Alberta's Industrial Heartland

Self Guided Tour

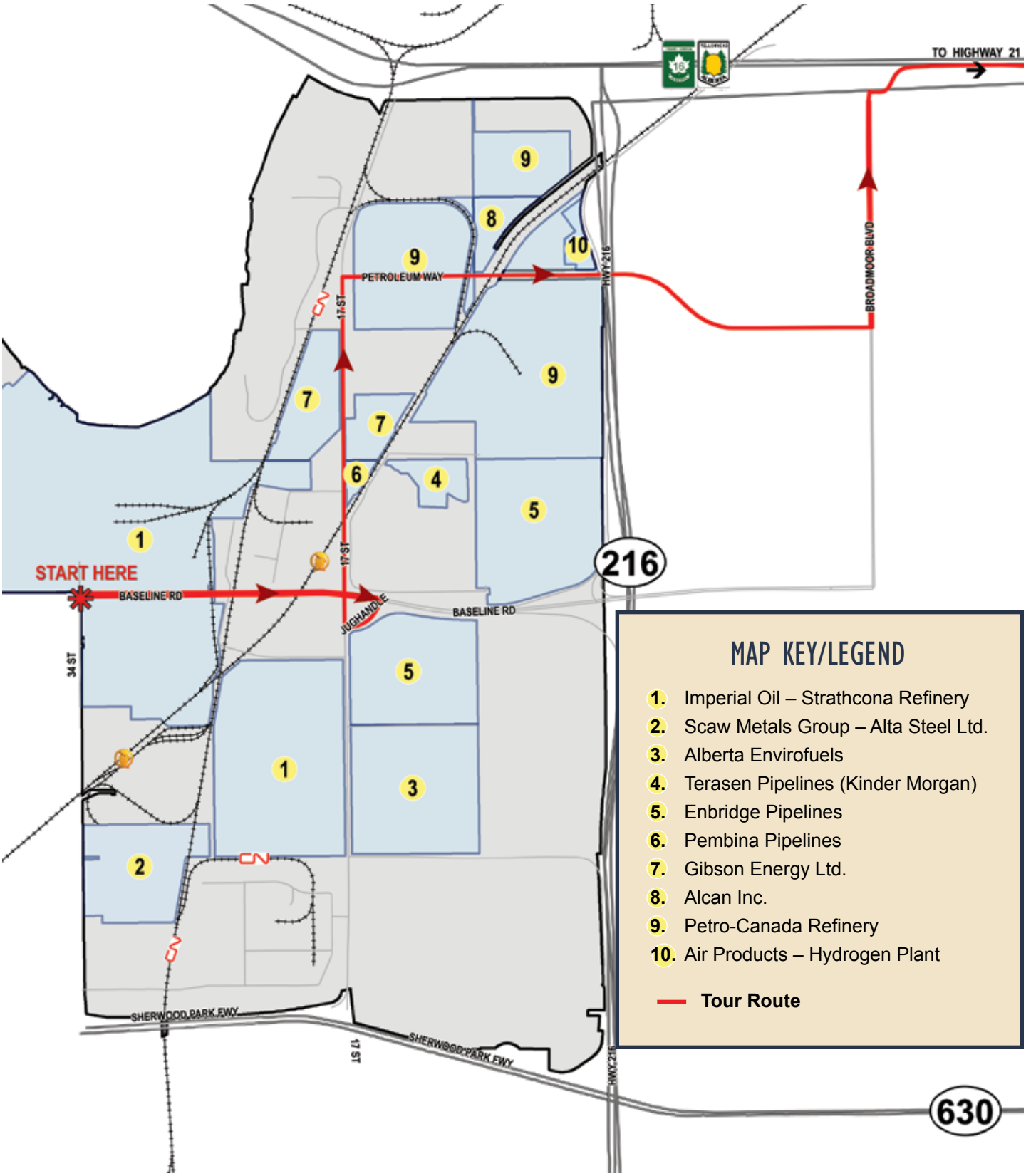
Refinery Row and Alberta's Industrial Heartland

Starting point of tour:

Eastbound on Baseline Road (101st Ave) and 34 Street (South of the North Saskatchewan River). This is the border of Strathcona County and Edmonton.

Map of Refinery Row in Strathcona County

(See page 18-19 for full tour map)



MAP KEY/LEGEND

1. Imperial Oil – Strathcona Refinery
2. Scaw Metals Group – Alta Steel Ltd.
3. Alberta Envirofuels
4. Terasen Pipelines (Kinder Morgan)
5. Enbridge Pipelines
6. Pembina Pipelines
7. Gibson Energy Ltd.
8. Alcan Inc.
9. Petro-Canada Refinery
10. Air Products – Hydrogen Plant

Tour Route

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GOLD SPONSORS

Alberta Employment, Immigration and Industry
aeso Alberta Electric System Operator
Air Products
AltaLink
BA Energy
Canadian Natural
CN
Canadian Pacific Railway
Enbridge
Integrity Land Inc. Professional Surface Land Consulting - With Integrity
King Tech Maple Resources Inc. (Recycling producer of spent catalyst)
NWU NorthWestUpgrading

Tour Route

Strathcona County

- Starting point of tour eastbound on Baseline Road (101st Ave) and 34 Street (South of the North Saskatchewan River). This is the border of Strathcona County and Edmonton.
- Continue eastward on Baseline Road to 17th Street.
- Move into the far right lane.
- Take 17 St. North sign around jughandler (stay right).
- Proceed on 17 St. North.
- At Petroleum Way turn right.
- Continue to Broadmoor Boulevard.
- Turn left at Broadmoor Boulevard and proceed to Yellowhead Highway (Hwy 16).
- At the traffic lights at Yellowhead Highway (Hwy 16) take the right exit to go eastbound on the highway.
- Continue eastward to Highway 21.
- Take the Fort Saskatchewan exit at Highway 21.
- Continue north on Highway 21 to Fort Saskatchewan. (When you reach Fort Saskatchewan the Highway changes to Highway 15 East).

Fort Saskatchewan

- Proceed approximately 7 kilometres to 119 St.
- As you pass 114 St, companies #11-#15 are on the north side of the Highway behind Sherritt International.
- Turn left at 119 Street.
- Continue on this road as it winds by the North Saskatchewan River. Follow the Keyera and BP sign.
- Turn right at Range Road 221 & Twp Rd 554.
- Continue to Range Road 214.

DID YOU KNOW?

Alberta's Industrial Heartland is Canada's largest hydrocarbon processing region

Alberta's Industrial Heartland encompasses 122 square miles

There are approximately 6,000 employees in the Alberta's Industrial Heartland area

There is over $23 billion investment currently in the Alberta's Industrial Heartland

Strathcona County

- Turn left at Range Road 214
- Proceed to Twp Rd 562 which will curve to the right
- Turn right at Range Road 213
- Turn left at Twp Rd 560

Lamont County

- Continue eastward to Town of Bruderheim (8 kilometres)
- Proceed straight through the Town of Bruderheim
- As the road starts to curve to the left, take the right access in the curve
- Proceed to Range Road 202 and turn right
- Continue southward to Highway 15 (3 kilometres)
- Turn right onto Highway 15 (westbound).
- Proceed to Secondary Highway 830 (6.5 kilometres)
- Turn right at Highway 830 (northbound)
- Proceed approximately 13 kilometres
- At the T-intersection turn left and cross the Vinca Bridge onto Highway 38 West

Sturgeon County

- At the junction of Highway 38 and Highway 643 (13 kilometres) turn left onto Highway 643
- At the junction of Highway 643 and Highway 825 turn left
- Continue past the W4 Industrial Park (Sturgeon Industrial Park – new name)
- Turn right at the stop sign (dead-end)
- Proceed to Highway 15 West into Edmonton (Note: This highway will change into the Manning Freeway when entering Edmonton)

Self Guided Tour – Refinery Row and Alberta's Industrial Heartland

Starting point of tour eastbound on Baseline Road (101st Ave) and 34 Street (South of the North Saskatchewan River). This is the border of Strathcona County and Edmonton.

REFINERY ROW STRATHCONA COUNTY www.strathconacounty.com

Strathcona is called a "County," yet its status is actually something that many people may not have heard of--it is classified by the Province of Alberta as a specialized municipality. This classification provides for the unique needs of a municipality that includes both a large urban centre and a significant rural territory and population. As a specialized municipality, Strathcona County (80,232) consists of the urban area of Sherwood Park (55,044) and an extensive rural area (25,188) which includes eight rural hamlets. These are Antler Lake, Ardrossan, Collingwood Cove, Half Moon Lake, Hastings Lake, Josephburg, North Cooking Lake and South Cooking Lake.

Sherwood Park, the largest urban centre of Strathcona County, was initially developed (1957) as a bedroom community for employees in the refinery row district. Today it is Alberta's fourth largest municipality, Canada's largest oil refining complex, and Alberta's highest value of manufactured goods.

