

Environmental Impacts of the Tar Sands Industry in Northeastern Alberta: A Database

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A flaring event at Petro-Canada's refinery, Edmonton, 21 Nov 2008, as seen from Sherwood Park, 4 km to the south. Photo: K. Timoney.

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Foreword

The pollution database gathered for this report serves to document a failure of the Alberta government to uphold the public trust. If the database proves useful, it may in some small way contribute to replacing a culture of impunity with one of responsibility. When Albertans decide they will no longer tolerate bad government, things will get better. Until then, tar sands and other corporations will continue to pollute at will, sure in the knowledge that they operate outside meaningful controls and immune from prosecution.

This work is dedicated to Alberta's civil servants, many of whom strive to serve the public knowing full well their efforts may be nullified at some point along the chain of command.

Note: Since completion of this report, the databases have been made searchable and more user-friendly. Please see the documents that accompany this report.

Introduction

Development of the tar sands industry in northeastern Alberta has raised serious questions and concerns about its environmental, social, and public health impacts. Unfortunately, information relevant to those questions and concerns is often unavailable or difficult to procure. In many cases, a researcher may be unaware that relevant information exists. In other cases, readily available information may be second- or third-hand and therefore of dubious utility.

The purpose of this project was to create a collection of tar sands-related information that can provide useful primary data to scientists and the concerned public.

This document describes the four types of information gathered, how to use the datasets, what the datasets indicate, and makes recommendations for future work.

The Approach

The Alberta Environment Twin Atria records library in Edmonton, Alberta houses a diverse collection of information including reports on air, water, wastewater, and groundwater monitoring, consultant reports, and correspondence. Information is organized by Alberta Environment under an approval number that generally corresponds to a company, but in some cases a company may have more than one approval number. This project began with a methodical search through the library, first of the current records folders for approvals 26 and 94 (Syncrude and Suncor), followed by a search of previous years' records for those approvals, and then by a search of records for other approvals.

A research assistant visually searched file folders for the tar sands company approvals from the present back to circa 2005. As the assistant worked alone and under some time duress, it is uncertain whether all relevant information was extracted. Records prior to 2005 are stored at a secure facility in Edmonton (Alberta Records Centre). No attempt was made to search those records.

As the work progressed, it became evident that much of the relevant information was contained in "call information" sheets that reported "alleged contraventions",

“notification” releases of substances to air, land, and water, and other kinds of information. “Call information” is not available without a formal “routine disclosure” request, similar to a freedom of information request. A set of routine disclosure requests was submitted to Alberta Environment keyed to tar sands companies.

Under the Fisheries Act, it is unlawful to destroy fish or fish habitat without a HADD permit. Access to information related to the destruction of fish and fish habitat required a freedom of information request to the federal Department of Fisheries and Oceans. The access to information request was for:

“All Harmful Alteration, Disruption, or Destruction (HADD) of fish habitat permits, or their earlier equivalents, that have been granted in the tar sands region of northeastern Alberta. Geographic limits: southern = 56.0 degrees N; northern = 58.1 degrees N; western = 114.0 degrees W; eastern = 110.0 degrees W. Date window extends from 1 January 1960 to the present (August 28, 2008).”

Search for information relating to bird and wildlife mortalities also met with a requirement to file a freedom of information request, in this case to Alberta Sustainable Resources Development (SRD). Under Alberta legislation, release of such information to the public requires notification of the tar sands companies on whose leases the animal deaths were recorded. The companies are given sufficient time and opportunity to examine the data and file grounds for objection to its release, at which point a government representative (the minister or his/her representative) decides on the validity of the objection. If the minister decides in favour of release, the company or companies is/are given time and opportunity to object to the decision to release, after which yet another decision has to be made. This process began in July 2008, took several months, and was not completed at the time that Timoney wrote the report. A single page spreadsheet of bird mortalities for three companies was faxed to Timoney in October 2008. In February 2009, after Timoney completed the study, mammal mortality data were released for three companies and these were later scanned into a document and made text searchable (see [Wildlife FOIP.pdf](#)).

The Datasets

Environmental data and report excerpts in government and industrial reports housed in the Alberta Environment Twin Atria records library.

Bibliographic information, source notes, and comments for the material gleaned from the Twin Atria records are found in the file: [Tar Sands Sources - Master List.xls](#). The information has been converted to pdf files that are hyperlinked in the spreadsheet. There are 180 records.

Routine Disclosures

Telephone calls to Alberta Environment are logged into its “Environmental Management System.” Records for Suncor (approval 94) extended from 1995 to 2008, those for Syncrude (approval 26) extended from 1996 to 2008; those for other approvals extended over a much shorter period.

The calls typically come from industry but public complaints are also logged. In the information received in the routine disclosure, each record consists of a summary of an original record. The summary contains a Call Id number, Sheet number, Date and Time of Call, Caller Type, Call Type, Reason, Reported Source, Incident Date and Time,

Operation (company or project), Resolution (typically followed by “Linked to an Incident”), and Incident Id number. All “Referred to” and “Referral Date/Time” fields were blank in the records received.

The Comments field contains a short description of the incident. For example, at the Syncrude Aurora Mine, on 6 July 2005 at 08:22, the comments reported a “Hydraulic oil spill – 3000 gallons to ground – has been cleaned up with sand and recovered to process – caused by 1138 shovel hydraulic pump breaking into 2 pieces.”

