in writing by an Inspector.

REVEGETATION

5.3.13 The approval holder shall only use the following types of seed for revegetation:

(a) for agronomic species that:

(i) is equivalent to Canada #1 seed;

(ii) is free of prohibited and primary noxious weeds;

(b) for native species that:

(i) is free of prohibited and primary noxious weeds;

(ii) has a count of 5 or less secondary noxious weed seeds per 25 g of seed; and

(iii) has a count of 50 or less for other weed seeds per 25 g of seed.

5.3.14 The approval holder shall obtain and retain documentation that verifies that the seed used for revegetation meets the criteria specified in 5.3.13.

5.3.15 The approval holder shall maintain a weed control program until new vegetation is established and is self-sustaining.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

MONITORING

5.3.16 The approval holder shall submit a proposal for a comprehensive Reclamation Monitoring Program to assess soils, vegetation and wildlife on reclaimed areas, to the Director by November 30, 2012, or as otherwise authorized in writing by the Director.

5.3.17 The approval holder shall implement the Reclamation Monitoring Program proposal submitted pursuant to 5.3.16 as authorized in writing by the Director.

REPORTING

5.3.18 In addition to reporting pursuant to 2.1.1, the approval holder shall immediately contact an Inspector when a land surface disturbance that is not approved is required.

5.3.19 The approval holder shall prepare an Annual Conservation and Reclamation Report that meets the information requirements outlined in the *Guide to the Preparation of Applications and Reports for Coal & Oil* Sands *Operations*, Alberta Environment, 1991, as amended and includes the following:

(a) an updated record of all well pads and well licenses associated with the plant;

(b) any proposed changes to the reclamation seed mix;

(c) a summary on the status of the following:

(i) the Wildlife Mitigation Plan;

(ii) the Wildlife Monitoring Program;

(iii) the Biodiversity Monitoring Program

(iv) the Reclamation Monitoring Program; and

(d) any other information requested by the Director.

5.3.20 The approval holder shall submit the Annual Conservation and Reclamation Report to the Director on or before March 31 of each year and the report shall be based on the information collected in the preceding year.

DATED October 10, 2008

Ken Singh
DESIGNATED DIRECTOR UNDER THE ACT

Alberta
ENVIRONMENT

AMENDING APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 240008-00-01

APPLICATION NO. 002-240008

EFFECTIVE DATE: March 17, 2010

EXPIRY DATE: September 30, 2018

APPROVAL HOLDER Connacher Oil and Gas Limited

Pursuant to Division 2, of Part 2, of the *Environmental Protection and Enhancement Act*, R.S.A.2000, c.E-12, as amended, the approval for the following activity:

ALGAR SAGD pilot enhanced recovery in-situ oil sands or heavy oil processing plant

is amended as per the attached terms and conditions.

Designated Director under the Act .....

Date Signed March 17, 2010

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Environmental Protection and Enhancement Act Approval No. 240008-00-00 is hereby amended as follows:

1. Subsections 3.1.1 to 3.1.3 are deleted and the following is substituted:

3.1.1 If the construction of the cogeneration unit as described in application 002-240008 has not commenced by February 28, 2011, or as otherwise specified in this approval, the approval holder shall apply for an amendment to this approval unless otherwise authorized in writing by the Director.

3.1.2 The approval holder shall notify the Director in writing at least 14 days before commencing operations of the modified plant described in 002-240008.

2. Subsection 3.2.1 is deleted and the following is substituted:

3.2.1 The approval holder shall construct all stacks according to the following height requirements as prescribed in TABLE 3.2-A, unless otherwise authorized in writing by the Director.

TABLE 3.2-A: STACK HEIGHTS

STACK	MINIMUM HEIGHT ABOVE GRADE (metres)
The two 73.2 MW Steam generator exhaust stacks	30.0
The 3.7 MW Utility boiler exhaust stack	8.5
The 4.3 MW Glycol heater exhaust stack	8.2
The 823 kW Crystallizer exhaust stack	13.7
The Central Processing Facility flare stack	39.0
The Cogeneration unit exhaust stack (15.6 MW electricity output and 62.7GJ/h steam heat output)	15.2

3. Subsection 3.2.4 is deleted and the following is substituted:

3.2.4 The approval holder shall install, at a minimum, all of the following monitoring equipment, unless otherwise authorized in writing by the Director:

(a) a minimum of 4 passive exposure stations for measurement of hydrogen sulphide (H_2S) and sulphur dioxide (SO_2) concentrations;

(b) one ambient air quality monitoring station for measurement of nitrogen dioxide, sulphur dioxide, hydrogen sulphide, total hydrocarbons, wind speed, and wind direction.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4. Subsection 3.2.5 is deleted and the following is substituted:

   3.2.5 The following stack(s) shall be equipped with sampling facilities:

   (a) the two 73.2 MW steam generator exhaust stacks;

   (b) the 3.7 MW utility boiler exhaust stack;

   (c) the 4.3 MW glycol heater exhaust stack; and

   (d) the co-generation unit exhaust stack.

5. Subsection 4.1.2 is deleted and the following is substituted:

   4.1.2 The approval holder shall only release effluent streams to the atmosphere from the following sources:

   (a) the two 73.2 MW steam generator exhaust stacks;

   (b) the 3.7 MW utility boiler exhaust stack;

   (c) the 4.3 MW glycol heater exhaust stack;

   (d) the 823 kW crystallizer exhaust stack;

   (e) the central processing facility flare stack;

   (f) the cogeneration unit exhaust stack;

   (g) the turbine bypass exhaust stack;

   (h) the space ventilation exhaust stacks;

   (i) the space heater exhaust vents; and

   (j) any other source authorized in writing by the Director or by an amendment to this approval.

6. Subsection 4.1.8 is deleted and the following is substituted:

   4.1.8 The approval holder shall operate and maintain the following stacks according to the height requirement as prescribed in TABLE 4.1-A, unless otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.1-A: STACK HEIGHTS

STACK	MINIMUM HEIGHT ABOVE GRADE (metres)
The two 73.2 MW Steam generator exhaust stacks	30.0
The 3.7 MW Utility boiler exhaust stack	8.5
The 4.3 MW Glycol heater exhaust stack	8.2
The 823 kW Crystallizer exhaust stack	13.7
The Central Processing Facility flare stack	39.0
The Cogeneration Unit exhaust stack (15.6 MW electricity output and 62.7GJ/h steam heat output)	15.2

7. The following subsection is added after subsection 4.8.1:

    4.1.8.1 The approval holder shall use the turbine bypass exhaust stack only when the cogeneration unit is under maintenance or in the event of an emergency.

8. Subsection 4.1.15 is deleted and the following is substituted:

    4.1.15 Releases of air contaminants shall not exceed the limits specified in TABLE 4.1-B.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.1-B: LIMITS

EMISSION SOURCE	AIR CONTAMINANT	LIMIT
Plant	Sulphur Dioxide	1.98 tonnes per day
Each of the two 73.2 MW steam generators	Oxides of nitrogen (expressed as NO_2)	10.6 kilograms per hour
The 3.7 MW utility boiler	Oxides of nitrogen (expressed as NO_2)	0.35 kilograms per hour
The 4.3 MW glycol heater	Oxides of nitrogen (expressed as NO_2)	0.40 kilograms per hour
The Cogeneration unit (15.6 MW electricity output and 62.7GJ/h steam heat output)	Oxides of nitrogen (expressed as NO_2)	13.2 kilograms per hour

9. Subsection 4.1.19 is deleted and the following is substituted:

4.1.19 The approval holder shall report to the Director the results of the emission source monitoring as required in Table 4.1-C.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.1-C: AIR EMISSION SOURCE MONITORING AND REPORTING

EFFLUENT STREAM/ EMISSION SOURCE	MONITORING			REPORTING FREQUENCY		
	PARAMETER	METHOD	FREQUENCY	MONTHLY (on or before the end of the month following the month in which the information was collected)	ANNUALLY (on or before March 15th of the year following the year in which the information was collected)	TO
Produced gas and residue or fuel gas to the Central processing facility flare stack	Volumetric flow rates	Measured or Estimated	Continuously	No	No	Director
Central processing facility flare stack	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
Produced gas at the central processing facility	Hydrogen sulphide	Gas analysis	Monthly	Yes	No	
	Total hydrocarbons					
	Lower heating value					
Each 73.2 MW Steam generators	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning	Yes	Yes	
Any one of the 73.2 MW steam generators	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once per year after initial commissioning manual stack survey	Yes	Yes	
The cogeneration unit (15.6 MW electricity output and 62.7GJ/h steam heat output)	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning	Yes	Yes	
	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once per year after initial commissioning manual stack survey	Yes	Yes	
The 3.69 MW Utility boiler	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning	Yes	Yes	
The 4.3 MW Glycol heater	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning	Yes	Yes	

TERMS AND CONDITIONS ATTACHED TO APPROVAL

10. Subsection 4.1.23 is deleted and the following is substituted:

4.1.23 The approval holder shall report to the Director the results of the ambient air quality monitoring as required in TABLE 4.1-D, unless otherwise authorized in writing by the Director.

TABLE 4.1-D: AMBIENT AIR MONITORING AND REPORTING

MONITORING STATION	PARAMETER	MONITORING PERIOD	REPORTING FREQUENCY		
			MONTHLY (on or before the end of the month following the month in which the information was collected)	ANNUALLY (on or before March 15th of the year following the year in which the information was collected)	SPECIAL
One continuous monitoring station as per *Air Monitoring Directive*	Sulphur Dioxide concentrations, hydrogen sulphide concentrations, nitrogen dioxide concentrations, wind speed and wind direction	Three months prior to commencing operations, and six months per year after commencing operations	Yes	Yes	No
	Total hydrocarbons concentrations	Continuously, during the first year of operation	Yes	Yes	No
Four passive exposure monitoring stations as per *Air Monitoring Directive*	Hydrogen sulphide and sulphur dioxide concentrations	Monthly	Yes	Yes	No

DATED March 17, 2010

DESIGNATED DIRECTOR UNDER THE ACT

ERCB Energy Resources Conservation Board
Calgary Office 640–5 Avenue SW Calgary, Alberta Canada T2P 3G4

FACILITY LICENCE

Licence No.	F40209
Licensee	Connacher Oil And Gas Limited
Description	Bitumen battery - multiwell < 1 t/d sulphur inlet
Location	00/14-18-082-11 W4M
Field	Hangingstone
Field Centre	Bonnyville
	(Ph. (780) 826-5352)

The maximum daily design for Total Inlet Rates (at 101.325 kilopascals and 15 degree Celsius) approved for this facility are:

Raw Gas	30.40	**10^3 m^3/d**
Oil/Bitumen	1,600.0	**m^3/d**
Condensate	0.0	**m^3/d**
Water	4,800.0	**m^3/d**
Sulphur	0.07	**t/d**

The maximum daily design for Total Continuous Emission Rates approved for this facility are:

NO_x	22.08	**kg/h**
CO_2	679.70	**t/d**
Flaring/Incineration	0.00	**10^3 m^3/d**
Venting	0.00	**10^3 m^3/d**
Sulphur	0.07	**t/d**

The Licensee shall comply with the Oil and Gas Conservation Act and Regulation and all applicable guides, interim directives and directives issued by the Board.

Further environmental approval from Alberta Environment may be required. These approvals must be in place prior to construction and/or operation.

The facility is associated with crude bitumen Scheme Approval No. 11253

This facility licence will expire one year from the date of issue if construction has not been initiated.

Dated at Calgary, Alberta this

12th day of November 2008.

Application Number 1594471

For Energy Resources Conservation Board

ERCB Energy Resources Conservation Board
Calgary Office 640–5 Avenue SW Calgary, Alberta Canada T2P 3G4

FACILITY LICENCE

H_2S Information

Sweetening Processes: **None**

Maximum H_2S Content of Inlet Gas 1.678 mol/kmol

Compressors

Install/ Remove	Rating (kW)	Driver Power Source	NO_x Emission Rating (g/kWh)
Install	93	Electric	0
Install	93	Electric	0
Install	2,237	Electric	0
Install	932	Electric	0
Install	298	Electric	0

Total Number of Gas Compressors on Site : 0
Total Number of Electric Compressors on Site : 5
Total On-site Compressor Wattage : 3,653 kW

ERCB Energy Resources Conservation Board

COMMERCIAL SCHEME
Approval No. 11253

MADE at the City of Calgary, in the Province of Alberta, on 13th day of November 2008.	 ENERGY RESOURCES CONSERVATION BOARD

IN THE MATTER of a commercial scheme of Connacher Oil and Gas Limited for the recovery of crude bitumen from the **Wabiskaw-McMurray Deposit in the Athabasca Oil Sands Area**.

WHEREAS the Lieutenant Governor in Council, by Order in Council Number O.C. 525/2008 dated November 5, 2008, hereto attached as Appendix B, has authorized the granting of this approval.

The Energy Resources Conservation Board, pursuant to the Oil Sands Conservation Act, chapter O-7 of the Revised Statutes of Alberta, 2000, orders as follows:

1) The commercial scheme of Connacher Oil and Gas Limited (hereinafter called "the Operator") for the recovery of crude bitumen from the **Wabiskaw-McMurray Deposit in the Athabasca Oil Sands Area,** as such scheme is described in

   a) Application No. 1515981,

   is approved, subject to the Oil Sands Conservation Regulation and the terms and conditions herein contained.

2) The recovery of crude bitumen from wells located in the development area outlined in Appendix A is approved.

3) Clauses 1 and 2 do not preclude alterations in design and equipment, provided that the Board is satisfied that the alterations are compatible with the outline of the scheme, are made for the better operation of the scheme, and do not result in unacceptable adverse impacts.

4) The recovery process approved for the project is Steam-Assisted Gravity Drainage (SAGD) utilizing only steam as the injection fluid unless otherwise stipulated by the Board.

5) Unless otherwise stipulated by the Board, the production of bitumen shall not exceed 1600 cubic metres per day (m^3/d) on an annual average basis.

6) The operator shall conduct all operations to the satisfaction of the Board and in a manner that under normal operating conditions will permit:

   a) the recovery of the practical maximum amount of crude bitumen within the project area,

   b) the conservation of the practical maximum volume of produced gas at the well pads and central facilities,

c) the minimization of flaring to non-routine operations such as start-up, shutdown, emergencies, infrequent upsets, and maintenance depressuring, and

d) the practical maximum reuse of produced water.

7) Unless otherwise stipulated by the Board, the Operator shall:

a) provide the Board with gamma ray spontaneous potential resistivity and gamma ray neutron density logs from total depth to surface casing for all vertical wells, and

b) take full diameter cores of the entire bitumen-bearing interval of the Wabiskaw-McMurray Formation from not less than four evenly spaced vertical wells per section, and take full-diameter cores of bitumen-bearing intervals of other zones in the Mannville Group, if any, from at least one well per section, and at the Board's request

i) analyze portions of such cores, and
ii) provide suitable photographs of the clean-cut surface of each core slabbed.

8) Unless otherwise permitted by the Board, steam injection operations, having commenced at a well pad, shall continue until the well pad has produced a minimum of 50 per cent of the in-place volume of crude bitumen assigned to that well pad by the Board.

9) Where the Operator proposes to cease SAGD operations at a well pad that has produced less than 50 per cent of the in-place volume of crude bitumen and the Board's consent therefore is sought, the Operator shall advise the Board as to the following:

a) the reason for proposing to cease SAGD operations,

b) details of individual well workovers and recompletions attempted,

c) detailed economics of continuing operations,

d) the effect of ceasing SAGD operations on the bitumen recovery ultimately achievable from that part of the reservoir associated with the pad and immediately offsetting pads, and

e) future plans for the well pad with reference to possible follow-up recovery techniques that could be applied and other zones that could be exploited.

10) The Operator shall ensure that sulphur recovery will be operational before total project sulphur emissions from flaring and combustion of gas containing hydrogen sulphide (H_2S) reach one (1) tonne/day on a calendar quarter-year average basis, unless otherwise stipulated by the Board. The calendar quarter-year sulphur recovery shall not be less than set out in Table 1 of the Board's *Interim Directive (ID) 2001-03: Sulphur Recovery Guidelines for the Province of Alberta* on the basis of the calendar quarter-year daily average sulphur content of produced gas streams flared and used as fuel at each central process site.

11) The Operator shall notify the Board of any proposed material alteration or modification of the SAGD scheme or to any equipment proposed for use therein prior to effecting the alteration or modification.

12) (1) Where, in the opinion of the Board, any alteration or modification referred to in Clause 11 to the scheme or to any equipment proposed for use therein:

a) is not of a minor nature,

b) is not consistent with the scheme approved herein, or

c) may not result in an improved or more efficient scheme or operation,

the alteration or modification shall not be proceeded with or effected without the further authorization of the Board. The Operator must provide evidence that this major alteration or modification to the scheme or to any equipment will result in a benefit to the scheme or operation and be in the public interest.

(2) Should the Board consider the alteration or modification to be major, it may request some or all of the information outlined in Clause 13 below, as it deems appropriate.

13) Any plans for operations or development outside the approved development area shall be applied for to the Board for review. Such applications must:

a) describe the facility and infrastructure locations and the operation of the surface facilities. Justify any changes from those described in the original application and associated amendments. Evaluate the potential environmental impacts in the context of these changes and contrast with impacts predicted in the original application,

b) verify predictions and evaluate the performance of the environmental mitigation strategies proposed by the operator in the original application and associated amendments. Discuss how the approach to various mitigation strategies might be altered based on the findings of the evaluation and incorporated into future operations,

c) provide a summary of the information submitted for the Environmental Protection and Enhancement Act (EPEA), as well as any other environmental information related to the scheme and its amendment that may be required by an agency other than the Board,

d) provide geological and reservoir data that demonstrate that the reservoir in the proposed development area has been fully evaluated, including evaluation wells and seismic interpretation to fully understand where well pads and wells will be located. Submit updated bitumen, gas, and water mapping, reservoir properties, and reserves estimates for the existing development area, the proposed additional area, and the overall development area,

e) describe the Operator's participation in regional environmental initiatives. Discuss recommendations that have been generated from these regional initiatives and how these recommendations have been incorporated into the project,

f) provide a detailed description of the proposed amendment, including subsurface drainage pad design, such as the number of horizontal wells per drainage pad, the lateral spacing between horizontal wells, the length and trajectory of each horizontal well, the horizontal well elevations, and the subsurface drainage area corresponding to each horizontal well. Provide cross-section profiles for each horizontal well to demonstrate that the location and design have been optimized to conserve bitumen,

g) provide a detailed discussion of the scheme performance to date, with specific emphasis on key factors affecting the success of the scheme, and how this experience has been incorporated into the operating of the existing scheme and the design and operation of the scheme within the proposed additional area, including but not limited to:

i) the impact of top gas,
ii) the impact of top water,
iii) the impact of bottom water,
iv) the effectiveness of the cap rocks, and
v) the state of the steam chamber.

h) provide a discussion on modeling results, including the input data, modeling runs carried out, and the latest model predictions of bitumen recovery and pad production profiles based on history matching the field performance data. This information shall include:

i) a description of the model used,
ii) the input data files for the model cases run,
iii) for each case run, cross-sections perpendicular to the wellbore showing the changing fluid saturations and temperature with time to illustrate the growth of the steam chamber to abandonment,
iv) a discussion of the history match and parameters adjusted to achieve the match obtained, and
v) a discussion of the prediction cases run, plots of the results for key performance predictions (e.g. rates, steam oil ratio), and how the results were used in operation of the existing scheme, in the design and operation of the proposed new area, and in the scheduling of future development of the scheme.

14) Notwithstanding any date by which any work, act, matter, or thing is by this approval required to be done, performed, or completed, the Board, if it considers it proper to do so, may by stipulation alter the dates specified.