Strathcona Industrial Association (SIA) www.sia.ab.ca

This association consists of 11 heavy industrial operators in East Edmonton and Strathcona County who work with the community and all levels of government to promote a safe and healthy working and living environment. Together they:

- operate an ambient air monitoring network
- ensure emergency preparedness and planning
- conduct community outreach through Community Awareness Emergency Response (CAER)

**See Appendix A for a complete list of members.*

Strathcona District Mutual Assistance Program (SDMAP) www.sdmap.ca

SDMAP is a partnership of more than 30 industrial and community agencies dedicated to Emergency response planning in east Edmonton and Strathcona County. Since 1979, we have been sharing best practices for industrial incident planning and response. SDMAP uses the combined expertise and equipment of all our members, which includes emergency response crews from refineries, petro-chemical plants, manufacturers and oil and gas transportation companies, as well as emergency services and police from both Strathcona County and the City of Edmonton. All members have emergency response plans that work hand in hand with the community response plans.

Community Awareness Emergency Response (CAER)

CAER has a history dating back to the late 1980s. The Canadian Chemical Producers' Association (CCPA) launched its Responsible Care® Program in 1986. As a result of its involvement with Responsible Care®, Celanese was instrumental in the formation of the local Community Awareness Emergency Response Program in 1990. CAER is one of six codes in Responsible Care®, a made-in-Canada program that has since been embraced by industrial companies in 42 nations around the world. Since its introduction to the SIA in 1986 and official acceptance in early 1987, the overall goal has been to improve the protection of public health and safety in the community and at work.

1. Imperial Oil – Strathcona Refinery

Profile: Production began in 1949. Construction of the Strathcona refinery started in 1972 and was completed in 1976, at a cost of $300 million. It was built on the site of the original 1940s refinery. A major expansion in 1983 added five new units and introduced more efficient production methods. In 1998, new fractionation facilities were installed to lower benzene content in motor gasoline. A $140 million low sulphur gasoline project was completed in 2003. With the new unit, the refinery can manufacture gasoline with sulphur levels among the lowest in the world. The capacity of this refinery is 125,000 barrels/day (bpd). The large storage tanks on the south side of Baseline Road are to store product until it is shipped out to markets in Western and Eastern Canada. This is the largest of the four Imperial Oil refineries in Canada. This refinery does one third of western Canada's refining 50% of their product is shipped via pipeline with the rest by rail, truck, barge, and package containers. Their feedstock is light sweet synthetic crude oil and they utilize their own water looping system. The only time this refinery was fully shut down was during the tornado in 1987.

Products: Unleaded Gasoline, Diesel Fuel, Jet Fuels, Propane, Isobutane, Lubricating Oils, Waxes, Sulphur, Asphalt, Heavy Fuel Oil

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Continue eastward on Baseline Road to 17 St.
Move to the far right lane.

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2. Scaw Metals Group - AltaSteel Ltd. (brown facility)

Profile: AltaSteel operates a scrap-based steel mini mill with melting and continuous casting facilities. They are the largest recycler in Alberta and the largest steel plant in Western Canada with a production capability of over 350,000 tonnes of steel billets annually.

AltaSteel makes a variety of round, flat, and square bar shapes for use by downstream remanufacturers in the mining, oil and gas, automotive, construction, agriculture, and OEM industries. They are also a world leader in the manufacture of heat-treated grinding rod, which it markets directly to mining operations around the globe. They are one of the largest employers in the Alberta capital region, and have revenues in excess of $200 million per year.

Products: Steel bars for the mining, oilfield, agriculture, manufacturing and construction industries

3. Alberta Envirofuels (AEF) (green & red plant)

Profile: AEF is owned by Chevron Texaco Corporation and Neste Oil Oyj and was started in 1992, as Canada's only manufacturer of MTBE (Methyl Tertiary Butyl Ether), a gasoline blending component. Anticipated changes in market demand for more environmentally friendly gasoline products prompted AEF to convert its facility in 2002 to produce Iso-octane. Iso-octane is a gasoline blending component with an octane rating of 100 and is used in making premium grades of gasoline. Produce 520,000 tonnes/year (rated capacity) from a butane feedstock obtained from Alberta sources. The majority of this product is shipped to California.

Product: Iso-octane, a gasoline blending component

Take 17 St. North sign around "jughandle" (stay right).
Proceed on 17 St. North.

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4. Terasen Pipelines (Kinder Morgan)

Profile: This is the mainline Edmonton Terminal in Sherwood Park, AB. The terminal has 20 incoming feeder lines from throughout Alberta. This site comprises 19 storage tanks with an overall volume 420,000 m3 (2,642,000 bbl). Kinder Morgan has an extensive 4,500-kilometre network of pipeline systems delivering petroleum products to Canadian, USA, and offshore markets. Between the Kinder Morgan terminal and the Enbridge terminal, they transport a half million bpd of crude oil.

Products: Pipeline distribution of crude oil and refined petroleum products

5. Enbridge Pipelines (east of Terasen)

Profile: Started operating in 1949 as Interprovincial Pipe Line Company. Enbridge operates the world's longest crude oil and liquids pipeline system including Enbridge Pipelines Inc. and a variety of affiliated pipelines in Canada. These pipeline systems now comprise approximately 13,500 kilometres (8,500 miles) of pipeline, delivering more than 2 million barrels of crude oil and liquids per day.

The Edmonton Terminal is the largest single owner tank farm in Canada. With 27 tanks ranging in size from 10,000 barrels to 390,000 barrels, it has a total capacity of approximately 4.8 million barrels on site.

Enbridge owns and operates Canada's largest natural gas distribution company, Enbridge Gas Distribution, which provides gas to industrial, commercial and residential customers in Ontario, Quebec and New York State. Enbridge distributes gas to 1.7 million customers and is developing a gas distribution network in New Brunswick.

Products: Pipeline distribution of crude oil and natural gas

6. Pembina Pipelines

Profile: This is the control centre for their pipelines in northern AB and B.C. They transport liquid hydrocarbon materials.

Products: Pipeline distribution of refined petroleum products

7. Gibson Energy Ltd.

Profile: Crude oil/LPG terminal & transportation. Integrated movement of hydro carbon liquid by rail, pipeline, and truck. Loading facility on site.

Products: Transportation

At Petroleum Way turn right.
Continue to Broadmoor Boulevard.

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8. Alcan Inc.

Profile: Alcan and Alcoa are world leaders in the production of primary aluminum, aluminum products and packaging and aluminum recycling, own the facility jointly. Alcan manages the operation.

Both of the plant scrubbers were recently replaced. This reinvestment meant that the plant can continue to operate successfully for another 30 years, and has reduced particulate emissions to less than 50% of current permit levels.

At this site, green petroleum coke, a waste product from the refining of crude oil, is heated to over 1300 Celsius, then cooled. The result of this process is calcined petroleum coke, vital in the production of aluminum.The green petroleum coke is dried and heated to over 1300 Celsius in a rotary kiln 11 feet in diameter and 175 feet long. Residual volatile material in the green coke is burned as the fuel source and the temperature is controlled by adjusting the air combustion. The material is then quenched in a cooler – which is a second rotating drum that is 80 feet long and eight feet in diameter. This cooler consumes 50 gallons of water per minute.

Products: Alcan produces 180,000 metric tons of calcined product and ships by rail to Alcan plants in B.C. and Quebec, as well as Alcoa plants in Quebec, Washington State, and New York State.

9. Petro-Canada Refinery

Profile: Petro-Canada's refinery is located on 142 hectares and has been operating in Strathcona County since 1951 at this location. This is Petro-Canada's largest and most efficient refinery which processes about 135,000 barrels per day of crude oil into a wide range of consumer products.

Petro-Canada is converting their refinery to upgrade and refine oil sands feedstock exclusively. The conversion takes advantage of Western Canada's increasing supplies of heavy oil as conventional light crude oil production declines.

- By 2008 the refinery will process about 135,000 b/d of oil sands feedstock. This about equals the amount of crude oil currently processed, but differs because 85,000 b/d of conventional crude oil will be displaced by oil sands-derived bitumen and synthetic crude oil.
- In switching to 100% oil sands feedstock, Petro-Canada will spend about $1.2 billion to increase the capacity of the refinery's coker, expand hydrogen production and increase sulphur handling capability.

Products: Premium and regular unleaded automobile gasoline, all grades of diesel fuel, aviation fuels and heating fuels such as kerosene and stove fuel.

10. Air Products – Hydrogen Plant

Profile: Manufacture hydrogen using methane reforming process which is used in the diesel sulphur process at Petro-Canada. The second plant will service Imperial Oil and other companies in the region. Each plant will produce 71 million cubic feet per day. Air Products utilizes grey water from the Gold Bar Treatment Plant in their process.

Products: Hydrogen

Turn left at Broadmoor Boulevard and proceed to Yellowhead Highway (Hwy 16).

Millennium Place

On the east side of Broadmoor Boulevard is Strathcona County's multi-recreation facility, Millennium Place. It was built in 2000 at a total cost of $26 million. It has over a million visitors per year.

At the traffic lights at Yellowhead Highway (Hwy 16) take the right exit to go eastbound on the highway (Hwy 16E).

Strathcona County Hospital (future site - south side of Yellowhead Highway & Clover Bar Road)

Strathcona County's future hospital will have 72 acute care beds and sufficient infrastructure for future additional beds. It will offer emergency services, general surgery, low-risk obstetrics and diagnostics. A Day Clinic building will be constructed and linked to the hospital by a pedestrian pedway. This building will be home to community health, public health, home care, mental health services and as well as Child & Family Services and AADAC. Construction timeline is 2007-2009.