About 1700 pages of incidents (with about four incidents listed per page) were retrieved. Common incidents included flaring, H₂S exceedances, SO₂ exceedances, sulphur releases, failures to report, excessive ‘down time’ for equipment and monitoring devices, spills, and water quality exceedances. The most recent records released date from mid-July 2008. Unfortunately, past Alberta Environment policy has been to destroy call information after about ten years. It is hoped that destruction of records will not occur with the new electronic records system.

Hundreds of records were deleted or partly censored by FOIP staff. Deletion or censoring is allowed by legislation under two conditions: to prevent disclosure of personal information (e.g., names, addresses) and to prevent disclosure of information under open investigations. Study of hundreds of deleted and partially censored records in the context of related information raised the question: has deletion or censoring been conducted beyond the limits allowed under legislation? I asked the FOIP officer involved in this routine disclosure:

“Can you confirm that every Routine Disclosure record that was either deleted or partially-censored contained either personal information or was part of an open investigation?”

The officer responded: “Yes.”

It would be interesting to examine some of the deleted records in that context. Here are some examples of deletions:

Public complaint, “alleged contravention”, about Encana Corporation, 17 March 2003, incident 136735, all comments were deleted (page 25 of: christina lake encana approval 48522.pdf).

Fort Hills Energy, seven out of a total of 18 records were deleted (perhaps 9 out of 20 records deleted; cannot tell due to extensive deletions; fort hills energy 151469.pdf).

An undeleted record adjacent to a deleted record stated: “Call from stakeholder – waste being disposed of wrongfully. Being investigated now. Anonymous caller. Notification only.” (14 May 2008, incident 301674, fort hills energy 151469.pdf). If the caller were anonymous, why was the material deleted? Is this an active investigation?

As the incidents are filed by date and incident number, by inference three of the deleted records were found to correspond to incidents documented in the library search. These documents (151469-water monitoring reports 2008-1.pdf, ... 2008-2.pdf, and ...2008.3.pdf) refer to incidents 197280, 196427, and 196428 (deleted in fort hills energy 151469.pdf) in which discharges of excessive levels of total suspended solids and turbidity were documented into a creek that drained into the Athabasca River; failure of water quality monitoring equipment was also documented.

For more information on how to use the [Routine Disclosures – Master List](#) spreadsheet, refer to the [Routine Disclosures Help Sheet](#).

DFO HADD Permits

The document, [Hadds Reports.pdf](#), contains information on 36 HADD permits and their related amendments; the document, [additional records.pdf](#), contains an additional seven HADD permits (received 26 November 2008). Altogether, DFO provided copies of 43 HADD permits.

CNRL received the most HADDs, 12, followed by Suncor 8, Alberta Infrastructure and Transportation 4, Nexen 3, Fort Hills Energy Corporation 3, Petro-Canada Oil Sands Incorporated 2, Pembina Pipelines Corporation 2, and one each for Birch Mountain Resources, Trans Canada Pipelines, Corridor Pipeline Expansion Project, Atco Electric, Enbridge Pipelines, Imperial Oil (Kearl), Shell Albion, the Regional Municipality of Wood Buffalo, and Koch Petroleum.

Each HADD permit provides the company or agency granted the permit, contact information; Location of Project; the dates under which the permit applies; Description of the Works or Undertakings; and the (Conditions of) the Authorization for Works or Undertakings Affecting Fish Habitat. Conditions may include general, mitigation, compensation, security deposit, and monitoring sections.

Alberta SRD Data on Bird and Wildlife Mortalities

Under their project approvals, tar sands companies are required to report the results of avian mortality monitoring in their annual reports to the Alberta government. Number of dead birds found were listed for Suncor (1990-2008), Syncrude (2000-2007), and Shell Albion (2000-2008) leases for three causes of death: oiling, other, and unknown. “Other” causes of death included electrocution, collisions with vehicles and buildings, predation, fights with other birds, and natural (Table 1).

Table 1. Bird mortality spreadsheet released by Alberta SRD. Text in red font was added by Timoney.

Mortality by Oiling

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	YTD	Comments
Suncor	103	93	194	135	87	43	72	71	80	48	193	2	17	15	10	3	3	9		16	
Syncrude											8	15	20	16	33	8	57	10		500	2008 Syncrude value left blank by srd under FOIP Act section 20(1)(a) (open investigation); 500 was tentative value; it was later revealed that more than 1600 waterfowl had died in the April 2008 event
Albian											0	0	0	17	2	14	3	26		4	
										annual sum	201	17	37	48	45	25	63	45		520	

Mortality by Other

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	YTD
Suncor	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2	4	1		0
Syncrude											2	2	6	23	5	18	8	7		2
Albian											1	0	3	3	2	2	7	6		1
										annual sum	3	2	10	28	7	22	19	14		3

Mortality by Unknown

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	YTD
Suncor	0	0	2	4	1	0	4	6	3	10	12	23	1	2	2	1	3	6		0
Syncrude											7	3	2	5	9	16	8	19		2
Albian											0	0	1	0	1	1	4	6		4
										annual sum	19	26	4	7	12	18	15	31		6

Bird Types

A	Waterfowl	Note: There is no information provided in the spreadsheet as to bird types, so why the bird type codes are listed is unknown.
B	Shorebird	
C	Passerine	
D	Other	
E	Unknown	

Causes

Other: includes electrocution, collisions with vehicles and buildings, predation, fights with other birds, natural causes, etc.