15) Attached hereto as Appendix B to this approval is the Order of the Lieutenant Governor in Council authorizing the granting of the approval.

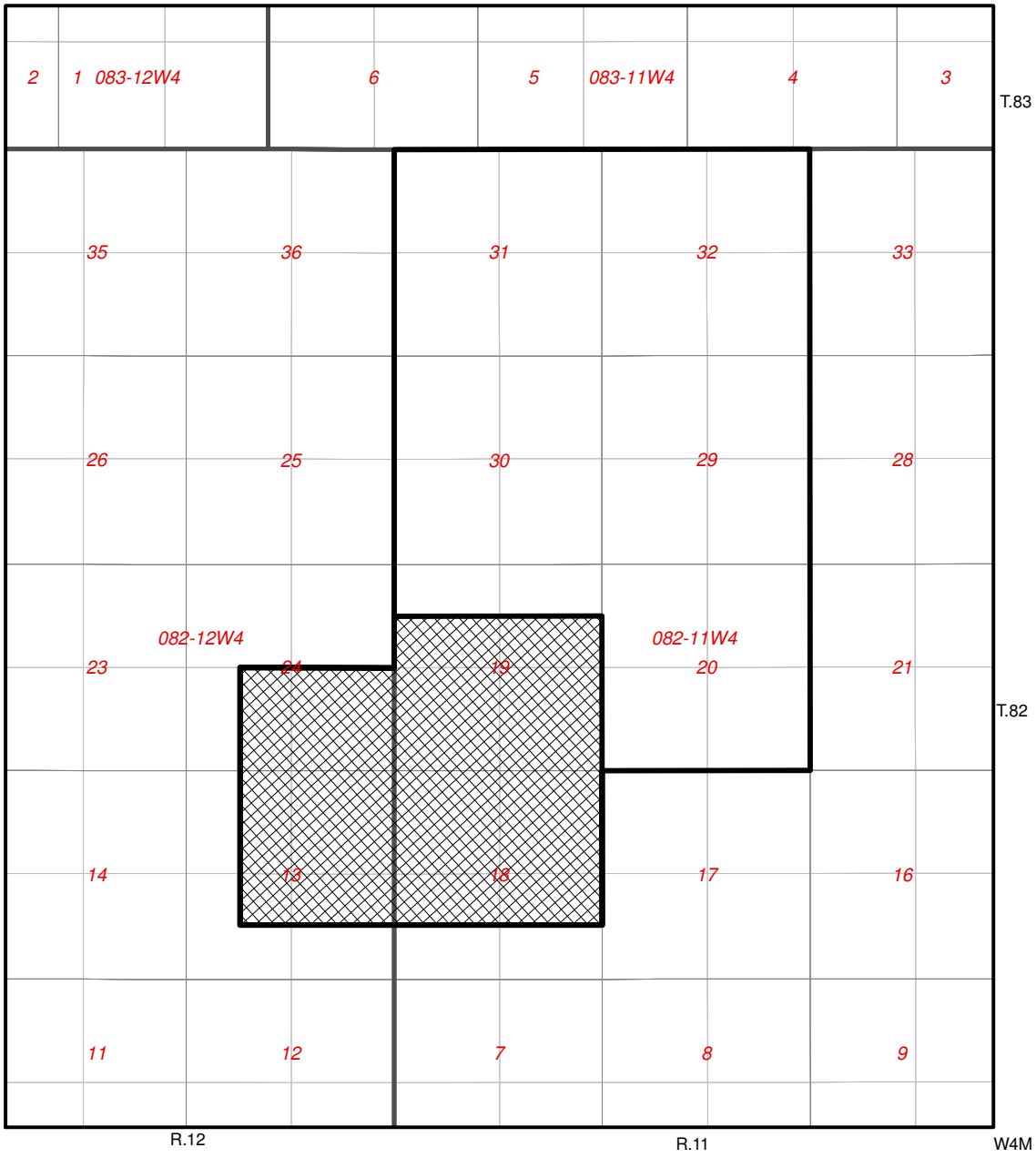
16) The Board may,

a) upon its own motion, or

b) upon the application of an interested person,

rescind or amend this approval at any time.

END OF DOCUMENT



ATHABASCA OIL SANDS AREA
APPENDIX A TO APPROVAL NO. 11253

Legend

Development Area

Project Area

Area(s) of Change

Added

Deleted

Appendix B
to
Approval No. 11253

O.C. 525/2008

NOV 25 2008

Province of Alberta
Order in Council

ORDER IN COUNCIL

Approved and ordered:

Lieutenant Governor

The Lieutenant Governor in Council authorizes the Energy Resources Conservation Board to grant Approval No. 11253 to Connacher Oil and Gas Limited in the form attached.

CHAIR

Alberta

For Information only

Recommended by: Minister of Energy

Authority: Oil Sands Conservation Act (section 10)

ERCB Energy Resources Conservation Board

COMMERCIAL SCHEME
Approval No. 11253A

MADE at the City of Calgary, in the Province of Alberta, on 19th day of March 2010.	ENERGY RESOURCES CONSERVATION BOARD

IN THE MATTER of a commercial scheme of Connacher Oil And Gas Limited (hereinafter called "the Operator") for the recovery of crude bitumen from the **Wabiskaw-McMurray Deposit in the Athabasca Oil Sands Area** from wells located in the project area outlined in Appendix A to this approval.

Whereas the Lieutenant Governor in Council, by Order in Council O.C. 525/2008 dated November 5, 2008, authorized the granting of Approval No. 11253;

Whereas the Energy Resources Conservation Board (ERCB) is prepared to approve an application by the Operator for an amendment to the scheme;

Whereas the ERCB deems it desirable for ease of reference to consolidate the amendment into the existing approval in a document to be known as Approval No. 11253A;

Therefore, pursuant to section 13 of the Oil Sands Conservation Act, chapter O-7 of the Revised Statutes of Alberta, 2000, the ERCB hereby approves Amendment A to Approval No. 11253 and issues Approval No. 11253A as follows:

1) The Operator's scheme as described in

   a) Application No. 1515981,
   b) Application No. 1636848,

   is approved, subject to the Oil Sands Conservation Regulation and the terms and conditions herein contained.

2) The recovery of crude bitumen from wells located in the development area outlined in Appendix A is approved.

3) Clauses 1 and 2 do not preclude alterations in design and equipment, provided that the ERCB is satisfied that the alterations are compatible with the outline of the scheme, are made for the better operation of the scheme, and do not result in unacceptable adverse impacts.

4) The recovery process approved for the project is Steam-Assisted Gravity Drainage (SAGD) utilizing only steam as the injection fluid unless otherwise stipulated by the ERCB.

5) Unless otherwise stipulated by the ERCB, the production of bitumen shall not exceed 1600 cubic metres per day (m^3/d) on an annual average basis.

6) The Operator shall conduct all operations to the satisfaction of the ERCB and in a manner that under normal operating conditions will permit:

   a) the recovery of the practical maximum amount of crude bitumen within the project area,

   b) the conservation of the practical maximum volume of produced gas at the well pads and central facilities,

   c) the minimization of flaring to non-routine operations such as start-up, shutdown, emergencies, infrequent upsets, and maintenance depressuring, and

   d) the practical maximum reuse of produced water.

7) Unless otherwise stipulated by the ERCB, the Operator shall:

   a) provide the ERCB with gamma ray spontaneous potential resistivity and gamma ray neutron density logs from total depth to surface casing for all vertical wells, and

   b) take full diameter cores of the entire bitumen-bearing interval of the Wabiskaw-McMurray Formation from not less than four evenly spaced vertical wells per section, and take full-diameter cores of bitumen-bearing intervals of other zones in the Mannville Group, if any, from at least one well per section, and at the ERCB's request

      i) analyze portions of such cores, and
      ii) provide suitable photographs of the clean-cut surface of each core slabbed.

8) Unless otherwise permitted by the ERCB, steam injection operations, having commenced at a well pad, shall continue until the well pad has produced a minimum of 50 per cent of the in-place volume of crude bitumen assigned to that well pad by the ERCB.

9) Where the Operator proposes to cease SAGD operations at a well pad that has produced less than 50 per cent of the in-place volume of crude bitumen and the ERCB's consent therefore is sought, the Operator shall advise the ERCB as to the following:

   a) the reason for proposing to cease SAGD operations,

   b) details of individual well workovers and recompletions attempted,

   c) detailed economics of continuing operations,

   d) the effect of ceasing SAGD operations on the bitumen recovery ultimately achievable from that part of the reservoir associated with the pad and immediately offsetting pads, and

   e) future plans for the well pad with reference to possible follow-up recovery techniques that could be applied and other zones that could be exploited.

10) The Operator shall ensure that sulphur recovery will be operational before total project sulphur emissions from flaring and combustion of gas containing hydrogen sulphide (H_2S) reach one tonne/day on a calendar quarter-year average basis, unless otherwise stipulated by

the ERCB. The calendar quarter-year sulphur recovery shall not be less than set out in Table 1 of the ERCB's *Interim Directive (ID) 2001-03: Sulphur Recovery Guidelines for the Province of Alberta* on the basis of the calendar quarter-year daily average sulphur content of produced gas streams flared and used as fuel at each central process site.

11) The Operator shall notify the ERCB of any proposed material alteration or modification of the SAGD scheme or to any equipment proposed for use therein prior to effecting the alteration or modification.

12) (1) Where, in the opinion of the ERCB, any alteration or modification referred to in Clause 11 to the scheme or to any equipment proposed for use therein:

a) is not of a minor nature,

b) is not consistent with the scheme approved herein, or

c) may not result in an improved or more efficient scheme or operation,

the alteration or modification shall not be proceeded with or effected without the further authorization of the ERCB. The Operator must provide evidence that this major alteration or modification to the scheme or to any equipment will result in a benefit to the scheme or operation and be in the public interest.

(2) Should the ERCB consider the alteration or modification to be major, it may request some or all of the information outlined in Clause 13 below, as it deems appropriate.

13) Any plans for operations or development outside the approved development area shall be applied for to the ERCB for review. Such applications must:

a) describe the facility and infrastructure locations and the operation of the surface facilities. Justify any changes from those described in the original application and associated amendments. Evaluate the potential environmental impacts in the context of these changes and contrast with impacts predicted in the original application,

b) verify predictions and evaluate the performance of the environmental mitigation strategies proposed by the operator in the original application and associated amendments. Discuss how the approach to various mitigation strategies might be altered based on the findings of the evaluation and incorporated into future operations,

c) provide a summary of the information submitted for the Environmental Protection and Enhancement Act (EPEA), as well as any other environmental information related to the scheme and its amendment that may be required by an agency other than the ERCB,

d) provide geological and reservoir data that demonstrate that the reservoir in the proposed development area has been fully evaluated, including evaluation wells and seismic interpretation to fully understand where well pads and wells will be located. Submit updated bitumen, gas, and water mapping, reservoir properties, and reserves estimates for the existing development area, the proposed additional area, and the overall development area,

e) describe the Operator's participation in regional environmental initiatives. Discuss recommendations that have been generated from these regional initiatives and how these recommendations have been incorporated into the project,

f) provide a detailed description of the proposed amendment, including subsurface drainage pad design, such as the number of horizontal wells per drainage pad, the lateral spacing between horizontal wells, the length and trajectory of each horizontal well, the horizontal well elevations, and the subsurface drainage area corresponding to each horizontal well. Provide cross-section profiles for each horizontal well to demonstrate that the location and design have been optimized to conserve bitumen,

g) provide a detailed discussion of the scheme performance to date, with specific emphasis on key factors affecting the success of the scheme, and how this experience has been incorporated into the operating of the existing scheme and the design and operation of the scheme within the proposed additional area, including but not limited to:

   i) the impact of top gas,
   ii) the impact of top water,
   iii) the impact of bottom water,
   iv) the effectiveness of the cap rocks, and
   v) the state of the steam chamber.

h) provide a discussion on modeling results, including the input data, modeling runs carried out, and the latest model predictions of bitumen recovery and pad production profiles based on history matching the field performance data. This information shall include:

   i) a description of the model used,
   ii) the input data files for the model cases run,
   iii) for each case run, cross-sections perpendicular to the wellbore showing the changing fluid saturations and temperature with time to illustrate the growth of the steam chamber to abandonment,
   iv) a discussion of the history match and parameters adjusted to achieve the match obtained, and
   v) a discussion of the prediction cases run, plots of the results for key performance predictions (e.g. rates, steam oil ratio), and how the results were used in operation of the existing scheme, in the design and operation of the proposed new area, and in the scheduling of future development of the scheme.

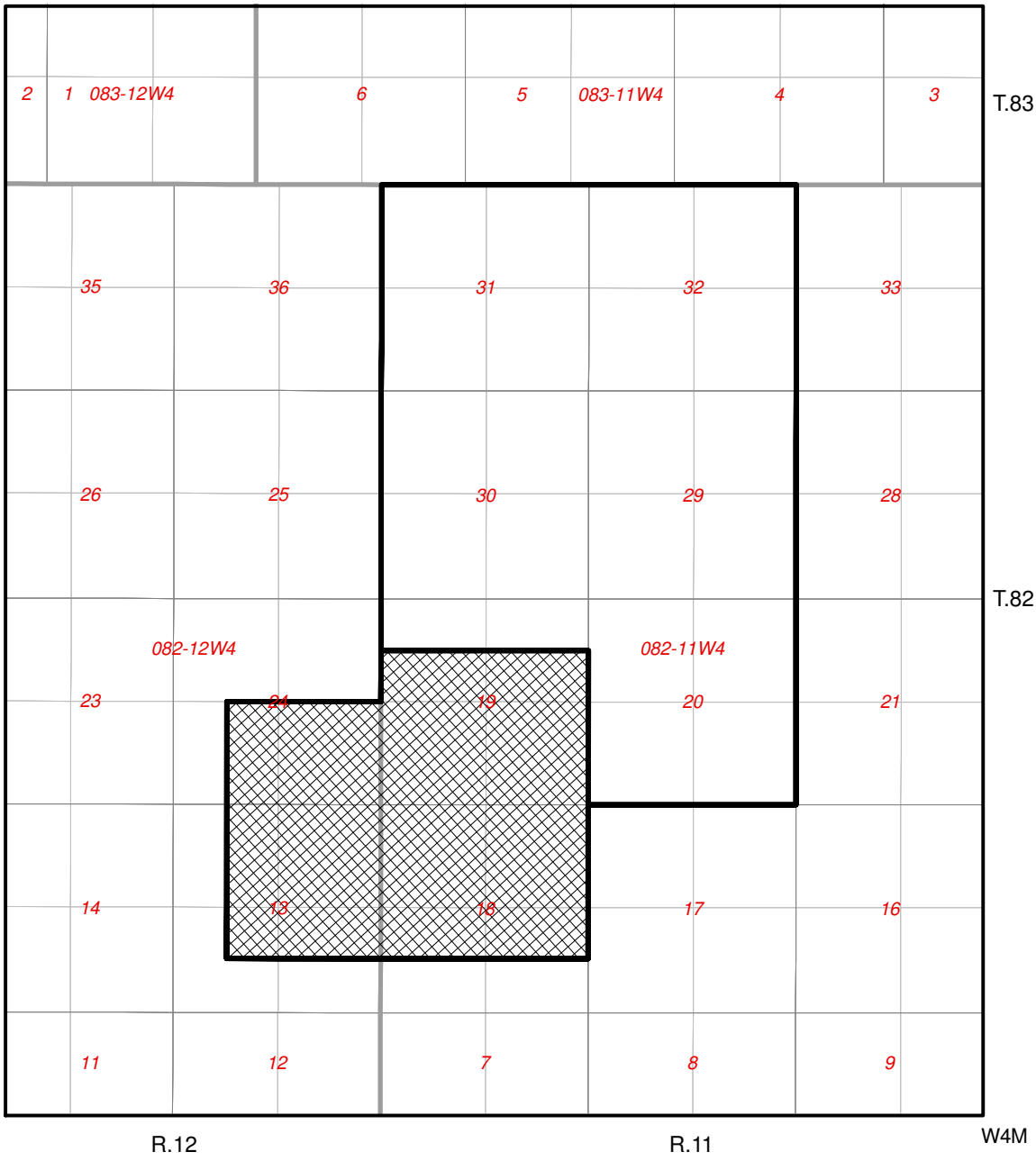
14) Notwithstanding any date by which any work, act, matter, or thing is by this approval required to be done, performed, or completed, the ERCB, if it considers it proper to do so, may by stipulation alter the dates specified.

15) The ERCB may,

a) upon its own motion, or
b) upon the application of an interested person,

rescind or amend this approval at any time.

END OF DOCUMENT



ATHABASCA OIL SANDS AREA
APPENDIX A TO APPROVAL NO. 11253A

Legend

Project Area

Development Area

Area(s) of Change

Added

Deleted

AUC
Alberta Utilities Commission

Fifth Avenue Place
#400, 425 – 1 Street SW
Calgary, Alberta T2P 3L8

DECISION REPORT DISPOSITION

MADE at the City of Calgary, in the Province of Alberta, on

2nd day of March 2010.

For Alberta Utilities Commission

Decision Report Number 2010-094

Application Number 1605214

Decision Report #2010-094 is now available on http://www.auc.ab.ca/dds.iar/dds-iar-default.asp?App=1605214

If you have any questions or concerns, please contact Pat Wickel at (403) 592-4418.

Connacher Oil and Gas Limited

Cogeneration Plant and Industrial System Designation
Great Divide and Algar Oil Sands Projects

March 2, 2010

ALBERTA UTILITIES COMMISSION
Decision 2010-094: Connacher Oil and Gas Limited
Cogeneration Plant and Industrial System Designation
Great Divide and Algar Oil Sands Projects
Application No. 1605214
Proceeding ID. 263

March 2, 2010

Published by
Alberta Utilities Commission
Fifth Avenue Place, 4th Floor, 425 - 1 Street SW
Calgary, Alberta
T2P 3L8

Telephone: (403) 592-8845
Fax: (403) 592-4406

Web site: www.auc.ab.ca

ALBERTA UTILITIES COMMISSION
Calgary Alberta

CONNACHER OIL AND GAS LIMITED
COGENERATION PLANT AND **Decision 2010-094**
INDUSTRIAL SYSTEM DESIGNATION **Application No. 1605214**
GREAT DIVIDE AND ALGAR OIL SANDS PROJECTS **Proceeding ID. 263**

1 INTRODUCTION

1. Connacher Oil And Gas Limited (Connacher or the Applicant) filed an application with the Alberta Utilities Commission (AUC or the Commission) requesting approval to construct and operate a cogeneration plant and for an industrial system designation (ISD). The application was registered on June 25, 2009, as Application 1605214 (Application).

2. Connacher currently operates the Great Divide Oil Sands Project (Great Divide Project) located in northeastern Alberta, approximately 80 kilometres South of Fort McMurray. Connacher is developing the Algar Steam Assisted Gravity Drainage (SAGD) oil sands mining and extraction project (the Algar Project or Algar site) located East of, and adjacent to, its existing Great Divide Project.

3. Connacher is requesting AUC approval, pursuant to section 11 of the *Hydro and Electric Energy Act* to construct and operate a 15-MW natural gas fuelled cogeneration plant within the Algar Project. Connacher is also applying to the AUC pursuant to section 4 of the *Hydro and Electric Energy Act* for designation of the electrical system at the Algar and Great Divide projects as an industrial system.

4. The proposed cogeneration plant will consist of a single gas turbine, coupled with an electric generator and a heat recovery steam generator (HRSG). It will have a nominal output of 15 MW under ISO conditions and will supply the on-site load to the Algar Project, anticipated to be 8 MW, with the balance supplied to the existing Great Divide project. The gas turbine exhaust will run through the HRSG to create steam that will be used in the SAGD process.