Continue eastward to Hwy 21.
Take the Fort Saskatchewan exit at Hwy 21.
Continue North on Hwy 21 to Fort Saskatchewan
(When you reach Fort Saskatchewan the Highway changes to Hwy 15 East).

ALBERTA'S INDUSTRIAL HEARTLAND
www.industrialheartland.com

The Alberta's Industrial Heartland Association (AIHA) was established in 1998 to develop and promote the Heartland region as a global leader in processing, manufacturing and eco-industrial development. Situated east and north of Edmonton, the Heartland region encompasses the industrial areas of Strathcona County, City of Fort Saskatchewan, Sturgeon County and Lamont County.

This partnership came as a result of industry representatives Northeast Capital Industrial Association (NCIA) meeting with municipal stakeholders to assess the opportunities for working together. This resulted in a broader, more comprehensive initiative for what is now known as Alberta's Industrial Heartland. It was the beginning of a new model of cooperation, uniting the four municipalities, NCIA and its member companies.

- This initiative was industry driven and supported by the municipalities based on the premise of collaboration yields far more positive benefits than competition.

- It is also a business partnership – designed to attract industry to the region.

Born from this commitment between the four partners, Alberta's Industrial Heartland (AIH) has developed into Canada's largest hydrocarbon processing region and fulfills a key role in the Province's hydrocarbon industry. The region spans 122 sq. miles and has unique assets making it the most viable site in Alberta with the capability of cost effective, value added processing of the oil sands bitumen, and petrochemical feedstock. AIH is the nation's largest processing centre for petroleum, petrochemical and chemical industries looking to upgrade their resources before exporting.

DID YOU KNOW?

Peak construction labour from 2010 to 2012 will be 20,100 employees

Projected upgrader capacity will be over 1.5 million barrels per day by 2015

70% of Canada's crude oil comes from Alberta, 80% of it is natural gas, 46% of it is coal, and all of it oilsands

Alberta's oilsand reserves contain an estimated 1.7 trillion barrels of bitumen in place, exceeding the oil reserves of Saudi Arabia

Infrastructure Importance

- Complementary Area Structure Plans with industrial land critical to siting industry - all four municipalities undertook the challenge of addressing the need for complementary zoning.
- AIH is an integral part of the North American pipeline networks carrying oil, natural gas, ethane, and ethylene to processing plants and markets
- Logistically well connected with overland distribution systems to transport products to North American and offshore markets
- Emergency Services plans well laid out. Industry emergency plans in cooperation with Heartland Hall.

Voluntary Resident Property Purchase Program

The voluntary property purchase program was developed by the AIH and industry to provide a long-term solution for residents wishing to relocate outside the Heartland region. Resident properties can be marketed for sale to Alberta's Industrial Heartland Trust Society at fair and equitable market prices.

CITY OF FORT SASKATCHEWAN www.fortsask.ca

The North Saskatchewan River opened up this area as several fur trading posts were established in the late 1700s just down river. In 1874 the North-West Mounted Police made its incredible trek across the prairies. A small group was detached at Roche Percee and they followed the Carlton Trail to Edmonton. In the spring of 1875 they built the Fort on the Saskatchewan thus, the present City of Fort Saskatchewan traces its history back to this time.

Dow Centennial Centre

As you enter Fort Saskatchewan on the right hand side of the road is the Dow Centennial Centre which is the City's $22 million sports and culture facility with a 500 seat theatre, ice rink, soccer arena, fitness facilities, and meeting rooms.

Northeast Capital Industrial Association (NCIA) www.ncia.ab.ca

NCIA is a not-for-profit industry cooperative, representing over 20 of the largest industries in the Alberta's Industrial Heartland. Through their membership, financial support and active involvement in the association, members are committed to environmental protection, health and safety, public education, industry-government cooperation, and community support. The association is a major funder and Board member of the Fort Air Partnership (FAP). All members of NCIA belong to the Northeast Region Community Awareness Emergency Response (NR CAER).

**See Appendix B for a complete list of members.*

Fort Air Partnership (FAP) www.fortair.org

FAP was created in 1997, recognizing that regional air quality was a major concern for residents. They provide accurate, reliable and credible air quality information, and a transparent and open forum to discuss this information and air quality issues. The airshed involved is the fourth in Alberta recognized by the Clean Air Strategic Alliance and is approximately 4,500 square kilometres in size. FAP established and maintains eight continuous air monitoring stations, and 30 passive air sampling sites. With a partnership from Environment Canada to provide the Volatile Organic Compound (VOC) readings, the public can access the FAP website to obtain current readings at any time.

Northeast Region Community Awareness Emergency Response (NR CAER) www.nrcaer.com

NR CAER is a partnership of more than 40 community-minded industries, municipalities, chemical transporters, and government agencies dedicated to emergency preparedness and safety education initiatives throughout the region. Members operate the region's UPDATE line (1-866-653-9959), a toll free, 24 hour information line that carries messages about industry activity. The line gives residents one number to call and hear messages from any one of their members.

Proceed approximately 7 kilometres to 119 St.
As you pass 114 St., companies #11-#15 are on the north side of the Highway behind Sherritt International.

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11. Umicore Canada Inc.

Profile: Umicore is a global, application oriented metals and materials group, aiming to be the benchmark of excellence in each area of operation. No other metals company has the same breadth of offer. Their metals and engineered materials are not always visible, but they are at the heart of a myriad of products which are not only essential to everyday life, but are also at the cutting edge of exciting new technological developments.

Products: Spherical fine cobalt, nickel and copper powders

12. Sulzer Metco (Canada) Inc.

Profile: Sulzer Metco (Canada) Inc. is part of the world-wide Sulzer group, headquartered in Switzerland. They have been a global supplier of specialty materials for over 30 years. The operations at Fort Saskatchewan include manufacturing, R&D, analytical services, engineering, sales and marketing, and administration for all of Sulzer Metco's operations in Canada.

Products: A range of nickel-based composite powders for aerospace, power generation and electronics applications, as well as other specialty materials

13. NUCRYST Pharmaceuticals

Profile: NUCRYST Pharmaceauticals Division is one of the first companies to successfully launch a medical product based on nanotechnology. Wound care products produced in Fort Saskatchewan are sold and distributed by Smith & Nephew plc, a world leader in advanced wound management.

Products: H2S, CS2, Biomedical Materials (wound care products)

14. Sherritt International Corp.

Profile: Sherritt's Metals mines, processes, and refines commodity nickel and cobalt for sale worldwide with mining operations and associated processing facilities in Moa, Cuba; refining facilities in Fort Saskatchewan, Alberta, and international marketing and sales operations. Sherritt is a pre-eminent operator of pressure hydro-metallurgical technologies for the extraction of metals from lateritic ores. The Metals business continues to focus on maintaining low cost production of finished nickel and cobalt from the development of Cuba's extensive nickel resources. The Metals business also includes Sherritt's 100%-owned fertilizer and utilities operation which provides inputs for the metals refinery and produces agricultural fertilizer for sale in western Canada.

Products: Ammonia, Urea Carbon Dioxide (Raw), Sulphuric, Acid, Nickel and Cobalt, Ammonium, Sulphate, Anhydrous Ammonia.

15. ATCO Midstream (blue building)

Profile: The Fort Saskatchewan Ethane Extraction Plant straddles an ATCO Pipelines high pressure transmission line. Constructed in 1984, the plant utilizes turbo expander technology to extract natural gas liquids from the gas stream. The plant is capable of operating in both ethane plus and propane plus modes, in order to react to changing gas streams and market conditions.

Products: NGL product C2+

Turn left at 119 Street.

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16. Marsulex Inc. (on the lefthand side of 119 St.)

Profile: With headquarters in North York, Ontario, and locations across North America, Marsulex is a leading provider of environmental services, dedicated to the "reduce, reuse and recycle" process. Marsulex provides removal services to the mining, oil refinery and electrical utility industries, which generate useable hazardous byproducts and converts them into valuable industrial chemicals.

Products: Aluminum Sulphate (alum), Sodium Bisulphite, Carbon disulfide, Hydrogen Sulfide, Sulphuric Acid, Bleach, Chlorine, Ammonia, Sulphur Dioxide

17. Praxair Inc. (on the right)

Profile: Praxair is the largest industrial gases company in North and South America, and one of the largest worldwide, with 2004 sales of $6.6 billion. The company produces, sells and distributes atmospheric and process gases, and high-performance surface coatings. Praxair products, services and technologies bring productivity and environmental benefits to a wide variety of industries, including aerospace, chemicals, food and beverage, electronics, energy, healthcare, manufacturing, metals and others.

Products: Gaseous oxygen, nitrogen, hydrogen, liquid oxygen, argon, carbon dioxide, dry ice.

18. MEGlobal (located on the Dow site)

Profile: MEGlobal is a world leader in the manufacture and marketing of merchant monoethylene glycol and diethylene glycol (EG). The company is a joint venture between The Dow Chemical Company and Petrochemical Industries Company of Kuwait. MEGlobal produces about 1.0 million metric tons per year of EG, and markets in excess of 2.5 million metric tons of EG per year. With approximately 200 employees worldwide, MEGlobal serves customers around the world, and has production facilities in Fort Saskatchewan and Red Deer in Alberta. EG is used as a raw material in the manufacture of polyester fibers, polyethylene terephthalate resins (PET), antifreeze formulations and other industrial products.