Unknown: includes incidents where company is not able to determine cause of death, and incidents where cause of death was not reported.

This is a compilation of avian mortality reported in annual summary reports submitted to ASRD as a requirement of collection license. Several reporting errors have been encountered between and within reports, which may explain the discrepancy between this summary and numbers reported in summary tables and Conservation & Reclamation Reports.

Notes

1. It is unclear why only Syncrude, Suncor, and Albian numbers are reported. There are other company leases upon which bird mortalities have been documented (e.g., Mackay River / Petro-Canada, 3 May 2004, two birds died from landing in brine lagoon; routine disclosure sheet 155884, document = mackay river petro-canada approval 48408.pdf).
2. It is unclear why data for Suncor begin in 1990 and data for Syncrude and Albian begin in 2000.
3. The Alberta and federal governments conduct no mortality monitoring.
4. Reliance on industry *ad hoc* reporting results in gross underestimates of mortality.
5. The dataset is woefully incomplete.
6. The FOIP request was for: "Bird and wildlife mortality observations held by Alberta SRD, Fish and Wildlife Division, for the Athabasca tar sands region of northeastern Alberta." The wildlife part of the FOIP was still outstanding when Timoney completed the report. The data have since been procured and are included in the dataset package ([Wildlife FOIP.pdf](#)).

How to Use the Datasets

Reports

The [Tar Sands Sources - Master List.xls](#) spreadsheet is the starting place for use of this database.

The fields (data columns) are:

Folder Code: the number of the physical file on a shelf in the Twin Atria records library. This is needed if a person wishes to visit the library to research further questions on that topic.

Application Number: the identifier for a particular company's project. All information in the library is stored by project application number. For example, the Syncrude Mildred Lake complex is application number 26. Within each section of shelf devoted to that application number, information is stored in folders by folder code.

Monitoring Category: the kind of report (e.g., water monitoring, air monitoring, land reclamation).

Company: the energy company name.

Project Location or Identifier: either the geographic location of the project, the project's office, or simply to the name of the project.

Date of Origin: date to which the information refers or, in other cases, the publication date. The format is either day-month-year, month-year, or year.

Type of Data: monthly reports, annual reports, correspondence, proposals, field studies, risk assessments, etc.

Sheet Number: in some cases, a sheet number is provided that refers to an Alberta Environment call information sheet code. Call information sheet numbers provide a means of organizing incident information. The routine disclosures data are also organized by sheet number codes.

Notes: a summary of some of the salient points contained in the document.

Hyperlink: the file name of the document. When a user clicks on the file name, the document opens in Adobe Reader. Note that in order for the link to function, the hyperlinked files must reside in "c:\myfiles\library research project\tar sands research project\digital copies\".

Electronic Only: if "yes", then no paper copy exists. Information was retrieved directly from an electronic copy.

Routine Disclosures

The Alberta government does not supply electronic text documents in its routine disclosures but rather supplies paper copies. Text recognition scanning allows for these documents to be used with the search function, but the recognition is imperfect and not all words in each document were picked up, especially text in tables.

Routine disclosures were scanned into a separate document for each company; the company name, project name and Alberta Environment approval number are part of the file name. Grammatical and spelling errors are common in the comments section of the disclosures, but the meaning is typically understandable. All routine disclosures have been compiled electronically in the [Routine Disclosures – Master List.xls](#) file.

Each Adobe pdf file contains the text information scanned as black and white images. Automated text searching is possible within the [Routine Disclosures - Master List.xls](#) as well as the pdf files themselves which can be accessed through the hyperlink column.

HADD permits

The file [Hadds Reports.pdf](#) contains the 43 HADD permits received in the order presented by DFO. Automated text searching is possible in this file.

Bird and Wildlife Mortality

The data in Table 1 may be used directly or copied into a spreadsheet for analysis. Wildlife mortality data is available for three companies and is found in the [Wildlife FOIP.pdf](#) document.

What the Data Indicate

Reports and Data

The reports and data illustrate chronic pollution and chronic lack of enforcement (particularly for air); poor documentation of reclamation; unacceptable downtimes for pollution monitoring equipment, and oft times provide important background information that is amenable to new interpretations.

The following serves as an illustration of information contained in the report excerpts. The focus is on only a portion of the Syncrude material.

1. Exceedances of air quality regulations are common.

Some Syncrude examples:

26-air monitoring reports-2005-1.pdf (see Appendix 1)

26-air monitoring reports-2005-2.pdf

26-air monitoring reports-2005-3.pdf

26-air monitoring reports-2005-5.pdf

26-air monitoring reports-2005-9.pdf

26-air monitoring reports-2006-5.pdf

2. The claim that Syncrude releases no process-affected and industrial wastewaters into the environment requires scrutiny. According to Syncrude: “The only discharge of water from Syncrude’s Mildred Lake operation to the Athabasca River is from the domestic wastewater treatment facility (lagoons). Inflow to the anaerobic/aerobic lagoon system is limited to sanitary sewage” (26-water monitoring reports-2006-1.pdf).

The retention of all process-affected waters on the Syncrude site is a physical impossibility. The relevant questions are: how much seepage/loss of process-affected water takes place, where does it take place, and what are its effects?

In 2007, Syncrude disposed of 41,231,403 liters of various industrial waters ‘on-site’. About two million tonnes of coke are deposited annually into the Mildred Lake Settling Basin (26-water monitoring reports-2006-1.pdf).

