Oil Heritage Conservation District Study

County of Lambton
Planning and Development Services Department
789 Broadway Street
WYOMING ON N0N 1T0

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August 2010

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County of Lambton
Planning and Development Services Department
789 Broadway Street
Box 3000
WYOMING ON N0N 1T0
Attn: Mr. D. Posliff, Manager

August 24, 2010

Dear Mr. Posliff:

On behalf of the consultant team (MHBC Planning, Golder Associates Ltd., and George Robb Architect), I am pleased to submit the Phase 1 Study for the proposed Oil Heritage Conservation District.

The Study has identified, documented and evaluated the numerous heritage attributes and values found in the area. Based on this foundation of information the Study proposes a boundary for the Heritage Conservation District, which is referenced within the accompanying Heritage Conservation District Plan.

We, along with the Steering Committee, recognize the practicality and ingenuity of present and past oil producers within the Oil Springs area and trust that this document will allow for the continued success and viability of their operations. We also trust this Study will be well received by the Steering Committee, and by the stakeholders who have assisted us in its preparation.

Yours truly,

Wendy Shearer

Wendy Shearer, OALA, CSLA, ASLA, CAHP
Managing Director

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IN MEMORIAM: Robert Cochrane (1948 – 2010)

The authors of the Oil Heritage Conservation District Study and Plan wish to acknowledge the participation and support of Mr. Robert Cochrane, a member of the Oil Heritage District Steering Committee who passed away on February 28, 2010.

Mr. Cochrane was a founder of The Petrolia Discovery and its chairman for many years. Also, Robert was a contributor to the work of the Ontario Petroleum Institute, the Ontario oil and gas industry and an advocate of Lambton's oil heritage. As a member of the Society of Industrial Archaeologists he co-authored the definitive tour of Ontario's Oil Heritage District. He was a valued member of several professional societies and mentored earth-science students at the University of Western Ontario.

EXECUTIVE SUMMARY

The story of the development of the oil fields in southwestern Ontario is unique to Canada. Oil has been extracted in southwestern Ontario for the past 150 years, making the fields within Oil Springs and Enniskillen Township unlike any other industrial operation in Canada for continuity of use.

At Oil Springs the jerker lines snake across the fields; wooden pump-jacks nod in the countryside appearing much the same as they did in the 1860s. The gentle squeak of the jerker-lines and the occasional smell of crude oil further animate the area.

This landscape, with its historical innovation and continued operation has been studied at the request of the County of Lambton and the Ontario Ministry of Culture with the goal to document and conserve existing resources within the Study Area. The story of the development of the oil fields, along with the inventiveness of those who discovered and developed them is presented within this study to assess the suitability and scope of a proposed Heritage Conservation District.

The Study recounts the discovery of oil in the area, and how technologies were developed to extract oil more efficiently. Important landscape and equipment resources are identified, in particular for the fields owned and maintained by Fairbank Oil Properties.

As a result of the Study, a boundary for the proposed Heritage Conservation District has been recommended that encompasses properties found within the southern portion of the Village of Oil Springs and the Township of Enniskillen. A supporting area encompassing the remnant portions of the Plank Road (which connected Oil Springs with Sarnia to the northwest) and County Road 21 northward through Oil City and Petrolia to the railhead at Wyoming is also recommended for incorporation into the Heritage Conservation District.

The proposed Heritage Conservation District Plan and its method of implementation will respect the nature of the oil field as an ongoing, operational place of industry and employment. The Plan seeks to conserve the key elements of the landscape and operating equipment, but does not attempt to preserve these in their current state. Consultation with the remaining oil field operators has indicated a willingness to respect the ongoing methods of operation, while allowing continued creativity in extracting a finite resource from the earth in an efficient and economical manner.

The recognition and implementation of a Heritage Conservation District encourages the municipalities of Oil Springs and Enniskillen and the County of Lambton to promote the area's heritage as part of broader economic development and tourism initiatives. The creation of the Heritage Conservation District builds upon the prior National Historic Site designation afforded the area by the Government of Canada. These designations of local, provincial and national significance represent progressive steps from which the County should work with Parks Canada to further document and make the case for the granting of world heritage status by UNESCO.

The recommendations of the study are therefore as follows:

1. Establish the proposed Oil Heritage Conservation District as provided under Part V of the Ontario Heritage Act.

2. Adopt and implement the proposed Heritage Conservation Plan according to the process suggested by the provincial Ministry of Tourism and Culture.

3. Recognize the ongoing operations of the oil field as a dynamic, evolving place of industry and employment.

4. Preserve existing lot patterns that reflect the historical development of the area.

5. Identify and conserve historic equipment, structures and landscapes of primary importance.

6. Incorporate the to market the proposed Heritage Conservation District as part of continued efforts to market tourism within Lambton County and the province of Ontario. tourism strategy.

7. Enter discussions with Parks Canada to develop the required Commemorative Integrity Statements, and press for consideration of the Study Area by UNESCO as a World Heritage Site.

1.0 INTRODUCTION

The County of Lambton has an interest in the conservation and protection of its heritage resources. The Cultural Services Division of the County, working with the Oil Heritage District Steering Committee, proposed that the oilfields surrounding the Village of Oil Springs be studied for heritage value. The authority to undertake such a study is contained within Section 40 of the *Ontario Heritage Act*, with the possibility to prepare a Heritage Conservation District plan, which would seek to conserve significant heritage attributes and features identified within the Study.

In 2008, the County and the Steering Committee retained a Study Team comprised of members of three firms: Wendy Shearer Landscape Architect, a division of MHBC Planning; Golder Associates Ltd.; and George Robb Architect. The aims of the study were threefold: 1) describe the cultural landscape, built heritage, historical equipment, and methods of oil extraction that are still employed to the present day; 2) define the boundaries of the oil heritage cultural landscape; and 3) consider the feasibility of conserving the oilfields in the Village of Oil Springs and Enniskilllen Township as a Heritage Conservation District, under Part V of the *Ontario Heritage Act* and the *Planning Act*.

The consultant team met on an ongoing basis with a Steering Committee comprised of representatives of the County of Lambton, the local municipalities of Oil Springs, Petrolia, and Enniskillen, oil producers, and interested members of the community. The Steering Committee membership is listed in Appendix A.

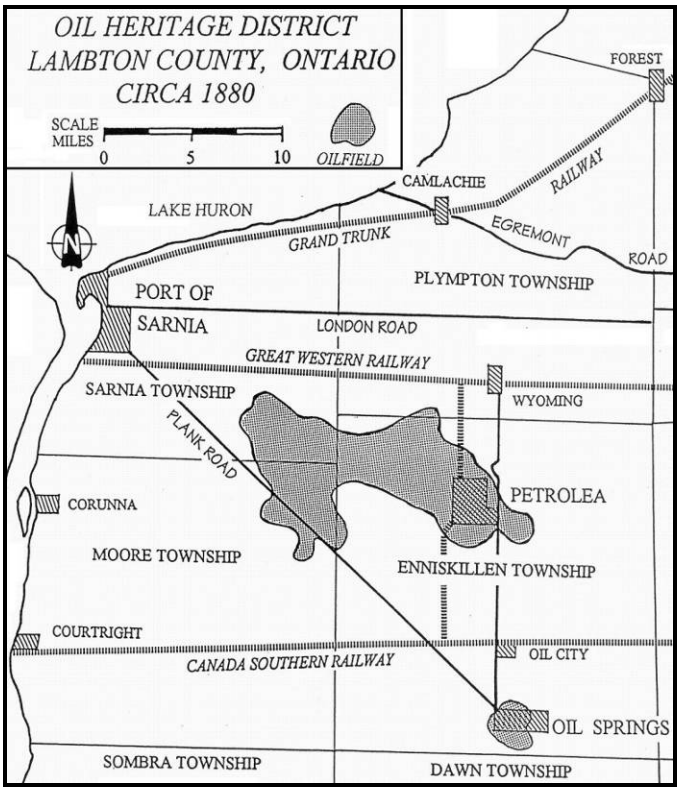
1.1 INTRODUCTION TO THE STUDY AREA

Heritage Conservation Districts are frequently formed to encourage the conservation of an architectural building form (e.g. Bishop Hellmuth District within north-central London), or to acknowledge the presence of a settlement founded in the 19th century as an urban area (e.g. Village of Port Credit within Mississauga) that contains building form and character distinct from the surrounding urban areas that now encompass it.

The Oil Heritage Conservation District is a unique area, in that the Study Area is within a rural area, and contains industry that continues to operate on its original lands. The extraction of oil --usually thought to be an operation that is large in scale and finite in its lifecycle-- has been conducted within the Study Area on a continuous, small-scale basis since the late 1850's. The industry survives here using early technology, adapted over time. The area perfectly fits the provincial definition of an 'evolved cultural landscape'.

The discovery of gum beds and oil springs in the Township of Enniskillen first occurred in the 1850's. This discovery signaled the beginning of Oil exploration and production within Lambton County. The ability and need to extract and ship oil from the area spurred the development of infrastructure between central Ontario and Lambton County, and later further westward to the oil refineries at Sarnia. The location of the main oil resource pools within Lambton County is shown in Figure 1.

Figure 1: Location of Oilfield surrounding Oil Springs, Ontario
Source: (*Oil Heritage in Lambton County*, Ontario Petroleum Institute Annual Meeting, 2000)



At the request of the Steering Committee, the Study Team also studied building forms within the Town of Petrolia, concentrating on neighbourhoods that resulted from development of the oil industry. Six neighbourhoods within Petrolia have the potential to be designated as Heritage Conservation Districts, and are candidates for further study.

This Heritage Conservation District Study Report is intended to document the findings of the Study Team as well as provide a Statement of Character for the proposed Heritage Conservation District, a *Heritage Act* requirement. This report also lays the groundwork for the Heritage Conservation District Plan which will contain the guidelines and policies for conserving the heritage resources and values identified in the Study.

2.0 BACKGROUND

2.1 THE STUDY AREA AS A NATIONAL HISTORIC SITE

In recognition of the first oil production site in Canada, Oil Springs was designated a National Historic Site by the Government of Canada in 1925. A federal plaque was erected on the town post office in 1938 commemorating Oil Springs as the site of the first commercial oil well. The Fairbank Oil Properties and Oil Museum of Canada properties were designated a National Historic Site by the federal government in November, 2006.

The site is also considered a potential addition to the Government of Canada's Tentative List for assessment and eventual designation as a UNESCO World Heritage Site.

2.2 POLICY FRAMEWORK

2.2.1 Ontario Heritage Act

The legislative basis for the designation of a Heritage Conservation District is found in Part V of the *Ontario Heritage Act*. Part V provides that where there is an Official Plan in effect that contains provisions relating to the establishment of Heritage Conservation Districts, a Municipal Council may designate a Heritage Conservation District by adopting a District Conservation Plan, through passage of a By-Law. Within the By-Law, properties previously designated under Parts IV and V of the Heritage Act may be included within the designated district. The Act requires that new policy affecting the designated area must conform to the general principles set out within the Heritage Conservation Plan.

Section 42(1) of the Heritage Act specifies the terms and conditions for the requirements of a permit for changes to be made to a designated property, or buildings therein, but does not apply to changes to the interior of a building or structure. Permits are to be reviewed within a 90 day period, with a permit considered to be approved if not dealt with by the designated committee/authority in that time frame. It is the Study Team's experience, however, that permits are dealt with promptly by municipal heritage committees.

2.2.2 Provincial Policy Statement

The Provincial Policy Statement (PPS) is a land use policy tool that applies to the entire Province of Ontario and provides guidance for the implementation of local planning policy that promotes efficient growth and wise use of resources.

Policy 2.6.1 states that "Significant built heritage resources and significant cultural heritage landscapes shall be conserved." A cultural heritage landscape is defined as, "a defined geographical area of heritage significance which has been modified by human activities and is valued by a community." Heritage Conservation Districts designated under the *Ontario Heritage Act* are one example of a 'cultural heritage landscape.'

Other sections of the PPS relevant to the Oil Springs Heritage Conservation District include Section 1.3, Employment Areas. The extraction and production of oil is an important sector of the Lambton County economy and this section of the PPS requires policies that ensure the long term protection of the oil fields and related infrastructure for current and future users.

2.2.3 County of Lambton Official Plan

The County of Lambton is the upper-tier municipality in which the Study Area is located. The County's Official Plan was approved by the Minister of Municipal Affairs and Housing in 1998. The Study Area is designated 'Rural/Agricultural' within the County Official Plan.

Section 6.2 of the County's Official Plan provides the policy goal "to promote Lambton County's prominent role in the discovery of oil in Canada and the development of a petrochemical industry." The section also contains the following specific policies to encourage further recognition of the Study Area as a Heritage District:

- Where possible, the County will assist in promoting and further developing the Oil Heritage District as a regional attraction.
- The County supports strong linkages between the features of the Oil Heritage District and signage to direct tourists to and around this area.
- Modern technology providing interactive learning experiences, where appropriate, should be introduced into attractions of the Oil Heritage District.

2.2.4 Village of Oil Springs Official Plan

The majority of the Study Area is located within the Village of Oil Springs. Part D (Community Development) of Oil Spring's Official Plan contains policies relating to Cultural Heritage, which provides the possibility for areas that may be designated under the Ontario Heritage Act "to conserve significant heritage resources through the designation of individual properties or areas, and the designation of a group or groups of properties as Heritage Conservation Districts."

Section 2.3 of the Village Official Plan allows for the exploration, drilling for and production of oil and natural gas within all areas of the Municipality. Impacts are to be minimized, with operations to comply with the Ontario Petroleum Resources Act, and the Oil, Gas, and Salt Resources Act.

The portion of the Study Area within Oil Springs is generally designated, "Mixed Commercial-Industrial" within the Village Official Plan. The intent of this land use designation is to allow for a number of commercial or industrial uses that may not be appropriate for the built area of the village.

Sections 5.1 and 5.2 of the Official Plan list potential uses within the designation, which would be confirmed for a specific site through the Zoning By-Law. Commercial uses include: factory outlets, farm-related commercial uses such as feed/fertilizer supply stores, and farm implement sales and service. Industrial uses include: livestock and poultry

processing establishments, bulk fuel depots, grain and seed storage facilities, feed mills and grain drying facilities.

2.2.5 Township of Enniskillen Official Plan

A smaller portion of the Study Area is located within the Township of Enniskillen, between Gum Bed Line and Aberfeldy Line. Part D (Community Development) of Enniskillen's Official Plan contains policies relating to Cultural Heritage, which provide the possibility for areas that may be designated under the Ontario Heritage Act "to conserve significant heritage resources through the designation of individual properties or areas, and the designation of a group or groups of properties as Heritage Conservation Districts."

The Plan designates the Study Area lands within Enniskillen as Rural, which lists Petroleum-related facilities as a permitted use. Section 1.16 of the Township's Official Plan lists development policies for oil and gas exploration and production, that are identical to the Rural policies of the Village of Oil Springs.

2.2.6 Village of Oil Springs Zoning By-Law 192 of 1986

The Study Area, with the exception of a residential lot located at the corner of Jerker Line and Marchant Street, is zoned Heavy Industrial (M2) within the Village's Zoning By-Law. Petroleum-related uses, subject to the regulations of the Petroleum Resources Act, are permitted uses within this zone. Buildings located within this zone that are not agricultural in use are subject to the Site Regulations found within Section 13.1.2, and include minimum Front Yard lot depths of 15m; with a one-storey maximum for building height.

2.2.7 Township of Enniskillen Zoning By-Law 5 of 1984

The portion of Study Area within the Township of Enniskillen is zoned Agriculture (A1) within the Township's Zoning By-Law. The Zoning By-Law allows for the operation of a petroleum facility pursuant to the Petroleum Resources Act within any zone in the Township.

2.2.8 County of Lambton Woodlands Conservation By-Law 45 of 2003

Portions of the Study Area are considered to be significant woodlands and are subject to the provisions of the County's Woodlands Conservation By-Law. The By-Law regulates the harvesting and/or clearing of trees within the County, and requires approval to be granted from the County prior to the clearing or harvesting of trees.

2.2.9 Suggested Changes to the Planning Policy Framework

Section 6.0 of the Heritage Conservation District Plan summarizes changes recommended by the Study Team to amend the local Official Plans and Zoning By-Laws.

3.0 HISTORICAL DEVELOPMENT OF THE STUDY AREA

3.1 OIL SPRINGS PRIOR TO 1865

3.1.1 First Nations

Aboriginal use of oil predates the arrival of European settlers. Geologist Charles Robb noted in 1861 that during oil well excavation in Enniskillen in the 1860s, diggers had found "deers' horns, and pieces of timber bearing the marks of the axe" in what appeared to be old aboriginal wells.[1] His findings were collaborated by a much later article that appeared in the *New York Times* of October 5, 1890. In this article, Prof. J.S. Newberry reported that he had found ancient "oil wells" in Enniskillen Township in c.1859/60. He noted:[2]

> *On the banks of Black Creek, the operators found that one corner of their shaft cut into an older shaft which had been filled up with rubbish, twigs, leaves &c. At the depth of 27 feet from the surface a pair of deer's antlers were taken from this old pit. Here, as on Oile Creek [Pennsylvania], the surface was occupied with trees 3 feet in diameter and some of them were growing immediately over the old oil well.*

By the 18th century, the First Nations peoples who lived in what became the London and Western Districts of Upper Canada were Ojibway (sometimes known as Chippewa), the largest and most powerful of the Great Lakes tribes.[3]

The land north of Lake St. Clair and east of the St. Clair River, including what later became Lambton County, were ceded by Ojibway to the British by means of four treaties signed between 1796 and 1827. Treaty #7, or the *Chenail Ecarte Treaty* of 1796, transferred a block of land directly north of Walpole Island that included future Sombra Township. Dawn, Euphemia and the southern parts of Enniskillen and Brooke were transferred in 1819 in what was known as the *Huron Tract Concessions*. The remainder of the future County of Lambton was transferred through the *Longwoods Treaty* (Treaty #25) of 1822 and covered a strip of land on the north side of the Thames River and the *Huron Tract Treaty,* Treaty #29 of 1827.[4]

Nevertheless, squatters began to settle on the land prior to the signing of the Treaties. Much of the squatting began about the time of the War of 1812. Some squatters even obtained land deeds from the local tribes. However these deeds appear to have been speculative rather than legal title to land.[5]

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[1] Charles Robb, "On the Petroleum Springs of Western Canada". *Canadian Journal*, N.S. 34(July, 1861), 313-23.

[2] "Ancient Oil Wells in Pennsylvania" *New York Times*, October 5, 1890, see also April 2, 1866

[3] http://www.tolatsga.org/ojib.html. *Ojibwe History* (revised 21 June 2000)

[4] Canada. *Indian Treaties and Surrenders*, p. 49-50; Victor Lytwyn, "Traditional Ecological Knowledge Study: Walpole Island First Nation and the St. Clair River Corridor," Revised February 2008.

[5] Lytwyn, "Traditional Ecological Knowledge Study: Walpole Island First Nation.