Products: Monoethylene glycol, Diethylene glycol

19. Agrium Inc. (Fort Saskatchewan)

Profile: Nutrients play a critical role in the production of safe and abundant food, replenishing our soils and minimizing destruction of wildlife habitat. Agrium is working to ensure nutrients contribute to a more sustainable world. The Fort Saskatchewan facility produces 465,000 gross tonnes (220,000 net) of anhydrous ammonia and 430,000 tonnes of granular urea. Water, air and natural gas are the raw materials required to produce these products. Water is obtained from the adjacent North Saskatchewan River and natural gas is purchased from Alberta producers. The Agrium Fort Saskatchewan plant occupies 227 hectares of land. The actual production facilities occupy less than one-tenth of the land area. The remainder is used as a buffer zone between the site and the City of Fort Saskatchewan.

Products: Anhydrous Ammonia, Granular Urea

Continue on this road as it winds by the North Saskatchewan River.
Follow the Keyera and BP sign.

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20. Dow Chemical Canada Inc.

Profile: With five world-scale plants, Dow's Fort Saskatchewan manufacturing site is one of the largest and most modern petrochemical sites in North America. Foam insulation, bicycle helmets and mattress foam are just a few examples of how Dow products improve daily living.

This 2,128-acre manufacturing site uses natural gas to produce basic chemicals and plastics. Natural gas liquids are brought into the site's fractionator plant by pipeline and separated into five hydrocarbon products: ethane, propane-plus, propane, butane and pentane-plus. The fractionator plant delivers four products to customers outside Dow and uses the ethane to make ethylene, which is used internally on site to make other chemicals, including polyethylene. This is the world's second largest Ethylene cracker.

Products: Ethane, Ethylene, Propane-plus, Propane, Butane, Pentane Plus, Polyethylene, Styrofoam insulation, Power Generation.

21. Keyera Energy

Profile: The Fort Saskatchewan Fractionation and Storage Facility receive natural gas liquids from connected pipeline systems and truck offloading. These streams are fractionated into propane, butane and pentane plus products. Following fractionation the products are shipped to customers through pipeline systems or truck loading facilities. Products that are not immediately delivered to customers are stored in deep underground storage caverns for subsequent delivery to market.

Products: Propane, Butane, Ethane, Condensate Products

22. BP Canada Energy Company

Profile: The BP Canada facility was originally built in the 1970s as a storage terminal for Natural Gas Liquids (NGL's) produced as a byproduct of gas processing.

The BP Fort Saskatchewan site is a Fractionation and Underground Storage Facility bringing in a stream of Natural Gas Liquids (NGL) which is fractionated into different components.

DID YOU KNOW?

30% of Canada's total oil is produced from the oilsands. By 2010, this is expected to increase to 50%.

There are 75 golf courses within one hour of downtown Edmonton.

AIH consumes less than 10% of each of the four municipalities' land mass.

The soil in AIH is very low grade agriculture land making this area an ideal location for industrial land.

There is also a Carbon Dioxide removal plant that strips the CO2 out of another product stream that contains ethane only. After fractionation of these products, they are stored underground in salt storage caverns where BP can pull out the products and ship them down pipelines when there is a demand in the marketplace.
Storage for NGL products occurs in solution mined salt caverns 1800 m. below the facility. The facility consists of 3 fractionation plants, a CO2 removal plant, 2 molecular sieve units, a brine system and control centre for pipeline and the plant.

The facility also marks the terminations point to the Alberta Ethane Gathering System (AEGS) and the Cochrane-Edmonton (Co-Ed) pipeline. There are also many interconnecting pipelines to many of the facilities surrounding BP. BP is ISO 14001 registered.

Products: Pure Ethane, Propane, Butanes, Pentanes Plus

23. Petro Gas Energy

Profile: Rail car and truck terminal to load and offload LPG.

24. Aux Sable Canada Ltd. Heartland Off Gas Plant (future site- announced in 2007)

Profile: The Heartland Off Gas Plant (HOP) will gather and process off gas that is produced from the BA Energy Upgrader. At the BA Upgrader, off gas will be purified to remove sulphur components, water and other contaminate and will be transported to Aux Sable via pipeline. Construction of the pipeline is scheduled for winter of 2008 with start-up in summer of 2008.

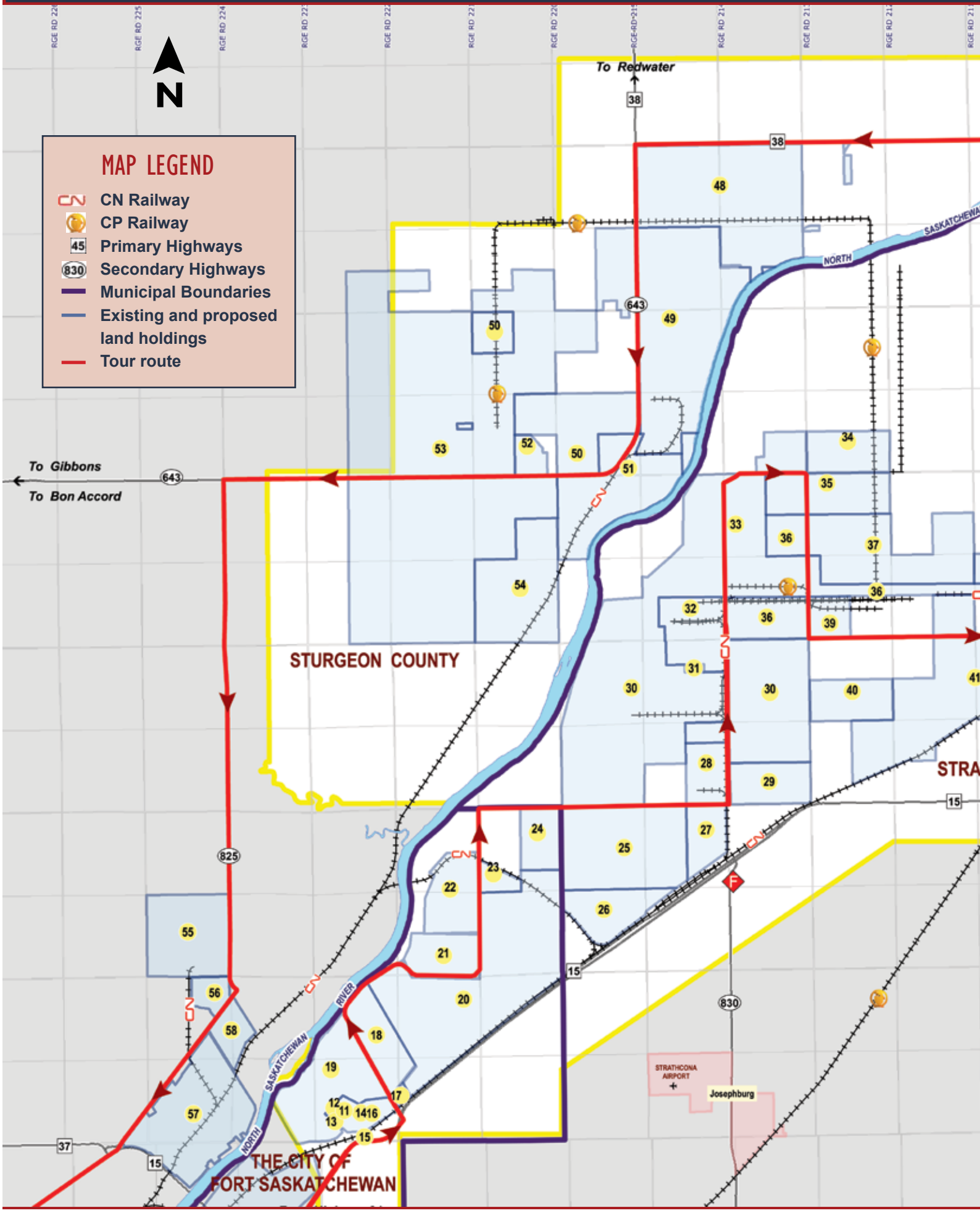
Aux Sable Canada Ltd. (ASC) and BA Energy reached an agreement whereby ASC will extract the NGL from the BA upgrader to sell to the petrochemical and NGL industries in the AIH region. This will require the construction of a sweet “deep cut” natural gas processing plant. The capacity of the plant will be 1.5 million m3/day of inlet gas with the capacity to produce approxiamately 3,200 m3/day of NGL.