A water balance should be prepared to account for facility and evaporative losses. If annual water disposals in other years are of similar volumes (corrected by a water balance for losses), and wastewater-tailings ponds are not growing correspondingly in volume, seepage would be the only logical explanation (26-air monitoring reports-2007-5.pdf).

Seepage from the Syncrude lease is implied in the concentration of naphthenic acids found in Beaver Creek at site TBC-1B of 15 mg/L (see 26-groundwater reports-2005-2.pdf, Table 5.2).

Similarly, data indicate high and increasing levels of naphthenic acids downstream of the “lower seepage dam” on Beaver Creek, a maximum of 28 mg/L at site BC-3 in 2005 (see 26-groundwater reports-2005-1.pdf, Table 20).

In 2006, laboratory deformities in *Xenopus* frog embryos occurred at a frequency of 3.9% in water from site BC-3 in Beaver Creek (26-groundwater reports-2006-1.pdf, Table 3.4).

Information presented in the aforementioned report, 26-water monitoring reports-2006-1.pdf, and other reports on seepage detection and effects is open to debate. Conclusions of ‘no detectable effect’ deserve scrutiny.

Correspondence from Alberta Environment to Syncrude shows that Alberta Environment suspects seepage off the Syncrude site (26-groundwater monitoring report-2007-3.pdf). Note that chloride concentration is a good marker for tailings seepage. Excerpts follow:

“Explain the increasing chloride concentration (76 mg/L) at sample location BRC in 2007.” [page 1]

“Wells with Background Chemistry – page 30 – Monitoring wells OW80-14 and OW03-03 continue to clearly show increasing chloride concentrations not reflective of background chemistry. In addition, monitoring well OW99-14 is showing an increase. This is all indicative of an advancing plume...

“Wells with Elevated Chloride (>100 mg/L) Concentrations – page 30 – Monitoring wells OW79-19, OW98-19B, OW98-22, OW98-24, OW98-28,

OW99-12, OW01-02, OW02-01, OW02-04, and OW03-15 indicate increasing chloride concentrations.” [page 2]

“Explain the increasing naphthenic acid concentration (60 mg/L) in monitor well OW98-09 located down-gradient of the pumping system and east of Hwy #63.” [page 2]

Many more examples could be given from this single document, but the essential point is that Alberta Environment has recognized that Syncrude’s seepage mitigation wells are not working as planned.

3. Information on land reclamation is not presented in a manner that allows for a scientific assessment of validity. Without adequate documentation, it is impossible to evaluate the success or failure of Syncrude’s reclamation activities. See, for example, 26-land reclamation-2005-2.pdf and 26-land reclamation-2007-1.pdf . Requests to Syncrude to provide the details of its recent 104 ha reclamation certificate were refused by the company.

Routine Disclosures

1. There have been thousands of ‘alleged contraventions’, notifications, and releases with little or no evidence of enforcement. Each routine disclosure contains only the initial comments about each incident. We do not know the specifics of each incident and what, if anything, the government did to follow-up. ‘Seven-day’ follow-ups and other “Incident Details” are reportedly available under routine disclosure.

2. Examples of pollution.

“Ground water problem. While digging at 8 ft below ground, it hit hyd[r]ocarbon pocket and ignited for a while.” [Suncor, 04 April 2005, incident 194038].

“Odour. Sour Gas. Very Strong.” [Syncrude, 01 February 2007, incident 245450]

“H2S off scale at lower camp, details will follow. Ft McKay has H2S reading over 100 ppb. 7-C26 flaring – 1800 – 2000 > 1 ton of SO2.” [Suncor, 13 June 1995, incident 9202]. Note: the Alberta 1 hour H2S air quality limit is 10 ppb, the 24 hour air quality limit is 3 ppb.

Public complaint: “Caller driving by Source – green thick smoke out of main stack – covering entire area: valley, lake, heading NE. Stinks.” [Syncrude, 05 May 2005, incident 196423].

3. Examples of lack of enforcement, monitoring, or incident follow-up.

“Fire @ tailings solvent recovery pond. While working on a pipeline, they closed in a valve, causing tailings into pond from different area igniting. Flame and black smoke for 4-5 min. FD onsite – fire out now. No adverse effects.” [Shell Albian, 02 Sept. 2003, incident 150389]. How would government know there were no adverse effects without study?

“Tank on fire – stationary tank containing sour water. First response – 2 shifts on site. No injuries. No media. Black plume.” [Syncrude, 03 April 2005, incident 193942]. In the original documentation viewed at the records library, the staff member had arrowed and underlined: “ → No media”, indicating perhaps a concern about the public being made aware of the event. In a follow-up report, Syncrude noted “These elevated TRS [total reduced sulphur] readings were attributed to elevated ambient H₂S readings near the Effluent Pond as a result of off-spec stripped water routed to this pond on April 4th and 5th 2005, when Plant 16-0 was brought on-line to help manage the sour water inventory situation caused by the fire... Intermittent tank venting from 20D-54 as a result of damaged seal, caused by the fire, may also have contributed to these exceedences”. Strangely, an Alberta Environment follow-up stated: “Syncrude indicated that the tank 54 fire did not contribute to any of these exceedences.”

The routine disclosure information contained thousands of environmental incidents and “alleged contraventions”. Yet, study of Alberta Environment quarterly reports of enforcement actions revealed only five actions in the past calendar year (1 July 2007 to 30 June 2008). Two ‘actions’ involved changes in the wording of documents. There were no prosecutions. Only three other documents were found and these amounted to letters from Alberta Environment to tar sands companies, rather than to enforcements *per se*. Excerpts of these follow as they are instructive of both chronic pollution and chronic non-enforcement.