5. The proposed cogeneration plant will be installed at the Algar Project site, specifically on LSD 15 of Section 18, Township 82, and Range 11, West of the 4th meridian. The Applicant expects the proposed plant to be operational by the end of September, 2010.

6. Connacher is also requesting a designation of its electrical generation and distribution systems serving the Algar and the Great Divide projects as an industrial system, pursuant to section 4 of the *Hydro and Electric Energy Act*. The Applicant has also requested that the Commission make rules exempting the electric energy produced from and consumed by the proposed industrial system from the *Electric Utilities Act* and its Regulations, pursuant to section 117 of the *Electric Utilities Act*. The proposed ISD boundary, which corresponds to the outline of Connacher's lease, encompasses the 58 sections of land shown on the attached map provided by Connacher and included as Figure 1 shown at the end of this decision.

7. Connacher further set out in the Application its public consultation program, noise and environmental impacts, a more detailed explanation of the electric system for which it is requesting the designation and the other approvals it has received for the proposed development. These topics are discussed below.

2 APPLICATION

2.1 Public Consultation Program

8. The Applicant notified all potentially directly and adversely affected persons within close physical proximity to the Algar Project and those that may have an interest in the scope or extent of the ISD. These included local municipalities, First Nations groups, a Metis group, other oil and gas companies, the Alberta Electric System Operator and ATCO Electric Ltd. (ATCO Electric). The Applicant indicated that no concerns were expressed by any of these parties.

9. The nearest residence to the proposed development is a trapper's cabin, which is used as a temporary residence and is located 5.4 kilometres West of the facility. There are no residences within 2,000 metres of the Algar Project. The nearest community is the Hamlet of Mariana Lake and is approximately 25 kilometres southwest of the proposed development.

2.2 Noise and Environmental Impacts

10. Connacher filed a Noise Impact Assessment (NIA) indicating that the maximum predicted sound levels at a distance of 1.5 kilometres was below the night-time Permissible Sound Level of 40 dBA Leq set out in Commission *Rule 012: Noise Control* (Rule 012).

11. Connacher provided details of atmospheric emissions (i.e. nitrogen oxides, sulphur dioxide, and particulate matter) from the power plant demonstrating compliance with the current *Alberta Source Emissions Standard*.

12. Connacher also provided results of dispersion modelling conducted for the proposed Algar Project, which included the proposed cogeneration plant, for normal and upset operating conditions. These results demonstrated that the ground level concentrations of pollutants would not exceed the levels specified in the *Alberta Ambient Air Quality Objectives and Guidelines*.

13. Connacher provided a summary of its site assessment indicating that no archaeological, historical or paleontological resources were found. Alberta Culture and Community Spirit did not require a Historic Resources Impact Assessment and granted *Historical Resources Act* clearance to Connacher.

2.3 Electric System to be designated

14. The existing Great Divide Project currently receives electric service from the local distribution company, ATCO Electric, at the 25 kilovolts (kV) voltage level. An internal distribution system, currently owned by ATCO Electric, feeds the processing plant facilities and the well sites that are dispersed throughout Connacher's lease.

15. The new Algar Project will house the proposed cogeneration plant, and will have a similar internal 25-kV network to feed the processing plant and well sites. Furthermore, a new 25-kV distribution line, of approximately 6 kilometres, would connect the Algar Project's

distribution network with the Great Divide Project's distribution network allowing electric energy generated by the cogeneration plant at the Algar site to supply loads to the Great Divide Project.

16. Connacher has provided a copy of a letter from ATCO Electric indicating that it has agreed to the formation of the ISD within its service area.

17. Connacher also indicates that ATCO Electric will construct, own and operate the 25-kV lines within the ISD area under a Facilities Charge agreement between ATCO Electric and Connacher. This is confirmed in ATCO Electric's letter where it states the following:

> Once the ISD is approved by the AUC and invoked by Connacher, the commercial obligations at each electrical service on the Great Divide and Algar facility will be transferred to a Facilities Charge agreement between ATCO and Connacher. All future electrical services at each facility will also be serviced by ATCO Electric under the Facilities Charge Agreement.

18. In summary, the electric facilities that would be designated as an industrial system are as follows:

- the cogeneration plant owned by Connacher;
- the power plant substation (to step up the generator voltage to 25 kV) also owned by Connacher; and
- the 25-kV network (described above) to be constructed, owned and serviced by ATCO Electric under the Facilities Charge agreement between ATCO Electric and Connacher.

2.4 Other Approvals

19. Connacher received a development permit from the Regional Municipality of Wood Buffalo for the Algar Project, which includes the cogeneration facility.

20. Alberta Environment has advised that approval pursuant to the *Environmental Protection and Enhancement Act* for industrial releases is forthcoming.

21. The Commission reviewed the Application and requested additional information from Connacher on August 13 and November 10, 2009. After completing a review of all of the information provided by Connacher, the Commission deemed the Application complete and issued a Notice of Application on January 12, 2010.

22. The Notice of Application was mailed directly to all potentially affected parties as identified by the Applicant. The notice was also sent electronically to a list of other potential stakeholders. In addition, the notice was published in the Fort McMurray Today on January 14, 2010. The Commission received no objections, interventions, or statements of intent to participate in response to the Notice of Application.

3 COMMISSION FINDINGS

23. The Commission considered the ISD Application pursuant to the principles and criteria set out in section 4 of the *Hydro and Electric Energy Act*. Section 4(2) sets out the principles the Commission shall have regard to when considering an ISD application and section 4(3) sets out the criteria that must be met prior to the Commission making a designation. These principles and criteria, as well as the Commission's findings, are addressed below.

Principle 4(2)(a) - Most Economic Source of Generation

24. This principle requires proponents to demonstrate that the internal supply through on-site generation is the most economic source of power for the industrial complex. To this end, the Commission observes that Connacher provided a 25-year cash-flow comparison of the following two scenarios:

- A standalone SAGD facility purchasing power from the grid and purchasing natural gas for steam generation (non-cogeneration scenario); and
- A SAGD facility with an electrical load sized cogeneration component purchasing gas for both steam generation and electrical generation, expanded in year 4 to contemplate facility expansion where small amounts of surplus power are available for export onto the grid (cogeneration scenario).

25. Furthermore, the Commission notes that the 25-year cash-flow comparison of the two scenarios produced positive net present values under different discount rate assumptions and internal rate of return estimates between 19 percent and 22 percent, favouring the cogeneration scenario over the non-cogeneration scenario.

26. In addition, the Commission reviewed the economic comparison provided by Connacher, including all of the costs and benefits as well as assumptions identified.

27. As a result, the Commission finds that the proposed ISD, with the cogeneration option, satisfies the most economic source of generation principle.

Principle 4(2)(b) - Efficient exchange, with the interconnected electric system, of electric energy that is in excess of the Industrial System's own requirements, improved voltage stability, reduction of losses and congestion of transmission lines

28. This principle requires proponents to demonstrate that the designation supports the development of the economical supply of generation to meet the requirements of integrated industrial processes, the efficient exchange, with the interconnected electric system, of electric energy that is in excess of the industrial system's own requirements, and the making of decisions respecting the location of generation and consumption facilities so that the efficiency of the interconnected electric system is improved, including improved voltage stability and reduction of losses and congestion on transmission lines.

29. In this case, the Commission notes that the Algar Project will be initially equipped with a cogeneration plant capable of producing 13 MW at the site[1] that will provide power and steam for the initial phases of development of the SAGD facilities. Also, in four years, during the final

[1] The cogeneration plant is rated at 15 MW under ISO conditions. The generating capacity at the site (13 MW) is less than under ISO conditions due to factors such as ambient temperature, elevation, etc.

phases of development of the SAGD facilities, a second similar generating unit will be added to the cogeneration plant, which will supply the entire electrical load of the SAGD facilities. There will be a small electric capacity surplus (3.2 MW) that will be sold to the Alberta Power Pool. Therefore, the Commission finds that the proposed ISD will support the continued exchange with the interconnected electric system of electric energy that is in excess of the industrial system's own requirements.

30. The Commission considered that the existing Great Divide Project, which does not have internal generation, is currently connected to, and supplied by, ATCO Electric's distribution network. Once the Algar Project is completed, and if the ISD designation is granted encompassing both the Algar and Great Divide projects, the industrial complex will continue to be connected to ATCO Electric's distribution network. The Commission is of the view that the addition of internal generation (at the Algar site) will improve operating efficiency, as it will provide additional voltage stability in the area.

31. The Commission accepts Connacher's submissions that the transmission losses associated with the exchange of electric energy that is in excess of the industrial system's own requirements are expected to be negligible given the small 3.2 MW surplus that the industrial complex will sell to the Alberta Power Pool. Without internal generation, the total load would have been supplied by the ATCO Electric network and this would have resulted in significantly larger line losses.

32. The Commission notes that there is no known transmission congestion attributed to the Algar Project's generation in the area.

33. Therefore, the Commission considers that the proposed ISD also meets the principles in subsection 4(2)(b) of the *Hydro and Electric Energy Act*.

Principle 4(2)(c) and (d) - Cost Avoidance, Uneconomic Bypass and Duplication

34. This principle requires proponents to demonstrate that the designation does not facilitate the development of independent electric systems that attempt to avoid costs associated with the interconnected electric system and uneconomical by-pass of the interconnected electric system.

35. The Commission notes that the Great Divide and Algar projects will continue to be connected to the grid via ATCO's distribution system. This connection will allow Connacher to sell surplus electric energy to the Alberta Power Pool and to consume electric energy from the Alberta Power Pool during planned and unplanned outages of Connacher's cogeneration plant. Therefore, Connacher will be paying tariffs for the supply of electric energy to the Alberta Power Pool and for receiving stand-by energy from the Alberta Power Pool. Therefore, the Commission is satisfied that there will be no avoidance of costs associated with the interconnected electric system.

36. The Commission also notes that in this case ATCO Electric will construct, own and operate the 25-kV network within the ISD under a Facilities Charge agreement between ATCO Electric and Connacher. ATCO Electric has agreed to this arrangement. Therefore, there would be no duplication or by-pass of the interconnected electric system.

37. In summary, for the reason stated in paragraphs 35 and 36 above, the Commission considers that the proposed ISD also meets the principles set out in the section 4(2)(c) and (d) of the *Hydro and Electric Energy Act*.

Criterion 4(3)(a)

38. This criterion requires proponents to demonstrate that the electric system includes a generating unit located on the property of the one or more industrial operations it is intended to serve, that there is a high degree of integration of the electric system with one or more industrial operations the electric system forms part of and serves, and a high degree of integration of the components of the industrial operations.

39. In this case, the Commission considered that the Algar Project will be initially equipped with one cogeneration plant capable of producing 13 MW at the site, which will provide power and steam for the initial phases of development of the SAGD facilities. Connacher has requested approval, as part of this Application, for this first cogeneration plant at the Algar site. In four years, Connacher plans to add a second similar generating unit to the cogeneration plant.

40. The Commission notes that both the Great Divide and Algar projects, which are owned by Connacher, are industrial processes that produce bitumen by way of SAGD technology. They will be physically connected by pipelines that will transfer diluents and other liquids between the Algar and Great Divide projects' processing plants. In addition, the facility on the Algar site will also supply electric energy to the Great Divide Project facility via the 25-kV distribution network. Therefore, the Commission considers that criterion 4(3)(a) is met, as there is internal generation and there is a high degree of integration of the components of the industrial operations.

Criterion 4(3)(b)

41. This criterion states that the industrial operations process a feedstock, produce a primary product or manufacture a product.

42. The Commission considered that the SAGD process, used by the Algar and Great Divide facilities, involves drilling pairs of horizontal wells (a top and a bottom well) and injecting steam for several months until there is fluid connection between the two wells. Connacher explained that the process continues as steam is injected into the top horizontal well and reservoir fluids are extracted from the bottom horizontal well. The extracted fluids are then piped to a central processing facility where bitumen, steam condensate, other gases and water are separated and treated. The bitumen is then either shipped to an upgrader and ultimately sold as Premium Synthetic Crude or as bitumen. Based on this process, the Commission finds that criterion 4(3)(b) is met.

Criterion 4(3)(c)

43. This criterion states that there is a common ownership of all of the components of the industrial operations. In this case, the Commission notes that all equipment and facilities are owned by the Applicant and considers that criterion 4(3)(c) is met.

Criterion 4(3)(d)

44. This criterion states that the whole of the output of each component within the industrial operation is used by that operation and is necessary to constitute its final products. In this Application, the Commission considered that the whole of the output of each component within the industrial operation (reservoir fluid from production wells) is used by that operation (the processing plants) and is necessary to constitute its final products (bitumen). Therefore, the Commission finds that criterion 4(3)(d) has been met.

Criterion 4(3)(e)

45. This criterion states that there is a high degree of integration of the management of the components and processes of the industrial operations. In this case, the Commission notes that the Algar and Great Divide projects are owned by Connacher and will be managed as a single integrated operation. Therefore, the Commission considers that criterion 4(3)(e) has been met.

Criterion 4(3)(f)

46. This criterion states that an application to the Commission for a designation demonstrates significant investment in both the expansion and extension of the industrial operations processes and the development of the electricity supply. The Commission took note that the total facility investment is expected to be in excess of $390 million, including new SAGD facilities, wells, electrical generation, and distribution facilities. Therefore, the Commission considers that criterion 4(3)(f) has been met.

Criterion 4(3)(g)

47. This criterion applies where an industrial operation extends beyond contiguous property. In this case, the Commission observes that the industrial operations will take place within the single contiguous area of crown land within the Applicant's lease boundary (as shown in Figure 1) and will not extend beyond contiguous property. Therefore, the Commission finds that criterion 4(3)(g) does not apply.

48. As a result of the above stated findings, the Commission is satisfied that all of the principles set out in section 4(2) and all of the applicable criteria set out in section 4(3) of the *Hydro and Electric Energy Act* have been met.

49. The Commission notes that ATCO Electric, the Distribution Facility Owner (DFO) in whose service area the proposed ISD is located, has agreed to the formation of the ISD within its service area.

50. With respect to the applied-for cogeneration facility, the Commission has reviewed the Application and has determined that it meets the requirements as stipulated in AUC Rule 007. The Commission notes that a noise impact assessment demonstrating compliance with the noise standards has been provided and the cogeneration plant will have minimal impact on the environment as it meets the source emission standards as well as the Alberta Ambient Air Quality Objectives and Guidelines. Additionally, all other necessary approvals have been obtained by Connacher.

51. Finally, the Commission notes that a participant involvement program has been conducted by the Applicant with respect to both the proposed cogeneration plant and the proposed ISD and that there are no outstanding public or industry objections or concerns.

52. For all of the foregoing reasons the Commission finds that Connacher's proposal should be approved.

4 DECISION

53. Pursuant to sections 4 and 11 of the Hydro and Electric Energy Act the Commission approves the Application subject to the terms and conditions as set out in Appendix 1 – Industrial System Designation Order U2010-106 – March 3, 2010 and Appendix 2 – Power Plant Approval U2010-107 – March 3, 2010 which are being released concurrently with this Decision. The Commission further grants the subject industrial system an exemption for the electric energy produced from, and consumed by, the industrial system from the operation of the *Electric Utilities Act*, in accordance with section 117 of the *Electric Utilities Act*.

Dated on March 2, 2010.

ALBERTA UTILITIES COMMISSION

(original signed by)

Carolyn Dahl Rees
Vice-Chair

(original signed by)

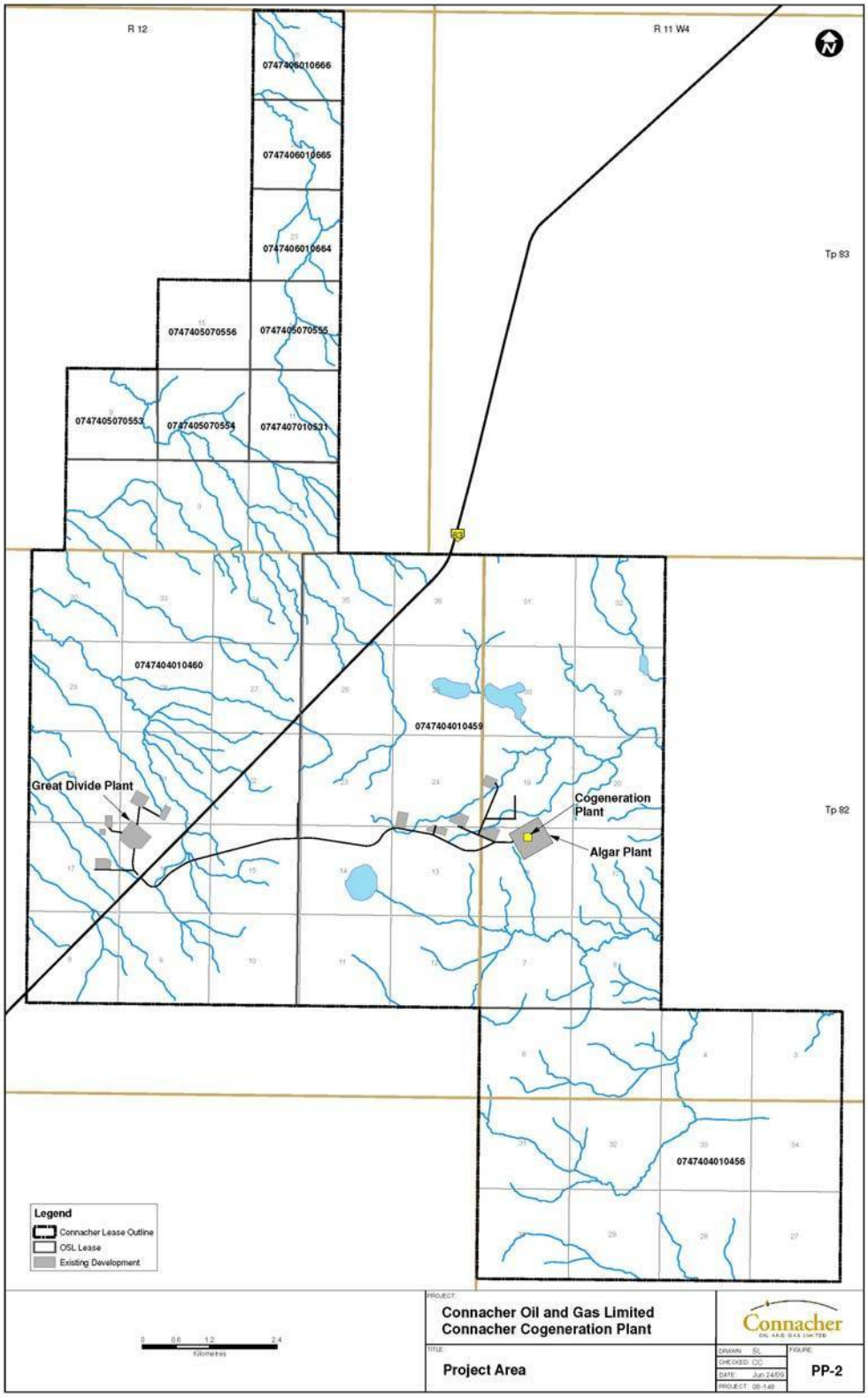
Anne Michaud
Commissioner

(original signed by)

Bill Lyttle
Commissioner

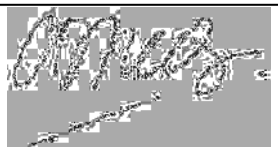
FIGURE 1

ISD BOUNDARY MAP PROVIDED BY CONNACHER



AUC
Alberta Utilities Commission

Industrial System Designation
Order No. U2010-106

DATED on the 2nd day of March, 2010.	 ALBERTA UTILITIES COMMISSION

Appendix 1 to Decision 2010-094 Connacher Oil and Gas Limited Algar and Great Divide Oil Sands Industrial System Designation	 Application No. 1605214 Proceeding ID. 263

The Alberta Utilities Commission (Commission), pursuant to section 4 of the *Hydro and Electric Energy Act* and sections 2(1)(d) and 117 of the *Electric Utilities Act*, and Decision 2010-094 granted to Connacher Oil and Gas Limited (Connacher) this Order for an Industrial System, subject to the provisions of the *Hydro and Electric Energy Act*, the *Electric Utilities Act* and the *Alberta Utilities Commission Act* (the Acts), any Regulations made under the Acts, any Orders made under the Acts, the Commission Rules made pursuant to the *Alberta Utilities Commission Act*, and the following terms and conditions:

1. The Industrial System Designation encompasses all the facilities at the Algar and Great Divide Oil Sands projects owned by Connacher. These facilities are located within Connacher oil lease area in Townships 81, 82, and 83, and Ranges 11 and 12 all West of the 4th meridian, as described in Application 1605214;

2. The Industrial System shall be comprised of the following major electric facilities:

   - A cogenerating plant consisting of one gas turbine generating unit rated 15 MW under ISO conditions, a heat recovery steam generator, and associated auxiliary equipment;
   - A cogenerating plant substation to step up the generator's voltage to 25 kilovolts (kV); and
   - An electric distribution network of 25 kV or less to supply all facilities at the Algar and Great Divide Oil Sands projects described in clause 1 above.