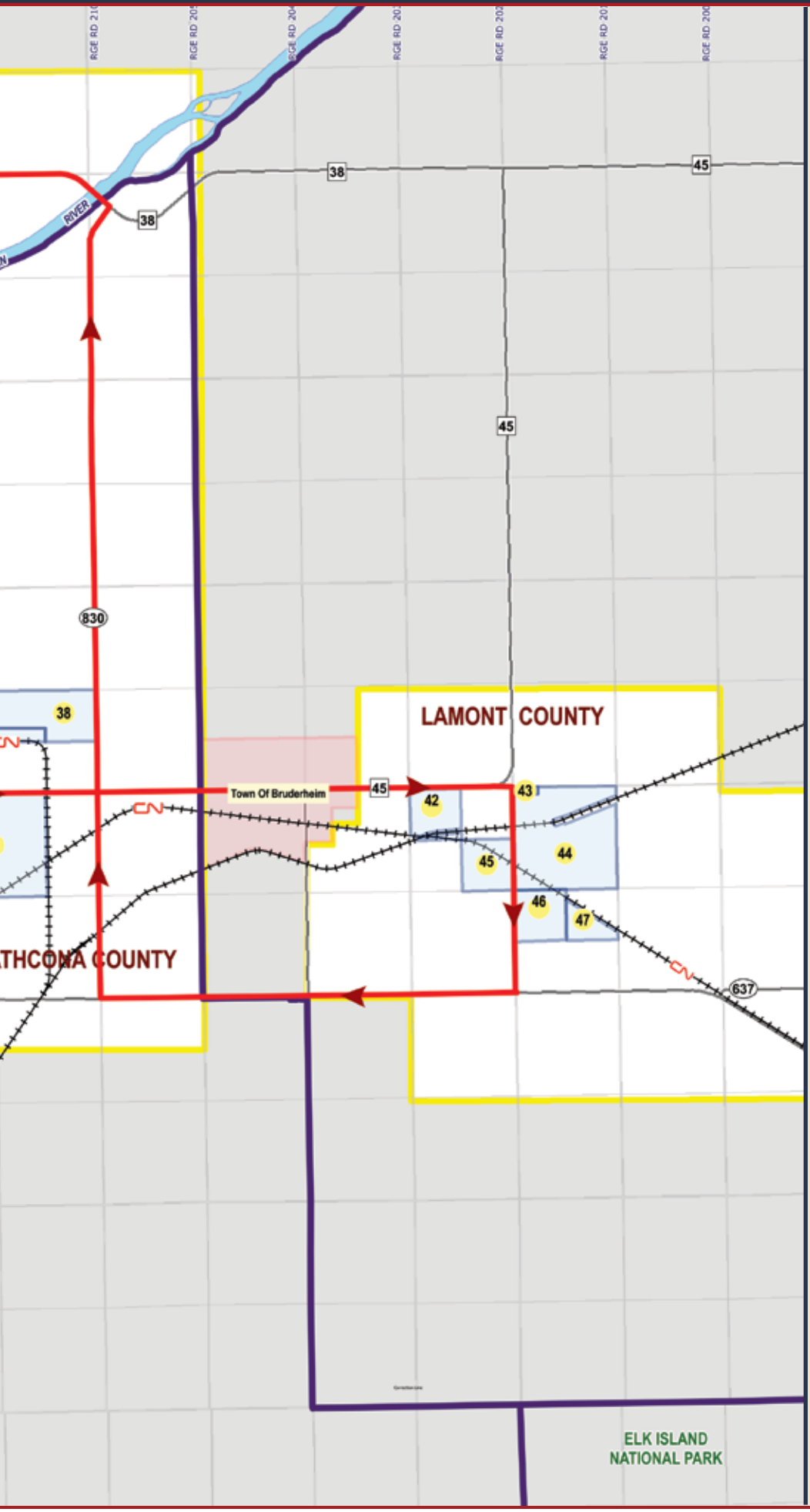
Products: Natural Gas Liquids

AUX Sable Canada LP/Nova Chemicals – North Sable Project (future site)

Profile: AUX Sable Canada LP/Nova Chemicals have signed a letter of intent to develop an ethane extraction plant in Fort Saskatchewan adjacent to the Heartland Offgas Plant. The extraction plant will be sited adjacent to the Alliance pipeline and will have an inlet processing capacity of 1.2 billion cubic feet per day of sweet natural gas from the Alliance Pipeline. Approximately 40,00bpd of ethane will be recovered and delivered to Nova’s Joffre site.

Products: Ethane


N
MAP LEGEND
CN Railway
CP Railway
45 Primary Highways
830 Secondary Highways
Municipal Boundaries
Existing and proposed land holdings
Tour route
To Redwater
To Gibbons
To Bon Accord
STURGEON COUNTY
THE CITY OF FORT SASKATCHEWAN
Josephburg
STRATHCONA AIRPORT
SASKATCHEWAN RIVER
NORTH SASKATCHEWAN RIVER
643
825
830
38
37
15



MAP KEY

11. Umicore Canada Inc.
12. Sulzer Metco (Canada) Inc.
13. The Westaim Corp. NUCRYST Pharmaceuticals
14. Sherritt International Corp.
15. ATCO Midstream
16. Marsulex Inc.
17. Praxair Inc.
18. MEGlobal
19. Agrium Inc. (Fort Saskatchewan)
20. Dow Chemicals Canada Inc.
21. Keyera Energy
22. BP Canada Energy Company
23. Petro Gas Energy
24. Aux Sable Canada Ltd.
25. Total Canada Ltd.
26. Gemini Corporation
27. CN Oil & Gas Logistics Centre
28. Gulf Chemicals & Metallurgic Corp.
29. Trans Canada Pipelines
30. Shell Canada Refinery
31. Air Liquide Canada Ltd.
32. Shell Chemicals Canada
33. Shell Canada Ltd (Upgrader)
34. Texaco Exploration Ltd.
35. Kinder Morgan Canada Inc.
36. Enbridge Stonefell
37. BA Energy Inc. – Value Creation
38. Strathcona Logistic Centre - CP
39. King Tech Maple Resources
40. Atco Gas
41. North American Oil Sands Corp. (Upgrader)
42. Vacant Plant (ERCO Worldwide)
43. AltaLink Ltd
44. Hazco Environmental
45. Canexus Chemicals Canada LP.
46. Triton Fabrication Inc.
47. Contura
48. Synenco Energy Inc. (Upgrader)
49. Agrium Inc. (Redwater)
50. North West Upgrading Inc.(Upgrader)
51. Access Pipeline & Terminal
52. Degussa Canada Inc.
53. Petro Canada Foot Hills (Upgrader)
54. Provident Energy Ltd.
55. W4 Industrial Park (Sturgeon Industrial Park)
    - Guardian Chemicals Inc.
    - Hexion Specialty Chemicals
    - Prospec Chemicals
    - Tolko Industries Ltd
    - Dow Agro Sciences Canada Inc
    - Reimer Bulk Systems
56. Horton CBI
57. Bunge Canada
58. Canadian Bioenergy (future)

Turn right at Range Road 221 & Twp Rd 554.
Continue to Range Road 214 (Leaving City of Fort Saskatchewan and entering Strathcona County).

25. Total Canada Ltd. (future upgrader)

Profile: Total is a French company who is one of the world's major oil and gas groups with activities in more than 130 countries and producing in 29 countries. At this location they will be upgrading bitumen from the oilsands into suitable refinery feedstock. Their process will be utilizing carbon rejection based technology known as delayed coking. The upgrader will be built in two phases. Phase one will produce 130,000 bpd and phase two – 70,000 bpd. Plans are to be operating in 2014 with 300-400 full-time employees. There will be approximately 4,000 construction employees at this site.

Products: Synthetic crude oil, coke and sulphur

26. Gemini Corporation (future site)

Profile: This 102-acre parcel will be developed by Gemini Corporation. This company specializes in maintenance shut-downs, cogen plants, wind power, modules, process piping, structure steel and vessels. They will be manufacturing modules at this location.

27. CN Oil & Gas Logistics Centre

Profile: Scheduled to open in the fall of 2007 is Canadian National's (CN) new Oil and Gas Logistics Centre. Committed to helping the industry meet the oil sands projects and developments, CN is in the process of developing yet another mega facility, the Oil and Gas Logistics Centre, strategically located in Scotford on 230 acres of land. This will have the capability to move anything from pipe and frac sand to crude oil diluents, machinery, construction materials and dimensional loads to Alberta. Also, the ability to move liquefied petroleum gases, sulphur and diesel to end markets.

Of interest:

Heartland is connected to CN's 15,250-mile transcontinental railroad at Edmonton, with direct western rail service to Vancouver or Kitimat/Prince George and east to Winnipeg, Chicago, Toronto, Montreal and Halifax. Through CN's subsidiary the Illinois Central and the CN-IC and Kansas City Southern (KCS) Railroad marketing alliance, Heartland manufacturers enjoy rail service into the US mid-west, the Gulf of Mexico and further south to Mexico City and Veracruz.

Turn left at Range Road 214 (Shell Canada paid to have this road paved). Please note that while the upgrader is being expanded, traffic on this road will be busier than usual.

Land Prices

Over the last two and a half years, Alberta's Industrial Heartland has experienced significant growth. Companies understanding the potential of this area have accumulated large parcels of land, enabling them the space for future value added development. Property values in AIH have seen a steady increase on a per acre basis. Land located in Strathcona County within the heavy industrial boundary has dramatically increased from $2,500 - $3,000 an acre two years ago to $20,000 to $30,000 an acre today.

28. Gulf Chemicals and Metallurgical Corp.

Profile: Dec. 13th, 2005, Gulf Chemicals announced its planned expansion into Alberta, Canada with the development of a full-service spent catalyst processing facility, offering both RSD and HDS metals reclamation capabilities, for the oil refining industry. Operation start-up is planned for Fall 2007. This is a spent catalyst recycling and recovery facility. Recovery of valuable metals; vanadium, molybdenum, nickel, cobalt and alumina

Products: Recycled catalysts

29. Trans Canada Pipelines

Profile: Landowner

30. Shell Canada Refinery

Profile: Shell's Scotford Refinery is one of North America's most modern and efficient refineries and is the first to exclusively process synthetic crude derived from Alberta's oil sands. Opened in 1984, the refinery produces over 100,000 bbls/day of products such as gasoline, diesel fuel, and jet fuel, along with feedstock for Shell's adjacent chemical plant. In early 2006, Shell Scotford was the first refinery in western Canada to meet federal regulations to reduce sulphur in on-road diesel by more than 90 per cent with the start-up of its diesel hydrotreaters.