1. Environmental Protection Order to Suncor, 18 December 2007 (Alberta Environment 2008).

“During the last eleven months there have been many instances where the measured values of H₂S in the ambient air at stationary air monitoring stations downwind from the plant have exceeded the Alberta Ambient Air Quality Objectives for H₂S. It had several incidents in which there have been releases of substances that caused or had the potential to cause an adverse effect. The ground level concentration (GLC) Exceedances and Emissions Management Program that began in November 2006 has not resulted in improved environmental outcomes. Alberta Environment [“AENV”] is of the opinion that the Company is contributing to regional GLC exceedances measured as H₂S which may cause adverse effects. It shall continue the work proposed in its GLC and Emissions Management Program; develop and submit a Monitoring Plan; develop and submit a Modeling Plan; develop and submit a Diluent Management Plan; immediately restrict diluent losses to the tailings ponds to rates of 1400 bbls/day; and submit written progress reports on a monthly basis.”

2. Enforcement Order to Suncor, 21 September 2007 (Alberta Environment 2007).

“It contravened its approval by emitting effluent streams to the atmosphere from sources such as tanks, containing produced water, the production sales tank, the skim tanks, and the skimmed oil tanks. It has continuously vented produced gas containing hydrogen sulphide to the atmosphere from various tanks contained produced water with no vapour recovery unit pollution control equipment ever installed. There have been a

number of instances where the measured values of H₂S in the ambient air at a stationary air monitoring station exceeded the Alberta Ambient Air Quality Objectives. The Company shall submit and implement an Interim Action Plan; submit and implement the Comprehensive Action Plan; provide written status reports; commission a third party Environmental Management System Audit; submit a Schedule of Implementation for the Environmental Management System Audit; and conduct the Environmental Management System Audit.”

3. Environmental Protection Order to Syncrude, 27 August 2007 (Alberta Environment 2007).

“On many occasions the hydrogen sulphide (H₂S) alarms located near the effluent pond have sounded, indicating a release of H₂S to the atmosphere. Alberta Environment (“AENV”) received various types of odour complaints. The Company sent sour water containing H₂S concentrations from 592 ppm to 1720 ppm to the effluent pond on several occasions, and indicated the effluent pond is a likely source of ammonia releases and may be linked to the odour complaints. It has exceeded the Alberta Ambient Air Quality Objective for both H₂S and ammonia and AENV is of the opinion that releases of H₂S and ammonia into the environment may have caused or may cause an adverse effect. It shall develop, submit, and implement a plan that details the steps to be taken to minimize inputs and emissions into and from the effluent pond; and submit written progress reports.”

HADD permits

As with the bird mortality information, one of the important findings of the HADD search is the incompleteness of the permits. While the FOIP request stipulated all HADD permits (or their pre-1985 equivalents) from 1960 to present, only HADDs from 1999 to 2008 were delivered by DFO. The Fisheries Act, which laid out the current HADD provisions, was enacted in 1985. No explanation for the lack of HADD permits in the region from 1985 to 1998 has been given by DFO to date.

CNRL has been granted the greatest number of HADD permits. The company’s HADDs for the Tar and Calumet Rivers are complex and allow for extensive habitat destruction. See the HADDs AB01-477-1 through 5. Conservation groups may find ample material in the HADDs that allows tracking of development over time to ensure that both CNRL and DFO adhere to the HADD provisions.

The most extensive HADD in terms of fish habitat destruction adjacent to the Athabasca River may be that for Imperial Kearn (ED03-2806). However, other projects such as the Corridor Pipeline expansion project (ED05-2263) disturb many water courses along the route of a pipeline. The Corridor pipeline extends south from Shell’s Albion Sands Mine to Fort Saskatchewan.

The Suncor Millennium HADDs for destruction of McLean Creek and the Shipyard Lake area deserve scrutiny and monitoring (ED03-3045, AB97-051-2).

A HADD to Pembina Pipeline Corporation (ED06-0244-01) reveals an egregious lack of concern for fish habitat and enforcement. Pembina violated its HADD permit by working in-stream for 26 days on the Athabasca River (the permit allowed for 12 days work in-stream) and, according to DFO, the company did not inform DFO of their

exceeding the permitted time. Rather than take action for violation of the permit, DFO amended the permit to allow for 28 days working in-stream.

Bird Mortality

The numbers of bird deaths recorded by industry are large underestimates of mortality as estimated by scientists. Recorded number of bird mortalities is directly related to search effort. Without a scientifically sound, regular, and statistically valid sample, the reported bird deaths will remain a small fraction of the actual death toll.

The data are significant for their incompleteness and their *ad hoc* nature. Despite the fact that tar sands companies have been operating in the region for decades, the Alberta government released (and by inference, possesses) data from only three companies (Suncor, Syncrude, and Shell Albian) and for only a small number of years (Table 1). Timoney queried the Alberta Minister of Sustainable Resources Development as to why the government released bird mortality data from only three companies, why the data extended over so short a period, and where records of bird mortality violations or enforcements might be found. The government replied (21 November 2008): "... we have received annual reports since 2000 from three oil sands mines—Suncor, Syncrude and Albian Sands. Except for one year, they each reported fewer than or substantially fewer than 100 mortalities a year due to oiling at tailings ponds... Alberta Environment is the regulatory lead agency" [for wildlife mortality violations]. The reply restated the facts but did not address the questions (Appendix 2).