3. Connacher shall hold valid permit and licences, pursuant to sections 14 and 15 of the *Hydro and Electric Energy Act*, for any future transmission facilities that may be included in the subject Industrial System;

4. The electric energy produced from, and consumed by, the subject Industrial System is exempt from the operation of the *Electric Utilities Act*, in accordance with section 117 of the *Electric Utilities Act;*

5. Connacher shall notify the Commission of any proposed changes to the subject Industrial System, including changes in ownership that may result in contravening the principles and the criteria set out in section 4 of the *Hydro and Electric Energy Act* and applied by the Commission in its decision to grant the Application;

6. Connacher shall notify the Commission of any proposed changes to the subject Industrial System that may affect other parties or adjacent occupants, and make an application for the proposed changes pursuant to relevant sections of the *Hydro and Electric Energy Act*, if the Commission so directs;

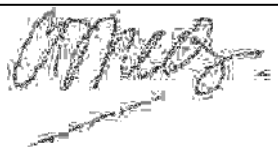
7. This Order is not transferable unless approved by the Commission; and

8. The Commission may cancel or suspend this Order, in whole or in part, in accordance with section 41 of the *Hydro and Electric Energy Act* or may review this Order, in whole or in part, upon its own motion or upon an application by an interested party, in accordance with section 10 of the *Alberta Utilities Commission Act*.

END OF DOCUMENT

AUC
Alberta Utilities Commission

Power Plant
Approval No. U2010-107

DATED on the 2nd day of March, 2010.	 ALBERTA UTILITIES COMMISSION

Appendix 2 to Decision U2010-094 Connacher Oil and Gas Limited 15-MW Cogeneration Plant	 Application No. 1605214 Proceeding ID. 263

Connacher Oil and Gas Limited (Operator) by Application No. 1605214 (Application), registered on June 25, 2009, applied to the Alberta Utilities Commission (the Commission) for approval to construct and operate a 15-MW cogeneration plant (Power Plant) at the Algar Oil Sands Project in the Fort McMurray area.

The Commission, pursuant to section 11 of the *Hydro and Electric Energy Act*, approved the Application in Decision 2010-094 and granted an Approval to the Operator, to construct and operate the Power Plant, subject to the provisions of the *Hydro and Electric Energy Act* and the *Alberta Utilities Commission Act* (the Acts), any Regulations made under the Acts, any Orders made under the Acts, the Commission Rules made pursuant to the *Alberta Utilities Commission Act*, and the following terms and conditions:

1. The Power Plant shall be located in LSD 15 of Section 18, Township 82, Range 11 and west of the 4th meridian;

2. The Power Plant shall consist of one gas turbine generating unit rated 15 MW under ISO conditions, a heat recovery steam generator, and associated auxiliary equipment;

3. The Operator shall submit a progress report to the Commission in writing, once every three months, on construction progress pursuant to section 3 of the *Hydro and Electric Energy Regulation*. The first progress report shall be filed with the Commission three months from the date of issuance of this approval;

4. Unless otherwise authorized by the Commission, construction of the Power Plant shall be completed by March 31, 2011;

5. The Operator shall notify the Commission within 30 days of completing the Power Plant;

6. This Approval is not transferable unless approved by the Commission; and

7. The Commission may cancel or suspend this Approval, in whole or in part, in accordance with section 41 of the *Hydro and Electric Energy Act* or may review this Approval, in whole or in part, upon its own motion or upon an application by an interested party, in accordance with section 10 of the *Alberta Utilities Commission Act*.

END OF DOCUMENT

Alberta
ENVIRONMENT

LICENCE TO TEMPORARILY DIVERT WATER
PROVINCE OF ALBERTA
WATER ACT, R.S.A. 2000, c.W-3, as amended

LICENCE NO.: 00262807-00-00

FILE NO.: 082-12-W4

EFFECTIVE DATE: 2009-08-11

EXPIRY DATE: 2010-08-10

SOURCE OF WATER: borrow pit (LSD 16-13-082-12-W4)

LICENSEE: Connacher Oil and Gas Limited

Pursuant to the *Water Act*, R.S.A. 2000, c.W-3, as amended, a licence for the temporary diversion of water is issued to the Licensee to:

operate a works and to divert up to 30000 cubic metres of water from the source of water for the purpose(s) of industrial (drilling, dust control, hydrostatic testing, and miscellaneous)

subject to the attached terms and conditions.

Designated Director under the Act: Sara Rajack for
Patrick Marriott, P. Eng.

Date Signed: 2009-08-11

DEFINITIONS

1.0 All definitions from the Act and the Regulations apply except where expressly defined in this licence.

1.1 In all parts of this licence:

(a) "Act" means the Water Act, RSA 2000, c. W-3, as amended;

(b) "Application" means the written submissions to the Director in respect of application number 001-00262807;

(c) "Aquifer" means the underground water-bearing formation that is capable of yielding water, that is accessed by the works authorized by this licence;

(d) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(e) "Monitoring well" means the well used to monitor the water levels associated with the diversion of water authorized by this licence;

(f) "Production well" means any well used to divert water for the purpose of this licence;

(g) "Regulations" means the regulations, as amended, enacted under the authority of the Act.

GENERAL

2.0 The Licensee shall immediately report to the Director by telephone any contravention of the terms and conditions of this licence at 1-780-422-4505.

2.1 The terms and conditions of this licence are severable. If any term or condition of this licence is held invalid, the application of such term or condition to other circumstances and the remainder of this licence shall not be affected thereby.

2.2 The Licensee shall not deposit or cause to be deposited any substance in, on or around the source of water that has or may have the potential to adversely affect the source of water.

DIVERSION OF WATER

3.0 This licence is appurtenant to LSD 16-13-082-12-W4.

3.1 The Licensee shall divert water only for the purpose(s) specified in this licence.

3.2 The Licensee shall divert water only from the source of water specified in this licence.

3.3 The works used to divert the water authorized by this licence shall include the production well referred to in the application dated August 5, 2009.

3.4 The Licensee shall not exceed any of the limits specified in Table 3-1.

3.5 The Licensee shall not position the pump intake in the production well at a depth greater than the maximum pump intake depth specified in Table 3-1.

TABLE 3-1

WELL NUMBER	LEGAL LAND DESCRIPTION for WELL LOCATION	PRODUCTION INTERVAL (metres below grade)	MAXIMUM PUMP INTAKE DEPTH (metres below grade)	LIMITS	
				MAXIMUM RATE OF DIVERSION (cubic metres per day)	MAXIMUM DIVERSION (cubic metres)
borrow pit	16-13-082-12-W4	0.0-25.0	n/a	500	30000

3.6 Prior to diverting any water from the source of water, the Licensee shall equip the production well with a meter, which cumulatively measures the quantity of all water diverted during the term of this licence.

3.7 The Licensee shall maintain each measuring device referred to in 3.6 at all times.

MONITORING AND REPORTING

4.0 During the term of the licence, the Licensee shall measure the water level(s) in the production well on a monthly basis while water is being diverted.

4.1 The Licensee shall measure the total volume of water diverted on each month using the meter specified in 3.6.

4.2 The Licensee shall record and retain all of the following information for a minimum of one year after the expiry date of this licence:

(a) the place, date and time of all monitoring and measuring or estimating;

(b) the results obtained pursuant to 4.0 and 4.1; and

(c) the name of the individual who conducted the monitoring, measuring or estimating stipulated in (a) and (b).

4.3 The Licensee shall report to the Director the results of the recording in 4.0 and 4.1 using the "Water Use Reporting System" and any other information required in writing by the Director.

4.4 The Licensee shall submit the report required in 4.3 on or before the end of the month following the month in which the information is based upon was collected.

RECLAMATION

5.0 The Licensee shall reclaim all abandoned wells or other holes related to the water diversion in accordance with the Act and the Regulations.

5.1 The Licensee shall submit a reclamation report to the Director documenting the actions taken under 5.0 within 90 days after the reclamation is complete.

Date Signed: 2009-08-11

James Pojasek for

Designated Director under the Act
Patrick Marriott, P. Eng.

Alberta
ENVIRONMENT

LICENCE AMENDMENT

PURSUANT TO THE PROVISIONS OF THE *WATER ACT*

LICENCE No. 00262807-00-00

FILE No. 082-12-W4

AMENDMENT No. 00262807-00-01

Connacher Oil and Gas Limited
900, 332-6 Avenue SW
Calgary, Alberta T2P 0B2

The licence is amended as follows:

1. Delete conditions 3.5 and 5.0 of the licence.

2. Revised the following conditions:

3.3 The works used to divert the water authorized by this licence shall include the diversion site(s) referred to in the application dated August 3, 2009.

3.5 Prior to diverting any water from the source of water, the Licensee shall equip the diversion site(s) with a meter, which cumulatively measures the quantity of all water diverted during the term of this licence.

3.6 The licensee shall maintain the measuring device referred to in 3.5 at all times.

4.0 During the term of the licence, the Licensee shall measure the water level(s) at the diversion site(s) on a monthly basis while water is being diverted.

4.1 The Licensee shall measure the total volume of water diverted on each month using the meter specified in 3.5.

Designated Director under the Act

2009 09 01
Dated (Y/M/D)

Form WA AA1 (2001)

ENVIRONMENT

LICENCE TO TEMPORARILY DIVERT WATER
PROVINCE OF ALBERTA
WATER ACT, R.S.A. 2000, c.W-3, as amended

LICENCE NO.: 00262534-00-00

FILE NO.: 00223694

EFFECTIVE DATE: 2009-08-01

EXPIRY DATE: 2010-07-31

SOURCE OF WATER: Grand Rapids Aquifer (Section 19-082-11-W4)

LICENSEE: Connacher Oil and Gas Limited

Pursuant to the *Water Act*, R.S.A. 2000, c.W-3, as amended, a licence for the temporary diversion of water is issued to the Licensee to:

operate a works and to divert up to 73,000 cubic metres of water from the source of water for the purpose(s) of industrial (drilling, hydrostatic testing)

subject to the attached terms and conditions.

Designated Director under the Act: _____
Patrick Marriott, P. Eng.

Date Signed: 2009 07 30

DEFINITIONS

1.0 All definitions from the Act and the Regulations apply except where expressly defined in this licence.

1.1 In all parts of this licence:

(a) "Act" means the Water Act, RSA 2000, c. W-3, as amended;

(b) "Application" means the written submissions to the Director in respect of application number 001-00262534;

(c) "Aquifer" means the underground water-bearing formation that is capable of yielding water, that is accessed by the works authorized by this licence;

(d) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(e) "Monitoring well" means the well used to monitor the water levels associated with the diversion of water authorized by this licence;

(f) "Production well" means any well used to divert water for the purpose of this licence;

(g) "Regulations" means the regulations, as amended, enacted under the authority of the Act.

GENERAL

2.0 The Licensee shall immediately report to the Director by telephone any contravention of the terms and conditions of this licence at 1-780-422-4505.

2.1 The terms and conditions of this licence are severable. If any term or condition of this licence is held invalid, the application of such term or condition to other circumstances and the remainder of this licence shall not be affected thereby.

2.2 The Licensee shall not deposit or cause to be deposited any substance in, on or around the source of water that has or may have the potential to adversely affect the source of water.

DIVERSION OF WATER

3.0 This licence is appurtenant to Section 19-082-11-W4.

3.1 The Licensee shall divert water only for the purpose(s) specified in this licence.

3.2 The Licensee shall divert water only from the source of water specified in this licence.

3.3 The works used to divert the water authorized by this licence shall include the production well referred to in the application dated July 20, 2009.

3.4 The Licensee shall not exceed any of the limits specified in Table 3-1.

3.5 The Licensee shall not position the pump intake in the production well at a depth greater than the maximum pump intake depth specified in Table 3-1.

TABLE 3-1

WELL NUMBER	LEGAL LAND DESCRIPTION for WELL LOCATION	PRODUCTION INTERVAL (metres below grade)	MAXIMUM PUMP INTAKE DEPTH (metres below grade)	LIMITS	
				MAXIMUM RATE OF DIVERSION (cubic metres per day)	MAXIMUM DIVERSION (cubic metres)
Production Well	19-082-11-W4	330 – 380	330	200	73,000

3.6 Prior to diverting any water from the source of water, the Licensee shall equip the production well with a meter, which cumulatively measures the quantity of all water diverted during the term of this licence.

3.7 The Licensee shall maintain each measuring device referred to in 3.6 at all times.

MONITORING AND REPORTING

4.0 During the term of the licence, the Licensee shall measure the water level(s) in the production well on a monthly basis while water is being diverted.

4.1 The Licensee shall measure the total volume of water diverted on monthly basis using the meter specified in 3.6.

4.2 The Licensee shall record and retain all of the following information for a minimum of one year after the expiry date of this licence:

(a) the place, date and time of all monitoring and measuring or estimating;

(b) the results obtained pursuant to 4.1 and 4.2; and

(c) the name of the individual who conducted the monitoring, measuring or estimating stipulated in (a) and (b).

4.3 Within 30 days after the expiry date, the Licensee shall submit a Water Use Report to the Director.

4.4 The Water Use Report shall include, at a minimum, the following information collected during the term of this licence:

(a) the total number of cubic metres of water diverted from the source of water;

(b) the results obtained pursuant to 4.1 and 4.2; and

(c) any other information required in writing by the Director.

RECLAMATION

5.0 The Licensee shall reclaim all abandoned wells or other holes related to the water diversion in accordance with the Act and the Regulations.

5.1 The Licensee shall submit a reclamation report to the Director documenting the actions taken under 5.0 within 90 days after the reclamation is complete.

Date Signed: 2009 07 30

Designated Director under the Act
Patrick Marriott, P. Eng.

Alberta
ENVIRONMENT

LICENCE TO DIVERT WATER
PROVINCE OF ALBERTA
WATER ACT, R.S.A. 2000, c.W-3, as amended

LICENCE NO.: 00240527-00-00

FILE NO.: 00240527

PRIORITY NO.: 2009 10 13 003

EFFECTIVE DATE: 2010 04 01

EXPIRY DATE: 2012 03 31

SOURCE OF WATER: Grand Rapids Formation (See Table 3-1)

LICENSEE: Connacher Oil and Gas Limited

Pursuant to the *Water Act*, R.S.A. 2000, c.W-3, as amended, a licence is issued to the Licensee to:

operate a works and to divert up to 330,000 cubic metres of water annually from the source of water for the purpose(s) of Industrial (Injection) purposes

subject to the attached terms and conditions.

Designated Director under the Act: _____
Patrick Marriott, P. Eng.

Date Signed: 2010 03 29

DEFINITIONS

1.0 All definitions from the Act and the Regulations apply except where expressly defined in this licence.

1.1 In all parts of this licence:

(a) "Act" means the Water Act, RSA 2000, c. W-3, as amended;

(b) "Application" means the written submissions to the Director in respect of application number 001-00240527 and any subsequent applications for amendments of Licence No. 00240527-00-00;

(c) "Aquifer" means the underground water-bearing formation that is capable of yielding water, that is accessed by the works authorized by this licence;

(d) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(e) "Monitoring well" means the well used to monitor the water levels associated with the diversion of water authorized by this licence;

(f) "Production well" means any well used to divert water for the purpose of this licence;

(g) "Regulations" means the regulations, as amended, enacted under the authority of the Act;

(h) "Water Use Reporting System" means the secure internet website provided by Alberta Environment at http://www.environment.alberta.ca/1286.html for submitting measuring and monitoring results electronically to the Director.

GENERAL

2.0 The Licensee shall immediately report to the Director by telephone any contravention of the terms and conditions of this licence at 1-780-422-4505.

2.1 The terms and conditions of this licence are severable. If any term or condition of this licence is held invalid, the application of such term or condition to other circumstances and the remainder of this licence shall not be affected thereby.

2.2 The Licensee shall not deposit or cause to be deposited any substance in, on or around the source of water that has or may have the potential to adversely affect the source of water.

2.3 The licensee shall comply with the terms and conditions of the "Water Use Reporting System User Consent".

DIVERSION OF WATER

3.0 This licence is appurtenant to the following:

(a) Grand Rapids Formation production wells in Section 18, 19 and 20-82-11-W4;

(b) The annual allocation granted under subsequent term licences shall not exceed 250,000 cubic metres of water annually; and

(c) The annual allocation granted under subsequent licences shall be reduced if a suitable source of saline groundwater is identified for the project.

3.1 The Licensee shall provide a report prepared by a qualified groundwater professional that provides an evaluation of the results from testing all active production wells concurrently at their maximum rate of diversion.

3.2 The Licensee shall divert water only for the purpose(s) specified in this licence.

3.3 The Licensee shall divert water only from the source of water specified in this licence.

3.4 The works used to divert the water authorized by this licence shall include, at a minimum, all of the following:

(a) the production wells referred to in report 00240527-R001, Algar Project Grand Rapids Formation Groundwater Supply dated January 2010, and

(b) Plan Number 00240527-P001.

3.5 The Licensee shall not exceed any of the limits specified in Table 3-1.

3.6 The Licensee shall not position the pump intake in the production well(s) at a depth greater than the maximum pump intake depth specified in Table 3-1.

TABLE 3-1

WELL NUMBER	LEGAL LAND DESCRIPTION for WELL LOCATION	PRODUCTION INTERVAL (metres below grade)	MAXIMUM PUMP INTAKE DEPTH (metres below grade)	LIMITS	
				MAXIMUM RATE OF DIVERSION (cubic metres per day)	MAXIMUM ANNUAL DIVERSION (cubic metres)
WSW 02-19	02-19-082-11-W4	356 - 382	356	Standby Well	330,000
WSW 03-19	03-19-082-11-W4	349 - 382	349	550	
WSW 04-19	04-19-082-11-W4	350 - 382	350	550	
WSW 06-19	06-19-082-11-W4	347 - 382	347	550	

3.7 Prior to diverting any water from the source of water, the Licensee shall equip each production well with a meter, which cumulatively measures the quantity of all water diverted during the term of this licence.

3.8 The Licensee shall maintain each measuring device referred to in 3.7 at all times.

MONITORING AND REPORTING

4.0 The Licensee shall establish monitoring well(s) as and when required in writing by the Director.

4.1 Unless otherwise authorized in writing by the Director, the Licensee shall measure the water levels in the LSD 03-19-082-11-W4 monitoring well on at least a daily basis.

4.2 Unless otherwise authorized in writing by the Director, the Licensee shall measure the water level(s) in each production well on a daily basis while water is being diverted.

4.3 Unless otherwise authorized in writing by the Director, the Licensee shall:

(a) monitor the total number of cubic metres of water diverted; and

(b) record the total number of cubic metres of water diverted;

from each production well on a daily basis.