Products: Catalysts, Process Chemicals, Product Chemicals, C3C4 Mix, Gasoline, Jet Fuel, Diesels, Heavy Distillate, Benzene, Heavy Aromatics, N-Hexane, Sulphur

31. Air Liquide Canada Ltd.

Profile: The Scotford complex includes an air separation unit (ASU) that supplies air gases for local industry and liquid for the merchant market, a cogeneration plant that supplies Shell Chemicals and Air Liquide's facilities while supplying any surplus power to the Alberta grid, and a CO2 plant that recovers and purifies by-product carbon dioxide from Shell's plant for Alberta's merchant market, particularly for enhanced recovery of oil and gas, and food-grade applications.

Products: Electricity, Steam, Oxygen, Nitrogen, Argon, Carbon Dioxide

32. Shell Chemicals Canada

Profile: Manufacture styrene monomer that is shipped out to produce styrene (white plastic). Also manufacture mono ethylene glycol. This is used as anti freeze and is also used to manufacture fleece for jackets, vests, etc. The company is verified under Responsible Care and has achieved ISO 900I, I 400I, and OHAS I 800I designations.

(There is a railway line on the east. This rail is owned by CP to the Shell complex and owned by CN after the plant.)

Products: Principal products are styrene monomer and mono-ethylene glycol

33. Shell Canada Ltd (Upgrader expansion)

Profile: The Shell Upgrader is a joint venture project with partners Chevron Canada and Western Oil Sands. In 2003 the Upgrader started processing bitumen from the Muskeg River Mine north of Fort McMurray and currently has a design capacity of 155,000 barrels per day. There are two pipelines coming into the Upgrader: one brings down heavy bitumen and diluent which are separated at the Upgrader and the second returns the diluent back to Fort McMurray to mix with more bitumen. Construction of a second upgrader commenced in late 2006 that will, upon completion in 2010, increase capacity by 100,000 barrels per day. Construction workforce on Shell's expansion is expected to be in excess of 6,000 people, and when completed will add more than 350 full-time Shell employees and 100 full-time contractors. Shell is proposing further Upgrader expansion phases that will increase capacity to more than 700,000 per day.

Products: Synthetic crude oil

Proceed to Twp Rd 562 which will curve to the right

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34. Texaco Exploration Ltd.

Profile: Landowners. Wells on site.

Of interest:

The Alberta's Industrial Heartland area up to Fort McMurray in the north and continuing eastward to the province of Saskatchewan is an underground sedimentary basin. This basin contains many evaporates within its borders, but only a few have the right geological conditions to form economic deposits of salts. The deposits deepen southward across the province, from a minimum of 690 feet at Fort McMurray to 6,560 feet in this area. The salt in this area is extremely chemically pure. Industries have been brining the salt for many years and using the empty caverns to store chemicals and gases. Underground salt is a desirable medium for storage because it is completely impermeable and, if properly developed, will have no losses. It is also much more economical to store high pressure product underground than by surface storage.

Turn right at Range Road 213

35. Kinder Morgan Canada Inc. (future site)

Profile: Heartland Pipeline Terminal (future site). Kinder Morgan Canada is a leader in the petroleum transportation industry. The company transports over 680,000 barrels per day of petroleum products to markets in Canada, the United States and offshore. The proposed terminal will provide long-term crude oil handling services for area upgraders.

Products: This proposed pipeline terminal facility will aggregate, store and ship differential bitumen and synthetic crude oil products.

36. Enbridge Stonefell (under construction)

Profile: The proposed Stonefell Project is made up of the Stonefell Terminal and the Stonefell Pipelines. This is an expansion of Enbridge Athabasca's pipeline system in Alberta.

In addition to other functions, the Stonefell Project will provide the Heartland Upgrader with access to oil terminal and transfer services in the Edmonton area. The project's batching, pumping, metering and blending facilities will consist of six 150,000-barrel tanks as well as receipt and delivery pipelines and laterals.

Subject to regulatory approval, the Stonefell Terminal is scheduled to be in service by March 2008 to coincide with the start-up of the Heartland Upgrader. Construction of the proposed Stonefell lateral pipelines is slated to begin in the first half of 2007.

37. BA Energy Inc – Value Creation (under construction)

Profile: The Heartland Upgrader will be an independent merchant upgrader. This means they can process bitumen from other companies. Construction began in 2006 on the first phase of the Upgrader. The plan calls for ultimate capacity of up to 260,000 bpd. Completion of Phase 1, 77,000-bpd is scheduled for 2008. Construction of two more stages about the same size as the first could start as early as 2007, to complete the full 260,000-barrels-daily project in 2013. Construction labour is expected to be 1,600 with operating labour after the first phase, 100+.

Products: Synthetic crude oil

38. Strathcona Logistic Centre – CP (future site)

Profile: CP is proposing to construct 16 miles of new rail right-of-way to service this area. They plan to expand their line including constructing a bridge to provide direct rail service to industries on either side of the North Saskatchewan River. This line will expand from BA Energy north to the river, across the river, south to the Synenco land, then across Highway 38 to the proposed Petro Canada Upgrader. It is expected that a single train could replace as many as 280 trucks on primary highways reducing the demand on local highways and infrastructure.

Turn left at Twp Rd 560.

Of Interest

The region is connected to CP's 15,000 mile network at Calgary, with direct western rail services to Vancouver and east to Winnipeg, Chicago, Toronto and Montreal. Heartland manufacturers can directly access Minneapolis, New York City, Philadelphia and Washington, D.C via CP's subsidiaries the Soo Line and the Delaware Hudson.

39. King Tech Maple Resources (future site)

Profile: Petroleum Spent Catalyst Recycling Plant. The petroleum spent catalyst recycling facility will treat the industrial solid wastes left behind from oil sand or heavy oil upgrading processes into valuable commodities, and at the same time contribute to environmental protection in the AIH area.

King Tech Maple is an extension of its related companies, Full Yield Industries in Taiwan and King Tech Industries of China, which has over 25 years experience and expertise in this recycling industry. Both the companies are credited with ISO 14000 certification.

The project, upon completion, will have a capacity of treating 30,000 metric tons per year of petroleum spent catalysts and will need about 80-100 persons to operate and manage.

Products: spent catalyst recovery

40. Atco Gas

Profile: Cavern storage of natural gas. Atco stores gas over the summer to be used in the region over the winter.

Products: Natural gas

41. North American Oil Sands Corp. (upgrader – future site)

Profile: This total site encompasses 1,350 acres. North American Oil Sands is planning a coking/ hydro-processing upgrader with an ultimate capacity of 250,000 b/d to be built in two stages. The first phase of the Upgrader Project, targeted to be operational in 2012, is expected to have the capacity to process 75,000 barrels per day of bitumen feedstock. Subsequent phases of the Upgrader Project, to the extent implemented, would be expected to bring bitumen feedstock capacity to 250,000 barrels per day. A gasifier may be added to the upgrader facility in the future. A gasifier transforms coke produced by cokers into a mixture of hydrogen and oxides of carbon called "syngas". Gasification will reduce their dependence on natural gas. They will also be able to convert syngas into a pure carbon dioxide stream to be sold to other companies and produce hydrogen that will allow them to be self-sufficient. The total development will occupy 700 acres which will include the upgrader, tank farms, water treatment facility, warehouses, office space and parking. Construction labour will be 3,000 with operating labour (1st phase) at 300+.

Products: SCO, gas liquids, petroleum, coke, sulphur, and other upgraded by-products

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Continue eastward to Town of Bruderheim (Approximately 8 kilometres).

LAMONT COUNTY www.countylamont.ab.ca

- Location – Lamont County is situated 62 km north east of the provincial capital of Edmonton
- Area – 2,474 sq km (955 sq miles)
- Population
  - Lamont County 4,167
  - Town of Bruderheim 1,202
  - Town of Lamont County 1,692
  - Town of Mundare 715
  - Village of Andrew 485
  - Village of Chipman 260

Lamont County is a rich agricultural district that encompasses 27 Townships. Agricultural and residential property within Lamont County is affordable. Recent accommodation initiatives by Lamont County municipalities and developers will result in more than 2,500 new residential lots and houses in the near term.

Lamont County is a key growth area and the municipality of the future offering a centrally located land base that is zoned to accommodate heavy, medium and light industry. Land designated for industrial

and commercial development is located in a prime spot adjacent to Highways 45 and 15, twenty kilometers east of Fort Saskatchewan – a mere forty five minutes from Edmonton.

In addition, there are numbers of different size land tracts available throughout the county in agricultural districts. This land can be used for commercial and industrial uses on a discretionary basis with approval from the Planning Commission.

Lamont County has a close proximity to the sixth largest metropolitan area of Canada. Industries settling here have a major advantage of drawing on the large, highly educated and skilled Greater Edmonton area workforce and consumer marketplace. Canadian National and Canadian Pacific Railways run through and intersect in this area. The county is well served by highway and pipeline corridors with enviable utility and communications service. Power lines in this area are owned and operated by Fortis Alberta. This company supplies residential and industrial needs from 120 volts to 25,000 volts.