3.1.2 Survey and Settlement

The area that later became Lambton County was surveyed into ten townships. The earliest surveys actually predated the Indian Treaty. Enniskillen was surveyed in 1833 using the "2,400 acre section" system. The eastern part of the township, even then, was known to contain "a great deal of swamp . . . in some places quite impassable"; because of this obstacle, "two of the concession lines were not carried quite through."[6]

In 1849 the colonial government adopted the county system of government. Originally Lambton was united with the Counties of Kent and Essex, but after 1853 it became an independent county.

Once the survey was completed, the colonial government in York began making grants of land in Enniskillen. One of the first patents for land in what would later be Oil Springs (Concessions Two and Three, Lots 15 to 19) was granted to Augustus Jones, whose uncle of the same name was also a Deputy Surveyor. Jones was given the free grant of the 200-acre Lot 16, Concession Two, of Enniskillen Township, on 12 August 1833, as the son of Ebenezer Jones, a United Empire Loyalist (UEL). His place of residence when he petitioned for land was Saltfleet Township, and doubtless he acquired this land in Enniskillen as an investment, as did many other sons and daughters of registered UELs. In 1852, the Assessment Roll for Enniskillen records no residents on Lot 16, Concession Two. The following year these two hundred acres passed into the hands of Charles N. Tripp, a gentleman then resident in Hamilton and one of Enniskillen's first prospectors for oil, who acquired much additional land in Concessions One and Two.[7]

Another early land patent in this area was to Margaret Burton, a resident in Charlottenburgh and daughter of a UEL. She received the Crown grant to Lot 18, Concession Three, on 2 January 1824. When the property was assessed in 1852, Moses Hilton was the owner of the west half, and was assessed £25. The census of 1861, however, found him cultivating 11 acres of crops and 5 acres of pasture on the west half of Lot 18, Concession Two. Later that year, Hilton leased his land to a speculator, William Sanborn, who subdivided it into one-acre lots, which were sub-let to drillers. One of those drillers was Hugh Nixon Shaw.[8]

Hilton's neighbour on Lot 19, Concession Three, was Moses Marchant (sometimes spelled Marshaw or Marchand). He had purchased the west half of this lot (originally Clergy Reserve land) from the Crown on 28 April 1852. He and his two children had been born in Upper Canada, and his wife in Scotland. A deep oil well was eventually dug on his land.[9] These Enniskillen residents were living in the third Concession in 1852.

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[6] See Burwell's Report to Surveyor General, 9 January 1833.

[7] For a biography of Augustus Jones, senior, see *Dictionary of Canadian Biography*; Ontario Archives Land Record Index, p. 4805; Upper Canada Land Petitions; Lambton Registry Office, Abstract Index, Enniskillen Township, Concession 2.

[8] Burr, p. 50-51.

[9] Johnston, p. 9.

In that year no one was recorded as resident on Concession Two, indicating that all those owning land there were absentees and their properties without tenants. This sample of settlers shows how slowly the area around the future Oil Springs was being cleared and settled before the oil boom of the late 1850s.[10]

John Smith was Enniskillen's enumerator for the 1861 census. He commented upon the early settlement of the township as follows:

> *"A few persons settled in this Township as early as AD 1835, but for many years it was dreaded by settlers as a miserable swamp, and made very little progress. In the year 1854 the settlers had increased until there were 54 on the assessment Roll and the Township was elevated into a Municipality under the amended Municipal Act. Since that time the increase of farming population has been steady and a good deal of improvement both in roads and land clearing, buildings &c. (also in schools) has been made. But the oil mania has brought the greatest influx of population to this Township."*[11]

Discovery of oil at Oil Springs initially had a negative effect on settlement of the overall Township of Enniskillen. All unoccupied lands were bought up by oil speculators. They kept these properties out of reach of actual settlers. Even by 1880, there were tens of thousands of acres held in speculation.

Ironically, land became available during the 1880s not because of the decline in the oil boom mentality but because of municipal land drainage improvements. The taxes paid on unoccupied land were sufficiently high that the lands were being sold to actual occupiers. By then there were drainage ditches along every concession in the township as well as along the township boundaries.[12]

3.2 OIL SPRINGS TO 1865

3.2.1 The First Boom

About 1850, Assistant Provincial Geologist, Alexander Murray, had studied and reported on samples from the gum beds.[13] Murray farmed in Oxford County when not prospecting for minerals and possibly told a neighbour, Henry Tripp, about these unusual deposits. Historians assume that Henry informed his brother, Charles Nelson Tripp, who worked for a stove factory in Bath near Kingston, but liked to prospect for minerals.[14]

In 1851, Charles and Henry Tripp arrived in Enniskillen Township to develop the gumbeds. They bought 800 acres of land; by 1852 Charles had established a petroleum and bitumen manufacturing company on the holdings. Incorporation of his International Mining and Manufacturing Company was formally approved by the provincial legislature in 1954, which marks the registration of the world's first petroleum company.

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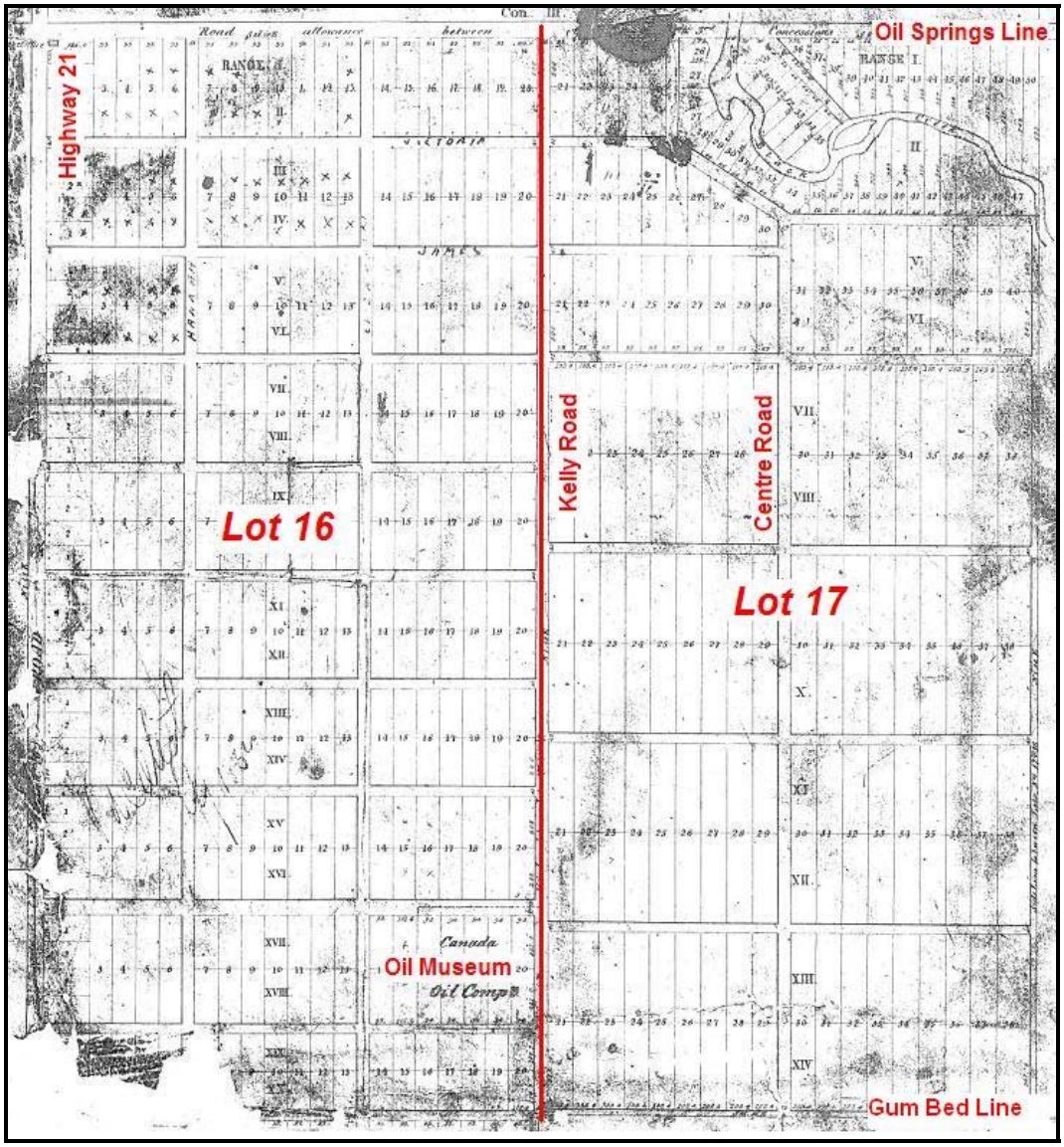
[10] Canada Census 1851, Vol. 1, pp. 14-15; Vol. 2, pp. 25-27, 412-413.
[11] Canada Census 1861, Enniskillen Township, p. 2. (Reel C-1040)
[12] *Historical Atlas of the County of Lambton, 1880*, p. 15
[13] Hunt, p. 247; Phelps, p. 157-8.
[14] Morritt, p. 17-18.

Figure 2: Survey of Lots 16 and 17, Concession Two, 1866



But Charles Tripp's industrial plans were too ambitious to be implemented in the undeveloped wilderness of Enniskillen. With the crudest of roads, no railways and a small pool of local labour, it was extremely difficult to extract petroleum and profitably refine it into asphalt. Tripp's enterprise soon became hostage to debt, and in 1857 he was forced to sell his property to the new owner, James Miller Williams. Williams was a carriage maker who first engaged in that business in London, Canada West, with Marcus Holmes, and then moved to Hamilton, where he expanded into making railway cars.[15]

Charles Tripp had sent a sample of his bitumen to the Hamilton Gas Company in 1855, and subsequently purchased wagons from Williams for his Enniskillen enterprises. James Miller Williams certainly interested himself in Tripp's experiments and explorations, and

[15] Ball and Phelps, p. 159; biography of James Miller Williams in *Dictionary of Canadian Biography*.

became one of the creditors who acquired pieces of Tripp's property in the township. But rather than collecting surface accumulations of bitumen as Tripp had done, Williams dug wells into the ground. By 1857 he was distilling or refining petroleum *in situ*, and within three years was sending oil to Hamilton where he had established a refining company.[16]

Commercial production of crude oil at Oil Springs began in 1858 when Williams hand dug a 40 foot well into the gum beds on Lot 16, Concession 2 in order to increase production. The following year Williams drilled a successful well using a spring pole drill worked by foot power. This and his earlier Williams #1 well established what is considered to be the world's first commercial oil field in the same year that Col. Drake produced his famous well in Pennsylvania.

The oil developments in Oil Springs are often compared to the discovery of the Titusville field of Pennsylvania. Drake's discovery of 1859 qualifies as the first oil well in North America drilled into hard rock. It produced a much larger field and is credited with launching America's passion for crude oil production.

News of William's discovery and success spread quickly both locally and internationally. In August 1858, soon after Williams' first flowing well was functioning, the *Sarnia Observer* circulated the news of his "bituminous or oleaginous spring" by reprinting a paragraph from the *Woodstock Sentinel*. This speculated

> *"that the supply of fluid thus accidentally discovered will continue an almost inexhaustible source of wealth, yielding, at the lowest calculation, and with no greater flow than at present, not less than one thousand dollars per day of clear profit."17*

These were the words that touched off the first of two speculative oil booms in Lambton County.

As a successful businessman, Williams was skilled at finding backers with funds, and in forming partnerships which would further his petroleum exploration and refinery operations. Enniskillen land records show that many of his partners hailed from Hamilton, or towns in Massachusetts or New York State.[18]. In 1860, Williams formed the Canadian Oil Company and was soon advertising its products in the *Hamilton Spectator.*[19]

The boom began in 1860 with the discovery of the first flowing surface well. At this time, it seems, proper drilling equipment was brought in. The new drillers went down to the rock face below the clay overburden. On October 8, 1860, L. Vaughan became the first person to strike a rock well in Canada, and for his efforts ended up with a well that produced 300 gallons an hour. . Before that date, all crude oil was produced by shallow dug wells. [20]

The year 1862 marked the pinnacle of Canadian oil frenzy, and launched a second speculative oil boom. In January, Hugh Nixon Shaw drilled a well that exceeded the

[16] Ball and Phelps, ibid.
[17] *Sarnia Observer*, 5 August 1858, p. 2.
[18] Lambton County Registry Office. Enniskillen, Instrument # 646, 19 September 1859, registered 21 September 1859.
[19] Gray, p. 28.
[20] *Belden's Illustrated Historical Atlas of the County of Lambton, Ontario, 1880.*

production of all previous wells. With a spring pole rig, Shaw brought in Canada's first oil gusher on January 16, 1862 from a depth of 62 metres. None of the locals had ever seen oil flow out of the ground at such astonishing rates, recorded at 2500 barrels per day. The well roared out of control for several days and dumped oil into Black Creek and thence the Sydenham River. It was eventually controlled with a packer of green calfskin and flax by Americans who had solved the same problem in Titusville, Pennsylvania.[21]

Following the Shaw well, there were over thirty big gushers, and the oil flowed freely into the flats of Black Creek. One source indicated that at the end of 1862, there were one thousand wells producing 12,000 barrels of oil per day, and ten refineries.

At the height of the boom Williams and his partners, William Anthony and John Fellows Bush, commissioned Samuel Peters, a public land surveyor from London, to design a plan of subdivision for their prime oil lands in Enniskillen - Lots 16 and 17 in the Second Concession, and Lots 16 and 18 in the First Concession. The plan that Peters drew up must have been quite unlike any other seen in the province until that time for the division of such a large area of rural property. He divided each of the 200-acre lots into ranges, and each range into small lots, all of which were less than an acre in size, and many of which (particularly those in the immediate neighbourhood of the Canadian Oil Company operations, or in lands along the Black Creek) were only a fraction of an acre. This plan was registered in the County registry office on 26 September 1861.[22] It was obviously designed to produce as many lots for oil exploration as possible, and thus maximize revenue from sales or leases.

The *Sarnia Observer* commented upon the leasing of oil land in February 1862, six weeks after Hugh Nixon Shaw had dug the first wild well in Canada: "The richest oil territory, as far as yet known, is in the hands of a few individuals, who lease portions of the land to those desirous of trying their luck as oil diggers. These leases are usually granted at a specific yearly rent, and, at the same time, on condition that a certain portion of the oil produced shall be delivered to the lessor, (say, one-third, or more or less, as the case may be) barrelled up and ready for export, the lessor merely, as his part of the arrangement, furnishing his own barrels. The lessee is moreover bound by the terms of the lease to work the well to its utmost capacity."[23]

There was ample real estate to sell or lease in Enniskillen in the early 1860s, and much of it was advertised as "Underflowing . . . with Oil!" Advantageous terms were offered "to persons who will sink Wells; or Actual Settlers can purchase them (if they do not contain Oil), on the easiest terms." Selling prices were as high as $100 per acre in the summer of 1861, and lease arrangements involved partial payment in oil.[24] Speculators made and lost fortunes during Enniskillen's boom and bust years.[25] One result of the subdivision of

[21] Cochrane
[22] Lambton County Registry Office, Enniskillen, Plan 4.
[23] *Sarnia Observer*, 21 February 1862, p. 2.
[24] *Sarnia Observer*, 2 August 1861, p. 4.
[25] See Burr's chapter "Oil Mania" for a detailed discussion of real estate speculation in this period.

property and the ease of leasing potential oil lands was that many adventurers were drawn to the area in search of riches. These fortune seekers crowded the muddy fields, wondered at the oil-blackened earth and trees, pitched tents, erected shanties, and, ultimately, founded the community of Oil Springs.

When surveyor and engineer Sandford Fleming visited the oil fields in the summer of 1862, he found over 30 flowing wells producing over 12,000 barrels per day. However, by the time he reported his findings to the Canadian Institute in February 1863, the number of flowing wells had been reduced to two; many of the rest were now being pumped by hand, and the output was calculated at 100 barrels per day.[26] Fleming estimated around one hundred refineries in the oil patch with a capacity of 1,500 barrels of crude per day, but by 1863 the yield of crude oil had fallen to around 400 barrels per day.[27]

The wells, which in 1862 had begun by flowing freely, and had then required pumping to raise oil, by the next year were producing only salt water, and finally failed altogether. By the end of 1863 the price of crude oil had fallen to 75 cents a barrel, and refined oil to 35 cents a gallon.[28] Hundreds of prospectors, drillers, refiners, coopers, mechanics, teamsters and their colleagues in related labouring groups in Oil Springs suddenly had very little work.

The economic optimism did not last long. Companies with expertise and capital drilled new wells in both Enniskillen and Dawn townships, but they found more productive wells in Petrolia rather than in Oil Springs. John Henry Fairbank had leased his first oil lot in the village in 1861 and built his first refinery there in 1862, but by 1865 his wells were producing so little oil that he began quietly selling some of his lands in Oil Springs and buying property in Petrolia.[29]

The oil boom began to shrink in 1863 when the wells, one by one, ceased to flow. At first, the immense flow from the wells had glutted the oil market and the price fell to less than $1/barrel. In January, Shaw's well failed and he was asphyxiated in one of his own wells while trying to retrieve a broken pipe. By October, the *Oil Springs Chronicle* suggested that the prospects in the oil business were not very bright. However, at the beginning of 1864, the decline of oil supply sent the price of oil up to $10/barrel.

Nevertheless, 1863 was the year when Oil Springs built a new school and two churches, and received telegraphic services for the first time. Enniskillen held its first fall fair in the village on October 13.[30] The price per barrel rose in 1864, and business experienced a welcome revival. It was in this resurgence of economic optimism that the village advocated for and achieved incorporation.

[26] Fleming, p. 246.
[27] Ibid, p. 248.
[28] O'Meara, p. 23.
[29] McGee, pp. 9, 17, 20.
[30] Elford (1969), p. 59.

Others were not so prescient. An American consortium, hoping to prosper in the next boom, built the International Hotel, which boasted 108 rooms, a large dining room, and a veranda fronting on Main Street. The hotel was planned to accommodate many people, but it was never occupied, not even swept or cleaned after the carpenters and plasterers had finished.