In response, Timoney wrote (21 November 2008): "Do you have any empirical evidence that would inform you as to what proportion of actual mortalities is represented by company-reported mortalities? Do you think the company-reported mortalities are gathered within a robust sampling design that produces statistically valid results? Many tar sands companies operate in the region, yet SRD is receiving mortality data from only three companies. Is that acceptable to Alberta SRD?"

A government representative replied (pers. comm., 27 Nov 2008) that: it does not know the extent to which industry-reported mortalities underestimate true annual mortalities; it is aware that the industry data are not a scientifically-based sample; currently, only tar sands companies with tailings ponds are required to report bird mortalities; and there have been no charges laid to date for bird mortality incidents.

The decrease in the number of dead oiled birds at Suncor from 2000 (193 birds) to 2001 (2 birds) is suspect. Written documentation of bird mortality at Suncor is sorely lacking. It is possible that Suncor changed its monitoring methods or effort after the 193 dead birds were found in 2000. I have posed the question to Suncor, but as of this writing I have not received an explanation for the steep decline in the number of dead birds.

The amount of industry-derived bird mortality data that exists that was not delivered in the FOIP request is unknown, but there are certainly missing data. For example, on 3 May 2004, two birds died from landing in a brine lagoon at Mackay River Petro-Canada facility (routine disclosure file: mackay river petro-canada approval 48408.pdf, sheet 155884, page 7).

There are discrepancies in the bird mortality numbers reported by Syncrude and the Alberta Government-reported bird mortalities for Syncrude (Table 2). The disagreements between the 2004-2006 values are large; this is surprising as the government's numbers are reportedly the same numbers supplied to them by industry.

While migratory birds are a federal responsibility and birds in general are a provincial responsibility, neither branch of government possesses credible mortality data. Neither the Alberta nor the federal government conduct tar sands bird mortality monitoring.

Table 2. Annual bird mortality at Syncrude (combined Mildred Lake and Aurora leases) as reported by the Alberta government (Table 1) and by Syncrude (2008). Table reproduced from Timoney and Ronconi, ms in prep.

Year	2000	2001	2002	2003	2004	2005	2006	2007
Alberta Government	17	20	28	44	47	42	73	36
Syncrude	20	21	31	44	69	55	46	35

Wildlife Mortality

In a conversation with an SRD FOIP officer on 20 November 2008 there were two reasons given for the delay in release of wildlife information. The decision was made to offer the tar sands companies the opportunity to object to release of the information even though no company information *per se* was under consideration. Further opportunity to object to the decision to release the information was then provided. This was admitted to be a mistake in procedure. More importantly, it was admitted that Alberta SRD does not monitor wildlife mortality on the tar sands leases and therefore SRD FOIP staff had to assemble the dataset “from scratch”.

Incidentally, during the library search, an interesting record of wildlife mortality was found (48408-land reclamation-2005-1.pdf). In 2005, 51 black bears were destroyed at tar sands facilities in the Ft. McMurray district. Of the 51 bears, 14 (27.5%) were destroyed at the Petro-Canada Mackay River project.

Conclusions

The information contained in the database provides evidence of troubling facts.

The evidence documents:

- licensed and unlicensed discharges of pollutants,
- tailings pond leaks,
- chronic pollution,
- acute pollution incidents,
- habitat destruction,
- failure by industry to maintain pollution monitoring equipment,
- poor government and industry documentation of reclamation,
- and a chronic lack of enforcement by government.

Recommendations

This project was essentially an information gathering exercise. No funds were allotted for analyses or for other follow-up activities. The findings in this document serve as illustrations of the kind of information contained in the database and why the information is important. In order to use the database to its full potential, considerable time and effort will be required. Information by itself is inert. Only by analyzing, synthesizing, and applying that information does knowledge arise that can inform and guide action.

The user should become thoroughly familiar with the database and learn how to use it.

Independent audits of Alberta Environment and Sustainable Resources Development are needed that examine policies and practices in the context of relevant legislation and fiduciary obligation.

Reports and Documents

Most of the information items are excerpts from reports. For items of particular interest, the user may wish to visit the Twin Atria records library to procure full reports.

For reports and documents prior to 2005, the user should phone or visit the Twin Atria records library to discuss the request. The pre-2005 monitoring reports and other records are housed at the Alberta Records Centre. Records can be retrieved from that facility through either the Twin Atria records staff or via routine disclosure/FOIP, depending on the nature of the records. The policy of destruction of records older than ten years may render some information unavailable. Older records may exist at the Provincial Archives, which are open to the public.

Routine Disclosures

The chief advantage of this database is the abundance of records, but this is also its chief impediment to use. Ideally a means can be found to index the entries such that a user could look up information via a hyperlinked index.

At the very least, all significant incidents should be flagged as to document and page number.

Under the routine disclosure process, "Incident Details" for all significant incidents should be requested.

HADDs

For HADDs of particular interest, the user may wish to monitor whether both industry and the DFO are obeying the provisions of the permit. There is no easy way to do this as the areas are remote. Relevant information may be found in industry reports, DFO files, observations from aircraft, and from study of satellite imagery.

Does the lack of HADD permits over the 14 year period 1985-1998 mean that the extensive fish habitat destruction that occurred during that time was done in contravention of the Fisheries Act? Legal consultation is needed.