4.4 The Licensee shall:

(a) obtain a representative sample of water being diverted from each production well; and

(b) analyze the water collected in 4.4(a) for the following parameters:

(i) Total Dissolved Solids, Hardness, Alkalinity, pH, Calcium, Magnesium, Sodium, Potassium, Carbonate (CO_3), Bicarbonate (HCO_3), Sulphate (SO_4), Chloride, Nitrate, and Iron; and

(ii) any other parameter required by the Director;

on an annual basis unless otherwise specified in writing by the Director.

4.5 The Licensee shall record and retain all of the following information for a minimum of 5 years after being collected:

(a) the place, date and time of all monitoring, measuring and sampling;

(b) the results obtained pursuant to 4.1, 4.2, 4.3 and 4.4; and

(c) the name of the individual who conducted the monitoring, measuring and sampling stipulated in (a) and (b).

4.6 The Licensee shall report to the Director the results of the recording in 4.2 and 4.3 using the "Water Use Reporting System" and any other information required in writing by the Director.

4.7 The Licensee shall submit the report required in 4.6 on or before the end of the month following the month in which the information is based was collected.

4.8 The Licensee shall use the monitoring data obtained from the production and observation wells to ensure that the drawdown in the aquifer is limited in accordance with the *Water Conservation and Allocation Guideline for Oilfield Injection 2006.*

4.9 The Licensee shall compile an Annual Water Use Report on or before February 28th of each year following the calendar year in which the information on which the report is based was collected.

4.10 The Licensee shall retain each Annual Water Use Report for a minimum of 5 years.

4.11 The Licensee shall submit an Annual Water Use Report to the Director:

(a) on or before February 28th of each calendar year following the year in which the information on which the report is based was collected; or

(b) within a time period specified in writing by the Director.

4.12 The Annual Water Use Report shall include, at a minimum, the following information collected during the previous calendar year:

(a) the total annual number of cubic metres of water diverted from each production well;

(b) the results obtained pursuant to 4.1, 4.2, 4.3 and 4.4;

(c) the report evaluating the results from testing all the active production wells concurrently at their maximum rate of diversion pursuant to 3.1

(d) a review of the performance of the diversion site/aquifer through the past year and an assessment, supported by graphs and calculations, of the performance of the aquifer;

(e) recommendations for adjustment of pumping rates, the number and locations of observation wells and the well monitoring procedure

(f) report prepared by a qualified groundwater professional on the aquifer performance and recommendations for amendments to the licence; and

(g) any other information required in writing by the Director.

4.13 At least three (3) months prior to the expiry of this licence, the Licensee shall provide an assessment of an examination of alternate sources of saline water for the Algar Project that is consistent with the requirements of the *Water Conservation and Allocation Guideline for Oilfield Injection 2006.*

COMPLAINT INVESTIGATION

5.0 The Licensee shall:

(a) investigate all written complaints accepted by the Director relating to allegations of surface water and groundwater interference as a result of the operation of the production well;

(b) provide a written report to the Director, within a time specified in writing by the Director, detailing the results of the investigation relating to the complaint accepted by the Director in 5.0(a) including:

(i) recommendations to remediate and/or mitigate the impact(s) such as:

A. lowering the intake of the pump to compensate for a drop in water level,

B. re-drilling the water well to an increased depth so as to allow the pump to be installed at a lower depth,

C. drilling a new well, or

D. providing an alternate water supply; and

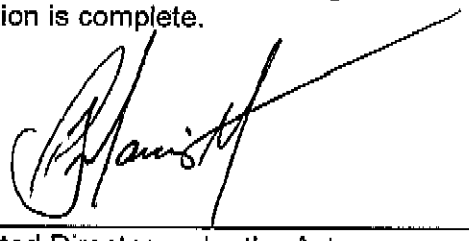
(ii) any other information required by the Director.

5.1 The Licensee shall satisfy the Director that the report submitted pursuant to 5.0(b) has identified remedial and/or mitigative measures relating to the alleged interference.

RECLAMATION

6.0 The Licensee shall reclaim all abandoned wells or other holes related to the water diversion in accordance with the Act and the Regulations.

6.1 The Licensee shall submit a reclamation report to the Director documenting the actions taken under 6.0 within 90 days after the reclamation is complete.



Date Signed: 2010 03 29

Designated Director under the Act
Patrick Marriott, P. Eng.

Alberta
ENVIRONMENT
Regulatory Approvals Centre
5th Floor, Oxbridge Place
9820 – 106 Street
Edmonton, Alberta
Canada T5K 2J6
Telephone 780/427-6311
Fax 780/422-0154

July 26, 2006

Tim O'Rourke
Vice President, Oil Sands Operations
Connacher Oil and Gas Limited
2600 530 8 AVE SW
CALGARY, AB T2P 3S8

Dear Mr. O'Rourke:

Re: Great Divide Oil Sands Project
Application No. 001-223216

Your application for an approval under the Environmental Protection and Enhancement Act (EPEA) has been reviewed and enclosed is Approval No. 223216-00-00.

It is your responsibility to obtain any approvals, permits or licences that are required from other agencies.

The Act may provide the approval holder a right of appeal against any term or condition contained in the approval to the Alberta Environmental Appeals Board. You should note that there are strict time lines for filing an appeal dependent on the type of appeal. If you choose to appeal, please contact the office of the Registrar of Appeals, Environmental Appeals Board of Alberta, 3rd Floor, 10011 - 109 Street, Edmonton, Alberta, T5J 3S8, telephone (780) 427-6207.

If you have any questions, please contact me at (780) 644-2069.

Yours truly,

Joanne Stachow
Application Coordinator

Enclosure

cc: James Chen, Northern Region – Edmonton
Barb Pullishy, Northern Region – Edmonton
Taras Pojasok, Northern Region – Edmonton
Parmjit Singh, Northern Region – Edmonton
Don Weleschuk, Northern Region – Grande Prairie
Keith Smith, Sustainable Resource Development – Fort McMurray
Kris Geekie, Alberta Energy & Utilities Board – Calgary
Marilyn Albert– Alberta Environment, Edmonton
Ken Deagle, Alberta Environment – Edmonton
Mel White, Sustainable Resource Development - Edmonton

Alberta
ENVIRONMENT

APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 223216-00-00

APPLICATION NO. 001-223216

EFFECTIVE DATE: July 24, 2006

EXPIRY DATE: June 30, 2016

APPROVAL HOLDER Connacher Oil and Gas Limited
2600, 530 – 8th Avenue S.W.
Calgary, Alberta
T2P 3S8

ACTIVITY: Construction, operation and reclamation of the Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant.

IS SUBJECT TO THE ATTACHED TERMS AND CONDITIONS.

Designated Director under the Act .....

Date Signed July 24, 2006

TERMS AND CONDITIONS ATTACHED TO APPROVAL

PART 1: DEFINITIONS

SECTION 1.1: DEFINITIONS

1.1.1 All definitions from the Act and the regulations apply except where expressly defined in this approval.

1.1.2 In all PARTS of this approval:

(a) "Act" means the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c.E-12, as amended;

(b) "affected lands" means lands which have received substances released from the plant;

(c) "air contaminant" means any solid, liquid or gas or combination of any of them in the atmosphere resulting directly or indirectly from the activities of man;

(d) "annulus gas" means gas from the annulus of the oil and gas well casing;

(e) "application" means the written submissions to the Director in respect of application number 001-223216 and any subsequent applications for amendments of approval number 223216-00-00;

(f) "chemical" means any substance that is added or used as part of the treatment process;

(g) "commence operation" means to start up the plant, process unit or equipment for the first time with the introduction of feed material, electrical or thermal energy and the simultaneous production of products for which the plant, process unit or equipment was designed excluding predetermined period of commissioning or testing;

(h) "day" means any sampling period of 24 consecutive hours unless otherwise specified;

(i) "decommissioning" means the dismantling and decontamination of a plant undertaken subsequent to the termination or abandonment of any activity or any part of any activity regulated under the Act;

(j) "decontamination" means the treatment or removal of substances from the plant and affected lands;

(k) "deep organic soil " means soil with surface organic horizons that are greater than 40cm in depth;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(l) "direct placement" means a reclamation procedure where topsoil is replaced on disturbed land that is undergoing successive reclamation, within one year of salvage;

(m) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(n) "dismantling" means the removal of buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, railways, roadways, pipelines and any other installations that are being or have been used or held for or in connection with the plant;

(o) "disturbed land" means any land disturbed by the approval holder in any manner in association with the activity which is the subject of this approval;

(p) "effluent stream" means any substance in a gaseous medium released by or from a plant;

(q) "fugitive emissions" means emissions of substances to the atmosphere other than ozone depleting substances, originating from a plant source other than a flue, vent, or stack but does not include sources which may occur due to breaks or ruptures in process equipment;

(r) "Fugitive VOC Emissions Code" means the Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks, CCME-EPC-73E, as amended;

(s) "grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled;

(t) "grade" means the rise or fall of the land surface over a specified distance, measured in the same units;

(u) "industrial runoff" means precipitation that falls on or traverses the plant developed area;

(v) "industrial runoff control system" means the parts of the plant that collect, store or treat industrial runoff from the plant developed area;

(w) "industrial wastewater" means the composite of liquid wastes and water-carried wastes, any portion of which results from any industrial process carried on at the plant;

(x) "industrial wastewater control system" means the parts of the plant that collect, store or treat industrial wastewater;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(y) "land reclamation" means the stabilization, contouring, maintenance, conditioning, reconstruction, and revegetation of the surface of the land to a state that permanently returns the plant to a land capability equivalent to its predisturbed state;

(z) "manual stack survey" means a survey conducted in accordance with the *Alberta Stack Sampling Code*, Alberta Environment, 1995, as amended;

(aa) "month" means calendar month;

(bb) "net or lower heating value" means the quantity of heat evolved on complete combustion where the combustion products remain as vapour at 15°C;

(cc) "plant" means all buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, roadways, pipelines and other installations, and includes the land, located on the Northeast Quarter of Section 16, Township 82, Range 12, West of the 4th Meridian, that is being or has been used or held for or in connection with the Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant;

(dd) "plant developed area" means the areas of the plant used for the storage, treatment, processing, transport, or handling of raw material, intermediate product, by-product, finished product, process chemicals, or waste material;

(ee) "produced gas" means all gas associated with the production and treatment of oil or bitumen including, gas liberated at storage tanks, heaters, treaters, produced water facilities;

(ff) "QA/QC" means quality assurance and quality control;

(gg) "quarter year" means a time period of three consecutive months designated as January, February, and March; or April, May, and June; or July, August, and September; or October, November, and December;

(hh) "regulations" means the regulations issued pursuant to the Act, as amended;

(ii) "representative grab sample" means a sample consisting of equal volume portions of water collected from at least four sites between 0.20-0.30 metres below the water surface within a pond;

(jj) "risk assessment procedure" means a qualitative and quantitative estimation of the severity and likelihood of harm to human health, property and the environment from exposure to one or more substances;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(kk) "shallow organic soil" means soil with surface organic horizons that are less than 40cm in depth;

(ll) "soil" means mineral or organic earthen materials that can, have, or are being altered by weathering, biological processes, or human activity;

(mm) "subsoil" means B horizons as defined in *Canadian System of Soil Classification*, 3rd edition, 1998, and rated as good, fair or poor as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, 1987;

(nn) "tank" means a stationary device, designed to contain an accumulation of a substance, which is constructed primarily of non-earthen materials that provide structural support including wood, concrete, steel, and plastic;

(oo) "topsoil" means the undisturbed soil profile made up of the following, when present:

(i) all organic horizons as defined in the *Canadian System of Soil Classification*, 3rd edition, 1998; and

(ii) A horizons as defined in *Canadian System of Soil Classification*, 3rd edition, 1998, and rated as good, fair or poor as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, 1987;

(pp) "volume estimate" means a technical evaluation based on the sources contributing to the release, including, but not limited to, pump capabilities, water meters, and batch release volumes;

(qq) "weeds" means weeds defined as controlled, nuisance or noxious by the Weed Control Act, 1980, as amended;

(rr) "week" means any consecutive 7-day period unless otherwise specified; and

(ss) "year" means calendar year, unless otherwise specified.

PART 2: GENERAL

SECTION 2.1: GENERAL

2.1.1 The approval holder shall immediately report to the Director by telephone any contravention of the terms and conditions of this approval at 1-780-422-4505.

2.1.2 The approval holder shall submit a written report to the Director within 7 days of the reporting pursuant to 2.1.1.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

2.1.3 The terms and conditions of this approval are severable. If any term or condition of this approval or the application of any term or condition is held invalid, the application of such term or condition to other circumstances and the remainder of this approval shall not be affected thereby.

2.1.4 The approval holder shall immediately notify the Director in writing if any of the following events occurs:

(a) the approval holder is served with a petition into bankruptcy;

(b) the approval holder files an assignment in bankruptcy or Notice of Intent to make a proposal;

(c) a receiver or receiver-manager is appointed;

(d) an application for protection from creditors is filed for the benefit of the approval holder under any creditor protection legislation; or

(e) any of the assets which are the subject matter of this approval are seized for any reason.

2.1.5 If the approval holder monitors for any substances or parameters which are the subject of operational limits as set out in this approval more frequently than is required and using procedures authorized in this approval, then the approval holder shall provide the results of such monitoring as an addendum to the reports required by this approval.

2.1.6 All abbreviations used in this approval follow those given in *Standard Methods for the Examination of Water and Wastewater* published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation, 1998, as amended, unless otherwise specified in this approval.

SECTION 2.2: RECORD KEEPING

2.2.1 The approval holder shall record and retain all the following information in respect of any sampling conducted or analyses performed in accordance with this approval for a minimum of ten years, unless otherwise authorized in writing by the Director:

(a) the place, date and time of sampling;

(b) the dates the analyses were performed;

(c) the analytical techniques, methods or procedures used in the analyses;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(d) the names of the persons who collected and analyzed each sample; and

(e) the results of the analyses.

SECTION 2.3: ANALYTICAL REQUIREMENTS

2.3.1 With respect to any sample required to be taken pursuant to this approval, the approval holder shall ensure that:

(a) collection;

(b) preservation;

(c) storage;

(d) handling;

(e) analysis;

shall be conducted in accordance with the following unless otherwise authorized in writing by the Director:

(i) for air monitoring;

(A) the *Alberta Stack Sampling Code, Alberta Environment, 1995, as amended*;

(B) the *Methods Manual for Chemical Analysis of Atmospheric Pollutants*, Alberta Environment, 1993, as amended;

(C) the *Air Monitoring Directive*, Alberta Environment, 1989, as amended;

(D) the *CEMS Code*, Alberta Environment, 1998, as amended;

(ii) for industrial wastewater, industrial runoff, groundwater and domestic wastewater parameters:

(A) the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended;

(iii) for waterworks parameters:

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(A) the *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, American Water Works Association and the Water Environment Federation, 1998, as amended;

(B) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1, as amended;

(iv) for soil samples:

(A) *Soil Sampling and Methods of Analysis*, Lewis Publishers, 1993, as amended;

(B) the *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, USEPA, SW-846; September 1986, as amended;

(C) the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, as amended;

(D) the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volume I: Main Report*, CCME EPC-NCS62E, 1993, as amended;

(E) the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volume II: Analytical Method Summaries*, CCME EPC-NCS66E, 1993, as amended;

(v) for waste analysis:

(A) the *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, USEPA, SW-846, September 1986, as amended; or

(B) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1 as amended; or

(C) the *Toxicity Characteristic Leaching Procedure (TCLP)* USEPA Regulation 40 CFR261, Appendix II, Method No. 1311, as amended; or

(D) the *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, American

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Water Works Association, and the Water Environment Federation, as amended.

2.3.2 The preservation, storage, and handling of all samples collected at the sampling locations identified in this approval shall be in such a manner that the validity of the samples is not compromised. The analysis of samples shall be in a laboratory with documented quality assurance and quality control programs, including participation in interlaboratory studies.

PART 3: CONSTRUCTION

SECTION 3.1: GENERAL

3.1.1 If construction of the plant as described in application 001-223216 has not commenced by June 30, 2007, the approval holder shall apply for an amendment to this approval unless otherwise authorized in writing by the Director

3.1.2 The approval holder shall notify the Director in writing at least 14 days before commencing operation of the plant.

3.1.3 The approval holder shall construct the plant as described in the application and shall include, at a minimum, all of the following:

(a) steam generation;

(b) production (bitumen, water and gas) treating;

(c) water treatment and disposal; and

(d) associated facilities;

unless otherwise authorized in writing by the Director.

3.1.4 All tanks shall conform to the *Guideline for Secondary Containment for Above Ground Storage Tanks*, Alberta Environment, 1997, as amended, unless otherwise authorized in writing by the Director.

3.1.5 All aboveground storage tanks containing liquid hydrocarbons or organic compounds shall conform to the *Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks*, CCME-EPC-87-E, as amended.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 3.2: AIR

3.2.1 The approval holder shall construct all stacks according to the following height requirements as prescribed in TABLE 3.2-A, unless otherwise authorized in writing by the Director.

TABLE 3.2-A: STACK HEIGHTS

STACK	MINIMUM HEIGHT ABOVE GRADE (metres)
The two 67.4 MW steam generator exhaust stacks	30.0
The 3.69 MW utility boiler exhaust stack	8.2
The 3.22 MW glycol heater exhaust stack	8.2
The 1.47 MW treater exhaust stack	11.75
The central processing facility flare stack	39.0

3.2.2 The approval holder shall install the following minimum systems on the flare stack:

(a) wind guard;

(b) a continuously burning pilot light; and

(c) an electric (or equivalent) igniter;

unless an alternative system is authorized in writing by the Director.

3.2.3 The approval holder shall design and construct all boilers at the plant to meet the requirements prescribed in the *National Emission Guideline for Commercial/Industrial Boilers and Heaters*, CCME-PN 1286, as amended.

MONITORING EQUIPMENT

3.2.4 The approval holder shall install, at a minimum, all of the following ambient air monitoring equipment:

(a) a minimum of four exposure stations for measurement of hydrogen sulphide and total sulphation levels.

3.2.5 The following stacks shall be equipped with sampling facilities:

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(a) the 67.4 MW steam generator exhaust stack.

3.2.6 All air monitoring systems shall be constructed and equipped with sampling facilities as prescribed in the following documents:

(a) the *Alberta Stack Sampling Code*, Alberta Environment, 1995, as amended;

(b) the *CEMS Code*, Alberta Environment, 1998, as amended; and

(c) the *Air Monitoring Directive*, Alberta Environment, 1989, as amended.

SECTION 3.3: INDUSTRIAL WASTEWATER

3.3.1 The approval holder shall construct the plant according to the application and shall include, at a minimum, all of the following:

(a) the industrial runoff control system which shall include:

(i) a containment pond which is sized to contain a 1-in-10 year, 24-hour precipitation event and lined with a liner with a permeability of no greater than 1×10^{-6} cm/sec;

(b) the industrial wastewater control system which shall include:

(i) an evaporator system;

(c) incorporate in the design of the plant, equipment and operational procedures as described in the application for the minimization and recovery of spills of process wastewater and process liquids;

(d) above ground storage tanks in accordance with *Alberta Energy and Utilities Board (EUB) Guide G-55 Storage Requirements for the Upstream Petroleum Industry*, as amended;

(e) spill collection boxes at the hose connection point of any new liquid load-out or off-loading areas; and

(f) spill collection boxes shall have a cover and shall be positioned such that each of its sides and bottom can be visually inspected.

SECTION 3.4: WASTE MANAGEMENT

Not used at this time.

SECTION 3.5: DOMESTIC WASTEWATER

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Not used at this time.

SECTION 3.6: WATERWORKS

Not used at this time.