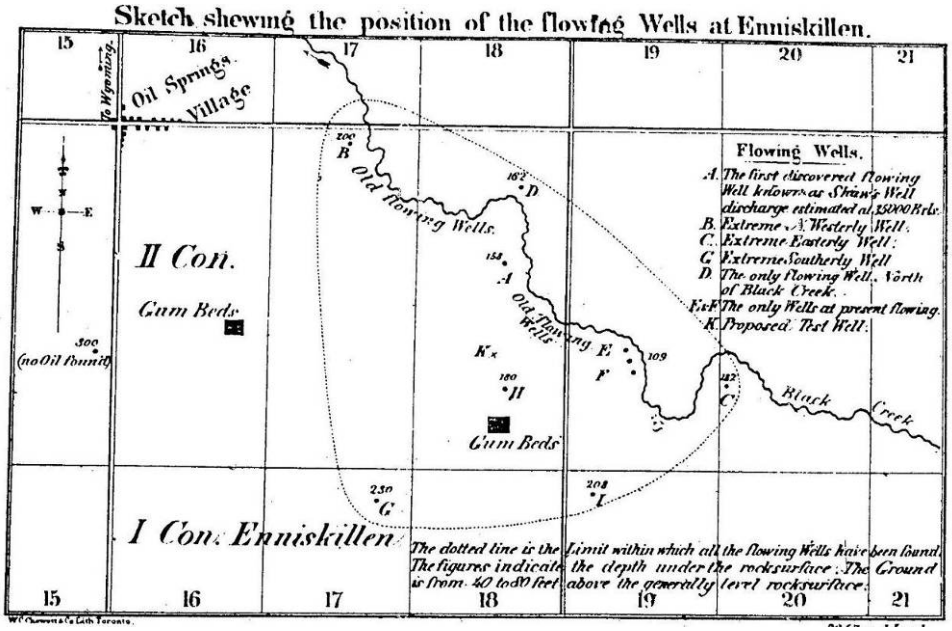
The Fenian Raids became a threat the day its construction was completed in 1866. The Hotel's owners, along with most American oil operators and the owners left hurriedly back to America fearing war breaking out between the United States and England. Later, the hotel was torn down in parts and taken variously to Oil City, Petrolia, Brigden, and here and there through the country to form parts of new homes.[31]

Still, by 1866 there were estimated 1,500 wells in operation. Much of the oil was refined at Oil Springs and there were no less than 27 refineries at different times. The boom ended abruptly in that year due to the development of the Petrolia oil field. Ultimately the Petrolia field was determined to be about 67 km^2 while the Oil Springs pool was only 5 km^2. The oil men at Petrolia were at an advantage, not only because of the larger size of the field, but also because they had constructed a railway immediately between Petrolia and the Great Western Railway at Wyoming. Therefore, they had considerably cheaper transportation costs, while the cost of transporting oil from Oil Springs to the railway was greater than the market value when it finally arrived.

After the Petrolia fields, the most important Ontario fields were found in nearby Kent County and were known as the Bothwell and Tilbury-Romney oil fields. The Bothwell pool was opened in 1864 but the shallow wells did not produce sufficient oil and were soon abandoned, although some production was subsequently revived. Exploration in the Tilbury-Romney area began at the same time as at Petrolia but the pool was not discovered until 1905. For a few years, it was a good producer, but then the supply was exhausted. Numerous smaller fields were scattered throughout southern Ontario.

[31] Johnston, p. 17.

Figure 3: Fleming's Map of the Oil Springs field, 1862



3.2.2 Village of Oil Springs

The news of the petroleum explorations and discoveries of Tripp and Williams spread across the country and beyond. When the first post office was established in the Black Creek area on 1 April 1859, nomenclature officials chose "Oil Springs" for its name, and appointed John Bartley as its first postmaster.[32] Bartley served for one year, and was then replaced by William Harrison. In the 1861 census, Bartley was enumerated as farming 100 acres on the east half of Lot 16, Concession Three. No doubt oil would soon figure in his future.

John Smith counted 1,069 persons in Enniskillen in the 1861 census. As the township comprised one enumeration district, it is not known how many of those persons were living in Oil Springs. In the decade between the 1851 and 1861 censuses the population of Enniskillen grew by 450 percent, and Smith attributed most of the increase to oil mania: "It commenced in April last, and has tended greatly to increase the inhabitants, and to put a fictitious value on land. Many parcels of land that a few years ago were thought hardly worth the taxes are now held at high prices."[33]

An examination of Enniskillen residents' occupations in 1861 indicates 133 farmers and 189 labourers. Some of the latter might well have been farm labourers, but no doubt many were engaged in the oil business. In that category there were as well, 35 miners, nine carpenters, five foremen (likely engaged in lumbering), three lumbermen, five joiners,

[32] Library and Archives Canada. Post Offices and Postmasters.

[33] Canada Census 1861, Enniskillen Township, p. 2. (Reel C-1040)

four oil speculators, two engine drivers, two blacksmiths, two contractors, one carrier of oil, one teamster, one tanner, and one rope maker.

The village core was laid out by a quartet of early businessmen, James Miller Williams, James Thompson, William E. Sanborn, and Hugh Nixon Shaw.[34] Main Street was the original road between the second and third concessions, with a grid of streets to the north and south of it, interspersed with the meanders of Black Creek. Some of the streets were named after Imperial figures – Victoria, Richmond, Wolseley – and some after local families. The feature that distinguished this village from any other in Upper Canada at the time was the omnipresence of oil wells.

Dr. William Marcet visited Black Creek, or Oil Springs, in September 1863, and gave this description of the settlement as he approached it on the road from Wyoming:

> *Suddenly a gap in the forest makes its appearance, the road turns to the left, skirting a pool of dark and stagnant water, and the adjacent village of Black Creek comes into sight.*
>
> *The place has the appearance of being a rough clearing in a forest, crossed by a high road, on both sides of which are scattered a number of small wooden houses, containing a population of about 1,500 souls. In the intervening space between the houses and the wood turf and stumps of trees may be seen; the Creek lies in a hollow, close to the village on its north side; its banks are now mostly barren of vegetable life, and here and there are felled trunks of trees, blackened as if by the action of fire, but on closer inspection they are found to be covered by a black gummy coating of tar. The soil about these banks is black with the same material, and on the stagnant water of the pool floats a layer of a black oily substance, emitting a smell of naphtha, and on a bright day exhibiting a remarkable display of colours. Several rock-oil refineries have been erected on the banks of the Creek, into which they discharge the impurities of the crude oil.*[35]

Possibly the same year, the English writer and newspaper correspondent, Samuel Phillips Day, included a visit to the oil lands on his travels through Lambton County. He also commented on the "unsavoury odour of oil, the strength of which almost took away my breath," and gave a somewhat fuller description of the young community:

> *The village contains some two hundred wooden fabrics, independently of refineries, which, together with the wells, lie in an easterly direction. Taverns and stores abound at either hand for the length of a mile. The highway is built of planks just broad enough to allow of two wagons passing without coming into unpleasant collision. The sidewalks are formed of two planks, each twelve inches broad and lying nearly two feet apart. As you approach the wells, however, the footway widens considerably. The "Exchange," like the "Anglo-Saxon" hotel at Wyoming, is a frame-built edifice, having been thrown up anyhow, without the least regard being paid to architectural harmony or domestic convenience. The dormitories were small and ill-furnished, not even possessing the very homely luxury of a looking glass. When I mention a bedstead and a basin-stand, together with a small mat at the bedside, I have completed the inventory. The village boasts of a newspaper entitled*

[34] McEvoy, p. 264.
[35] Marcet, p. 234.

the Oil Springs Chronicle, a little ill-printed sheet, which is regarded as a high authority in this remote quarter.[36]

The main street was planked for 1.5 miles with white oak. Buses ran the length of the town every five minutes during the day and on a reduced schedule during the night. The streets were lit with oil lamps. A regular stage line operated four times daily over the new plank road to Sarnia, 19 miles away. The Village had an official population of 3,046 and a rumoured population in excess of 4,000.

Day's comments on his accommodation at the *Oil Springs Exchange Hotel* would not have been appreciated by its proprietor, Alfred Fletcher, who described his hotel in Sutherland's 1864 Gazetteer with these satisfied words: "The above Hotel is entirely new, and the most commodious in the place, being very convenient, and best located for the accommodation of men on business, or the curious . . ."[37]

Sutherland's *Gazetteer* prints a more complete account of Oil Springs than either visitor, although it omits any reference to the pervasive odour of oil. Of the 274 men listed as residents, 105 were well owners, 22 were refiners, and 40 were engaged in trades and activities relating to oil; while 89 others were involved in professions and skills not related to that commodity.

Sutherland's *Directory* records a village dominated by the search for and refining of oil. But the directory also lists the many residents whose occupations supported daily life, the boot and shoemaker, carpenter, dry goods merchant, mill owner, butcher, watchmaker, one citizen who kept a boarding house keeper and issued Marriage licenses, and two Methodist ministers. The community also boasted Masonic and Orange lodges, and the Lambton Star Temple, a temperance organization.[38] Oil Springs existed because of a simple commodity, but a diverse population of shopkeepers, tradesmen and professionals sustained it.

By 1864 Oil Springs residents petitioned the County for village status in order to have more control over their local school and, in general, managing their own affairs. The Lambton County Council bylaw incorporating the village was signed on 16 December 1864. The village boundaries contained lots fifteen to nineteen inclusive in the second and third concessions of Enniskillen Township.[39]

Many oil men have brought their families with them to Black Creek. Since living in the immediate proximity to the wells was not a desirable location, families that could afford it chose land to the west of the Wyoming Road.[40]

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[36] Day, pp. 173-174.
[37] Sutherland, 1864, p. 108.
[38] Johnston, p. 18, 101.
[39] *Sarnia Observer*, 25 Nov 1864;Lambton County Council, By-Laws, #34, 16 Dec 1864. (UWO, ARCC, M34)
[40] *Canadian Native Oil; Its Story*, 1862 p.24

After the boom, the Village had almost no economic activity. At the end of the bust, population had fallen to below 300. In November 1864, the village was incorporated with the population of around 2,000 people. By 1871, the population had dropped to 551. Belden's *Historical Atlas of Lambton County* begins with the statement "Among the many instances of rapid growth and subsequent decay, no place in Canada that we are aware of stands out so prominently as Oil Springs Village". There was little evidence of the former oil industry. All of the equipment was either removed to Petrolia or destroyed. The remaining evidence is the hundreds of dry holes in the landscape.[41]

Conversely, Petrolia filled with drillers and land speculators so quickly the single hotel could not accommodate them all and most took the stage back to Wyoming every night. Hotel prices at Wyoming and Oil Springs were higher than at Sarnia. New hotels were under construction down both sides of Petrolia's main street and at Oil Springs the buildings erected during that boom were now sawn in half and towed down the Black Creek road to Petrolia.[42]

3.2.3 Oil Field Technology

Dug Wells. Prior to the development of mechanized drilling systems, all wells were hand dug. This method was suitable when the resource was close to the surface, and would seep into shallow wells. Large petroleum pools, however, were generally found in considerably deeper reservoirs. Thus, hand dug oil wells had a very short history in Canada.

At Oil Springs, cribbed wells were dug by hand to the bedrock at a depth of 46 feet (14.0 metres), and the oil which seeped out of the clay into the well had to be bucketed, pumped by hand, or pumped with a springpole. Bedrock was the limit for hand digging, and spring pole rigs were set up later specifically to drill through the rock.

Spring Pole Rig. The first improvement to hand excavation was the 18th century European development of the spring pole. A heavy drill bit, or chisel, was suspended by cable from a pole. The drill crew kicked the bit down the well and the spring pole jerked the tool back up. After the chisel had churned up sufficient debris to impede progress, the bit was pulled out and a container, called a 'bailer' was lowered to remove stone cuttings. The pounding procedure then resumed. If the rope broke during the process, the driller would improvise a tool to lower down the well to recover, or 'fish' for the lost tool. A typical European well was 7.5- 10 cm in diameter and seldom more than 76 m deep. The first deep well sunk by the percussion method was a water-well completed near Paris, France, in 1841 to a depth of 548 m.

American Cable Tool Drilling. About 1850, the cable tool method was developed in the United States as an improvement of the spring pole for application to water and salt extraction. A steam engine provided a regular reciprocating motion to the bit. The engine

[41] *Historical Atlas of the County of Lambton, 1880.*

[42] Whipp, p 21

was also used to hoist drilling and bailing tools. The tall, distinctive derrick became a feature of cable tool operations to hoist drill casings and tools.
The first step in drilling a well was known as 'spudding'. The cable tool was suspended from the top of the derrick rather than from the walking beam at the drill floor. This technique was necessary until the well was sufficiently deep - 22-30 m - that the walking beam could be used. Spudding was much harder on the derrick than ordinary drilling as the strain created by the drill action was concentrated at the top of the derrick rather than on the more robust drilling floor.

Figure 4: Oil field with distinctive three-pole derricks (Source: Oil Museum of Canada)

With the introduction of steam engines, the weight of drill bits could be considerably heavier than for spring pole systems. Cable tools were particularly suitable for drilling medium hard rocks. By the turn of the century cable tools, under favourable conditions, could complete wells down to about 900 m. The first drilled oil well in Canada was completed in 1859 by James Williams using a spring pole at Oil Springs to tap an oil reservoir at a depth of 50 m.

Canadian Pole Tool Drilling. During the mid-19th century, percussion drilling techniques evolved rapidly. The cable tool system developed in the United States became known as the 'standard rig'. During the 1860s, drillers at Oil Springs and Petrolia perfected their own solution that became known as the 'Canadian pole tool drilling system'. The Canadian method was especially suited for regions that experienced excessive caving in of the wall of the well. The wooden drilling pole could be rotated, something difficult to do with cable tools. Sometimes wooden drilling poles were replaced with iron rods. Canadian pole tool technology was brought to Russia, Galicia, and numerous other locations by Canadian 'foreign drillers' when oil fields were developed in these countries.

Under favourable circumstances, a pole tool well could be sunk in the 1860/70s at a rate of about two metres per day. The cost of sinking petroleum well to 185m was estimated at $7,000. By 1890, a hole could be drilled in four or five days at a cost of $160 per well due to improved equipment, methods and greater competition. In the Petrolia fields, a drilling gang consisted of six men, with three each working the day and night shifts.

After World War One, the rotary bit became the preferred method for drilling below 1,200 m. because cable drilling could rarely exceed more than 18 m a day. Under extremely favourable conditions, rotary drilling could penetrate up to 600 m in eight hours. As the industry became more competitive and deeper wells were required, rotary drilling became essential. Rotary drilling was developed in Texas in the early 1890s in an attempt to solve problems associated with soft rock that was difficult for cable tools to penetrate. The method grew in popularity after 1900.

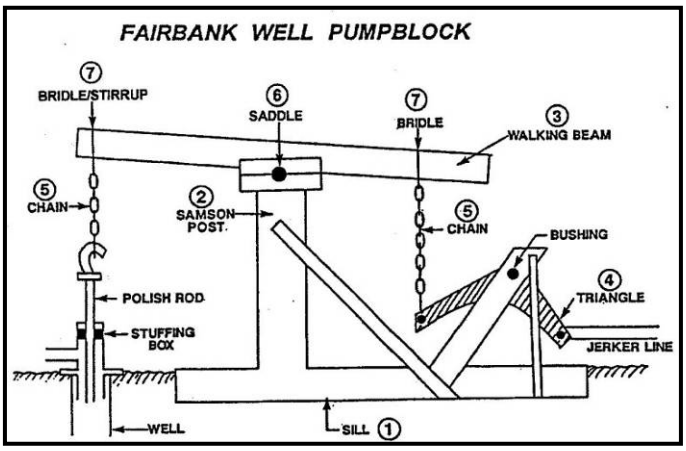
Pumping. During the initial operation of most wells, the natural pressure in a reservoir drives oil to the surface. In an older field, or one that had been poorly managed, the pressure drops to a point where pumping is necessary. The first wells were quite shallow, being only 20-50 ft deep, and pumped by hand. A significant change came in the early 1860s when production began with deeper drilled 'rock wells' and the pressure in the field was subsequently depleted. These wells were too deep to hand pump and so steam pumping had to be introduced.

Canadian Jerker Line System. The high cost of operating a steam engine at each well was financially challenging and a threat to the economic viability of the field. The solution was developed by the entrepreneur, J.H. Fairbank who arrived in Oil Springs in 1861. He devised the jerker-line system in 1863, which could pump multiple wells from a single power source. Fairbank never applied for a patent, thinking his invention didn't qualify for patent protection.

Throughout the 19th century, central, stationary steam plants provided the power to operate the system, typically supplying steam to each of two working engines. For a brief period around 1900, some of the power houses were converted to gasoline engines, which were cheaper and easier to operate. When Oil Springs was connected to the Ontario Hydro Electric power grid in 1917, oil producers quickly switched to electric motors to power their jerker line systems.

Individual electric pumped wells. With the availability of electric power, individually-pumped wells again became viable, although the jerker line system remained more economical to operate. Individually-pumped wells were viable when a well was far removed from an existing jerker line, or if topographic conditions made it difficult to construct or maintain a jerker line.

Figure 5: Pump jack used with the jerker line system (Source: Kemp)



Storage. Shaw dug underground tanks for additional storage of his crude oil. This provided a successful local solution to the problem he and other oil producers faced when access to both sufficient barrels and reliable transportation to the railway in Wyoming proved woefully inadequate.[43]

Notable features of the oil field were the wooden tanks for storage of oil. Small tanks adjacent to each well are called "day tanks." Oil pumped from the well was stored in these tanks until a horse-drawn tank wagon collected the oil on a daily or weekly schedule. Initially the oil was hauled to refineries in Oil Springs. Later, the oil was taken to larger storage or "receiver" tanks, and then pumped by pipeline to Petrolia.

Initially all tanks were built above ground. These large wooden tanks were prone to leakage and danger from fire. During the 1860s Petrolia oil companies started to use clay tanks. Heavy clay of the area was so impermeable that it made an oil-proof reservoir. The tank was constructed by excavating a circular hole about 30 feet in diameter and 50 feet deep and lining it with boards. Clay was packed between the boards and the wall making a firm puddle wall. Such tanks could hold 8,000 barrels of oil. By 1912, there were at least 50 of these reservoirs with a total capacity of 400,000 barrels. By World War One steel storage tanks with capacities up to 35,000 barrels were coming into use.

Refining. Refining was an important activity at Oil Springs for the first decade of the field's operation. With high transportation costs, producers could not economically ship low-value crude oil to refineries in London or Hamilton. Refining at the field permitted the shipping of high-value kerosene. When the oil industry expanded to Petrolia, it became economical to ship crude oil to the larger, more efficient refineries that had been established there by the mid-1860s.

[43] Morritt, pp. 52, 54, 61.

The chemistry of refining petroleum had been identified by the 1860s, and the technology to distill crude oil was soon well established. By later standards, the equipment used at Oil Springs was very simple and inefficient. Nevertheless, it was practical within the pioneer conditions that existed at the time. These stills were typically cast iron kettles, heated externally at the bottom. The vapour was lead off into a coil for condensation. This was a batch process, rather than continuous distillation method. The gradual heating of a batch of crude petroleum in a still caused the more volatile components to boil first and condense as naphtha. As the still became hotter, kerosene, another natural fraction of crude oil, vaporized and condensed. As this was originally the only desired product, the fires were then drawn and the residue discarded. The still was refilled with crude petroleum and the process recommenced. This was essentially the same technique used in the production of distilled alcohol.[44].