Bird and Wildlife Mortality

The lack of government monitoring of tar sands bird mortality is inexcusable. Consultation is needed to determine whether either or both the federal and provincial governments are legally negligent. Are both the federal and provincial governments open to court actions for failure to uphold bird protection legislation?

As regards wildlife mortality, the same recommendations apply. The fact that, until this information request, Alberta SRD had no idea of the level of wildlife mortality on tar sands leases is unbelievable. Furthermore, they are based on *ad hoc* industrial monitoring. As with the bird mortality, questions of negligence and legal action and the need for credible scientific monitoring apply.

In parallel, pressure should be brought to bear on both the federal and provincial governments to put in place scientifically credible government-administered bird and wildlife mortality monitoring.

Acknowledgments

I thank Geoff Kershaw for his able assistance and conscientious library research. Cooperative staff at Alberta Environment, Alberta Sustainable Resources Development, and the federal Department of Fisheries and Oceans provided information and assistance. Similar cooperation was not forthcoming from staff at Syncrude and Suncor.

Keepers of the Athabasca, Global Forest Watch Canada, Environmental Defence, Sierra Club, and the Pembina Institute supported the project.

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- Rennie, S. 2008. Feds plan to absolve companies of liability for bird deaths. The Canadian Press, 1 June 2008, newswire.
- Syncrude. 2008. 2007 Annual Reclamation Progress Tracking Report, Mildred Lake and Aurora North Oil Sands Mines. Alberta Environment, Edmonton, Alberta.

Appendix 1. Example of multiple exceedances of air quality guidelines at Syncrude for September 2005. Document: "26-air monitoring reports-2005-1.pdf".

X20014017-00000026-Air Monitoring Reports



Environmental Affairs and Regulatory Services

SEPTEMBER 2005 AIR EMISSION SUMMARY REPORT

October 31, 2005

Alberta Environment
Environmental Monitoring and Evaluation
11th Floor, Oxbridge Place
9820-106 Street4
Edmonton, Alberta, T5K 2J6
Email: air.reporting@gov.ab.ca

Dear Sir or Madam:

MILDRED LAKE MONTHLY AIR EMISSION SUMMARY REPORT: SEPTEMBER 2005
Alberta Environment Approval No. 26-01-17

Enclosed, please find the Syncrude Canada Ltd. Mildred Lake Monthly Air Emission Summary Report for September 2005, as per §11.5.1 of AENV Approval No. 26-01-17.

Jacques Whitford, the company that provides the quality assurance function for the ambient air monitoring data, is sending the Wood Buffalo Zone Air Monitoring Station data for the month directly to AENV.

* Total equivalent SO₂ emissions for the month of September 2005 were:

SOURCE	SO ₂ EMISSIONS
Main Stack	7024.07*
Flare Stacks	19.75
Diverter Stacks	0.00
TOTAL	7043.82

* As a result of a SO₂ solenoid blowback failure that began on September 22nd, the Main Stack SO₂ emissions from Sept. 22nd to 26th were estimated based on Upgrading operations at the time. The Main Stack SO₂ emissions for Sept. 27th and 28th were supplemented with the average SO₂ results from the Relative Accuracy Test Audits conducted on those dates. The Main Stack SO₂ emissions for Sept. 29th and 30th were also estimated based on Upgrading operations at the time. As a result, the percent availability for the Main Stack CEMS SO₂ instrumentation was below 90 percent for the month of September. AENV Reference No. 164133 was obtained for this incident. Please see page 17 for more details regarding this incident.

* There were four instances in September where the *Alberta Ambient Air Quality Objectives* were exceeded. On September 29th at WBEA Station #2 (Mildred Lake) the 1-hour H₂S *Alberta Ambient Air Quality Objective* was exceeded for three hours from 17:00 - 20:00. In addition, the 24-hour

SUMMARY OF AMBIENT READINGS
IN EXCESS OF MAXIMUM LEVELS SPECIFIED IN THE
ALBERTA AMBIENT AIR QUALITY OBJECTIVES

(Format as per AMD Appendix B-1)

There were four ambient air exceedances likely attributed to Syncrude operations in September 2005:

September 2005

Station	Day	Time (MST)	Duration (Hours)	Pollutant	1-hr (ppbv)	24-hr (ppbv)	Wind Speed (km/hr)	Wind Direction (Degrees)	Suspected Cause	AENV Reference #
2	29	18:00	1	H ₂ S	12		7.9	304	Syncrude contributed to these incidents as a result of a leaking pressure safety valve (PSV-293) on the stripped wash water line from Plant 16-1 (Sour Water Treater) to Plant 18-1 (Light Gas Oil Hydrotreater), which subsequently resulted in stripped water being sent to the Effluent Pond rather than Plant 18-1.	164136
2	29	19:00	2	H ₂ S	11		5.9	296		163896
		20:00			21		4.4	251		164141
2	29	24:00	24-hour Average	H ₂ S		4	NA	NA		

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**SUMMARY SHEET FOR READINGS
IN EXCESS OF LICENSED STACK LIMITS
AND FOR UNLICENSED OR UNCONTROLLED RELEASES**

(Format as per AMD Appendix B-1)

September 2005 (continued)