SECTION 3.7: LAND CONSERVATION

3.7.1 Prior to conducting any land disturbance associated with the plant, the approval holder shall provide an updated detailed conservation and reclamation plan for the plant to the Director.

3.7.2 The approval holder shall implement the plan referred to in 3.7.1 as authorized in writing by the Director.

3.7.3 The approval holder shall salvage merchantable timber as directed in writing by the Inspector.

3.7.4 The approval holder shall dispose of woody debris as directed in writing by the Inspector.

3.7.5 The approval holder shall not conduct tree and brush clearing activities between May 1st and August 15th annually, to protect nesting migratory birds, unless authorized in writing by the Inspector.

3.7.6 The approval holder shall salvage topsoil as follows, unless otherwise authorized in writing by the Director:

(a) on mineral and shallow organic soil areas, the approval holder shall salvage all topsoil;

(b) on areas of deep organic soil where pad materials will be left in place, the approval holder shall:

(i) salvage topsoil to a minimum depth of 40 cm; or

(ii) provide to the Director for his authorization, an alternative plan for obtaining topsoil materials for the reclamation of the pad; and

(c) on areas of deep organic soil where pad materials will be removed, the approval holder shall not salvage topsoil.

3.7.7 The approval holder shall conduct direct placement of salvaged topsoil on contoured portions of the disturbed land whenever possible.

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3.7.8 The approval holder shall salvage, separately from topsoil, all subsoil from the central processing facility site to a maximum thickness of 30 cm, unless otherwise authorized in writing by the Director.

3.7.9 The approval holder shall stockpile salvaged topsoil and subsoil and the stockpiles shall be constructed as follows:

(a) topsoil and subsoil shall be stockpiled separately from each other and from other materials;

(b) stockpile foundations must be stable;

(c) stockpiles shall be stabilized to control water and wind erosion;

(d) stockpiles shall be accessible and retrievable; and

(e) stockpiles shall be revegetated and controlled for weeds.

3.7.10 The approval holder shall immediately suspend topsoil salvage when:

(a) wet or frozen field conditions will result in the degradation of topsoil or subsoil quality; unless otherwise authorized in writing by an Inspector;

(b) high wind velocities, any other field conditions or operations will result in the degradation of topsoil or subsoil quality or loss of topsoil or subsoil; unless otherwise authorized in writing by an Inspector; or

(c) directed to do so in writing by an Inspector.

3.7.11 The approval holder shall only recommence topsoil or subsoil salvage when suspended under 3.7.10 if:

(a) field conditions referred to in 3.7.10 no longer exist; or

(b) directed in writing by an Inspector.

3.7.12 The approval holder shall ensure that drainage control measures are in place to minimize erosion and sedimentation on disturbed land and adjacent land.

SECTION 3.8: WILDLIFE

3.8.1 The approval holder shall submit, to the Director by October 15, annually, a Caribou Protection Plan that is based on the Strategic Plan and Industrial Guidelines for Caribou Range in Northern Alberta (Boreal Caribou Committee, September 2001), unless otherwise authorized in writing by the Director.

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PART 4: OPERATIONS, LIMITS, MONITORING AND REPORTING

SECTION 4.1: AIR

OPERATIONS

4.1.1 The approval holder shall not emit any effluent streams to the atmosphere except as provided in this approval.

4.1.2 The approval holder shall only emit effluent streams to the atmosphere from the following sources:

(a) the two 67.4 MW steam generator exhaust stacks;

(b) the 3.69 MW utility boiler exhaust stack;

(c) the 3.22 MW glycol heater exhaust stack;

(d) the 1.47 MW treater exhaust stack;

(e) the central processing facility flare stack;

(f) the space ventilation exhaust stacks;

(g) the space heater exhaust vents; and

(h) any other sources for which the approval holder receives a prior written authorization from the Director.

4.1.3 Produced gas shall be collected and burned as fuel, incinerated or flared.

4.1.4 The approval holder shall ensure that all oil production tanks are connected to the vapour recovery system.

4.1.5 The approval holder shall ensure the combustion of all combustible gases released to the flare stacks.

4.1.6 All plant pressure and safety valves in sour service shall be connected to the flare system.

4.1.7 The approval holder shall equip and operate the flare stack with:

(a) wind guard;

(b) a continuously burning pilot light; and

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(c) an electric (or equivalent) igniter;

unless an alternative system is authorized in writing by the Director.

4.1.8 The approval holder shall operate and maintain the following stacks according to the height requirements as prescribed in TABLE 4.1-A, unless otherwise authorized in writing by the Director.

TABLE 4.1-A: STACK HEIGHTS

STACK	Minimum Height Above Grade (meters)
The two 67.4 MW steam generator exhaust stacks	30.0
The 3.69 MW utility boiler exhaust stack	8.2
The 3.22 MW glycol heater exhaust stack	8.2
The 1.47 MW treater exhaust stack	11.75
The central processing facility flare stack	39.0

4.1.9 Except as provided for by the Director in writing, the approval holder shall control fugitive emissions and any source not specified in 4.1.2 in accordance with 4.1.10 of this approval.

4.1.10 The approval holder shall not release a substance or cause to be released a substance that causes or may cause any of the following:

(a) the impairment, degradation or alteration of the quality of natural resources;

(b) material discomfort, harm or adversely affect the well being or health of a person; or

(c) harm to property or to plant or animal life.

4.1.11 All aboveground storage tanks designed to contain hydrocarbons shall conform to the *Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks*, CCME-EPC-87-E, as amended.

4.1.12 The approval holder shall submit a Fugitive Emissions Leak Detection and Correction Program to the Director by November 30, 2008.

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4.1.13 The Fugitive Emissions Leak Detection and Correction Program shall include the periodic inspection and repair of any equipment found to be leaking.

4.1.14 The approval holder shall implement the Fugitive Emissions Leak Detection and Correction Program as authorized in writing by the Director.

LIMITS

4.1.15 Releases of air contaminants shall not exceed the limits specified in TABLE 4.1-B.

TABLE 4.1-B: LIMITS

EMISSION SOURCE	AIR CONTAMINANT	LIMIT
Plant	Sulphur dioxide	0.40 tonnes per day
The 67.4 MW steam generator	Oxides of nitrogen (expressed as NO2)	8.9 kilograms per hour

4.1.16 The net or lower heating value of the combined gas stream released to the flare stacks shall be maintained, at a minimum, at 12 MJ/m^3 when adjusted for 101.325 kPa and 15°C by adding residue gas to the flare gas.

MONITORING AND REPORTING

4.1.17 The approval holder shall monitor the following emission sources as specified in TABLE 4.1-C, unless otherwise authorized in writing by the Director.

4.1.18 The approval holder shall report to the Director the results of the emission source monitoring as required in TABLE 4.1-C, unless otherwise authorized in writing by the Director.

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TABLE 4.1-C: AIR EMISSION SOURCE MONITORING AND REPORTING

EFFLUENT STREAM/ EMISSION SOURCE	MONITORING			REPORTING		
	PARAMETER	METHOD	FREQUENCY	MONTHLY (On or before the end of the month following the month in which the information was collected)	ANNUALLY (on or before March 31st of the year following the year in which the information was collected)	TO
Produced gas and residue or fuel gas to the flare stacks	Volumetric flow rates	Measured or Estimated	Continuously	No	No	Director
Flare stack	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
Produced gas	Hydrogen sulphide	Gas analysis	Monthly	Yes	No	
	Total hydrocarbons	Gas analysis	Monthly	Yes	No	
	Lower heating value	Gas analysis	Monthly	Yes	No	
The 67.4 MW steam generators	Sulphur dioxide	Calculated	Daily	Yes, tonnes per day	Yes, tonnes per year	
Any of the 67.4 MW steam generators	Oxides of nitrogen (expressed as NO_2)	Manual stack survey as per Alberta Stack Sampling Code	Once within six months of commissioning and once per year after initial commissioning manual stack survey	Yes	Yes	

4.1.19 The approval holder shall notify the Director in writing a minimum of two weeks prior to any manual stack survey that is required to be conducted by this approval.

4.1.20 The approval holder shall monitor ambient levels of the parameters as specified in TABLE 4.1-D, unless otherwise authorized in writing by the Director.

4.1.21 The approval holder shall report to the Director the results of the ambient air quality monitoring as required in TABLE 4.1-D, unless otherwise authorized in writing by the Director.

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TABLE 4.1-D: AMBIENT AIR MONITORING AND REPORTING

NUMBER OF MONITORING SITES	MONITORING			REPORTING		
	METHOD OF MONITORING	PARAMETER TO BE ANALYZED OR MEASURED	FREQUENCY	MONTHLY (On or before the end of the month following the month in which the information was collected)	ANNUALLY (On or before March 31st of the year following the year in which the information was collected)	TO
Four	Static exposure monitoring station as per *Air Monitoring Directive*	Total sulphation levels and hydrogen sulphide levels	Monthly	Yes	Yes	Director

4.1.22 In addition to the monthly reporting requirements in TABLE 4.1-C and TABLE 4.1-D, the monthly air emission summary report shall contain remarks on the performance of the air pollution control equipment including an interpretation of significant variations in equipment performance.

4.1.23 In addition to the annual reporting requirements in TABLE 4.1-C and TABLE 4.1-D, the annual air emission summary and evaluation report shall contain information related to the plant operation, the performance of air pollution control equipment and air contaminant emissions.

SECTION 4.2: INDUSTRIAL WASTEWATER

OPERATIONS

4.2.1 The approval holder shall not release any substances from the plant to the surrounding watershed except as authorized by this approval.

4.2.2 All industrial wastewater and process liquids contained in above ground and below ground storage tanks, shall be contained in accordance with the *Alberta Energy and Utilities Board (EUB) Guide G-55 Storage Requirements for the Upstream Petroleum Industry*, as amended.

4.2.3 Industrial wastewater, produced water and boiler blowdown shall only be disposed of as follows:

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(a) directed to the process pond;

(b) EUB approved disposal well;

(c) EUB approved Waste Processing and Disposal Facility; or

(d) as otherwise authorized in writing by the Director.

4.2.4 Industrial runoff for the plant shall be directed to the Industrial Runoff Control System, specifically one stormwater runoff pond.

4.2.5 The approval holder shall only release industrial runoff from the Industrial Runoff Control Systems.

LIMITS

4.2.6 Releases from the Industrial Runoff Control System shall not exceed the limits for the parameters specified in TABLE 4.2-A.

TABLE 4.2-A: INDUSTRIAL RUNOFF LIMITS

PARAMETER	PARAMETER OR CONCENTRATION LIMIT
Discharge Volume	--
pH	6.0 - 9.5 units
Oil and Grease	No visible sheen
Chloride	500 mg/l

4.2.7 Any release of industrial runoff shall be done in a manner, which will not cause flooding or erosion.

MONITORING AND REPORTING

4.2.8 The approval holder shall monitor the Industrial Runoff Control Systems as required in TABLE 4.2-B.

4.2.9 The approval holder shall report to the Director the results of the Industrial Runoff Control Systems monitoring as required in TABLE 4.2-B.

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TABLE 4.2-B: INDUSTRIAL RUNOFF CONTROL SYSTEMS MONITORING AND REPORTING

MONITORING						REPORTING	
PARAMETER, TEST, EVENT, STUDY PROPOSAL OR REPORTING REQUIREMENT	PRIOR TO RELEASE		DURING RELEASE			ANNUALLY	TO
INDUSTRIAL RUNOFF							
Discharge volume (in cubic metres)	-	-	Once/day	Volume estimate	A	Industrial Wastewater and Runoff Report (On or before March 31st of the year following the year in which the information was collected)	Director
pH	Once	Representative grab	Once/day	Grab	A		
Oil and Grease	Once	Representative grab	Once/day	Grab	A		
Chloride in mg/l	Once	Representative grab	Once/week	Grab	A		
A = Discharge point of industrial runoff control system (stormwater runoff pond)							

4.2.10 In addition to the annual reporting requirements in TABLE 4.2-B, the annual industrial wastewater and runoff report shall include the following information:

(a) a current contact for the plant;

(b) a summary and evaluation of management and disposal of the following for the previous year:

(i) industrial wastewater;

(ii) industrial runoff;

(iii) domestic wastewater;

(c) an overview of the operation of the plant; and

(d) any other information required by the Director.

SECTION 4.3: WASTE MANAGEMENT

Not used at this time.

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SECTION 4.4: DOMESTIC WASTEWATER

OPERATIONS

4.4.1 The approval holder shall not release any substances from the domestic wastewater system to the surrounding watershed except as authorized by this approval.

4.4.2 All domestic wastewater shall be directed to a holding tank with subsequent disposal to a domestic wastewater treatment facility holding a current approval under the Act.

4.4.3 Sludge produced by the domestic wastewater system shall be disposed of at a domestic wastewater treatment facility holding a current approval under the Act.

MONITORING AND REPORTING

4.4.4 The approval holder shall report a summary of any domestic wastewater directed off-site and report as per 4.2.10(b)(iii), including details regarding wastewater volumes and the facility the domestic wastewater is directed to.

SECTION 4.5: WATERWORKS

Not used at this time.

SECTION 4.6: GROUNDWATER

4.6.1 The approval holder shall develop a proposal for a Groundwater Monitoring Program for the plant which shall include, at a minimum, all of the following:

(a) a conceptual development of the local groundwater monitoring network;

(b) a description of the regional hydrogeology;

(c) a hydrogeologic description and interpretation of the plant;

(d) a map and description of surface water drainage patterns for the plant;

(e) a lithologic description and maps, including cross-sections, of the surficial and the upper bedrock geologic materials at the plant;

(f) maps showing depth to water table, patterns of groundwater movement and hydraulic gradients at the plant;

(g) the hydraulic conductivity of all surficial and bedrock materials at the plant;

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(h) a map showing the location of existing and additional proposed groundwater monitor wells at the plant;

(i) lithologs of all boreholes drilled at the plant;

(j) construction details of existing groundwater monitor wells;

(k) a rationale for proposed groundwater monitor well locations and proposed completion depths of those wells;

(l) a description of groundwater monitor well development protocols;

(m) a list of parameters to be monitored and the monitoring frequency for each groundwater monitor well or group of groundwater monitor wells at the plant;

(n) a description of the groundwater sampling and analytical QA/QC procedures;

(o) details of a groundwater response plan specifying actions to be taken should contaminants be identified through the Groundwater Monitoring Program or in the event of a well casing failure; and

(p) any other information relevant to groundwater quality at the plant.

4.6.2 The approval holder shall submit two copies of the proposal for the Groundwater Monitoring Program to the Director on or before December 31, 2006, unless otherwise authorized in writing by the Director.

4.6.3 If the Groundwater Monitoring Program proposal is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within 120 days of the deficiency letter.

4.6.4 The approval holder shall implement the Groundwater Monitoring Program for the plant as authorized in writing by the Director.

4.6.5 The approval holder shall conduct at least six sampling events before any new production wells are steamed.

4.6.6 The sampling events referred in 4.6.5 shall be at intervals of not less than two months.

4.6.7 The samples extracted from the groundwater monitor wells shall be collected using scientifically acceptable purging, sampling and preservation procedures so that a representative groundwater sample is obtained.

4.6.8 All groundwater monitor wells shall be:

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(a) protected from damage; and

(b) locked except when being sampled;

unless otherwise authorized in writing by the Director.

4.6.9 If a representative groundwater sample cannot be collected because the groundwater monitor well is damaged or is no longer capable of producing a representative groundwater sample:

(a) the groundwater monitor well shall be cleaned, repaired or replaced; and

(b) a representative groundwater sample shall be collected and analyzed prior to the next scheduled sampling event;

unless otherwise authorized in writing by the Director.

4.6.10 In addition to the sampling information recorded in 2.2.1, the approval holder shall record the following sampling information for all groundwater samples collected:

(a) a description of purging and sampling procedures;

(b) the static elevations, above sea level, of fluid phases in the groundwater monitor well prior to purging;

(c) the temperature of each sample at the time of sampling;

(d) the pH of each sample at the time of sampling; and

(e) the specific conductance of each sample at the time of sampling.

4.6.11 The approval holder shall compile an Annual Groundwater Monitoring Program Summary Report which shall include, at a minimum, all of the following information:

(a) a legal description of the plant and a map illustrating the plant boundaries;

(b) a topographic map of the plant;

(c) a description of the industrial activity and processes;

(d) a map showing the location of surface and groundwater users within a five kilometre radius of the plant;

(e) a general hydrogeological characterization of the region within a five kilometre radius of the plant;

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(f) a detailed hydrogeological characterization of the plant;

(g) a geological cross-section(s) of the plant;

(h) a map of surface drainage patterns located within the plant;

(i) a map of groundwater monitor well locations and a description of the existing groundwater monitoring program for the plant;

(j) a summary of any changes to the groundwater monitoring program made since the last groundwater monitoring report;

(k) analytical data recorded as required in 4.6.4 and 4.6.10;

(l) a summary of fluid elevations recorded as required in 4.6.10(b) and an interpretation of changes in fluid elevations;

(m) an interpretation of groundwater flow patterns;

(n) an interpretation of the analytical results including the following:

  (i) diagrams indicating the location of any contamination identified;

  (ii) probable sources of contamination;

  (iii) the extent of contamination identified;

(o) a summary and interpretation of the data collected since the groundwater monitoring program began including:

  (i) control charts which indicate trends in contaminant concentrations;

  (ii) the migration of contaminants;

(p) a description of the following:

  (i) contaminated groundwater remediation techniques employed;

  (ii) source elimination measures employed;

  (iii) risk assessment studies undertaken;

  (iv) risk management studies undertaken;

(q) a sampling schedule for the following year;

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(r) recommendations, as follows:

(i) for changes to the groundwater monitoring program to make it more effective; and

(ii) for remediation, risk assessment or risk management of contamination identified.

4.6.12 The approval holder shall submit two copies of the Annual Groundwater Monitoring Summary Report to the Director on or before March 31 of the year following the year in which the information on which the report is based was collected, unless otherwise authorized in writing by the Director.

SECTION 4.7: SOIL

MONITORING

4.7.1 The approval holder shall develop and document proposals for the Soil Monitoring Program in accordance with the *Soil Monitoring Directive*, Alberta Environment, May 1996, as amended.

4.7.2 The approval holder shall submit the Soil Monitoring Program proposals to the Director for authorization in writing according to the following schedule:

(a) for the first soil monitoring proposal, no later than January 31, 2009; and

(b) for the second soil monitoring proposal, no later than January 31, 2014.

4.7.3 If the Soil Monitoring Program proposals are found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director within 120 days of the deficiency letter.

4.7.4 The approval holder shall implement the Soil Monitoring Program proposals as authorized in writing by the Director.

4.7.5 The approval holder shall implement QA/QC provisions in accordance with the *CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites, Volume I*, Report CCME EPC-NCS62E, Winnipeg, Manitoba, December 1993, as amended.

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STANDARDS

4.7.6 For sampling locations which meet the conditions in C.1 of the *Soil Monitoring Directive*, May 1996, as amended, the concentration of substances in soil shall be compared to values in the following:

(a) for soil and water which will be remediated for agricultural, residential, commercial or industrial use, *Canadian Environmental Quality Guidelines, CCME PN1299, 1999,* as amended;

(b) for hydrocarbon contaminated soil and water which will be remediated for natural, agricultural, residential, commercial or industrial use, *Alberta Soil and Water Quality Guidelines for Hydrocarbons at Upstream Oil and Gas Facilities, AENV 2001,* as amended;

(c) for salt contaminated soil and water, *Salt Contamination Assessment and Remediation Guidelines, AENV 2001,* as amended.

(d) for soil which will be remediated for agricultural or residential use and which contains substances not found in 4.7.6. (a) to (c), *Alberta Tier I Criteria for Contaminated Soil Assessment and Remediation*, AEP, March 1994, as amended; and

(e) for soil which will be remediated to commercial or industrial land use and which contains substances not found in 4.7.6. (a) to (c), the *Interim Canadian Environmental Quality Criteria for Contaminated Sites*, CCME EPC-CS34, September 1991, as amended.