James Miller Williams is thought to have established the first commercial-scale petroleum refinery in Canada**.** The following is a description of the equipment used by in his 1859 refinery on Lot 16, Concession 2 Enniskillen:[45]

> *2 iron tanks 900 gallons each; 1 round iron tank, 200 gallons; 1 compressor tank, 2,500 gallons; 1 still & [. . .] complete 550 gallons; quantity of brick; quantity hogshead, barrels, &c. 1200 gallons; blacksmith forge and tools; quantity of lead pipes, picks and shovels, block chains, ropes and well tackle; quantity of wood; 2 dwelling houses; factory 30X40; 1 ditto 40X60; 1 house; quantity of oats in barn; 1 span horses; wagon; [. . .]; cooking stove, 1 box stove & furniture."*

Removing offensive odours was one of the early additional refining processes developed. Kerosene produced in Lambton County was especially noted for its offensive smell due to high sulphur content. Chemist Herman Frasch developed a commercial technique for removing the sulphur[46]. During the process of deodorizing oil – which employed sulphuric acid and water - an abundance of sulphurous fumes is created. When Dr. William Marcet visited the Black Creek oil fields in September 1863 he speculated about the effects of this on the labourers: "I feel assured that this part of the business of refining rock-oil must be very unhealthy."[47]

3.2.5 Timber Industry

Prior to European settlement, most of Lambton County was covered by mixed hardwood forests of oak, hickory and walnut in association with beech, sugar maple and basswood. Those tracts with poorly drained land produced elm and black ash trees, so the thick woods around the village of Oil Springs yielded a supply of timber ideal for construction. In 1869, Andrew Elliott was operating a steam sawmill. In the late 1870s, Alexander Ferguson ran another mill until about 1915. Yet another sawmill in the area was run by G.B. Osborn.

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[44] Kemp, p. 132.

[45] Lambton County Registry Office. Enniskillen, Instrument # 646, 19 September 1859, registered 21 September 1859.

[46] Andreae, p. 24.

[47] Marcet, p. 235.

Andrew Elliott, an Oil Springs land owner, oil producer and lumber merchant, supplied the oak planks for the Black Creek Plank Road Co. He established a steam sawmill, affectionately called "Mount Elliot," north of the Black Creek within the village for the purpose.[48]

Draining of the expansive Enniskillen Swamp produced an intense but short-lived timber industry. Several lumbering companies bought land to cut over, and then sell to settlers. Much of the swamp was covered with elm and black ash forest. By the 1880s, lumber cutting peaked in the swamp and by 1900 the area had been effectively logged out. In order to facilitate transport in this area, a narrow gauge railway was completed in 1884 running from approximately Dresden to near Edy's Mills. Once logging was complete in 1898 the railway, known as the Dawn Tramway, was removed.

Although expensive, barrels proved to be a secure means of moving oil. Given the poor state of land transportation, barrels offered a flexible means of moving from one shipment mode to the other and minimized the risk of loss that could happen with larger tanks. The need for barrels created a major industry in Oil Springs; there was a frequent shortage of barrels and producers were often scrounging for them.[49]

The 1871 census gives an indication of the importance of the barrel and staves industries to Oil Springs: George Jackson, a teamster, reported the production of 30,000 staves while Lewis Pulfer, a cooper, had produced 3,000 staves. Peter Bauer operated a barrel factory that used 100,000 staves to manufacture 6,000 barrels valued at $12,000. John McLister reported the production of 8,000 staves. James Lockhart, who also owned a refinery, operated another cooperage. He employed seven men in the refinery and four in the cooperage, although his cooperage had been in operation for only six months. Standish O'Grady employed 12 men and one boy in his cooperage and had manufactured 7,200 oil barrels valued at $12,000. In 1871, Lambton County was the highest stave-producing district in Ontario.[50]

There were numerous indirect benefits of the timber and oil industries: Richard Gorsline operated a hotel in which nine people lived in 1871—evidence both of Oil Springs' mobile workforce and the accommodation that made their local labour possible. The ages of these three women and six men ranged between 20 and 28 years old. The six men were all coopers, and one of the women was listed as a servant.[51]

[48] McEvoy directory 1866, p. 266; *Sarnia Observer*, 14 March 1862; Burr, p. 39, 42; *The Canadian Native Oil*, p. 22-23

[49] Morritt, pp. 52, 54, 61.

[50] Canada Census 1871, Ontario District #4, Oil Springs, (reel C-9895); Sutherland, Table XXV Table XXVII.

[51] McEvoy, p. 272.

Figure 6: Cooperage in Oil Springs (Source: Oil Museum of Canada)

3.2.6 Transportation

Water. Early transport of crude oil was a problem due to the vast quantity of product that had to be shipped. When wells at Oil Springs and Petrolia first opened, oil was conveyed to refineries in barrels on stoneboats, 2 barrels at a time. In one desperate attempt to move oil during the 1860s, barrels were simply thrown into the local creeks and floated down the Sydenham River to Lake St. Clair for export. Later, specially-built tank wagons were used, while still later, a system of collecting pipelines was laid from the wells to the refinery.

Black Creek, like most tributary streams in southwestern Ontario, had seasonal water levels that were unreliable both for transport and for furnishing waterpower for mills and other machinery. Although the Ojibwe probably paddled canoes on Black Creek long before its banks became sites for oil exploration and refining, this stream rarely had the depth to support boats transporting barrels heavy with oil. Nevertheless, it is claimed that some producers did float shipments of barrels down Black Creek to Wallaceburg.[52]

Roads. The major challenge confronting the economic value of the Oil Springs oil field was transportation. The closest railway station was at Wyoming, after the line between London and Sarnia had been opened in 1856. The connecting road between Wyoming and Oil Springs was laid out as a straight line through forests and swamp. Stone boats with a capacity of two barrels each were hauled by a team. At the peak, about 500 teams a

[52] Whipp, p. 6; Morritt, p. 67.

day were leaving Oil Springs. The road was popularly known as "the canal".[53] One traveler to Oil Springs in 1861 described the practice in these words: "I had noticed for some miles a strange looking ditch, about eighteen inches deep and five feet wide, the clay at the bottom of which seemed to have been smoothed in some way."[54] When the oxen reached the drier sections of the road, the load of barrels would be transferred to wagons and hauled to the railway station in Wyoming. This double transport added considerably to the shipping cost.

Freights rates between Wyoming station and Oil Springs (12 miles) was $1 per 100 pounds. Freighting out the oil cost $3.50 per barrel. The oil was worth $9-10 per barrel delivered at Wyoming station.[55]

The road was not planked until 1862, when the private Black Creek Plank Road Company (or Wyoming and Enniskillen Plank and Gravel Road Company) undertook to provide a more resilient surface than that of the local clay.[56] The planked road was an enormous improvement on its predecessor. In the words of a Yankee companion of the traveller quoted above, who eagerly anticipated completion, "soon the plank road will make it like a railroad driving; and it won't cost no dollar a hundred to get stuff in as it did last spring, and then you couldn't get nothing in."[57]

When "the canal" had been used for shipping, only 40,000 barrels a year reached the railhead. Completion of the Wyoming to Black Creek Plank Road in 1863 increased shipments from Wyoming to 90,000 barrels.

Soon after the Oil Springs to Wyoming road was planked, a second private road, the Sarnia to Florence Plank Road was under construction, to convey both oil and passengers directly from Oil Springs to Sarnia. The *Sarnia Observer* threw its support behind the proposed venture, urging Lambton County Council to invest in the project: ". . .a direct road from the Oil regions to Sarnia would prove of great advantage to all who are engaged in the Oil trade either directly or indirectly . . . and . . . the traffic will have a material influence on the prosperity of the county as a whole."[58]

Whereas the earlier road had been organized by Oil Springs' merchants, the Sarnia and Florence Plank Road was the project of a group of Sarnia businessmen led by Malcolm Cameron and George Durand.[59] The Town of Sarnia purchased half the stock in the Company, and private businessmen subscribed the rest.

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[53] *Historical Atlas of the County of Lambton, 1880.*

[54] *Sarnia Observer*, 30 August 1861, p. 1. Stone boats were low sleds designed to carry stones or other heavy loads.

[55] *Historical Atlas of the County of Lambton, 1880.*.

[56] McEvoy Directory 1866, p. 266; *Sarnia Observer*, 14 March 1862; Burr, p. 39, 42; *Canadian Native Oil*, p. 22-23

[57] *Sarnia Observer*, 30 August 1861, p. 1.

[58] *Sarnia Observer*, 21 February 1862.

[59] Whipp, p. 10. Florence is in the southwest corner of Euphemia Township, across the county line from Zone Township.

The route cut diagonally across Sarnia, Moore, and Enniskillen townships, and was surfaced with planks of local white oak. It was a toll road, with three toll houses along its route. Four hotels were opened for the convenience of travellers and teamsters, with accommodation for up to 20 teams of horses. Stages conveyed visitors and oilmen between Sarnia and Oil Springs four times a day.

The volume of traffic carried on the Plank Road was heavier than the company's maintenance resources (or perhaps the latter could not compete with profits paid to stockholders.) Within a few years, much of the road was impassable. Sarnia gravelled around eight miles at its end in the late 1870s, but the section of the road over the Bear and Black Creeks was eventually abandoned because of the cost of bridge maintenance. The Sarnia and Florence Plank Road ceased being a toll road in 1926 when it was assumed by the County of Lambton, which gradually paved what was left of it.[60] An examination of contemporary local maps shows that the route of the Plank Road has survived only in Sarnia: the rest of the original right-of-way reverted to those farmers whose land it had crossed. The Road never did extend beyond Oil Springs toward Florence.

Railways. The Great Western Railway was the first company to disturb the wilderness of Lambton County, when track was completed from London to Sarnia in 1858. The company's terminal in Sarnia was on the waterfront at the foot of Cromwell Street. The railway was a branch from the company's main line between Windsor, Toronto and Niagara Falls.

From time to time oilmen promoted plans to build a rail line from the Great Western at Wyoming to Oil Springs, without significant success.

The idea of a rail line was raised again as the Petrolia oil field grew in production. As with Oil Springs, the Petrolia producers initially relied on horse and wagons using a plank road to Wyoming. The Great Western Railway assumed that the oil boom would soon collapse, and refused to construct spur to the oil field. Therefore Petrolia businessmen financed construction of the line themselves. Soon after completion in 1866, the railway was sold to the Great Western. So profitable was the oil traffic that the line paid for itself in eight months. The rail line dramatically shortened the length of road haulage from Oil Springs to a railhead.

3.3 OIL SPRINGS 1865 - 1914[61]

3.3.1 Social/Economic Development of Oil Springs

The population of Oil Springs dwindled rapidly as men left to work elsewhere, falling from 3,046 at incorporation to 553 in 1869.[62] Businesses closed their doors. The *Oil Springs*

[60] McBryan, pp. 2-3.

[61] Since this report was written, Meaghan Nelligan has prepared a report, *The Oil Springs Social History Project* for the Oil Museum of Canada (Summer, 2009). This provides a much more detailed social history of the community and should be read in conjunction with this report. A copy of Ms Nelligan's *Social History* is available at the Oil Museum.

[62] Belden, p. 12; Oil Springs Assessment Roll of 1869.

Chronicle suspended publication in July 1867 for want of subscribers. In September of that year the local school board resolved to close their school for want of funds. Two fires destroyed first the Exchange Hotel, in September 1866, and then James Keating's 'choice family' grocery store and neighbouring buildings at Main and St. Clair Streets in July 1867. In September, the *Sarnia Observer* printed the following notice: "Owing to the depopulation of Oil Springs, and the removal of the greater portion of its businessmen to Petrolia, Judge Robinson has determined upon holding the sittings of the 8th Division Court at the latter place, instead of Oil Springs."[63]

The local Wesleyan Methodist church could not make its mortgage payments, and in February 1869 its property was auctioned off to Father Kilroy, and became Oil Springs' first Roman Catholic Church, the Sainte Anne's Catholic Church on Roady Park Street. Part of the building still survives. When services ended in 1974 the church was closed and subsequently sold as a private residence.[64]

Figure 7: Methodist Church in background of Oil Field (Source: Oil Museum of Canada).

The 1871 census was the first since Oil Springs' incorporation, and provides a useful baseline of economic and sociological information against which to see the village's history over the next few decades. The enumerator counted 100 families, and a total population of 551 people, of whom 356 were children. There were 106 houses occupied and 85 houses uninhabited in - a telling snapshot of the depressed economy of the village.[65]

Perhaps the most unusual entry in the 1871 census was that of the 59-year-old widower, Robert McBride, whose occupation was given as "Poet, Writing Poems and Songs on all

[63] *Sarnia Observer*, 6 September 1867, p. 2.
[64] Elford (1982), pp.111-112; *Oil Springs Businesses*. Oil Museum
[65] Canada Census (1871), Vol. 1, Table I, p. 2-3.

the evil & good transpiring in Canada." [66] He had been one of a group of Oil Springs' businessmen who raised funds to sink a well to 1,200 feet on the theory that a new, large oil reservoir might be found beyond the depth of previous drilling in the field.[67] The enterprise failed for lack of sufficient capital, but not before McBride had set his hopes to verse. [68]

Then let us all fresh courage take,
And drill our wells still deeper;
Some lucky one may strike a lake
Of oil, that's now a sleeper;
For sure as Etna is with flame
And liquid streams run o'er,
So sure will Oil Springs rise to fame,
For oil in boundless store.

Oil Springs dozed through the 1870s in an economic slump. Belden described the village in his historical atlas as having "a most dilapidated and forlorn appearance: houses in all stages of ruin and decay, and general inactivity." Its inhabitants, though, had not given up hope that their community would again know prosperity:

> *"To the very sanguine there is a great future in store for Oil Springs; the anticipated causes being the increased consumption of oil throughout the country, or the 'blowing out' of the Petrolea wells, or both in whole or in part combined."*[69]

The assessment roll for 1878 recorded Oil Springs' slump with sobering figures. The population had fallen to 536 residents, and the total of real, personal, and taxable income to $71,492. The value of land in the hands of non-residents (which had been $42,700 in 1869) had fallen to $6,780, a figure indicative of the depreciation of oil lands in the village. The number of workers employed in the oil business had also fallen. There were still a few drillers, refiners, coopers and hoop-makers at work, but most of these occupations claimed only one practitioner in 1878. An education report to the Lambton County Council that year reported that Oil Springs' school population (ages 5 – 16 years old) was 134 children, and the number of all ages enrolled in school was 175 children. Daily attendance at the two village schools, however, was only 75 children. There were two teachers, one male and one female.[70]

3.3.2 The Second Boom

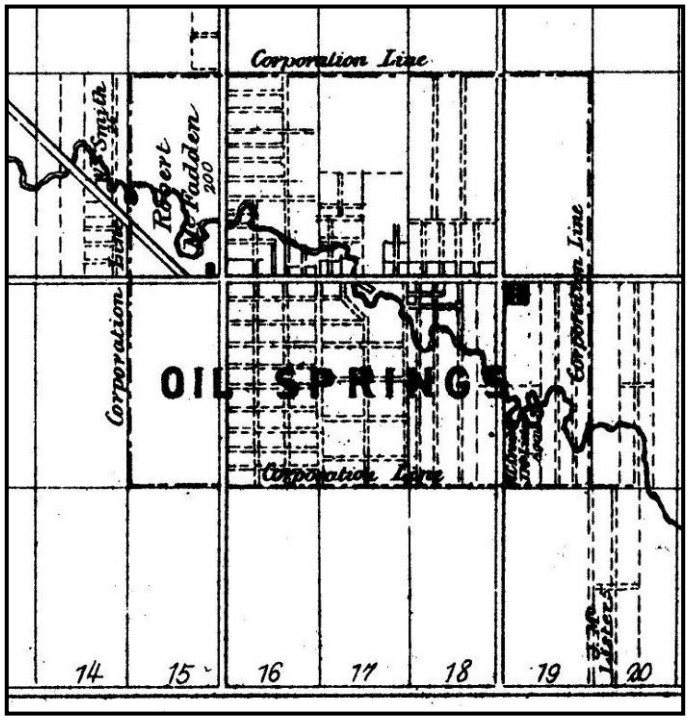
Perhaps those who had remained in Oil Springs dreamt of achieving renewed prosperity by the possibility of a resounding failure in Petrolia, the oil community that had replaced their own in growth, petroleum production and technological innovation. In practice, it was a development in Petrolia that brought new hope to the village. The price of oil rose in 1881, prompting oilmen in Petrolia to drill deeper wells in search of more black gold. When new oil was struck there at 450 feet, the Excelsior Oil Company, under the

[66] Canada Census 1871, Ontario District #4, Oil Springs, p. 21.
[67] *Sarnia Observer*, 15 July 1870, p. 2.
[68] Mc Bride, from "Answer to H.J. Nelson . . .", pp. 138-140.
[69] Belden, p. 12.
[70] Ibid, pp. 6-7

leadership of W.S. Duggan, drilled into the Oil Springs field and found oil at a deeper level than the gushers of the 1860s had yielded. Wells, which had been dormant, were reopened. Between 1883 and 1886, wells in Oil Springs produced 500,000 barrels of oil. The population of Oil Springs in the census of 1881 was 552 people, which included 99 families.[71]

The return of modest prosperity to Oil Springs meant a steady growth in population over the next couple of decades, a rise in local land values, and an increase in revenue from municipal assessment. In 1883, the population grew to 624, and the village's total real, personal, and taxable income rose from a low in 1881 of $68,452, to $112,810. By 1885 the comparative numbers were 673 residents, and a taxable income base of $172,700. That year the occupations of residents listed in the Assessment Roll reflected the resurgence of the oil business. Oil Springs boasted 54 oil operators, 22 labourers, 16 teamsters, 12 engineers, 11 drillers, four machinists, three blacksmiths, two boilermakers, two refiners, a pump puller, a rig builder, and one hoop maker. Many of the new deep wells were successful. In the year 1887-1888 alone, 244 wells were sunk, bringing Oil Springs' total of operating wells to 964.[72]

Figure 8: Oil Springs in 1880



In the 1891 census, Oil Springs was a sub-district of Lambton East, which also included Petrolia. Census tables reporting details about industrial establishments did so for the

[71] McPhee, p. 34; Elford, p. 112; Bell, p. 111-2; Ross, chapter 5; Canada Census 1881, Vol, 1, Table I, pp. 88-89.
[72] Elford (1982), p. 60.

whole district rather than for sub-districts. The picture that emerges from a study of these tables reflects the entire oil lands of Lambton East, rather than the Village of Oil Springs and the town of Petrolia separately. In this census district there were 12 oil refineries, employing 216 men over 16 years of age, earning yearly wages of $112,067. These refineries reported fixed capital of $48,125 in land, $292,383 in buildings, and $488,340 in machinery and tools; and working capital of $753,400. The total value of raw material used was $1,087,690 and of finished product was $1,538,101.[73] Similar statistics were collected for Lambton East's ten stave mills, four iron and brass fillings foundries, six planning and moulding mills, ten cooperages, and twelve tinsmithing works.