Proceed straight through the Town of Bruderheim.

Town of Bruderheim

Bruderheim has a population of 1,200 people and is located 30 minutes northeast of Edmonton. It offers the peace and quiet of country living. Yet its location and major transportation links, including rail and bus services, provide convenient connections to key sectors and amenities. Bruderheim has a number of businesses, an elementary school K-6, and an ice rink. It is located within close proximity to the major attractions in the area, including the Bruderheim Natural Area located 6.4 km north of town. A developer is currently planning a new residential subdivision. As well, lots are being subdivided in anticipation of the AIH growth.

As the road starts to curve to the left, take the right access in the curve
Proceed to Range Road 202 and turn right

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42. ERCO Worldwide (vacant plant)

Profile: ERCO Worldwide is a division of Superior Plus LP and has recently ceased chemical production and distribution. Previously the annual capacity was 80,000 metric tons of sodium chlorate crystal. ERCO Worldwide is looking at other uses for this site.

43. AltaLink Ltd.

Profile: Located on the Hazco site on the corner of Range Road 202 and Twp Rd 560,AltaLink is Alberta's transmission leader, owning and operating more than 11,000 kilometres of transmission lines and approximately 300 substations. One of these power stations is on the Hazco site. Altalink supplies industrial electrical load needs above 25,000 volts.

Products: Electricity

44. Hazco Enviromnental (future site)

Profile: AST, a division of Hazco Environmental Services, a CCS Income Trust company is proposing to construct and operate a Sulphur Forming and Shipping Facility on a portion of Section 35-55-20-W4. With CN and CP rail on site, Highway 15 to the South, Highway 45 to the North Range Road 2 assignment as a heavy truck route, along with AST's plans to construct a rail loop on site; the area was considered a logistical benefit. Close proximity and other industrial advantages create synergies for industrial opportunities.

Liquid sulphur will be received by rail tank car and truck, processed into a dust free solid pastille and loaded onto rail cars destined for the international export market through the Port of Vancouver.

Products: Solid Elemental Sulphur Pastilles

45. Canexus Chemicals Canada LP

Profile: Canexus Chemicals Canada LP produces sodium chlorate which is used in the pulp and paper bleaching process. This facility has a production capacity of 70,000 tonnes per year. Crystal product from the plant is sold to North American customers and is exported overseas to customers in Asia. It is also a distribution terminal for caustic soda and hydrochloric acid. Caustic Soda is used in a variety of industries and the hydrochloric acid is used in Western Canada for enhancing production in existing oil and gas wells.

Products: Sodium Chlorate, caustic soda and hydrochloric acid.

46. Triton Fabrication Inc.

Profile: Triton Fabrication Inc. is a subsidiary of Triton Projects. This fabricating plant provides heavy-industrial fabrication services to industrial clients.

Products: Metal fabrication - specifically, structural steel, pipe & module fabrication and modular assembly.

47. Contura (future site)

Profile: Contura is a holding company that is acting on behalf of Conserve Oil Corporation.
This company's goal is to establish a facility in 2007 that utilizes an innovative process to recycle waste oil and crude oil into value added products Ultra Low Sulphur Diesel fuel, naptha and fuel oil. The facility plans to employ 29 fulltime skilled workers.

Products: 2,000 bpd refinery producing ULSD, naptha and fuel oil

Heartland Hall (located on Hwy 15 and Range Road 214)

This emergency service building is located in Strathcona County and was built to service the northern rural portion of Strathcona and the AIH. It is open 24/7 and has 5 full-time personnel all with advanced fire and EMS qualifications. They provide advanced industrial level fire and dangerous goods support to complement industries' emergency service departments. There is also a satellite RCMP office and the Northern Strathcona Liaison office in the building.

Josephburg Airport (South of Heartland Hall)

This airport is owned and maintained by Strathcona County. It is used for privately owned and commercial aircraft. The paved runway is 4,620 feet by 100 feet. The airport is highly utilized by local industry in the AIH.

Continue southward to Highway 15 (3 kilometres).
Turn right onto Highway 15 (westbound).
Proceed to Secondary Highway 830 (6.5 kilometres).
Turn right at Highway 830 (northbound).
Proceed approximately 13 kilometres.
At the T-intersection turn left and cross the Vinca Bridge onto Hwy 38 West.

STURGEON COUNTY www.sturgeoncounty.ab.ca

- Population – 18,621 residents
- Land Size – spans 2,100 square kilometers
- 10 hamlets
- 75 country residential subdivisions
- Home to Edmonton Garrison Army Base

The county has been able to attract large industries due to its favourable tax climate, abundance of raw materials and its cost-effective transportation infrastructure of paved roads and rail linkages. A wide variety of rich natural resources are found within the county, including heavy oil deposits, natural gas fields, coal, clay, sand and gravel.

Looking to the future, Sturgeon County stands to become a leader in industry, while still maintaining its image as a successful rural/urban community that offers the best of both worlds. The county continues to build a reputation as a place where agriculture and industry co-exist, and as rural and urban lifestyles flourish side-by-side.

48. Synenco Energy Inc. (Upgrader)

Profile: Northern Lights Upgrader. This project is currently on hold and Synenco is reviewing their options. Construction of the facility will begin upon receipt of regulatory approval. When completed, Northern Lights will produce 100,000 barrels per day (with an initial phase of 50,000 barrels per day) of high quality synthetic crude oil over a 30-year period.

Products: Synthetic crude oil

At the junction of Hwy 38 and Hwy 643 (13 kilometres) turn left onto Hwy 643.

Town of Redwater

Town of Redwater is located 7 kilometres to the north of this intersection. Redwater will be a major supplier for the proposed upgraders in Sturgeon County.

49. Agrium Inc. (Redwater)

Profile: Agrium is a leading global producer and marketer of agricultural nutrients and industrial products in both North America and Argentina. The Redwater Fertilizer Operation is the largest fertilizer complex in Canada and the largest in North America; producing approximately 680,000 tonnes of ammonium phosphate (MAP) and close to 1.4 million tonnes of nitrogen based nutrients. They receive phosphate rock by rail cars from Kapuskasing, Ontario. After years of harvest, soil nutrients have become depleted. Agrium's complete line of crop nutrients replaces those nutrients to sustain crop production and soil quality for future generations. The company is as committed to nurturing communities as they are to safe, efficient crop nutrient production. The fertilizer plant occupies 372 hectares along the North Saskatchewan River.

The massive pile on the left is gypsum which is a by-product of the chemical process. It covers an area of 320 acres and is 40 storeys high. Currently there is little use for this by-product. They are currently building another gypstack which will have the capacity for another 20 years.

Products: Ammonia, Ammonium Nitrate, Ammonium Sulphate, UAN (Urea Ammonium Nitrate) Solution, Urea, Mixed Sulphuric Acid, Gypsum (Impure), Anhydrous Ammonia, Granular Urea, Mono Ammonium Phosphate, Nitric Acid, Phosphoric Acid.

Electrical Needs in AIH

Alberta Electric System Operator (AESO) is assessing the needs of the area as well as the entire province. They plan to submit a Need Application in the latter part of 2007.

50. North West Upgrading Inc. (future upgrader)

Profile: The North West Upgrader will include three phases, each with a daily capacity of 77,000 barrels of bitumen blend feedstock. The first phase will start in 2010 and the Upgrader will be capable of processing 231,000 barrels per day of blended feedstock (150,000 barrels per day of crude bitumen) when built out to its design of three phases. This project will employ 2,000 construction labour and after completion of the first phase, 200 fulltime operating labour.

Products: Synthetic crude oil

51. Access Pipeline and Terminal

Profile: The Access pipeline and terminal will service the North West Upgrader. Construction is underway on the Trim Blend Facility and the North Saskatchewan River crossing. This site will include three oil storage tanks, a pump station and the pipeline control centre.

The Trim Blend Facility will provide diluent for the 406 –mm ACCESS pipeline en route to the proposed Devon Canada Corp.- Jackfish Facility new Christina Lakes. This site would also be used to provide extra diluent to the returning 610-mm bitumen blend pipeline to meet downstream transportation specifications.

52. Degussa Canada Inc.

Profile: This facility manufactures and distributes hydrogen peroxide. This chemical is widely used in the pulp and mining industries and also has environmental applications.

The Bleaching & Water Chemicals unit is a global supplier of hydrogen peroxide, operating production facilities in eight countries around the world and maintaining production in every region of the world.

Degussa Corporation, located in Parsippany, New Jersey, is the North American subsidiary of Degussa AG, Duesseldorf, Germany, a world leader in specialty chemicals with major businesses dedicated to health and nutrition, construction chemicals, fine and industrial chemicals, performance chemicals, coatings and advanced fillers, and specialty polymers. The company also owns and operates production facilities, R & D and applied technology centers throughout the NAFTA region.

Products: Hydrogen Peroxide

53. Petro Canada Foot Hills (future upgrader)

Profile: The Fort Hills Sturgeon Upgrader has acquired 4400 acres and plans to have ultimate capacity of 350,000 bpd. Phase 1 will have a capacity of 100,000 – 170,000 bpd. The upgrader will process bitumen from the Fort Hills Oil Sands Mine, 90 kilometres north of Fort McMurray, into light synthetic crude oil ready for refining into consumer products such as gasoline and diesel. Construction is slated to begin in 2009. Construction labour is expected to be 6,000 with operating labour of 500+ after the first phase construction.