4.7.7 For sampling locations which do not meet the conditions in C.1 of the *Soil Monitoring Directive*, May 1996, as amended, or if substances are present that are not listed in the standards referred to in 4.7.6, the concentrations of substances in soil shall be compared to values derived using methods in C.2 of the *Soil Monitoring Directive.*

REPORTING

4.7.8 The approval holder shall submit two copies of each Soil Monitoring Program report to the Director summarizing the data obtained from the soil monitoring referred to in 4.74 according to the following schedule:

(a) for the first soil monitoring report, no later than January 31, 2010; and

(b) for the second soil monitoring report, no later than January 31, 2015;

unless otherwise authorized by the Director.

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4.7.9 The Soil Monitoring Program reports shall be as prescribed in the reporting requirements of the *Soil Monitoring Directive*, May 1996, as amended.

SOIL MANAGEMENT PROGRAM

4.7.10 If the Soil Monitoring Program, or any other soil monitoring, reveals that there are substances present in the soil at concentrations greater than the applicable concentrations in 4.7.6 or 4.7.7, the approval holder shall develop and document a Soil Management Program Proposal in accordance with the *Guideline for Monitoring and Management of Soil Contamination Under EPEA Approvals*, Chemicals Assessment and Management Division, May 1996, as amended, or as otherwise authorized in writing by the Director.

4.7.11 If required pursuant to 4.7.10, the approval holder shall submit a Soil Management Program Proposal to the Director within six months after the date that the Soil Monitoring Report referred to in 4.7.8 is due.

4.7.12 The Soil Management Program Proposal shall include, at a minimum, all of the following:

(a) steps to be taken to control sources of contamination;

(b) remediation objectives for substances identified by soil monitoring as exceeding the applicable maximum standards in 4.7.6 or 4.7.7;

(c) proposed steps for management of soil contamination; and

(d) a schedule for implementing the Soil Management Program.

4.7.13 If the Soil Management Program Proposal is found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director by the date specified in the deficiency letter.

4.7.14 The approval holder shall implement the Soil Management Program as authorized in writing by the Director.

4.7.15 If the approval holder must implement a Soil Management Program pursuant to 4.7.14, the approval holder shall submit a written Soil Management Program Report to the Director on or before March 31 of each year, unless otherwise authorized in writing by the Director.

4.7.16 The Soil Management Program report shall include, at a minimum, all of the following information:

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(a) a summary of actions taken under the Soil Management Program during the previous year;

(b) a description and interpretation of results obtained, including any soil testing, from the Soil Management Program; and

(c) events planned for the current year including any deviations from the program authorized in writing by the Director.

SECTION 4.8: ALTERNATIVE REPORTING

4.8.1 Notwithstanding the annual report requirements specified in 4.1.18, 4.1.21, 4.1.23, 4.2.9, 4.2.10, 4.6.11, 5.3.20, 5.3.21, the approval holder may request written authorization from the Director in order to implement an alternative reporting mechanism. The request must be made in writing, must include any information requested by the Director, and shall include the following:

(a) a request to modify the requirement for annual written reports, to a submission frequency of once every two years; and

(b) a proposal to substitute verbal presentations about environmental performance in lieu of the annual written reports that would otherwise have been required.

4.8.2 The Director may issue or refuse to issue a written authorization for any request that is made by the approval holder under 4.8.1. If the Director issues a written authorization, the approval holder shall complete the alternative reporting as specified in the written authorization by the Director.

PART 5: RECLAMATION

SECTION 5.1: GENERAL

5.1.1 Six months prior to the plant ceasing operation, except for repairs and maintenance, the approval holder shall apply for an amendment to this approval to reclaim the plant by submitting a decommissioning and final land reclamation plan to the Director.

5.1.2 As required in 5.1.1, the approval holder shall develop a plan for the final land reclamation phase which shall include, at a minimum, all of the following:

(a) the final use of the reclaimed area and how equivalent land capability will be achieved;

(b) removal of infrastructure;

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(c) restoration of drainage;

(d) soil replacement;

(e) erosion control;

(f) revegetation and conditioning of the plant including:

(i) species list, seed source and quality, seeding rates and methods;

(ii) information about areas where reforestation will occur;

(iii) justification for areas where reforestation is not proposed

(iv) fertilization rates and methods;

(v) a vegetation management plan;

(vi) wildlife habitat plans where applicable; and

(g) reclamation sequence and schedule.

5.1.3 The approval holder shall implement the Land Reclamation plan as authorized in writing by the Director.

SECTION 5.2: DECOMMISSIONING

5.2.1 As required in 5.1.1, the approval holder shall develop and submit a plan for the Decommissioning phase to the Director which shall include, at a minimum, all of the following:

(a) a plan for dismantling the plant or central processing facility;

(b) a comprehensive study to determine the nature, degree and extent of contamination at the plant and affected lands;

(c) a plan to manage all wastes produced at the plant during operation and decommissioning;

(d) evaluation of remediation technologies proposed to be used at the plant and affected lands;

(e) a plan for decontamination of the plant and affected lands in accordance with the following:

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(i) for soil and water which will be remediated for agricultural, residential, commercial or industrial use, *Canadian Environmental Quality Guidelines, CCME PN1299, 1999*, as amended;

(ii) for hydrocarbon contaminated soil and water which will be remediated for natural, agricultural, residential, commercial or industrial use, *Alberta Soil and Water Quality Guidelines for Hydrocarbons at Upstream Oil and Gas Facilities, AENV 2001*, as amended;

(iii) for salt contaminated soil and water, *Salt Contamination Assessment and Remediation Guidelines, AENV 2001*, as amended;

(iv) for soil which will be remediated for agricultural or residential use and which contains substances not found in 5.2.1(e) (i) to (iii), *Alberta Tier I Criteria for Contaminated Soil Assessment and Remediation*, AEP, March 1994, as amended;

(v) for soil which will be remediated to commercial or industrial land use and which contains substances not found in 5.2.1(e) (i) to (iii), the *Interim Canadian Environmental Quality Criteria for Contaminated Sites*, CCME EPC-CS34, September, 1991, as amended;

(vi) for sampling locations which do not meet the conditions in C.1 of the *Soil Monitoring Directive*, AEP, May 1996, as amended, or if substances are present that are not listed in the standards referred to in 5.2.1(e) (i) to (v), the concentrations of substances in soil shall be compared with values derived using methods in C.2 of the *Soil Monitoring Directive*;

(f) confirmatory testing to indicate compliance with the remediation objectives;

(g) a plan for maintaining and operating contaminant monitoring systems; and

(h) any other information as required in writing by the Director.

5.2.2 If the Decommissioning Plan is found deficient by the Director, the approval holder shall correct all the deficiencies as outlined by the Director by the date specified in the deficiency letter.

5.2.3 The approval holder shall implement the Decommissioning Plan as authorized in writing by the Director.

5.2.4 All analytical protocols shall be in accordance with the *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites - Volume 1: Main Report*, CCME EPC-NCS62E, as amended.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

5.2.5 The approval holder shall submit an Annual Decommissioning Report to the Director by March 1 of each year until decommissioning is complete which shall include, at a minimum, all of the following:

(a) summary of decommissioning activities conducted during the reporting period;

(b) status of decommissioning;

(c) decommissioning activities planned for the following reporting period;

(d) summary and interpretation of monitoring data collected for the reporting period; and

(e) interpretation of monitoring data collected historically.

SECTION 5.3: LAND RECLAMATION

GENERAL

5.3.1 The approval holder shall conduct land reclamation activities in an on-going and progressive manner.

5.3.2 The approval holder shall reclaim land through appropriate conservation and reclamation methods to construct land having characteristics (soils, topography and drainage) that results in a return of land capability equivalent to that existing prior to disturbance.

5.3.3 The approval holder shall remove all watercourse crossings as part of the final reclamation, unless otherwise authorized in writing by the Director.

5.3.4 Unless otherwise authorized in writing by the Director, the approval holder shall reclaim all access roads, including removal of culverts and other structures, recontouring, restoration of drainage, decompaction of subsoil, replacement of topsoil and revegetation.

5.3.5 The approval holder shall progressively re-establish surface drainage on all reclaimed plant areas such that it is integrated with the adjacent land.

CONTOURING AND MATERIALS PLACEMENT

5.3.6 The approval holder shall contour disturbed land such that the reclaimed landforms approximate the natural landforms in the areas adjacent to the plant or as authorized in writing by the Director.

5.3.7 The approval holder shall ensure that reclaimed slopes shall be no steeper than 3:1.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

5.3.8 The approval holder shall cap any unsuitable material, as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, where unsuitability is not related to contamination, with 1.0 metre of soil material having a good, fair or poor rating, as described in the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, prior to subsoil and topsoil replacement.

5.3.9 The approval holder shall replace all salvaged subsoil on the decommissioned, contoured, and decompacted central processing facility site.

5.3.10 The approval holder shall replace all salvaged topsoil on all recontoured areas such that average depth of topsoil in the reclaimed profile for each reclamation area is equivalent to or greater than 80% of the original topsoil depth, or as otherwise authorized in writing by the Director.

5.3.11 The approval holder shall immediately suspend topsoil or subsoil replacement when:

(a) wet or frozen field conditions will result in the degradation of topsoil or subsoil quality; unless otherwise authorized in writing by an Inspector;

(b) high wind velocities, any other field conditions or operations will result in the degradation of topsoil or subsoil quality or loss of topsoil or subsoil; unless otherwise authorized in writing by an Inspector; or

(c) directed to do so in writing by an Inspector.

5.3.12 The approval holder shall only recommence the topsoil or subsoil replacement when suspended under 5.3.11 if:

(a) the conditions specified in 5.3.11 no longer exist; or

(b) directed in writing by an Inspector.

REVEGETATION

5.3.13 The approval holder shall only use the following types of seed for revegetation:

(a) for agronomic species that:

(i) is equivalent to Canada #1 seed;

(ii) is free of prohibited and primary noxious weeds;

(b) for native species that:

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(i) is free of prohibited and primary noxious weeds;

(ii) has a count of 5 or less secondary noxious weed seeds per 25 g of seed; and

(iii) has a count of 50 or less for other weed seeds per 25 g of seed.

5.3.14 The approval holder shall obtain and retain documentation that verifies that the seed used for revegetation meets the criteria specified in 5.3.13.

5.3.15 The approval holder shall maintain a weed control program until new vegetation is established and is self-sustaining.

MONITORING

5.3.16 The approval holder shall submit a proposal for a comprehensive Reclamation Monitoring Program to the Director by November 30, 2010, unless otherwise authorized in writing by the Director.

5.3.17 The proposal submitted pursuant to 5.3.16 shall include a monitoring plan designed to assess soils, vegetation and wildlife on reclaimed areas.

5.3.18 The approval holder shall implement the Reclamation Monitoring Program proposal submitted pursuant to 5.3.16 as authorized in writing by the Director.

REPORTING

5.3.19 In addition to reporting pursuant to 2.1.1, the approval holder shall immediately contact an Inspector when a land surface disturbance that is not approved is required.

5.3.20 The approval holder shall prepare an Annual Conservation and Reclamation Report that meets the information requirements outlined in the *Guide to the Preparation of Applications and Reports for Coal & Oil* Sands *Operations*, Alberta Environment, 1991, as amended and includes the following:

(a) a statement summarizing compliance with the requirements of this approval, in addition to reporting pursuant to 2.1.1;

(b) a discussion about any non-compliance events or inconsistencies reported under 5.3.20(a);

(c) an updated record of all well pads and well licenses associated with the plant;

(d) any proposed changes to the reclamation seed mix; and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(e) any other information requested by the Director.

5.3.21 The approval holder shall submit the Annual Conservation and Reclamation Report to the Director on or before March 31 of each year and the report shall be based on the information collected in the preceding year.

DATED July 24, 2006

DESIGNATED DIRECTOR UNDER THE ACT

ENVIRONMENT

AMENDING APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 223216-00-01

APPLICATION NO. 002-223216

EFFECTIVE DATE:. September 22, 2006

EXPIRY DATE: June 30, 2016

APPROVAL HOLDER Connacher Oil And Gas Limited
2600, 530 - 8th Avenue S.W.
Calgary, Alberta
T2P 3S8

Pursuant to Division 2, of Part 2, of the *Environmental Protection and Enhancement Act*, R.S.A.2000, c.E-12, as amended, the approval for the following activity:

Construction, operation and reclamation of the Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant.

is amended as per the attached terms and conditions.

Designated Director under the Act Kem Singh

Date Signed September 22, 2006

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Environmental Protection and Enhancement Act Approval No. 223216-00-00 is hereby amended as follows:

1. Subsection 1.1.2 (cc) is repealed and the following is substituted:

   (cc) "plant" means all buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, roadways, pipelines and other installations, and includes the land, located on the Northwest Quarter of Section 16 and Southwest Quarter of Section 21, Township 82, Range 12, West of the 4th Meridian, that is being or has been used or held for or in connection with the Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant;

DATED September 22, 2006

Kem Singh
DESIGNATED DIRECTOR UNDER THE ACT

ENVIRONMENT

CONSENT TO TRANSFER APPROVAL 223216-00-00

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT

WHEREAS the Director, has issued Approval Number 223216-00-00 (the "Approval") to Connacher Oil and Gas Limited, to undertake the activity described in the Approval.

AND WHEREAS Connacher Oil and Gas Limited, pursuant to section 75 of the Environmental Protection and Enhancement Act of Alberta, has requested the Director to consent to the transfer of the Approval to Great Divide Oil Corporation.

NOW THEREFORE pursuant to section 11 of the Approvals Procedure Regulation, I, the Designated Director under the Act consent to the transfer of the Approval from Connacher Oil and Gas Limited to Great Divide Oil Corporation.

IN CONSIDERATION of the Designated Director consenting to the transfer of the Approval from Connacher Oil and Gas Limited to Great Divide Oil Corporation, Great Divide Oil Corporation covenants and agrees with the Designated Director to comply with and to be bound by all the terms of the Approval as if the Approval had been issued by the Director to Great Divide Oil Corporation.

Connacher Oil and Gas Limited	Witness (if not under corporate seal)
Great Divide Oil Corporation	Witness (if not under corporate seal)

Kem Singh
Designated Director under the Act

November 3, 2006
Date

ENVIRONMENT

AMENDING APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 223216-00-03

APPLICATION NO. 004-223216

EFFECTIVE DATE:. September 17, 2007

EXPIRY DATE: June 30, 2016

APPROVAL HOLDER Great Divide Oil Corporation
2600, 530 - 8th Avenue S.W.
Calgary, Alberta
T2P 3S8

Pursuant to Division 2, of Part 2, of the *Environmental Protection and Enhancement Act*, R.S.A.2000, c.E-12, as amended, the approval for the following activity:

Construction, operation and reclamation of the Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant

is amended as per the attached terms and conditions.

Designated Director under the Act Kem Singh

Date Signed September 17, 2007

APPROVAL NO.
223216-00-03

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Environmental Protection and Enhancement Act Approval No. 223216-00-00 is hereby amended as follows:

1. Subsection 4.4.2 is repealed and the following is substituted:

   4.4.2 All domestic wastewater shall be directed to a septic tank and field system.

DATED September 17, 2007

Kem Singh
DESIGNATED DIRECTOR UNDER THE ACT

Alberta
ENVIRONMENT

AMENDING APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 223216-00-04

APPLICATION NO. 005-223216

EFFECTIVE DATE: May 22, 2009

EXPIRY DATE: June 30, 2016

APPROVAL HOLDER Connacher Oil and Gas Limited

Pursuant to Division 2, of Part 2, of the *Environmental Protection and Enhancement Act*, R.S.A.2000, c.E-12, as amended, the approval for the following activity:

Great Divide Oilsands Pilot enhanced recovery in-situ oil sands or heavy oil processing plant

is amended as per the attached terms and conditions.

Designated Director under the Act .....

Date Signed May 22, 2009

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Environmental Protection and Enhancement Act Approval No. 223216-00-00 is hereby amended as follows:

1. Subsection 4.1.15 is deleted and substituted with the following:

4.1.15 Releases of air contaminants shall not exceed the limits specified in TABLE 4.1-B.

TABLE 4.1-B: LIMITS

EMISSION SOURCE	AIR CONTAMINANT	LIMIT
Plant	Sulphur Dioxide	1.98 tonnes per day
The 67.4 MW steam generator	Oxides of nitrogen (expressed as NO_2)	8.9 kilograms per hour

DATED May 22, 2009

DESIGNATED DIRECTOR UNDER THE ACT

EUB Alberta Energy and Utilities Board

Calgary Office 640 – 5 Avenue SW Calgary, Alberta Canada T2P 3G4 Tel 403 297-8311 Fax 403 297-7336

June 28, 2006

Tim O'Rourke
Connacher Oil and Gas Limited
Suite 2600, Watermark Tower
530 – 8th Avenue S.W.
Calgary, Alberta T2P 4H2

Dear Sir,

APPLICATION NO. 1414169
CONNACHER OIL AND GAS LIMITED
GREAT DIVIDE OIL SANDS PROJECT
ATHABASCA OIL SANDS AREA
APPROVAL NO. 10587

The Alberta Energy and Utilities Board (EUB/Board) has considered Connacher Oil and Gas Limited's (Connacher) application dated August 15, 2005, requesting approval to implement a steam-assisted gravity drainage (SAGD) scheme for the production of bitumen from the McMurray Deposit in the Athabasca Oil Sands Area.

After reviewing the application and all of the additional materials filed to address issues raised in respect of the application, the Board has determined that the Great Divide Oil Sands Project is in the public interest and has approved Application No. 1414169, pending an Order in Council and subject to the conditions in Approval No. 10587. A draft copy of the approval is attached.

When arriving at its decision, the Board also took into consideration the commitments made by the applicant. The Board expects Connacher to carry out the commitments fully or to advise the EUB immediately if for any reason it cannot fulfill a commitment. The Board would then assess whether the circumstances warrant a review of the approval. The Board also notes that affected parties have the right to request a review of the approval if commitments made by the applicant remain unfulfilled.

The Board is satisfied that Connacher has provided a complete and adequate level of information within the initial Development Area (DA), as outlined in Appendix A to Approval No. 10587. The Board also believes that resource delineation for the remainder of the project is sufficient only for preliminary project design. It understands that modifications to project design could occur as evaluation drilling and seismic programs proceed and as field information and operating experience become available. Therefore, for developments outside of the DA, Connacher must demonstrate to the EUB that it has adequate resource delineation to finalize locations of the pads, well trajectories, and elevations of horizontal wells within the proposed development area prior to construction.

The Board recognizes that modifications arising from detailed design of future developments outside of the DA may change the identified environmental impacts. Therefore, the Board expects that Connacher will conduct environmental reviews of proposed new well pads, roads, and pipelines, and will implement measures to mitigate impacts including avoiding sensitive areas and relocating wherever the reservoir geology allows. The Board expects this material to be communicated on an ongoing basis. Interim Directive (ID) 2002-03: *Performance Presentations for In Situ Oil Sands Schemes* provides one means for the Board to remain up to date on the developments and operations of the scheme.

The Board notes that Connacher is required to apply to the EUB's Resource Applications Group for approval of all disposal wells and that the applications must describe Connacher's proposed program for monitoring and reporting.

The Board believes that although the project-specific impacts of the Great Divide Project are manageable, some uncertainty remains concerning cumulative environmental management at the regional level. The Board recognizes that the Cumulative Environmental Management Association (CEMA) working groups are developing recommendations on management objectives and systems to address industrial cumulative effects issues in the region. The Board notes that regulatory changes resulting from implementation of CEMA recommendations by the EUB and other regulatory agencies may result in changes to approvals issued to Connacher for the Great Divide Project.