A tally of occupations from the assessment roll showed how extensively the oil economy had returned to Oil Springs since the boom of the early 1880s. The village boasted 69 oil operators, 48 engineers, 34 drillers, 31 labourers (who could have been engaged in a variety of work), 25 merchants, 23 farmers, 21 carpenters, nine blacksmiths, four machinists, three boiler makers, three pump pullers, one torpedo man, one rig builder, and one stave joiner. The latter occupations are examples of the diversification of labour in the developing oil industry.

When the oil industry began again, new business came into town. The VanTuyl and Fairbank hardware store was constructed in 1880. They ran the operation until 1884 when it was taken over by other operators. The building still stands in 2010 The Anderson and Murray Machine Shop opened at 4605 Victoria Street in 1880. Anderson and Murray were founders of the Oil Wells Supply Company. The shop has continued in various machining activities until the present day. In 1904, the Bank of Toronto was opened. It later became part of the Toronto Dominion Bank. In 1946 a new bank building was completed. After the bank closed its Oil Springs operation in November 1996, the building was acquired by the Village and used as a Council Chamber.

Oil Springs, as documented in the census and assessment rolls for 1891, was a community dominated by an industry becoming increasingly mechanized and complex. In 1886, Robert Bell had estimated that the Enniskillen oil fields employed upwards of 2,000 men and boys working approximately 2,600 wells, 500 of which were around Oil Springs. He calculated that the whole district used an average of 75 engines for pumping oil, 30 for drilling oil, and another 50 in refineries, lumber mills, and other works. Skilled men drilling wells or employed in refineries earned $1.50 to $2.00 per day, and labourers $1.25 to $1.50. Bell complimented the local workforce: "All operations are carried on by native Canadians, who have, by their own ingenuity, developed each branch of the business to its present perfection, by carefully studying the necessities of the case. This has afforded an excellent mechanical education to a large number of intelligent men, whose services are now sought for in every oil-producing country in the world."[74]

[73] Ibid, Vol. 3, p. 231.
[74] Bell, p. 112-113.

Figure 9: Bank of Toronto, Oil Springs (Source: Oil Museum of Canada)

The skilled workforce in Oil Springs supported large families of dependents, and was in turn supported by diverse retail, civic, and community services. In 1851 in the whole township there were no schools or places of worship. But by 1862, both the Episcopal and Wesleyan Methodists built churches. The number of local churches grew when the Baptists established a congregation (their adherents numbered 42 in the 1891 census). Local Presbyterians formed a charge with Oil City around 1882, and built their own church in Oil Springs in 1889. They had numbered 282 in the 1891 census.[75]

A frame school was erected in 1863 to replace the first log schoolhouse. That schoolhouse was used as an all-purpose meeting place from Black Creek's early days – church, courthouse, and lodge hall.[76] A new school, replacing the frame structure, was built in 1886, but soon burnt down. The Central School at 2614 Frederick Street was completed in 1904 and was a continuation school that contained all grades from 1 to 12 and by 1908 the Village had established a Public Library. The High School was discontinued in 1945 and the students bussed to Petrolia. The building was sold and some of it was converted into apartments. In 1982, it was sold again and the interior of the building was gutted. The new owner converted it to three-floor apartments from the original two storey building. The apartments are still rented today. By 1890 a new lodge hall had been built, named the Odd Fellows Building, at 4601 Oil Springs Line. The Oil Springs lodge opened in January 1896. The building is still used today for apartments and commercial activity.[77]

[75] Canada Census 1851, Vol. 1, pp. 14-5; Vol. 2, pp. 25-7, 412-3; Canada Census 1891, Vol. 1, Table IV; Union 1900, p. 58.
[76] Johnston, p. 18.
[77] *Oil Springs Businesses*. Oil Museum

Figure 10: The Central School, Oil Springs (Source: Oil Museum of Canada).

The *Oil Springs Chronicle,* which had stopped publication during the bust of the mid-1860s, resumed as a weekly in 1893. Boasting that it provided the "best advertising medium in Lambton", its subscription was $1.00 per year. The *Oil Springs Advance* replaced the *Chronicle* in 1909, and was published until 1917.[78]

Although the 8th Division Court (which had left Oil Springs in 1867) remained in Petrolia, Oil Springs did have two High Court Commissioners, a lock-up house and keeper, a coroner, and four constables.

Union's directory for 1911 published advertisements for Oil Springs' merchants promising enhanced services worthy of a community which believed it had left the frontier far behind. The Oil Springs branch of the Bank of Toronto offered "banking by mail." John McClure, proprietor of the McClure House advertised rates that were 50% higher than those of the Sherman House, eleven years before. He also offered "excellent sample rooms." A. W. Dewar, chemist and druggist, also dealt in schoolbooks, stationery, and wall paper. Angus McRae's livery, feed and sale stables promised "special attention to commercial travellers." F.C. Pearce declared himself an "Honour graduate and prizeman, O.V.C. [Ontario Veterinarian College], Member of Ontario Medical Association. All domestic animals treated on latest scientific principles. Calls promptly attended to day and night. Horses bought and sold. Phone 1."[79] The *Oil Springs Advance* admitted to being both "a bright, sparkling local paper" and "a good paying advertising medium."[80]

The hardware store established by Benjamin VanTuyl and John Henry Fairbank in Petrolia in 1865, opened branches in both Oil Springs and Bothwell around 1880.[81] The store's ad in the 1911 Union directory announced that it was "manufacturer's agents for hardware,

[78] Union (1897), p. 351; Elford (1982), p. 112.
[79] Union (1911), p. 406.
[80] Ibid, p. 409.
[81] McGee, pp. 163-164; Elford (1982), p. 112.

oil, gas and artesian well supplies," as well as being "wholesale and retail dealers in paints, oils, gas and iron pipe fittings. We make a specialty and always stock a full line of iron pipes, well castings, drilling cables and all supplies pertaining to oil, gas, salt and artesian well requirements in Petrolia, Oil Springs and Bothwell."[82]

3.3.3 Foreign Drillers

It has been calculated that between 1874 and 1939, over 500 men from Enniskillen worked in foreign oil fields.[83] Probably the first crew of such men went from Petrolia to the Dutch colony of Tjibodas in West Java, leaving in December 1873.[84] They went at a time when the Ontario oil industry was suffering one of its cyclical downturns leaving many skilled men were underemployed, but also when the expansion of international exploration for oil demanded the skills, technical expertise, and equipment that Enniskillen workers had invented and mastered.

J.H. Fairbank testified at the Royal Commission on the Mineral Resources of Ontario in 1890 on the foreign market for Enniskillen oilmen to their knowledge of the best drilling materials and techniques. Such men, he reported:

> *are in demand all over the world. Parties are going out every month. We have drillers now in Germany, Austria, India, Burma, Mexico and Australia. They are in demand in Pennsylvania. I do not know how many gangs are engaged in that industry; I think more than a dozen have gone away within a month. The cause of the demand is that they have superior tools and possess superior intelligence. Our manufacturers of tools have succeeded in getting the greatest possible strength within the smallest limit, and the training here makes the men perfect in their department. When they come in contact with any of the European drillers they distance them completely. The men are largely the sons of settlers and people who drifted into the oil business. The work is very hard, and requires a strong frame and a clear head. Our men become experts at it. By handling the pole they can tell what is going on down below 1,000 feet as well as if they were there. We drill much quicker than we used to. . . A fair driller gets $2.50 a day. When they go abroad they get good wages and expenses paid. They are paid by the day in going to Germany, Austria and India. The pay commences when they get there and continues till they reach home; their expenses are also paid."*[85]

While specialization of labour had undoubtedly increased in the Enniskillen oil fields, many men who had developed their skills there remained "jacks of all trades," able to handle carpentry, blacksmithing, and steam mechanics as well as well-drilling. In parts of the world where vegetation and geology differed greatly from Lambton County, these men adapted quickly to local conditions, showing the same inventiveness that was characteristic of their colleagues at home.[86] Their reputation for skills in oil extraction became known worldwide, and was a source of local pride. In 1889, the *Sarnia Observer* noted that William McMillan Jr. had been engaged "by Mr. Jno Sinclair, of Petrolea, to go

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[82] Union (1911), back cover.
[83] Elford (1982), p. 113.
[84] Burr, p. 158.
[85] *Report of the Royal Commission*, pp. 160-161.
[86] Whipp and Phelps, p. 70.

to India to help develop the oil fields of that country. The Oil Springs boys can handle the poles with any of them, and their services are greatly in demand. There is a small colony of drillers from Oil Springs in foreign countries and more are likely to follow."[87] In all likelihood this William McMillan was the man enumerated with his family in the 1891 Canada Census in Oil Springs as a 24-year old oil well borer. His father, also William, was listed in the census as an oil operator.[88]

In 1897 the Enniskillen oil fields received a visit from Sir Henri-Gustave Joly DeLotbiniere, federal Minister of Inland Revenue and thus closely involved in the regulation of the Canadian oil business. After touring the fields and seeing jerker lines at work and the shooting of a well with nitro-glycerine, the distinguished visitor was feted at a banquet in Sarnia. During the after-dinner speeches he recounted having been asked, when his tour of the oil fields was over, if he had seen "our school". This school, the Minister explained, was the field itself "where we educate and prepare our young men for the foreign fields when drilling is required to be done in the search for oil, gas or water. Where we give them a training that fits them for important work in Australia, India, Borneo, Sumatra, Germany, Austria, Mexico, Peru, Africa and several other countries." DeLotbiniere recognized that "we made the tools here for the development of these foreign countries."[89]

Another Oil Springs' man, Charles E. Wallen, took his family to Grozny in Russia in 1911 to manage the North Caucasian Oil Company. When the revolution broke out in 1917, the Grozny oil fields were taken over by local workers. Wallen remained as manager, but the situation became critical when Chechens drove the Bolshevists from Grozny and set fire to the oil wells. The Wallen family fled and in the midst of the Revolution, they had travelled the length of Russia. Five months later they arrived in Scotland and finally reached Oil Springs in time for Christmas celebrations.[90]

Men returning after a journey to oilfields across the world brought home with them not only accumulated wages and unusual souvenirs, but also stories of life and places far away from Enniskillen Township. Local pride developed around their marketable skills and ability to travel. When Arthur B. and Harvey F. Johnston published their father's *Recollections of oil drilling at Oil Springs, Ontario* in 1938, they included a list of 46 "Drillers who went from Oil Springs to foreign fields".[91] Here is their "incomplete" list:

[87] *Sarnia Observer*, 29 November 1889, p. 8.
[88] Granny's Genealogy Garden. Transcript of Canada Census, 1891, Oil Springs Village.
[89] "Sir Henri Joly De Lotbiniere: his visit to the oil region – reception and banquet," *Sarnia Observer*, 19 November 1897, p. 8. For deLotbiniere's career, see websites of *The Canadian Encyclopedia* and Parlinfo.
[90] Lauriston, pp. 194-195.
[91] Johnston, p. 19.

Figure 11: List of Oil Springs-area Drillers who Travelled Abroad

Horatio Beamer, Australia	James Johnson, Australia,
Mat. Porter, Australia	Geo. Harper, Australia
Geo. Williams, Australia	Geo. Craig, Austria
Sandy Wallen, Australia and Germany	Pat. Laner, Australia
Charles Williamson, Australia	Geo. Miller, Australia
John Sutherland, Australia and Peru	Henry McLister, Australia
Orm Vandewater, Australia	Fred England, Australia
Wm. McMillen, India	James Thompson
William Thompson, East Indies	James McLister, East Indies and Ecuador
W. McKewan, Borneo	J.M. Garrison, Borneo
Bloss Sutherland, Borneo	Henry Laner, Austria
Ed. Wallen, Austria and Russia	A.E. Sutherland, Germany
A. Cox, Germany	Chas. Wallen, Austria, Peru and Russia
John McLister, Trinidad, Ecuador, Argentina	Wm. Kay, Venezuela and Persia
Joe Wilkin, Peru	Joe Burns, Peru
George Burns, Germany	Harry Wallen, Peru
Jay Zimmer, Borneo	Fred Zimmer, Peru
John Gleason, New Zealand	John Sauvey, Sumatra
John Woodward, Africa	Mike Burns, Africa
James Donald, Jr., Persia	Ed. Booth, Peru
Richard Bolton	Geo. Sproule, California
Jack Bolton, California	Benfield Bros., California
Wm. Parker	Luke Sims, California

Johnston was not the only chronicler of the area who kept track of foreign drillers. Charles Whipp and Edward Phelps noted the following in their history of Petrolia: "Lew Gleeson has compiled a list of 73 from Oil Springs and periodically still adds names to it, and to a list of 236 Petrolia names. Lesser numbers came from Bothwell, Dunnville, Kingsville, Fletcher and other centres." By the same token, the Oil Museum of Canada in Oil Springs proudly maintains a "Roll of Foreign Drillers".[92]

3.3.4 Oil Industry

The first discoveries of the 1860s seemed to suggest that Ontario would be a major producer. Initially, and mistakenly, Lambton County was regarded as potentially larger than the important Pennsylvania fields. For a while there was even a thriving export market and from 1870 to 1873, 60 percent of Ontario's refined petroleum Ontario was sent to Britain and Europe. Ultimately the reserves in Lambton County, and elsewhere, were too small for Canada's needs. By 1900 Ontario was a relatively insignificant producer of crude oil and refineries relied on imports from the United States.

The Oil Springs and Petrolia pools are remarkable oil fields on account of the slow decline of production. From a maximum of about 7,000 wells in 1897-98, approximately 4,000 wells were still producing in 1914 in the Petrolia pool. As a rule, Ontario wells were operated with more thrift than their American counterparts. Whereas some American wells were abandoned when daily production fell to 10-20 barrels, Ontario wells were

[92] Whipp and Phelps, pp. 69-70; Morritt, p. 112.

seldom abandoned before production declined to a few gallons per day. By 1940, Oil Springs had yielded approximately eight million barrels of oil and it still continued to produce at slightly less than 30,000 barrels a year. Both Petrolia and Oil Springs were still producing in 2009.

Well spacing and speed of extraction were crucial factors in the successful operation of a petroleum field. In the early years, every owner of a property located in a producing area drilled as many wells as possible to prevent his property from being drained by his neighbour. This resulted in wells being drilled only a metre or so apart and pumped at their maximum rate. In the 19th century Petrolia field wells were drilled at two to twenty oil wells per hectare. Later the importance of well spacing was understood and the Leduc field in Alberta, for example, was drilled in the 1940s with one well per 16 ha.

During the initial development of Oil Springs Field, the drillers assumed that the oil supply was infinite and its recovery was only limited by the number of wells. In Oil Springs with a well density as 1.4 wells/acre (3.5 wells/hectare) the current regulated spacing for Devonian wells is one well for each 6.25 acres (2.52 hectares).[93] With little knowledge of good conservation practices, reservoirs were improperly drained and much oil was left in place. At Oil Springs and Petrolia, it was estimated that as much as 80 percent of the oil was left in the reservoir.

Because Oil Springs was developed at the birth of the oil industry, production records do not exist before 1917. So much oil flowed into the creeks during the initial drilling and there were so many producers and refiners with no regulation or inspection that the cumulative production is difficult to estimate. R.B. Harkness, after much detailed research, estimated the cumulative production at the end of 1916 at seven million barrels. At the end of 1996, the cumulative oil production was 9.81 million barrels. In 1996, there were about 450 operating wells in the field with an annual production of 35,515 barrels.[94]

In 1954, N.E. de Mers and his brother Victor introduced to Oil Springs the concept of water-flooding, and segments of the field were flooded. The result was an increase in annual production by a factor of 2.8, between 1954 and 1965. The water started to break through into the producing wells in 1970 and, after that event the water-floods were mostly suspended.[95]

The Oil Springs Field was revived when the oil prices started to rise in 1973. The increase in annual oil production correlated exactly with the crude oil price. In Oil Springs as with other stripper fields, the level of activity depends on the price of crude oil. Since 1992, the annual oil production from the field has stabilized at 34,600 barrels/year, the same level as it was in the year 1928. The average well produces about 76 barrels of oil per year or 0.21

[93] Cochrane p.28
[94] Cochrane p.74.
[95] Cochrane p.74.

barrels per day. The oil is separated from the water by gravity before being trucked to the Imperial Oil refinery at Sarnia. [96]

In the late 20th century, the water content of crude oil from Oil Springs Field cut varied from property to property but ranged from 20- 40 percent of the total fluid production. The water pumped with the crude oil was brackish and sulphurous. Historically after the oil was separated, the water was dumped into surface watercourses. On warm still days, the air around the village had a sulphurous fetid odour. In 1990, Provincial environmental regulations were established to prohibit the discharge of water on the surface. In order to dispose of the brine, operators drilled disposal wells into the Detroit River Group that was below the oil producing strata.[97]

Standard Oil. In 1880 there were approximately 100 independent refineries in Ontario and each had difficulty generating adequate profits in the face of such heavy competition. During the 1870s various "pools" were organized in attempts to control production and refining. In 1880 seven small refiners in London and Petrolia, Ontario, pooled their resources to form Imperial Oil Ltd. The owners hoped that their new company would have sufficient financial and physical resources to operate successfully in the face of Canadian and American competition.

But Imperial Oil could not overcome the formidable competition of John D. Rockefeller's efforts to control the American petroleum industry. In 1882 Rockefeller consolidated many pools into the Standard Oil Trust. By the end of the 1890s, the Trust controlled virtually all important producers and refiners in North America. In 1887 the number of refineries had fallen to 13: nine in Petrolia, two in London, one in Hamilton, and one in Sarnia. By 1894, the number had been reduced to five plants in Petrolia and one in London. By 1900, with Standard Oil in full control of Canadian production, there seems to have been only two refineries - at Sarnia and Petrolia. The Standard Oil Trust remained a powerful institution until it was disassembled by United States federal regulations after 1910.

By 1892 Imperial Oil was beginning to feel the destructive effects of the Standard Oil Trust. The company tried unsuccessfully to raise money in Canada and Great Britain to finance its growth. Instead it had to bow to the inevitable and, in 1898, was acquired by Standard Oil. All of Standard Oil's affiliates from Ontario to the Maritimes were combined into Imperial Oil. In 1899 Imperial moved its head office from Petrolia to Sarnia.

Imperial Oil's earliest refineries were in London and Petrolia, Ontario. One of the first steps of the new company was to concentrate its refinery activities in Petrolia and close the London refinery. In 1899, the company acquired a refinery at Sarnia, which had originally been built in 1871 and later acquired by a Standard Oil affiliate, the Bushnell Company in 1897. By 1917, the Imperial Oil refinery had grown from its original 46 ha to about 512 ha. Sarnia was selected as the centre of Imperial's refining operations because it was near the Petrolia fields and afforded water transport.

[96] Cochrane p.74.
[97] Cochrane p.28.

Natural Gas. The practice of deeper drilling continued at Oil Springs. In 1913, natural gas was discovered at 1,900 feet in a small incipient reef of Silurian age; Oil Springs was one of the first villages to have street lamps powered by natural gas.[98]

The Oil Springs Oil and Gas Company was organized in 1912 and supplied the village with natural gas until 1950. The company's office building at 4615 Oil Springs Line still exists in 2009 after being converted into apartment units.