Date	Source	Unlicensed Uncontrolled Release	Duration (hours)	Reference Number ¹	Cause
Sept. 13	Tanks 20D-100 & 101	Hydrocarbon Vapours	0.50	163500	Tanks 20D-100/101 (UHGO) vented due to a pressure valve (PV-866) failure on the Tank 20D-101 natural gas blanketing system.
* Sept. 15	Effluent Pond	H ₂ S	18.25	163620	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.
Sept. 17	Effluent Pond	H ₂ S	7.75	163375	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.
Sept. 17	Effluent Pond	H ₂ S	13.70	163663	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.
Sept. 17	Tanks 20D-100 & 101	Hydrocarbon Vapours	9.08	163657	Tanks 20D-100/101 (UHGO) vented due to a pressure valve failure (PV-866) on the Tank 20D-101 natural gas blanketing system.
* Sept. 19	Effluent Pond	H ₂ S	31.47	163685	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.
Sept. 22	Tanks 20D-100 & 101	Hydrocarbon Vapours	1.17	164017	Tanks 20D-100/101 (UHGO) vented due to high rundown rates, in combination with a pressure valve (PV-866) failure on the Tank 20D-101 natural gas blanketing system.
Sept. 22	Bldg. 9	R-22 Freon	NA	163838	Roughly 13 kg of R-22 Freon was released from HVAC Unit # 5R-291A in Bldg. 9.
* Sept. 23	Effluent Pond	H ₂ S	12.67	164038	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.
Sept. 24	Effluent Pond	H ₂ S	53.47	164043	The Effluent Pond H ₂ S alarms were activated intermittently due to sending off-spec stripped water to the Effluent Pond.

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**SUMMARY SHEET FOR READINGS
IN EXCESS OF LICENSED STACK LIMITS
AND FOR UNLICENSED OR UNCONTROLLED RELEASES**

(Format as per AMD Appendix B-1)

September 2005 (continued)

Date	Source	Unlicensed Uncontrolled Release	Duration (hours)	Reference Number ¹	Cause
Sept. 25	Plants 12-4, 16-4 & 37-1	Sour Odours	Unknown	164052	Sour odours were detected in the vicinity of Plants 12-4 (Sulphur recovery), 16-4 (Sour Water Treater) and 37-1 (Vacuum Distillation Unit). Two employees reported to the Medical Centre complaining of sour odours.
Sept. 27	Effluent Pond	H ₂ S	193.00	163877	The Effluent Pond H ₂ S alarms were activated intermittently due to a leaking pressure safety valve (PSV-293) on the stripped wash water line from Plant 16-1 (Sour Water Treater) to 18-1 (Light Gas Oil Hydrotreater), which was diverting stripped water to the Effluent Pond.
Sept. 28	Tanks 20D-100 & 101	Hydrocarbon Vapours	2.25	163959	Tanks 20D-100/101 (UHGO) vented due to a pressure valve (PV-866) failure on the Tank 20D-101 natural gas blanketing system.
Sept. 29	Plant 8-2	H ₂ S	0.17	164127	Roughly 10 gallons of stripped sour water was released from a flange leak downstream of Plant 8-2 (Fluid Coker) TV-23.
* Sept. 29	Main Stack	NA	216.00	164133	The Main Stack CEMS SO ₂ data was determined to be incorrect from September 22 nd to 30 th , due to a malfunction with the SO ₂ solenoid blowback valve.
Sept. 29	Plant 25-1	Sour/ Hydrocarbon Odours	Unknown	164140	Eleven contractor employees working on the north side of Plant 25-1 (UE-1 CO Boiler) reported to the Medical Centre as a result of an unverified gas/vapour exposure.

¹ Reference number as obtained through telephone notification.

Appendix 2. Letter from Alberta SRD, 21 November 2008 in regard to bird mortality data.



Fish and Wildlife Division
Office of the Assistant Deputy
Minister

Petroleum Plaza South Tower
9915 - 108 Street
Edmonton, Alberta
Canada T5K 2G8

Telephone 780/427-6749
Fax 780/427-8884

November 21, 2008

Dr. Kevin Timoney
Treeline Ecological Research
21551 Twp Rd 520
Sherwood Park, Alberta T8E 1E3

Dear Dr. Timoney:

I have been asked by Minister Morton to respond to your recent e-mails about bird and wildlife mortality in the oil sands.

As you are aware, Sustainable Resource Development provides collection licences to oil sands mine operators, to authorize collection of dead wildlife on their leased properties. The companies must report the numbers collected as part of their licence requirements.

Focusing on recent operations, we have received annual reports since 2000 from three oil sands mines - Suncor, Syncrude and Albion Sands. Except for one year, they each reported fewer than or substantially fewer than 100 mortalities a year due to culling at tailings ponds. The exception was in 2000, when Suncor reported almost 200 bird mortalities. These mortalities covered a wide range of waterbirds.

Data from Syncrude for 2008 are not available, because a bird mortality incident earlier this year is still under investigation by Alberta Environment.

Regarding your query on enforcement related to bird and wildlife mortality, it's important to note that Alberta Environment is the regulatory lead with regard to facilities that operate with an approval under the Environmental Protection and Enhancement Act. Sustainable Resource Development staff serve as the wildlife experts that support regional management by the provincial government (primarily Alberta Environment) at oil sands mines.

For further information, please contact Paul MacMahon, Fish and Wildlife Program Manager for Lac La Biche Area, at 780-427-2632.

Yours truly,

A handwritten signature in black ink, appearing to read "Ken Amrock".

Ken Amrock
Assistant Deputy Minister
Fish and Wildlife Division

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