The Board commends Connacher for its proactive approach to consultation and for its success in reaching agreement and understanding with local aboriginal communities and other stakeholders. The Board expects Connacher to continue its consultation and communication efforts and to honour all the commitments it has made to parties.

If you have any questions contact Byron Lee at (403) 297-8537.

Yours truly,

Kris Geekie
Insitu Section Leader
Resource Applications

cc. J. Chen, Alberta Environment
K. Hennessey, Alberta Sustainable Resource Development

EUB Alberta Energy and Utilities Board

COMMERCIAL SCHEME
Approval No. 10587

MADE at the City of Calgary, in the Province of Alberta, on	ALBERTA ENERGY AND UTILITIES BOARD

*** Draft Form of Approval**

IN THE MATTER of a commercial scheme of Connacher Oil and Gas Limited for the thermal recovery of crude bitumen from the **McMurray Deposit in the Athabasca Oil Sands Area**.

WHEREAS the Lieutenant Governor in Council, by Order in Council Number O.C. # dated #, hereto attached as Appendix B, has authorized the granting of this approval.

The Alberta Energy and Utilities Board, pursuant to the Oil Sands Conservation Act, chapter O-7 of the Revised Statutes of Alberta, 2000, orders as follows:

1) The scheme of Connacher Oil and Gas Limited (hereinafter called "the Operator") for the thermal recovery of crude bitumen from the **McMurray Deposit in the Athabasca Oil Sands Area**, as such scheme is described in

   a) Application No. 1414169,

   is approved, subject to the Oil Sands Conservation Regulation and the terms and conditions herein contained.

2) The recovery of crude bitumen from wells located in the development area (DA) outlined in Appendix A is approved.

3) Clauses 1 and 2 do not preclude alterations in design and equipment, provided that the EUB is satisfied that the alterations are compatible with the outline of the scheme, are made for the better operation of the scheme, and do not result in unacceptable adverse impacts.

4) Unless otherwise stipulated by the Board, the production of bitumen from the project area identified in Appendix A shall not exceed 1600 cubic metres per day (m^3/d) on an annual average basis.

5) The operator shall conduct all operations to the satisfaction of the Board and in a manner that under normal operating conditions will permit:

   a) the recovery of the practical maximum amount of crude bitumen within the project area,

   b) the conservation of the practical maximum volume of produced gas at the well pads and central facilities,

c) the minimization of flaring to non-routine operations such as start-up, shutdown, emergencies, infrequent upsets, and maintenance depressuring, and

d) the practical maximum reuse of produced water, with the minimum recycle rate being 90 per cent on an annual basis, unless otherwise stipulated by the Board.

6) The Operator shall submit updated water quality and quantity results from the water supply wells and water disposal wells to the Board before November 15, 2006. The Operator shall incorporate these results into a revised water balance and description of water treatment and submit a report for the Board's approval by November 30, 2006.

7) Unless otherwise stipulated by the Board, the Operator shall:

a) provide the Board with gamma ray spontaneous potential resistivity and gamma ray neutron density logs from total depth to surface casing for all vertical wells,

b) take full diameter cores of the entire bitumen-bearing interval of the McMurray Formation from not less than four evenly spaced vertical wells per section, and take full-diameter cores of bitumen-bearing intervals of other zones in the Mannville Group, if any, from at least one well per section, and at the Board's request

i) analyze portions of such cores, and

ii) provide suitable photographs of the clean-cut surface of each core slabbed.

8) Unless otherwise permitted by the Board, steam injection operations, having commenced at a well pad, shall continue until the well pad has produced a minimum of 50 per cent of the in-place volume of crude bitumen assigned to that well pad by the Board.

9) Where the Operator proposes to cease SAGD operations at a well pad that has produced less than 50 per cent of the in-place volume of crude bitumen and the Board's consent therefore is sought, the Operator shall advise the Board as to the following:

a) the reason for proposing to cease SAGD operations,

b) details of individual well workovers and recompletions attempted,

c) detailed economics of continuing operations

d) the effect of ceasing SAGD operations on the bitumen recovery ultimately achievable from that part of the reservoir associated with the pad and immediately offsetting pads, and

e) future plans for the well pad with reference to possible follow-up recovery techniques that could be applied and other zones that could be exploited.

10) a) The Operator shall ensure that sulphur recovery will be operational before total project sulphur emissions from flaring and combustion of gas containing hydrogen sulphide (H2S) reach one (1) tonne/day on a calendar quarter-year average basis, unless otherwise stipulated by the Board. The calendar quarter-year sulphur recovery shall not be less than set out in Table 1 of EUB Interim Directive (ID) 2001-03: Sulphur Recovery Guidelines

for the Province of Alberta on the basis of the calendar quarter-year daily average sulphur content of acid gas streams generated in the facilities.

b) The Operator must record daily and report calendar quarter-year average sulphur balances in the annual presentation to the EUB. Daily sulphur balance information must be available for review by EUB staff.

11) The Operator shall notify the Board of any proposed material alteration or modification of the SAGD scheme or to any equipment proposed for use therein prior to effecting the alteration or modification.

12) (1) Any plans for operations or development outside the approved development area shall besubmitted to the Board for review. Such submissions must:

a) Describe the facility and infrastructure locations and the operation of the surface facilities. Justify any changes from those described in the original application and associated amendments. Evaluate the potential environmental impacts in the context of these changes and contrast with impacts predicted in the original application.

b) i) Verify predictions and evaluate the performance of the environmental mitigation strategies proposed by the operator in the original application and associated amendments. Discuss how the approach to various mitigation strategies might be altered based on the findings of the evaluation and incorporated into future operations.

ii) Provide a summary of the information submitted for the Environmental Protection and Enhancement Act (EPEA), as well as any other environmental information related to the scheme and its amendment that may be required by agency other than the EUB.

c) Provide geological and reservoir data that demonstrate that the reservoir in the proposed development area has been fully evaluated, including evaluation wells and seismic interpretation to fully evaluated, including evaluation wells and seismic interpretation to fully understand where well pads and wells will be located. Submit updated bitumen, gas, and water mapping, reservoir properties, and reserves estimates for the existing development area, the proposed additional area, and the overall development area.

d) Describe the Operator's participation in regional environmental initiatives, such as the Cumulative Environmental Management Association (CEMA), the Wood Buffalo Environmental Association (WBEA), the Terrestrial Environmental Effects Monitoring (TEEM), and the Regional Aquatics Monitoring Program (RAMP). Discuss recommendations that have been generated from these regional initiatives and how these recommendations have been incorporated into the project.

(2) After due consideration of the submission, the Board will decide whether it is satisfied with the information provided. The Board, if satisfied, will allow the development to proceed without further process. The development area shall then be deemed to include

the allowed expansion. The Board shall then issue an updated Appendix A that will depict the expanded development area.

(3) If the Board is of the view that the information is insufficient, it may request additional information.

(4) Where the Board is of the view that the scheme design and operations within the new development area represent a significant change that materially alters the approved project, it may require the Operator to file a new application in accordance with *Guide 23: Guidelines Respecting an Application for a Commercial Crude Bitumen Recovery and Upgrading Project*.

13) Where, in the opinion of the Board, any alteration or modification referred to in Clause 12 to the scheme or to any equipment proposed for use therein

a) is not of a minor nature

b) is not consistent with the scheme approved herein, or

c) may not result in an improved or more efficient scheme or operation, the alteration or modification shall not be proceeded with or effected without the further authorization of the Board. The Operator must provide evidence that this major alteration or modification to the scheme or to any equipment will result in a benefit to the scheme or operation and be in the public interest.

Should the Board consider the alteration or modification to be major, it may request additional information, as it deems appropriate.

14) Notwithstanding any date by which any work, act, matter, or thing is by this approval required to be done, performed, or completed, the Board, if it considers it proper to do so, may by stipulation alter the dates specified.

15) Attached hereto as Appendix B to this approval is the Order of the Lieutenant Governor in Council authorizing the granting of the approval.

16) The Board may,

a) upon its own motion, or

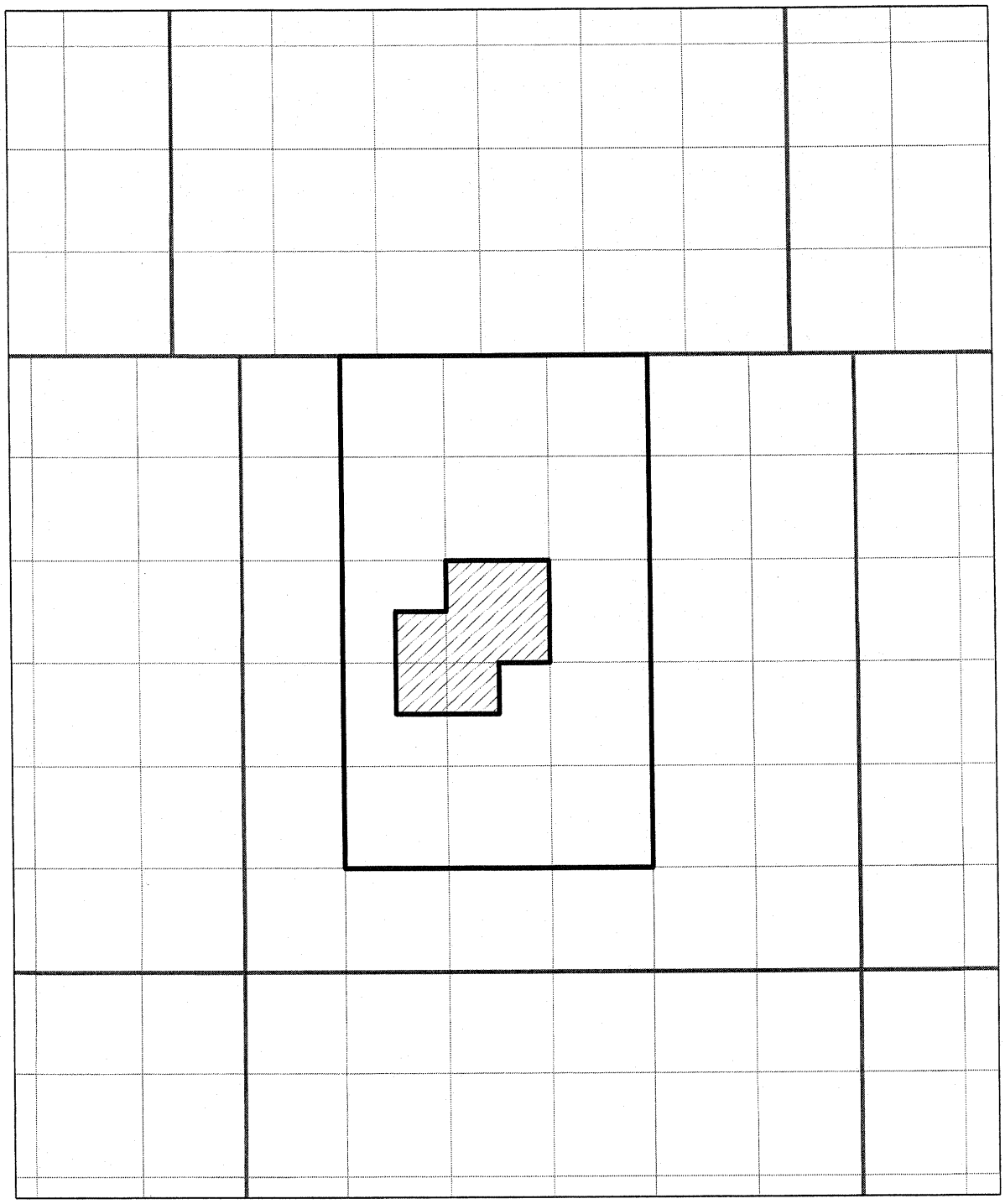
b) upon the application of an interested person,

rescind or amend this approval at any time.

END OF DOCUMENT

*** This is only a draft form of Approval. The Approval, when issued, may have minor variations from that set out here.**

R.12W4



T.82

ATHABASCA OIL SANDS AREA
APPENDIX A TO APPROVAL NO. 10587

REFERENCE:

Project Area

Development Area

Alberta
ENVIRONMENT

LICENCE TO DIVERT WATER
PROVINCE OF ALBERTA
WATER ACT, R.S.A. 2000, c.W-3, as amended

LICENCE NO.: 00240458-01-00

FILE NO.: 00240458

PRIORITY NO.: 2007-06-29-001

EFFECTIVE DATE: 2009-07-20

EXPIRY DATE: 2014-07-19

SOURCE OF WATER: Grand Rapids Formation (See Table 3-1)

LICENSEE: Connacher Oil and Gas Limited

Pursuant to the *Water Act*, R.S.A. 2000, c.W-3, as amended, a licence is issued to the Licensee to:

operate a works and to divert up to 292,000 cubic metres of water annually from the source of water for the purpose(s) of industrial (injection)

subject to the attached terms and conditions.

Designated Director under the Act: _____
Patrick Marriott, P. Eng.

Date Signed: 2009-07-20

DEFINITIONS

1.0 All definitions from the Act and the Regulations apply except where expressly defined in this licence.

1.1 In all parts of this licence:

(a) "Act" means the Water Act, RSA 2000, c. W-3, as amended;

(b) "Application" means the written submissions to the Director in respect of application number 002-00240458 and any subsequent applications for amendments of Licence No. 00240458-01-00;

(c) "Aquifer" means the underground water-bearing formation that is capable of yielding water, that is accessed by the works authorized by this licence;

(d) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(e) "Monitoring well" means the well used to monitor the water levels associated with the diversion of water authorized by this licence;

(f) "Point of use" means the point or places in which the diverted water is used by the Licensee for the licenced purpose;

(g) "Production well" means any well used to divert water for the purpose of this licence;

(h) "Regulations" means the regulations, as amended, enacted under the authority of the Act; and

(i) "Water Use Reporting System" means the secure internet website provided by Alberta Environment at http://www.environment.alberta.ca/1286.html for submitting measuring and monitoring results electronically to the Director.

GENERAL

2.0 The Licensee shall immediately report to the Director by telephone any contravention of the terms and conditions of this licence at 1-780-422-4505.

2.1 The terms and conditions of this licence are severable. If any term or condition of this licence is held invalid, the application of such term or condition to other circumstances and the remainder of this licence shall not be affected thereby.

2.2 The Licensee shall not deposit or cause to be deposited any substance in, on or around the source of water that has or may have the potential to adversely affect the source of water.

2.3 The licensee shall comply with the terms and conditions of the "Water Use Reporting System User Consent".

DIVERSION OF WATER

3.0 This licence is appurtenant to Table 3-1.

3.1 The Licensee shall divert water only for the purpose(s) specified in this licence.

3.2 The Licensee shall divert water only from the source of water specified in this licence.

3.3 The works used to divert the water authorized by this licence shall include, at a minimum, the production wells referred to in Schedule 1.

3.4 The Licensee shall not exceed any of the limits specified in Table 3-1.

3.5 The Licensee shall not position the pump intake in the production well(s) at a depth greater than the maximum pump intake depth specified in Table 3-1.

TABLE 3-1

WELL NUMBER	LEGAL LAND DESCRIPTION for WELL LOCATION	PRODUCTION INTERVAL (metres below grade)	MAXIMUM PUMP INTAKE DEPTH (metres below grade)	LIMITS	
				MAXIMUM RATE OF DIVERSION (cubic metres per day)	MAXIMUM ANNUAL DIVERSION (cubic metres per calendar year)
Production well	16-17-082-12-W4	300 – 350	300	1,500	292,000
Production Well	09-17-082-12-W4	300 – 350	300		
Production Well	08-17-082-12-W4	300 – 350	300		
Standby Well	02-17-082-12-W4	324 – 330	?		

3.6 Prior to diverting any water from the source of water, the Licensee shall equip each production well with a meter, which cumulatively measures the quantity of all water diverted during the term of this licence.

3.7 The Licensee shall maintain each measuring device referred to in 3.6 at all times.

MONITORING AND REPORTING

4.0 The Licensee shall establish monitoring well(s) as and when required in writing by the Director.

4.1 Unless otherwise authorized in writing by the Director, the Licensee shall measure the water levels in the monitoring well in LSD 08-17-082-12-W4 on a continuous basis.

4.2 Unless otherwise authorized in writing by the Director, the Licensee shall measure the water level(s) in each production well on a daily basis while water is being diverted.

4.3 Unless otherwise authorized in writing by the Director, the Licensee shall:

(a) monitor the total number of cubic metres of water diverted; and

(b) record the total number of cubic metres of water diverted

from each production well on a daily basis.

4.4 The Licensee shall:

(a) obtain a representative sample of water being diverted from each production well; and

(b) analyze the water collected in 4.4(a) for the following parameters:

(i) Total Dissolved Solids, Hardness, Alkalinity, pH, Calcium, Magnesium, Sodium, Potassium, Carbonate (CO_3), Bicarbonate (HCO_3), Sulphate (SO_4), Chloride, Nitrate, and Iron, and

(ii) any other parameter required by the Director

on an annual basis unless otherwise specified in writing by the Director.

4.5 The Licensee shall use the monitoring data obtained from production and observation wells to ensure that drawdown in the aquifer is limited in accordance with the *Water Conservation and Allocation Guideline for Oilfield Injection 2006.*

4.6 The Licensee shall limit the amount of non saline water diverted for injection purposes to 10% of the total make up requirement as described in any Directive issued by Alberta Environment or jointly by Alberta Environment and the Energy Resources Conservation Board dealing with *Requirements for Water Measurement, Reporting and Use for Thermal In Situ Oil Sands Schemes.*

4.7 The limit set out in 4.6 may be amended by the Directive as set out in any Directive issued by Alberta Environment or jointly by Alberta Environment and the Energy Resources Conservation Board dealing with *Requirements for Water Measurement, Reporting and Use for Thermal In Situ Oil Sands Schemes.*

4.8 The Licensee shall record and retain all of the following information for a minimum of 5 years after being collected:

(a) the place, date and time of all monitoring, measuring and sampling;

(b) the results obtained pursuant to 4.1, 4.2, 4.3 and 4.4; and

(c) the name of the individual who conducted the monitoring, measuring and sampling stipulated in (a) and (b).

4.9 The Licensee shall report to the Director the results of the recording in 4.2 and 4.3 using the "Water Use Reporting System" and any other information required in writing by the Director.

4.10 The Licensee shall submit the report required in 4.9 on or before the end of the month following the month in which the information is based upon was collected.

4.11 The Licensee shall compile an Annual Water Use Report on or before February 28th of each year following the calendar year in which the information on which the report is based was collected.

4.12 The Licensee shall retain each Annual Water Use Report for a minimum of 5 years.

4.13 The Licensee shall submit an Annual Water Use Report to the Director:

(a) on or before February 28th of each calendar year following the year in which the information on which the report is based was collected; or

(b) within a time period specified in writing by the Director.

4.14 The Annual Water Use Report shall include, at a minimum, the following information collected during the previous calendar year:

(a) the total annual number of cubic metres of water diverted from each production well;

(b) a review of the performance of the diversion sites during the past year an assessment, supported by graphs and calculations, of the performance of the aquifer;

(c) recommendations for adjustments of pumping rates, the number and location of observation wells, and diversion sites monitoring requirements;

(d) a report prepared by a qualified groundwater consultant of the aquifer performance and recommendations for amendments to the licence; and

(e) any other information required in writing by the Director.

Schedule 1 - Reports

Report Number	Report Title
00240458-R001	Grand Rapids Formation Groundwater Supply Technical Assessment And Oilfield Guideline Compliance Pod 1 16-82-12-W4 dated June 2007
00240458-R002	Application for Temporary Diversion 16-082-12-W4 dated May 2008
00240458-R003	Grand Rapids Formation Groundwater Supply (2009 Renewal) dated March 2009