Support Industries. Industries that supported the oil industry and the surrounding farming businesses continued to prosper into the 20th century. A cement tile plant was constructed on James Street, possibly in the first part of the 20th century. It ceased operation after being damaged in the 1931 elevator fire. A stockyard was also built on James Street. It too was damaged when the adjacent elevator burned in 1931. The building was finally torn down in the 1940s.[99]

A machine shop was located 4616 Oil Springs Line, but by 1894 it had been converted into a Baptist Church. In 1933, the building was leased to establish a creamery operation. The original building burned in 1946 and was replaced with a concrete and brick building the following year. The creamery operation stopped in 1965. In 1976, the building was converted into apartments and is used today.[100]

In 1901, Malcolm Dunlop from Arkona, came to Oil Springs and built a flourmill. When it was completed, he sold it to David Lambert who established a successful business producing both bread and pastry flour. In 1918, he sold the mill to Harry Penfound who operated it until it burnt down with the elevator in August, 1931. Penfound rebuilt the chopping mill business by the following year, which was still in operation in 1955. Penfound converted the mill to electric power which became too expensive to operate. The business went bankrupt. The building was sold and dismantled and transported to a farm and re-erected as a drive shed.[101]

[98] Cochrane p. 17.
[99] *Oil Spring Businesses*. Oil Museum of Canada.
[100] *Oil Spring Businesses*. Oil Museum of Canada.
[101] Oil Springs Women's Institute, "Tweedsmuir History"; *Oil Spring Businesses*. Oil Museum of Canada.

Figure 12: Anderson and Murray Machine Shop, Oil Springs (Source: Oil Museum of Canada).

Figure 13: Oil Springs Elevator (Source: Oil Museum of Canada).

3.3.5 Transportation

Rail. In 1872, the Canada Southern Railway built a straight line track across central Lambton from St. Thomas to Courtright, on the St. Clair River, with the intention of building a rail line to Chicago. A connecting line was never completed on the American side and the planned service never developed. However, its construction brought rail service closer to Oil Springs. In 1885 the Canada Southern, realizing the second Oil Springs boom might last, ran a line south on from its mainline at Oil City to Oil Springs and then in 1888 on to Edy's-Mills.

The Oil Springs Council wisely voted a $15,000 subsidy to the Canadian Southern for this branch line. This connection also benefited the travelling public, including students attending the high school in Petrolia and the Continuation School in Oil Springs. The

Petrolia-Oil Springs branch ran with a respectable four trains each way.[102] The Canada Southern Railway was eventually taken over by the Michigan Central.

Figure 14: Train approaching Oil Springs Station, 1914-1919
(Source: Oil Museum of Canada).

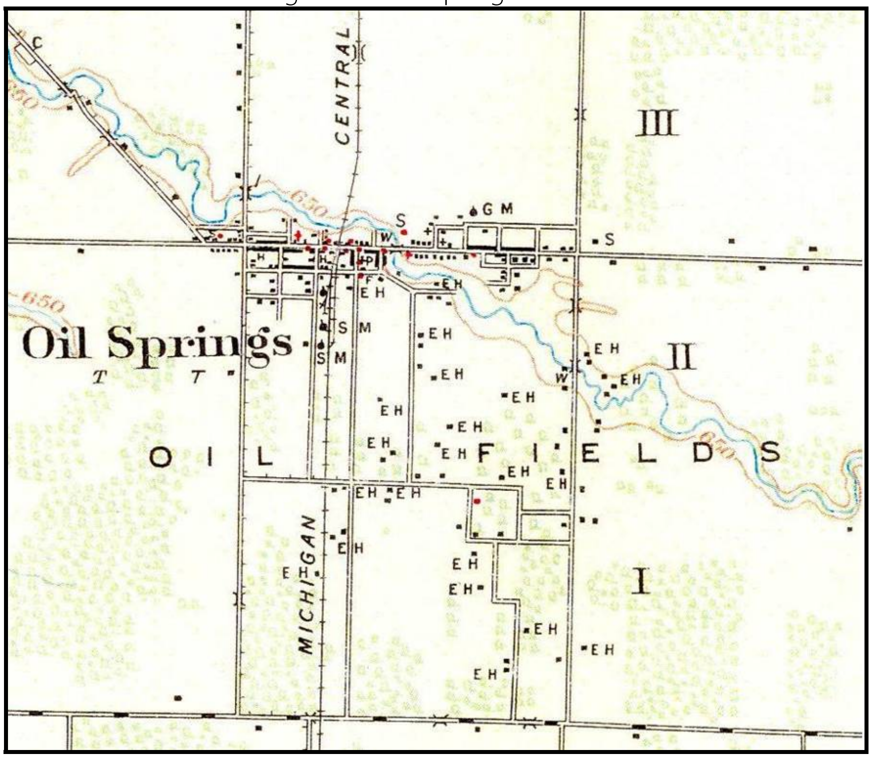
The railway's monopoly on transportation was broken slowly, but surely, by automobile and truck competition following World War One. At first poor roads and small vehicles limited road competition to local freight and passengers. The railway handled crude oil shipments from Oil Springs to the Imperial Oil refinery in Sarnia until 1960. After that time all oil was moved by truck.[103]

Paving of highways during the 1920s and the Great Depression created a substantial decline in railway traffic. Particularly vulnerable to highway traffic were passenger business and valuable freight such as express traffic. Passenger service to Oil Springs was discontinued in 1939, and freight in 1960.

The former New York Central train station was constructed in 1885 on Margaret Street when train service began to Oil Springs. The station remained in service until May 1, 1960. In July of that year, the building was moved to the Oil Museum and the land that the station occupied is now a parking lot.

[102] Elford (1982), pp. 112, 159, 160.
[103] "A.B. Johnston Collection," Oil Museum; from an undated article in the *Toronto Star*

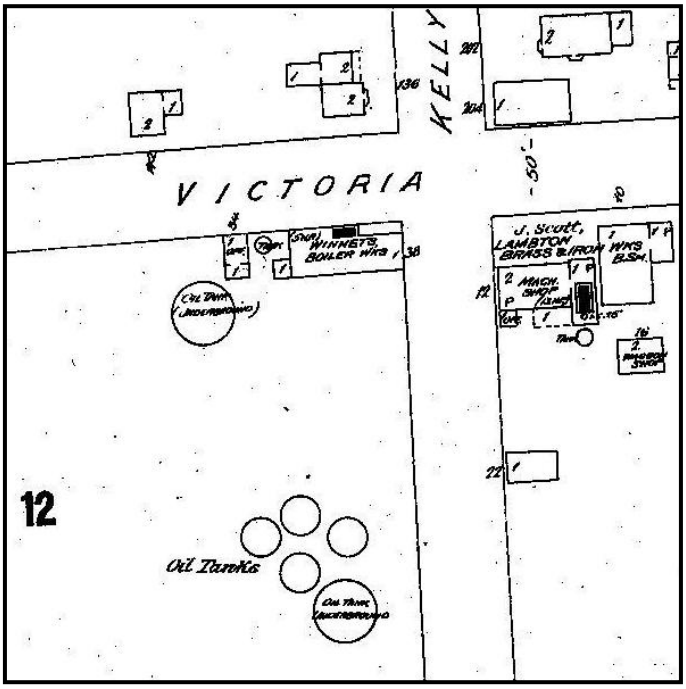
Figure 15: Oil Springs in 1912



Note: "EH" stands for engine house for the jerker-line system

Pipelines. With the expansion in oil production with the discovery of the new Oil Springs field, oil again had to be transported in great quantities. By the 1880s a large modern refinery industry had developed in Petrolia. Initially it was moved – as in the past - by teamsters hauling barrels. But almost immediately, the Petrolia Crude Oil and Tanking Company laid a 2-inch pipeline along the east side of the Wyoming Road for nine miles to Petrolia. The company excavated four 4,000 barrel underground receiving and storage tanks in Oil Springs, directly south of Victoria Street. The tanks were filled in about 90 years later when the village sewer system was constructed. A steam pump at Oil Springs sent the oil to Petrolia. The line was abandoned after the First World War due to lack of maintenance. (Whipp, T.A. Evoy: "Imperial Oil Limited: Old Springs Pump Station" Oil Museum of Canada)

Figure 16: Oil Springs Terminal of the
Petrolia Crude Oil and Tanking Company Pipeline.
(Source: Fire Insurance Plan)



3.4 OIL SPRINGS AFTER 1914

3.4.1 Community Development

In 1863 a telegraph line was completed to the village.[104] In the early 20th century the telephone arrived.

In February 1915, the village of Oil Springs sent a letter to Sir Adam Beck asking if the village could acquire hydroelectric power. Previously in 1913 a report had been prepared, presumably by hydro, of the power used at the oil wells and gristmill at that time. It also estimated the cost of converting from steam power to electricity. Hydro commission engineers visited Oil Springs in March of 1915. The engineers estimated the construction cost at $10,000 and a price of $38.54/horsepower/year. This was based on a load of 75 horsepower. This report was sent in December 1915. A year later the village ratepayers voted in favour of having a hydro connection. The bylaw was passed and on March 8, 1917 the power agreement was signed. Construction began in April 1917.[105]

[104] Elford, *History of Lambton*

[105] Oil Springs Women's Institute, "Tweedsmuir History")

Due to delays in delivery of the station transformer, the opening of the power system was delayed. On December 5, 1917 the system was put in operation but the fuses immediately blew. A subsequent report found that the transformer oil was faulty and the transformer had to be returned for repair. In February 1918, power was turned on to stay. Coincidently, this was just at the same time as the oil operators were practically shut down due to the lack of coal.[106]

Figure 17: Water Wagon, Oil Springs (Source: Oil Museum of Canada).

Water supply was always a problem because of contamination from either salt water or oil in the ground. Farmers had to rely on artificial ponds or have water trucked in. It was not until 1948 that wells were drilled north of the oil field and regular supply of fresh water was available for the village. Prior to that, water had to be brought in by horse drawn water wagons and later trucks.[107]

By comparison, Petrolia waterworks built a pipeline to Lake Huron at Brights Grove, 21 km distant, and thus provided with a reliable water supply.

Several churches built after the second oil boom remained in service. The Presbyterian Church gave weekly services until the 1960s, after which the building was sold and finally torn down in the 1980s. The Methodist Church was converted into the Oil Springs United Church in 1925. The building became too costly to maintain, and was torn down in 1978 and a new Church was constructed on site. The Baptist Church was moved to a new location in 1909 and then closed in 1929, when the congregation became too small to support it. In 1933 the building was leased and became operated as a creamery until 1946, when it burned.[108]

[106] Oil Springs Women's Institute, "Tweedsmuir History")
[107] Elford, *History of Lambton*
[108] *Oil Spring Businesses*. Oil Museum of Canada.

In 1915, the original frame structure that served as the Roman Catholic St. Ann's Church was replaced with a larger and more elaborate brick structure. The church remained in service until 1974 when it was sold for private residence. A new church was constructed in the latter part of the 21st century. The voice of Truth Tabernacle was built in 1977, and designs used a steeple from the original Presbyterian Church. An Anglican Church was constructed at an unknown date, on the corner of Roady Park and Main Street. It was moved to Sarnia in 1925.[109]

The Oil Springs Town Hall had also been built in the second oil boom of the 1880s. The wooden frame structure caught fire in 1931, and the present community hall was completed the following year. It contained council chambers, clerk's office, library, post office, and the original fire hall. A new separate fire hall was completed in 1983. In 2001 the council chamber and clerk's office moved to the former Toronto Dominion Bank building. The bank building had been erected in 1946 and operated until 1996.[110]

The "Little White Brick Post Office" was built in the 1890s. It was used as a post office until the 1932 when the new town hall was completed. After postal services moved, the building was used as a dental practice until 1962 when it was torn down.[111]

The vast majority of community buildings constructed during the second boom have not survived in Oil Springs. Many have been destroyed by the various fires that swept the town in the early 1900s, and others became too costly to restore, or had become outdated for their current use, and were demolished in the latter years of the 20th century.

3.4.2 Road Transportation

The development of practical motor vehicles, as epitomized by Ford's Model T, did more than anything to revive an interest in road transport in the early 20th century. Automobiles provided powerful, reliable, affordable, and personal transportation. Car registration in Ontario started to become significant by World War One. The war interrupted the trend and motor vehicles became an important transport role only by the early 1920s.

One surviving remnant of the early automobile era is the former W.H. Apps Shell garage at 4590 Oil Springs Line. The garage was constructed sometime prior to 1931 and the business operated until 1961. After being used by other businesses, it has stood vacant since 2002. The west side of this building was adjacent to the railway line and therefore the building does not have a rectangular footprint because of the irregular shape of the lot.[112]

[109] *Oil Spring Businesses*. Oil Museum of Canada.
[110] *Oil Spring Businesses*. Oil Museum of Canada.
[111] *Oil Spring Businesses*. Oil Museum of Canada.
[112] *Oil Spring Businesses*. Oil Museum of Canada.

New road-building techniques developed to keep pace with growing motor vehicle use. Grading and gravelling the surface, maintaining ditches and bridges, and snow removal also improved. Actually, in rural areas snow removal conflicted with farm use. Farmers wanted sufficient snow to provide good sleighing conditions and roads were frequently lined with trees to help snow accumulation, as well as providing shade in the summer. Snow removal was not common on major roads until the end of the 1920s.

Until paving began in 1930, the future Highway 21, known then as the Wyoming road, was an abomination. Although graveled between Petrolia and Wyoming, it had only a clay surface to the south. After every rain the surface became impossibly slippery and the worst holes were almost capable of swallowing a horse and wagon. It was maintained chiefly by neighbouring farmers whose horses and scoops were insufficient to the task.

In early 1927 the Department of Highways announced that the 40 miles of county roads from Reece's Corners at London Road to Morpeth on Highway 3 at Lake Erie would become a provincial highway. The choice of central Lambton for the new north-south King's Highway was well received by the area businessmen. A competing group, the St. Clair River Improvement Association and the Municipal Councils of Wallaceburg and Chatham argued that the new north-south route through Lambton should be along the river. This road later became Highway 40.[113]

But not until 1930 did the Department begin work. That year concrete pavement was laid from London Road south through Wyoming to Petrolia. Work proceeded slowly until 1932 when the Lambton County Council called a halt. As the depression neared bottom, the council, fearful of new expenses, asked the provincial government to cease work. The County was responsible for 20 percent of the highway work and was overcommitted to county projects. The Highway 21 project in Lambton was delayed another two years. On October 19, 1934, R.M. Smith, deputy Minister of Highways, officially opened the highway. Nearly a thousand had gathered for the occasion.[114]

3.5 CONCLUSION

The landscape of the oil field is utterly unlike any other in Ontario. Likely no other industrial operation in Canada has had such a continuity of use. The jerker lines snaking across the fields; the wooden pump-jacks nodding in the countryside look much the same as they did in the 1860s. The gentle squeaking of the jerker-lines and the occasional smell of crude oil further animate to the area. Crooked Road is crooked today because of the 1866 oil-land survey.

This landscape is more pastoral than it was 100, or even 40, years ago. Wood lots and forests have replaced open fields and scrub. The brine disposal salt flats have regenerating as grassed fields. Today the industrial activities of pumping oil fit into the natural landscape rather than imposing themselves on the land. In addition, pits, trenches

[113] Whipp
[114] Whipp

and other earthworks scattered across the fields and woods are subtle remnants of more than a century of intensive industrial development of the land.

This story of Oil Springs' oil industry has yet to be concluded. Oil is a finite natural resource and sometime in the future – perhaps 50-100 years from now depending on economics and how the field is operated – the pumping will stop.

The adjacent village of Oil Springs has lost much of the visual character that once defined it as an oil town. Fires, changing land uses, and the ravages of time have removed many structures. Yet features still exist, notably the Anderson and Murray machine shop and some commercial buildings. The abandoned railway right-of-way can be traced across the village. Some of the residences date from the time when oil provided a livelihood for many families.

The last 150 years have experienced remarkable continuity and change in the character of the oil industry at Oil springs. The wonder is that so much has survived and that it will continue to produce oil for many years to come.

Figure 18: Oil Springs in 1946, looking northwest
(Source: UWO Archives, London free Press Collection).

Note: The Plank Road angles off to the right at the far end of town. The railway bridge is visible at the edge of town on the right. The oil field with its powerhouses and jerker lines fills the lower-left of the photo.

4.0 STATEMENT OF HERITAGE VALUE

The Cultural Heritage Value or Interest of the Oil Springs heritage conservation district arises from the original discovery of oil in 1858 in Lambton County and the historical development of the first oilfield in North America in the current Village of Oil Springs and Township of Enniskillen and other areas which were not orignally suitable for agricultural production. The development of the local oil industry led to the building of a railroad to connect the County to southwestern Ontario and development of the Plank Road, made of hardwood to withstand high volumes of cart traffic hauling oil barrels, which connected the oilfield with the railway depot and later opened up Lambton County towards Sarnia.

The designation of all much of this area by the Federal government as a National Historic Site provides the area with wide recognition as an area of scientific importance. Designation of the area as a Heritage Conservation District under the Ontario Heritage Act will provide the opportunity to document and record the special technology which has been modified over time.

It is important that the technology be recorded through documentation, and the operators be allowed to modify the operations to suit their ongoing needs, all the while respecting the heritage values of this National Historic Site.

4.1 HERITAGE FEATURES AND ATTRIBUTES

The Heritage Conservation District contains a number of features and attributes that make the District important to conserve, including:

A Preserved Comprehensive Production System. The most important feature of the Heritage Conservation District is a complete collection of equipment and structures that reflect the entire process from drilling, extraction, power supply, storage, brine collection, shipping and the support activities that occur in barns, sheds and a limited number of residences. The completeness of the collection of equipment and structures is particularly important, as is the fact that it contains pieces from many different eras, as improvements and changes were integrated in the fields operations.

Ownership. The oil field is held by a small number of owners reflecting the nature of the industry which rewards initiative, ingenuity and hard work on the part of individuals. At one time when the fields were first being developed, many more people were involved speculating on a discovery that would result in their success. As the years progressed the number of owners has significantly decreased so that today there are a total of seven major owners that hold approximately 800 acres of active oil field. Many of the current owners speak of past generations of their families involved in the oil industry. This long involvement of several generations in the industry is a key feature of the area.

Equipment. The oil district is remarkable in that it contains a complete collection of all the key equipment and the support and accessory facilities that are needed for the

operation of the oil fields. In addition to the oil fields, there is the nearby Village of Oil Springs that supports the residents with their local post office, municipal office, coffee shop, community centre and other convenience / commercial buildings.

Transportation Network. Within a very few years of the oil discovery at Oil Springs, a transportation network emerged to link the oil field with the refineries. Initially it consisted of the Great Western Rail line connecting to Hamilton and London through Wyoming, with a later spur line into Petrolia. The Plank Road leads diagonally from Oil Springs towards Sarnia. There is also the surrounding grid of county and municipal roads that link the oil fields with the remainder of the County. The present Lambton County road system reflects the oil heritage of the area in numerous road names: Gum Bed Line, Gypsie Flats Road, Black Ash Road, Jerker Line, Plank Road, and Oil Heritage Road.