Products: Synthetic crude oil

54. Provident/Williams Energy Ltd. (south side of Highway – look for red & white tower)

Profile: Provident/Williams Energy separates natural gas into a number of Natural Gas Liquids (NGLs) including ethane, butane, and propane. NGLs are used as feedstock in oil refining and petrochemical manufacturing. Ethane is used to make polyethylene, for example, and Butane has a number of industrial and petrochemical uses. Propane is widely used as a fuel, as is butane. The 320 foot red and white tower is the actual propane/propylene splitter. To perform the splitting function there are 213 separation trays in this tower. A large number of trays are required as there is only 1 ½ degrees difference in the boiling points between propane and propylene. This fractionation tower is the tallest fractionation tower in Canada. The plant also produces condensate which in Alberta is mostly used to speed the flow of heavy oil through pipelines. Company has their own CoGen facility which has power tied to the grid. There are 8 underground storage caverns under this facility.

Products: Ethane, Butane, Propane

At the junction of Highway 643 and Highway 825 turn left. Note at this point you have exited the AIH area.

Of Interest

An interesting feature in this area is a micro-climate. Due to the location and elevation along the North Saskatchewan River, a longer frost-free growing season is created. This area is home to several sod growing companies and due to the unique micro-climate, it produces one of the world's best seed potatoes.

55. W4 Industrial Park (recently renamed Sturgeon Industrial Park)

This park consists of 400 acres of serviced land with CN rail access with an additional 800 acres of raw land. It is being marketed as a prime location for service companies positioning themselves to take advantage of proposed heavy oil sand facility development over the next few years. The park is home to the following businesses:

Guardian Chemicals Inc.

Profile: Guardian Chemicals is a privately owned Canadian company that researches, develops, manufactures, and sells specialty chemicals to industrial markets such as forestry (pulp and paper), gas and oilfield, mining, vehicle cleaning and maintenance, and general maintenance. This site has been in operation since 1957.

Products: Proprietary industrial specialty chemicals including: water treatment products, wash bay chemicals, production chemicals (scale/sand removers), strippers and degreasers, acids (rust & scale removers) and specialty products (printing press fountain solutions, fire fighting foams).

Hexion Specialty Chemicals

Profile: Producers of frac sand for oil industry

Products: Frac sand

Prospec Chemicals

Profile: The manufacturing division of Charles Tennant & Co. (Canada) Ltd. since 1984. It is a world-wide operation relevant to the mining sector.

Products: Focused on producing mining chemicals. Presently manufacture 7000 MT of Xanthates annually as well as a growing number of Specialty Collectors. They also produce Thionocarbamates and Xanthogen Formates, but retain the option to outsource these as required.

Tolko Industries Ltd

Profile: Cut and package oriented strand lumber. Capable of shipping mixed loads of engineered wood products.

Dow AgroSciences Canada Inc.

Profile: Produce agricultural herbicides.

Reimer Bulk Systems

Profile: Specialize in chemical and oilfield fluid hauling.

56. Horton CBI

Profile: One of the world's largest construction and engineering firms of plate steel tanks and pressure vessels for storage.

57. Bunge Canada (east side of Highway)

Profile: Canada's largest processor of edible oil products and canola seed crushing. Leader in the technology and manufacture of edible oil products, and a leading marketer of oilseed-based products.

58. Canadian Bioenergy (future)

Profile: Western Canada's first large scale Biodiesel Refinery. It will be located adjacent to Bunge Canada's canola oilseed crushing and refining operations.

Continue past the W4 Industrial Park (now Sturgeon Industrial Park).
Turn right at the Stop Sign (dead-end).
Proceed to Highway 15 West into Edmonton (This Highway will change into the Manning Freeway when entering Edmonton).

APPENDIX A – SIA MEMBERS

1. Alberta Envirofuels
2. Alcan
3. AltaSteel (Scaw Metals Group)
4. EPCOR
5. AT Plastics
6. Edmonton Waste Management Centre
7. Enbridge
8. Imperial Oil
9. Gold Bar WWTP
10. Owens Corning
11. Petro-Canada

DID YOU KNOW?

At 7,400 hectares, Edmonton's North Saskatchewan River Valley is the largest stretch of urban parkland in North America. There are 22 major parks and over 150 kilometres of trails on which you can enjoy walks, bike rides, picnics, snowshoeing, cross-country skiing and more.

APPENDIX B – NCIA MEMBERS

1. Agrium Fort Saskatchewan
2. Agrium Redwater
3. Air Liquide Canada Inc.
4. BA Energy Inc.
5. BP Canada Energy Company
6. Canexus
7. Deussa Canada Inc.
8. Dow Chemcials Canada Inc.
9. ERCO Worldwide
10. Guardian Chemicals
11. Keyera Energy
12. KinderMorgan (Terasen) Heartland Terminal
13. Marsulex Inc.
14. MEGlobal Canada Inc.
15. Praxair Canada Inc.
16. Provident Energy Inc.
17. Shell Canada
18. Shell Chemicals Canada Ltd.
19. Sherritt International Corporation
20. Sulzer Metco (Canada) Inc.
21. The Westaim Corporation Nucryst Pharmaceuticals Corp.
22. Umicore
23. North West Upgrading Inc*
24. Petro-Canada Oil Sands Inc*
25. Synenco Energy*
26. Enbridge Pipelines Inc.*
27. Gulf Chemicals and Metallurgical Corporation*
28. Hazco Environmental Services*

*Associate members until projects are completed.

Oilsands 101

WHAT ARE THE OILSANDS?

- Heavy oil sands are formed by infiltration of petroleum into porous sand near the Earth's surface
- Oil sands are crude oil deposits that are substantially heavier (more viscous) than other crude oils

WHAT IS THE COMPOSITION OF THE OILSANDS?

- Oil sands are a mixture of sand, bitumen and water
- Each grain of oil sand has three layers: an envelope of water surrounding a grain of sand, with bitumen surrounding the water to form the outer layer

HOW IS OIL SEPARATED FROM THE SAND AND WATER?

- **Ore preparation**
  - Ore dumped into crusher reduced in size to less then 2" particles
- **Extraction process**
  - Air added to slurry, bitumen attaches to the air bubbles. Froth is processed through a stripper directing the bitumen to storage vessels
  - Solvent added to separate remaining solids, water and asphaltenes
  - This process yields clean diluted bitumen at appropriate viscosity to be transported by pipeline

WHAT IS BITUMEN?

- Bitumen is a liquid-solid material, such as tar, asphalt, or heavy oil
- This heavier crude oil has lost much of its lighter fraction of its original petroleum due to volatilization or oxidation

WHY ARE OIL SANDS SO SPECIAL?

- Oil sands are of interest to the energy industry because they are a potentially huge source of petroleum.
- Upgrading of the oil sands into lighter crude oil can be used commercially.

WHAT IS AN UPGRADER?

- An Upgrader processes the bitumen into vacuum gas oil and light synthetic crude oil
- There are generally two types of upgraders: hydro conversion process and traditional coking process
- Hydro conversion process breaks down the heavy bitumen into smaller molecules by adding hydrogen in presence of a catalyst, heat and pressure
- Sulphur and nitrogen are removed

TWO PROCESSES FOR UPGRADING BITUMEN:

Delayed coking is a process where bitumen is heated to 500 degrees Celsius (925 degrees Fahrenheit), then pumped into one side of a double-sided coker. The bitumen cracks into two products: solid coke and gas vapour. It takes approximately 12 hours to fill one side with coke. When one coke drum is full the heated bitumen is diverted into the 2nd coker in the pair to continue the cracking process. A high-pressure water drill is used to cut out the solid coke from the first coking drum.

The **fluid coking** process is similar except it is a continuous process. There is just one coking drum for fluid coking. The bitumen is heated to 500 degrees Celsius (925 degrees Fahrenheit) but instead of pumping the bitumen it is sprayed in a fine mist around the entire height and circumference of the coker. The bitumen cracks into gas vapour and coke. The coke is in a much finer powder-like form, which is then drained from the bottom.

THE OILSAND RESOURCES IN ALBERTA

The Alberta oilsand deposits are located in three areas: **Athabasca**, **Peace River** and **Cold Lake**.

- Alberta has the second largest proven oil reserve after Saudi Arabia
- 174 billion barrels of proven reserves with an ultimate potential of over 300 billion barrels
- Over 400 years of supply available at current production rates
- Production based on current mining and in-situ techniques
- Marketed to Canadian and US refineries (primarily Midwest US)

TECHNOLOGY TRENDS

- **In Situ**
  - Cyclic Steam Stimulation (CSS)
  - Steam Assisted Gravity Drainage (SAGD)
  - Vapor Extraction (VAPEX)
  - Toe–to-Heel Air Injection (THAI)
  - Thermal Solvent
  - Hybrid (Steam-Solvent) Process
- **Surface Mining**
  - Truck and shovel
  - Hydro-transport
- **Upgrading & Value-Added Products**
  - Synergies with existing facilities

Alberta's Industrial Heartland

For more information, please visit our website:

www.industrialheartland.com

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see

Strathcona County, Alberta, Canada

Economic Development and Tourism

Lamont County

Sturgeon County

City of Fort Saskatchewan