Lot Patterns. An additional attribute of the oil field is the lotting pattern evident in the fence rows and vegetation lines. This is a unique overlay of the oil lease lotting pattern from the late 19th century, contained within the 1830 grid from the initial survey of Lambton County. Oil leases were smaller divisions of land 10 acres in area, in contrast with the more typical 100 acre concession lot found elsewhere in the County.

Black Creek Corridor. Another feature of the area is the interaction of the cultural landscape with the natural landscape. This occurs in the Black Creek corridor. Black Creek is a gently flowing stream which has a wide valley which crosses the northeast corner of the oil fields. In the 19th century, a gusher filled the creek corridor with oil, reportedly to a depth of one metre over an area of 50 acres, and flowed out of the valley.

This corridor provides an important outlet for the roadside drainage ditches which are a necessary component of the roadscape. The heavy clay land was initially very poorly drained, making agricultural activities and early road construction very difficult without the drainage system that is now associated with the area.

4.2 HERITAGE VALUES

The collection of heritage features and attributes are physical resources that have heritage values to be conserved and presented to the public. Values that are evident within the Heritage Conservation District include:

Natural Resource Utilization. The oil fields tell the story of the frequent Canadian experience of an industry based on the use of natural resources. Like mining, forestry, fishing and farming, the oil industry has been built on the process of taking a natural resource and converting it into a product that is used in daily life. The oil field tells the story of a particular resource, the underground oil pool.

Inventiveness. The Oil Springs wells were able to produce oil that was sold as a commodity, making this the first commercial oil field in North America. Producers were able to create uses for the resource as high quality lubricants and lighting fuel, well before the advent of the automobile. Although there were other oil discoveries and technology advancements accomplished in subsequent years, the discovery of oil at Oil Springs in 1858 started the revolution that we see today.

Continuous Operation. The oil field within the Heritage Conservation District is distinctive in the fact that the field remains in continuous operation today while other early fields such as those in Pennsylvania are no longer in operation. This makes the oil fields in Lambton County extremely significant because of the longevity of the operation.

Family Continuity. Another value associated is the fact that many of the early families are still involved with the oil industry. Today there is limited ownership with six families involved in the fields. (One property is owned by a group of investors.)

Traditional Extraction Methods. Many historic methods of extraction remain in use at the present time. This is an unusual situation since most industries that remain in operation over a period of time tend to replace and phase out equipment considered obsolete. Traditional methods of pumping, and central supply of power to the wellheads, remain efficient, economical and affordably maintained by the current operators.

Historically, horses were used in the oil fields because of their ability to work in the clay fields. One report indicates that as late as the 1950's, 500 horses remained in use in the field. The evidence of the use of horses is now limited to a surviving stable barn, which is an important reminder of the technology and operation of the fields throughout its early days.

Use of New Technology. The oil field has also incorporated new technologies when available. For example, in the early 20th century the oilmen converted their powerhouses to take advantage of the availability of hydro electric power from Niagara Falls. This was one of the earliest industries to take advantage of this new source of power.

Cyclical Nature of Industry. The impact of cycles of boom and bust, typical of new areas dependent upon natural resource exploitation, is also evident within the Heritage Conservation District. The adoption of new technology, fluctuations in price and other market conditions created periods of prosperity, followed by periods of relatively quiet activity. One example of this boom and bust speculation is evident in the community of Oil City (part of the contributing heritage area). Oil City was founded in anticipation of nearby oil discovery. The speculation proved to be unfounded and the community has never grown to the size first envisioned.

As described within Chapter 2, the Village of Oil Springs had a quick boom and longer bust period as oil speculation created a village with a population of around 2000 in 1864 at its incorporation, but fell to approximately 300 in the 1870's. The village's population eventually stabilized to offer services to the local oilmen and surrounding farms.

Sounds and Smells of the Oil Fields. In many ways the oil fields are part of the rural landscape with typical rural sounds of wind whistling through grasses and vegetation with intermittent sounds of distant cars and trucks as they travel on the surrounding rural roads. The unique aspect of the soundscape in the oil fields is the soft creaking and rhythmic sounds caused by the movement of the jerker lines. It is a repetitive, constant and relaxing sound for the visitor as they take a moment to stop in the field and listen to the operating lines.

Within the power house, the electric motors quietly drive the fly wheels and the belts producing a constant whirling and clicking sound as the wheels rotate and the belts are driven to power the jerker lines.

In many parts of the oil fields, there is a rich smell of oil which has sulphuric overtones. This is overlying the rural smell of rich organic vegetation smell and frequently in some cases a whiff of the sheep on the breeze.

The Hard Oilers. An important part of the heritage value of the oil district in Oil Springs and Enniskillen Township is the story of the hard oilers. These were the men starting in 1874 who moved around the world to develop oil fields in many other countries, which is discussed in Section 3.3.3. The proof of the impact on Enniskillen and Oil Springs is in the collection found at the museum where artifacts were sent families or brought back to Canada by returning hard oilers. Today the museum has a very unusual collection of international artifacts from the early 20th century not found in any other community museum.

The hard oilers, and the spread of the technology around the world was part of the development of the Imperial Oil Company, one of Canada's leading international corporations.

Contribution to the Physical Development of the County. The oil fields resulted in considerable physical development and prosperity in central Lambton County. In the early years, refining took place in Hamilton necessitating the link between the oil fields and the

railhead at Wyoming from where the oil was shipped to Hamilton, and later London, for processing. By the 1880s, a spur line was extended south from Wyoming to Petrolia and the oil shipped to Imperial Oil at Sarnia. The transportation network expanded with the Plank Road extending diagonally to Sarnia running across the Lambton grid in the most efficient and economical manner.

Remnants of the spur line and of the Plank Road are still evident. An example of the angled geometry of the Plank Road can be seen from the Oil Springs Cemetery. The gravestones, were aligned to the Plank Road, and now sit at a 45 degree angle to the present roadway.

Another example is the development of cultural facilities within Petrolia, where the initial prosperity encouraged the building of Victoria Hall, the Michigan Central Rail Station, and several new residential neighbourhoods.

4.3 Levels of Significance of Building Structures and Landscape Features in the Oilfields

The cultural landscape of the oil fields is made up of a collection of individual details that together create a unique visual image of a working industrial landscape. The individual components have been inventoried on the Fairbank properties and on the public road allowances. The remainder of the oil properties has not been inventoried in detail except for a 'drive by' overview from public roads.

The resulting picture of the oil field cultural landscape is one of variety, integrity, and of rarity. The resources consist of a limited number of residences, small barns and sheds located in clusters, generally in the centre of the properties, in a pattern similar to the farmstead pattern found in the adjacent townships.

The evidence of the oil industry is dispersed from these concentrations of buildings to the remainder of the fields. The equipment and structures are located to perform specific functions related to the various activities involved in the oil industry. The activities range from the initial drilling and extraction by means of a variety of methods but primarily the jerker lines system, through to collection, storage and ultimately transporting the oil out of the district for distant refining and marketing.

Each of the oil fields contains a variety of structures and equipment all set within the flat terrain typical of this part of Lambton County. The topographical relief found here is primarily the natural Black Creek corridor, which has a wide valley meandering through the northeast part of the district. Related relief includes the manmade ditches that parallel all roads, providing drainage to adjacent lands.

To assess the significance of the collection of equipment and other components in the fields, a ranking system has been developed to assist in the review process. It is the intention that the priority for review and discussion of planned changes to the heritage resources will focus on a conservation approach aimed at the key heritage resources.

Level One Historic Resources include unique resources built to develop and produce the oil field.

- Structures, such as power houses, sheds, stables, and the foreman's house at the James field.
- Any equipment used for drilling and production: all jerker lines, storage and transportation equipment distinctive to the Lambton oil fields.
- The municipal road system with its historical names, alignments and cross sections.
- The original driveway locations, lot pattern and perimeter property line fencerows, many of which include tree lines.
- Major woodlots.
- Archaeological features such as the gum beds, diggings, and other early extraction sites.
- Topographic features such as the Black Creek ravine
- The Fairbank boardwalk which crosses the valley of Black Creek to ensure the continuous working of the jerker lines during flood conditions.

Level Two Historic Resources have been added to the oil fields over the years to be used in day to day operation of the oil fields, but are not an integral part of this operation. These features include:

- laneways within the oil fields and outdoor work areas;
- parking areas for vehicles;
- fencing for work compounds;
- the folk metal sculptures created on the Fairbank property as pieces of public art to celebrate the Fairbank legacy, and to interpret key sites to the public.
- the brine disposal systems installed to satisfy more recent regulatory requirements; and
- equipment not distinctive to Lambton oil fields, typically of post-war vintage.

Level Three Supporting Resources have been added to the oil fields but were never part of the historical inventory of assets. These resources may, however, include character-contributing features:

- the exterior exhibits at the museum which do not contain heritage fabric;
- the recent boardwalk and stairs in the river valley on the Fairbank property;
- the recent fencing operation of the barrel racing grounds.

5.0 RANKING OF OIL FIELD EQUIPMENT

The cultural significance, or value, of the Oil Springs field has been well established by its designation as a National Historic Site by the Historic Sites and Monuments Board of Canada. The oil field has significance because:[115]

- The site is a rare industrial landscape possessing a large number of vestiges directly related to the beginning and to the evolution of the oil industry in the latter half of the 19th century in Canada;
- The site is credited with the registration of the world's first petroleum company, the first commercial oil well in North America, the first commercial oil field in the world, the first oil gusher in Canada, the first gas gusher in Canada, and a handful of additional national and international achievements;
- The site, where the mining, refining and marketing of petroleum once took place, had major impacts on the development of the oil industry in Canada and around the world.

The field inventory undertaken for this study identified most of the individual components of the Fairbank oil field (See Appendix). The ranking of these components has been based on how closely they relate to the National Historic Site's statement of significance. A three-tiered ranking has been used:

- Level One Historic Resources
- Level Two Historic Resources
- Level Three Supporting Resources

A distinctive characteristic of the Oil Springs field is the historic importance of the processes that occurred on the property. This is particularly true for the jerker line system. The way it operates today is exactly the same as when it was first developed in the early 1860s. However there are no material remains of the mid-19th century equipment today; the wooden components have been replaced as necessary, over time. The power houses have been rebuilt, relocated and/or modernized to adapt to new methods of power production and the changing dynamics of oil production. In contrast, the scale of the jerker line system – length of rods, method of hanging, size of bull wheels, speed of operation – do not appear to have changed significantly over time.

Another distinct feature of the field is the earthworks. The East Gumbed is pock-marked with pits that remain from 19th century workings, or possibly before. The valley wall of Black Creek is similarly dotted with 19th century earthworks. Several of the original oil wells are still visible as depressions in the ground. The West Gumbed at the Oil Museum of Canada has been modified over the last 50 years.

[115] Historic Sites and Monuments Board of Canada, *Report Number: 2005-20*, "First Commercial Oil Field, Oil Springs, Ontario.

5.1 LEVEL ONE HISTORIC RESOURCES

5.1.1 Canadian Jerker Line System

This category includes both the operating system and vestiges of abandoned operations. The main components include:

- Powerhouse
- Linear jerker lines, supports, field wheels and other linkages to change direction of line
- Pump jacks
- Well storage or 'day tanks' (all day tanks are abandoned but many are visible in various states of decay in the oil fields)

5.1.2 Historic Wells

- The East and West Gumbeds
- Earthworks of historic wells

5.1.3 Maintenance

- Three Pole Derrick
- Stable

5.1.4 Transportation

- Tank Wagons
- Large in-ground, wood storage tanks (now used primarily for brine disposal)
- Receiving Station
- Earthworks of abandoned railway right-of-way on Oil Museum of Canada property

5.1.5 Land Survey

Small lot lines of the 1850s oil land survey as seen in:

- Crooked Road: the bends in the road follow the 1866 oil land survey.
- Oil Museum of Canada property boundaries are lot lines of an oil property in the 1866 survey

5.2 LEVEL TWO HISTORIC RESOURCES

- Historic technology that was essential to oil industry but not specific to the Lambton County oil industry;
- Examples of technological transition and adaptation in production methods

5.2.1 Pennsylvania System

This common American operating system was introduced to the field after World War Two. The system differs from the Canadian jerker line system by:

- Radial pattern of pumps around a central power source.
- Steel cables transfer power to the wells.

5.2.2 Local Adaptation

Modern modifications to jerker line system including:

- Short jerker line systems running from unenclosed field motors to a few wells; typically introduced when larger jerker line system became too expensive to maintain or when abandoned wells were refurbished and brought back into production; typically laid out in a linear pattern but sometimes arranged in an X shape.
- Re-engineered diagonals to reduce the impact of snow on jerker line operation
- Variations of pump jack designs.

5.2.3 Maintenance

- Well-puller vehicles, both operational and abandoned.

5.3 LEVEL THREE SUPPORTING RESOURCES

Some features inventoried on the Fairbank Oil property have cultural significance not directly associated with historic oil production.

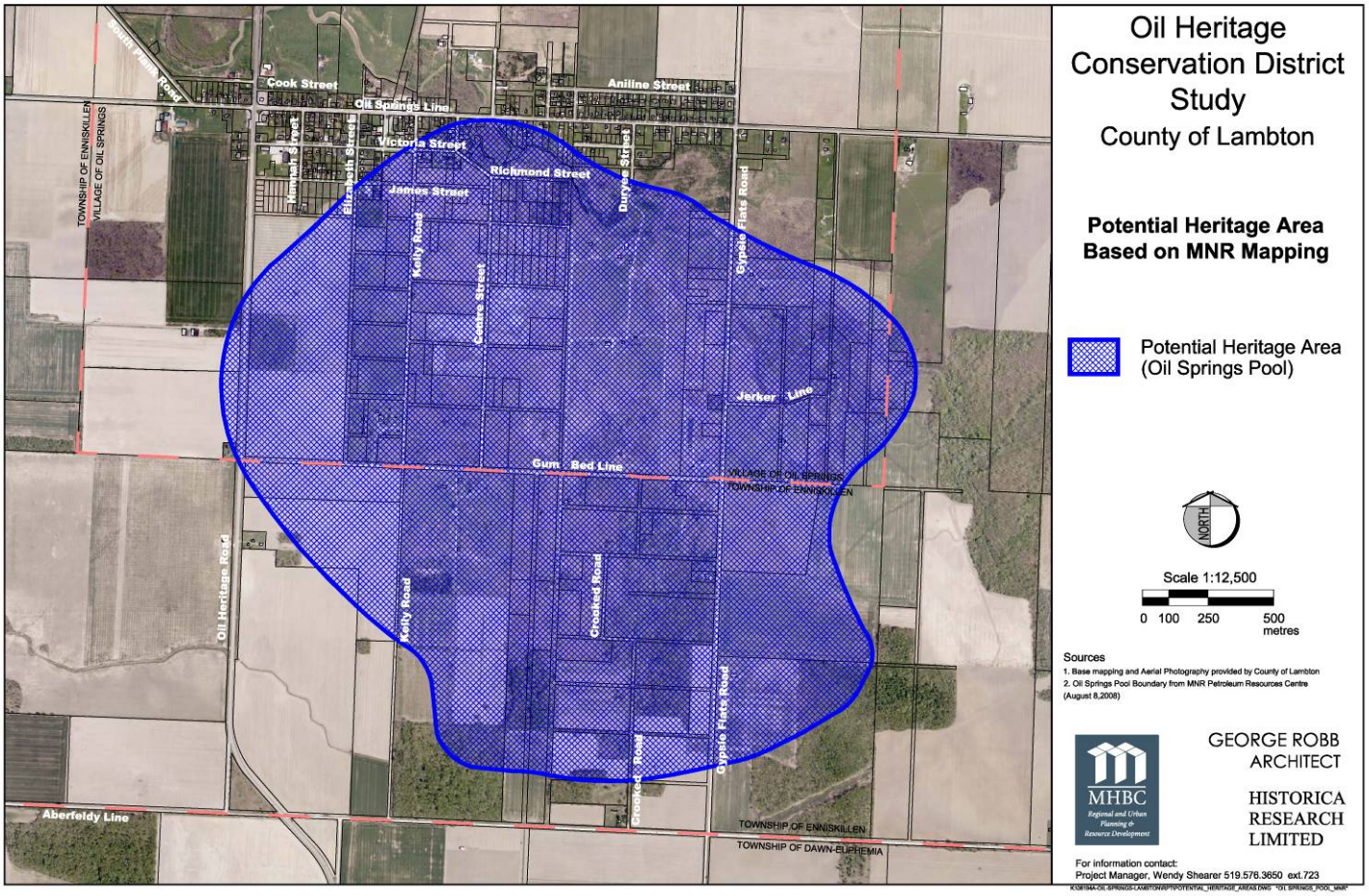
- Farming: Barns on the Fairbank field
- Abandoned steel tanks within the fields.
- Steel Sculptures: locally-created art that animate and interpret the industry
- Environmental management: Brine disposal system of 1990s.
- Individually-powered steel pump jacks.

6.0 DELINEATION OF THE HERITAGE CONSERVATION DISTRICT

A major challenge for any proposed Heritage Conservation District is to establish a manageable and logical boundary of the historic place. There are several contributors to establishing an effective district boundary – political, historical, social and environmental. As well, the boundary may include view sheds and functional corridors linking different parts of the area. The Oil Heritage Conservation District boundary was proposed once the tasks of inventory and evaluation of historical research of the study area were completed, and community and stakeholder input considered. Two options were presented to the Steering Committee to review.

The first option was to designate only properties within the boundary of the original oil resource pool. This option proved to be problematic, as the oil pool itself is not evident in the landscape. Further, this boundary would include portions of property, particularly west of County Road 21, which were not involved in the exploration and extraction of oil resources.

Figure 19: Proposed District Boundary (Option One)



The second option considered by the Steering Committee focused on identifying those properties that had active oil production facilities from 1940 to the present. This boundary was easier to identify, as lot patterns have not drastically changed from that time, and land ownership was kept generally to six major landowners/operators. The Study Team further proposed, an addition to the Primary Area within the Study Location: this was the delinaeation of a Contributing Area, to encompass the Oil Heritage Road north of Oil Springs, through Oil City and Petrolia to Wyoming, and remnants of the historic Plank Road towards Sarnia.

Figure 20: Proposed District Boundary (Option Two)

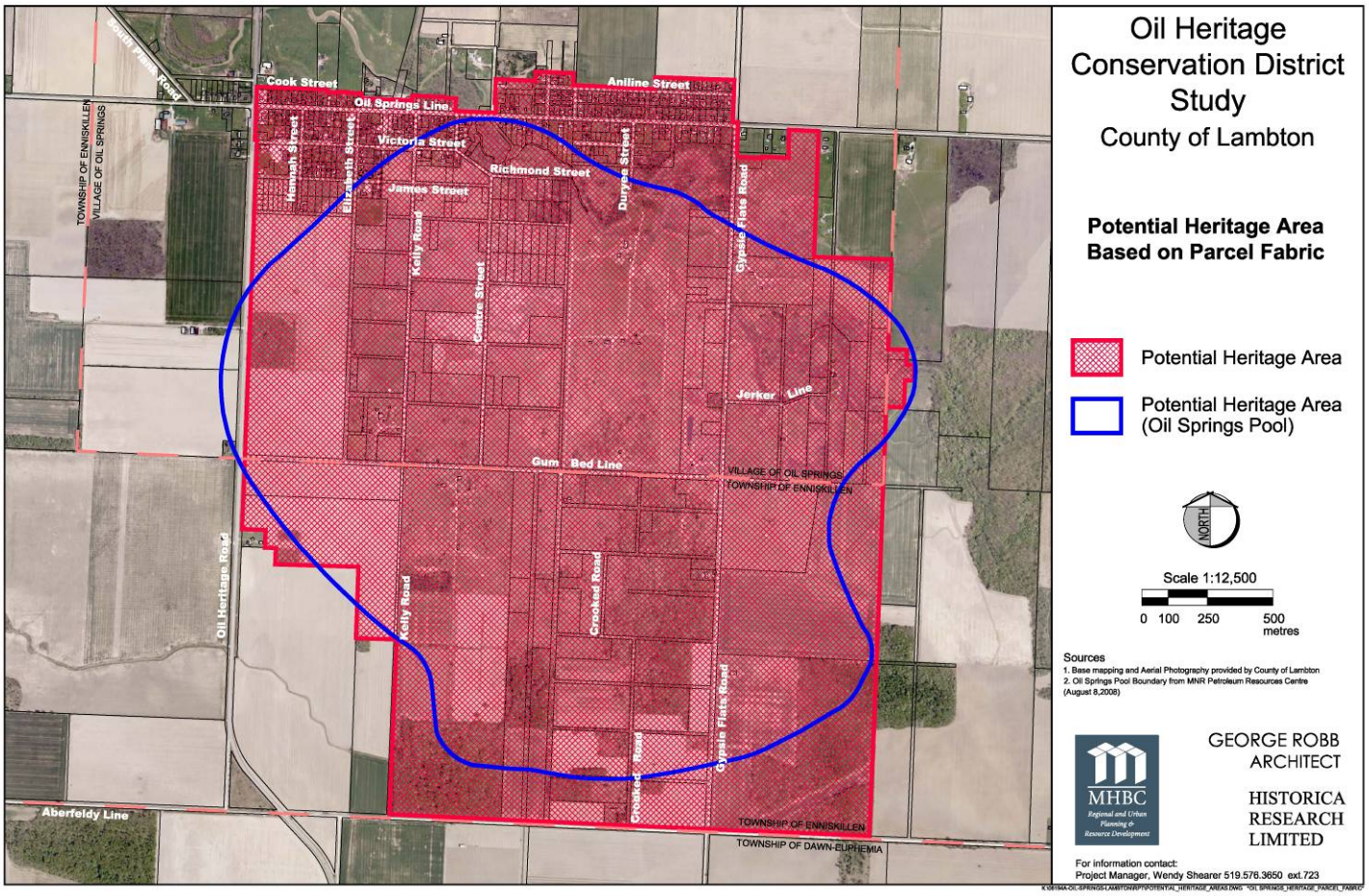
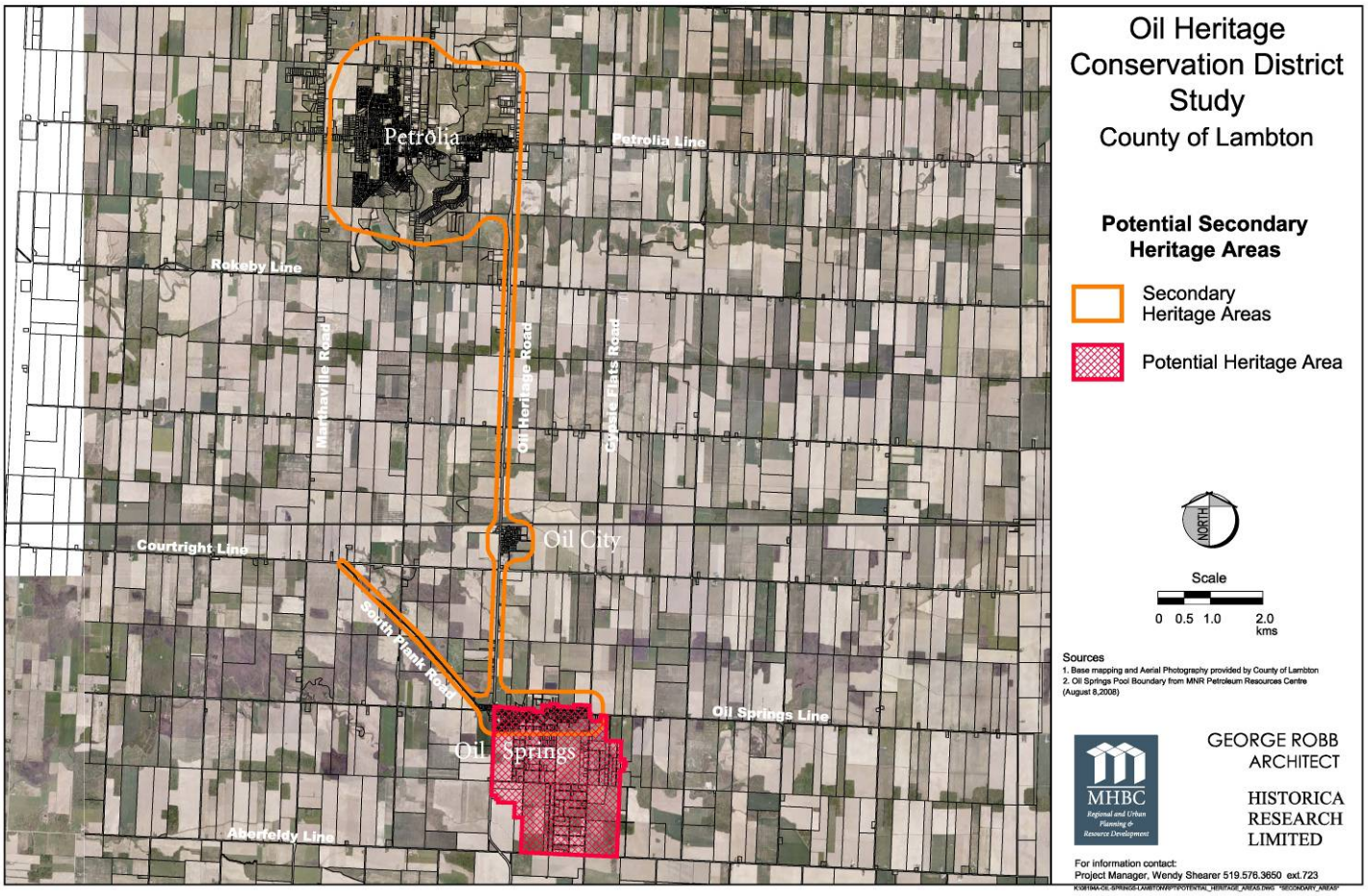


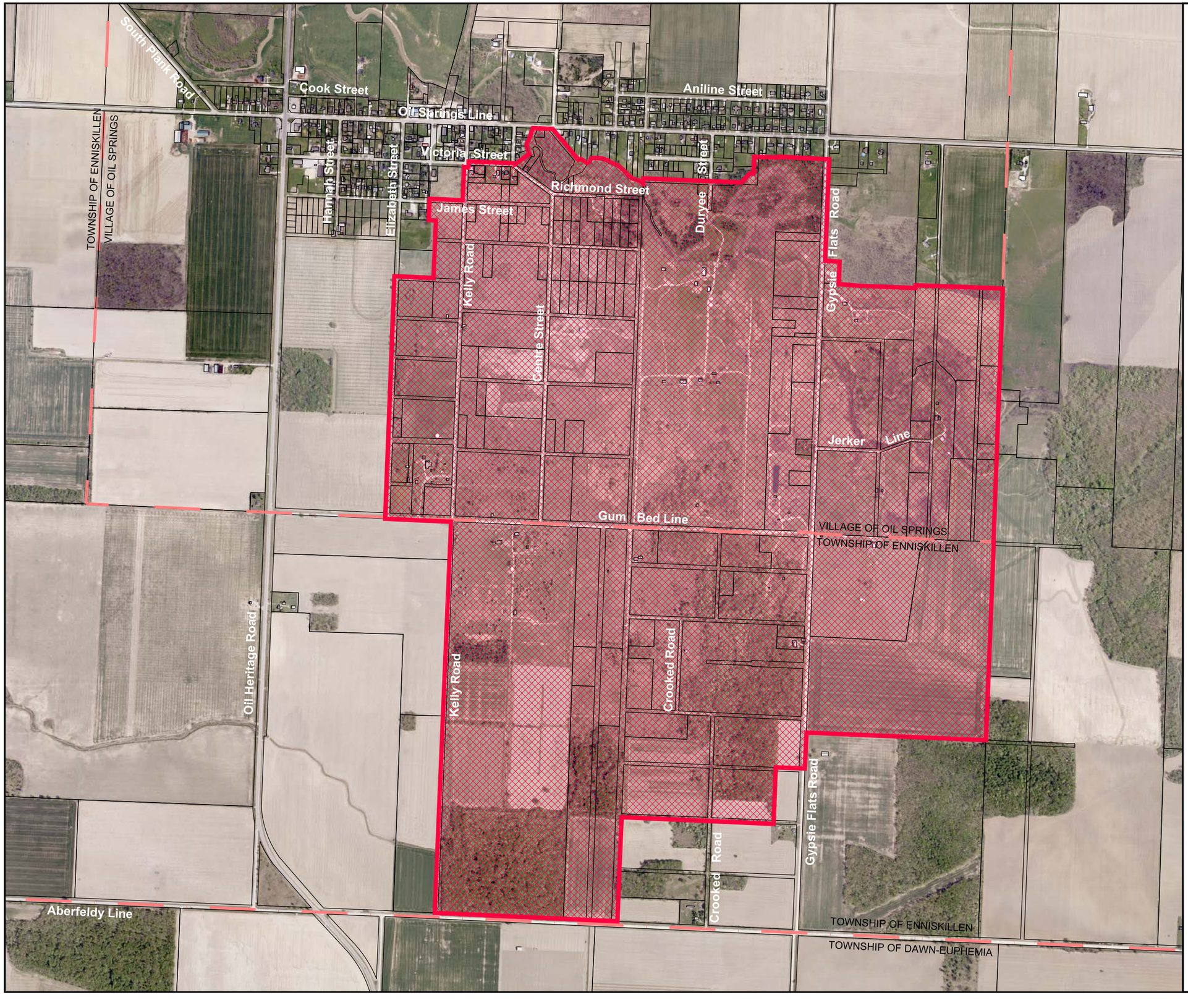
Figure 21: Proposed District Boundary with Secondary Area (Option Two)



The area recommended by the study team is listed below as Figure 19. It is a refinement of the area listed within Figure 18, but examines property ownership in closer detail. Several farm operations along Aberfeldy Line and properties within the built up area of Oil Springs are recommended to be excluded from the area.

Oil Heritage Conservation District Study

County of Lambton



Proposed Heritage Conservation District Boundary

NORTH

Scale 1:12,500

0 100 250 500 metres

Source:

1. Base mapping and Aerial Photography provided by County of Lambton

Date: February 9, 2010

MHBC
Planning, Urban Design & Landscape Architecture

GEORGE ROBB ARCHITECT

Golder Associates

For information contact:
Project Manager, Wendy Shearer 519.576.3650 ext.723

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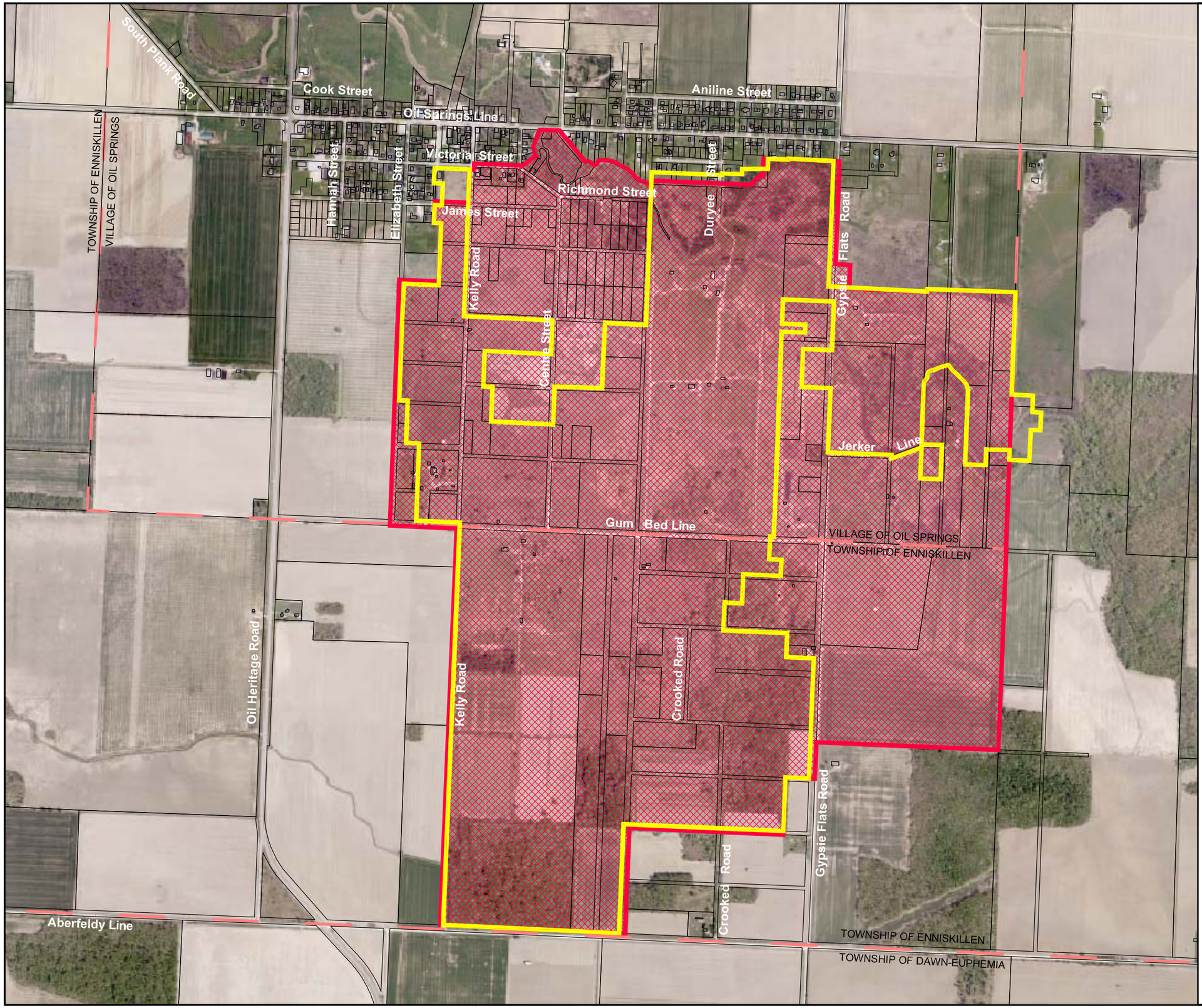
Oil Heritage Conservation District Study

County of Lambton



Proposed Heritage Conservation District Boundary

Limits of the National Historic Site

NORTH

Scale 1:12,500

0 100 250 500 metres

Source:

1. Base mapping and Aerial Photography provided by County of Lambton

Date: February 9, 2010
Revised: August 12, 2010

MHBC
Planning, Urban Design & Landscape Architecture

GEORGE ROBB ARCHITECT

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7.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Study Team conducted a comprehensive study of the Oil Springs area to document the history of the area, along with the equipment and techniques employed by the area oil producers. The Team's findings are summarized below:

- Discovery of oil allowed for the settlement of an area which at the time was not suitable for agriculture (pp. 10 – 15).

- The jerker line system was developed in Oil Springs as a response to the challenge of finding a way to power multiple wells from a single power source (p. 19).

- Men who developed the oil exploration and extraction techniques took their inventiveness to many foreign countries and settings much different from Lambton County (pp. 32 – 34).

- The development of the oilfields contributed to the development of a transportation network to Lambton County, including the building of a railroad and the development of the Plank Road (p. 25 – 28).

- Technology first used in the early 1860's continues to pump oil from the ground and demonstrates a preserved comprehensive production system (p. 48).

- The area has benefited from a small number of owner/producers who have experienced multiple generations of family involvement in the oilfield (p. 49).

- Land leases within the area for oil exploration allowed for a unique lotting pattern different from the traditional agricultural areas of the County (p. 49).

- Heritage Values associated with the study area include (pp. 50 – 51):
  - Utilization of Natural Resources
  - Inventiveness
  - Continuous Operation
  - Family Continuity
  - Traditional Extraction Methods
  - Incorporation of Newer Technologies
  - Experience of Boom and Bust Periods
  - Sounds and Smells of the Oil Fields
  - Exporting of Technology by the 'Hard Oilers'
  - Contribution to the Physical Development of the County

- Buildings, Structures and landscape features have been classified for cultural heritage significance. Planned changes to key heritage resources are expected to be evaluated from a conservation approach, as opposed to a more restrictive preservation approach (pp. 52 – 57).

- Oil field equipment within the Fairbank oil field has been evaluated (see Appendix B) and ranked according to its historical significance (pp. 55 – 57). Primary Historic equipment includes the Canadian Jerker Line System, Historic Wells found within the East and West Gumbeds, Three Pole Derricks, wooden storage tanks, and tank wagons.

As a result of the Study Team's research and analysis, the following recommendations are forwarded for the consideration of the Steering Committee and Municipal/County Council:

1. The accompanying Heritage Conservation Plan be adopted and implemented according to the process suggested by the provincial Ministry of Tourism and Culture.

2. The oil field be considered an active, evolving place of industry and employment. It should be recognized that new technologies will continue to interact with traditional methods.

3. Existing lot fabrics that reflect the historical development of the area be preserved where possible. Severance activity within the defined Heritage Conservation District areas (notwithstanding long term land leases requiring consent approval) should be discouraged.

4. Historic equipment and landscapes of primary importance should continue to be identified and conserved through the operations of the Heritage Conservation District.

5. The Heritage Conservation District should be incorporated into tourism initiatives advanced by the County of Lambton for all of southwestern Ontario.

6. The naming of new streets after the original oil developers and pioneers is a potential way of honoring the heritage and history of the Oil Springs/Petrolia area.

7. Discussions should continue with Parks Canada to develop the required Commemorative Integrity Statements for consideration of the Study Area as a designated World Heritage Site by UNESCO