

# SALESKI

IN SITU OIL SANDS PROJECT EXPANSION

PROJECT DESCRIPTION  
MAY 2013



LARICINA  
ENERGY LTD.



## LETTER TO STAKEHOLDERS

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We are very excited about our Saleski Project, the first project to target Alberta's high potential Grosmont Formation. At Laricina, we pride ourselves in our ability to forge new plays while serving as an industry leader in the innovative use of proven and developing technologies.

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The Saleski Project showcases Laricina's pioneering and innovative approach, drawing on the ground breaking ideas of our people and partnerships to lead the way in oil sands development. Saleski is Alberta's first commercial development in the Grosmont Formation, a platform carbonate, in the west Athabasca oil sands region. Laricina's Saleski Pilot has shown positive results in the recovery of bitumen from the Grosmont by demonstrating the commercial viability of the formation. The Grosmont Formation is Alberta's second largest oil-bearing resource, behind the McMurray oil sands. Developing this resource is central to Laricina and significant to Alberta's economy and its role in supporting Canada's sustained economic well-being.

Development at Saleski will use established thermal technology by cycling single horizontal wells with steam and in later steam cycles incorporating solvents to enhance bitumen recovery from the Grosmont Formation. Through testing activities at the Pilot, Laricina has found that the Grosmont at Saleski best responds to a cyclic steam injection and bitumen recovery process and have filed an update to Saleski's Phase 1 regulatory application to incorporate this design. The use of solvents reduces the amount of steam required, which in turn reduces carbon emission intensity and water utilization. We will also limit our impact on wildlife and fresh water resources by using non-surface, non-potable water to create steam, recycling as much produced water as possible.

Laricina is committed to open and transparent communication with our stakeholders and nearby communities. As a part of this commitment, we will strive to provide you with regular updates and opportunities to learn more about the Saleski Project. This project description contains a complete summary of the Saleski Project's history, its current status and our future plans. We are available to answer your questions at any time, and we welcome and value your ongoing feedback.

On behalf of Laricina, I want to thank you for taking an interest in the Saleski Project. I look forward to building strong and lasting relationships with all of our stakeholders.

**Glen Schmidt**

President and CEO, Laricina Energy Ltd.

## LARICINA ENERGY LTD.

Laricina Energy Ltd. is a privately held, Calgary-based company that is creating value by developing Canada's oil sands using innovative *in situ* technologies. *In situ* is a process for recovering bitumen from the oil sands through wellbores.

Laricina has a portfolio of targeted oil sands assets containing a variety of reservoir environments and geological character. These assets range from the familiar oil sands of the McMurray Formation to the less developed Grand Rapids and Grosmont Formations, all of which offer significant resource potential. Laricina's diverse portfolio of oil sands assets are at varied stages of development.

Laricina is a responsible energy company that will respond to the growing demand for crude oil through *in situ* oil sands development with an exceptionally experienced technical team.



Drilling operations at Saleski – February 2012.

## SALESKI DEVELOPMENT

Laricina is currently operating the Saleski Pilot, which is an approved 1,800 barrel-per-day project in the west Athabasca region of northern Alberta. We are currently seeking regulatory approval for Phase 1 of the Project's expansion, which will develop Saleski to a proposed production capacity of 12,500 barrels per day. Phase 1 will be the first of six potential expansion phases expected to increase Saleski's production to more than 280,000 barrels per day over a 30 year period.

In August 2006, Laricina and its joint venture partner acquired 19 sections of land in the Saleski area, located within the west Athabasca oil sands region. In 2006 and 2007, we acquired 48 additional sections of land, bringing our total land base in the area to 67 sections. Laricina is the project operator of Saleski, with a 60 per cent working interest.

The Grosmont Formation at Saleski is located between a depth of 300 and 375 metres below the surface. At these depths, recovery is conducted using well-established thermal recovery methods like those commonly used by oil sands producers in the more mature east Athabasca oil sands region. Laricina will use current and future innovations of *in situ* technology to develop its oil sands assets at Saleski.

In July 2009, Laricina received regulatory approval to proceed with the Saleski Pilot, which has a current installed capacity of 1,800 barrels of bitumen per day. Pilot construction began in early 2010, with initial horizontal well drilling completed in 2010 and steam injection beginning December 23, 2010. In 2012, additional horizontal well drilling was completed to test drilling techniques and the cyclic recovery process. There are currently four horizontal wells that are demonstrating the viability of the Grosmont under cyclic steam-assisted gravity drainage (C-SAGD) operations.

Phase 1 is the first of six potential phases of the Saleski Project's expansion. Phase 1 is a 10,700 barrel-per-day expansion that will bring the total field production to 12,500 barrels per day. Laricina is taking a staged approach to expand bitumen production capacity to 282,500 gross barrels per day over a 30 year period.

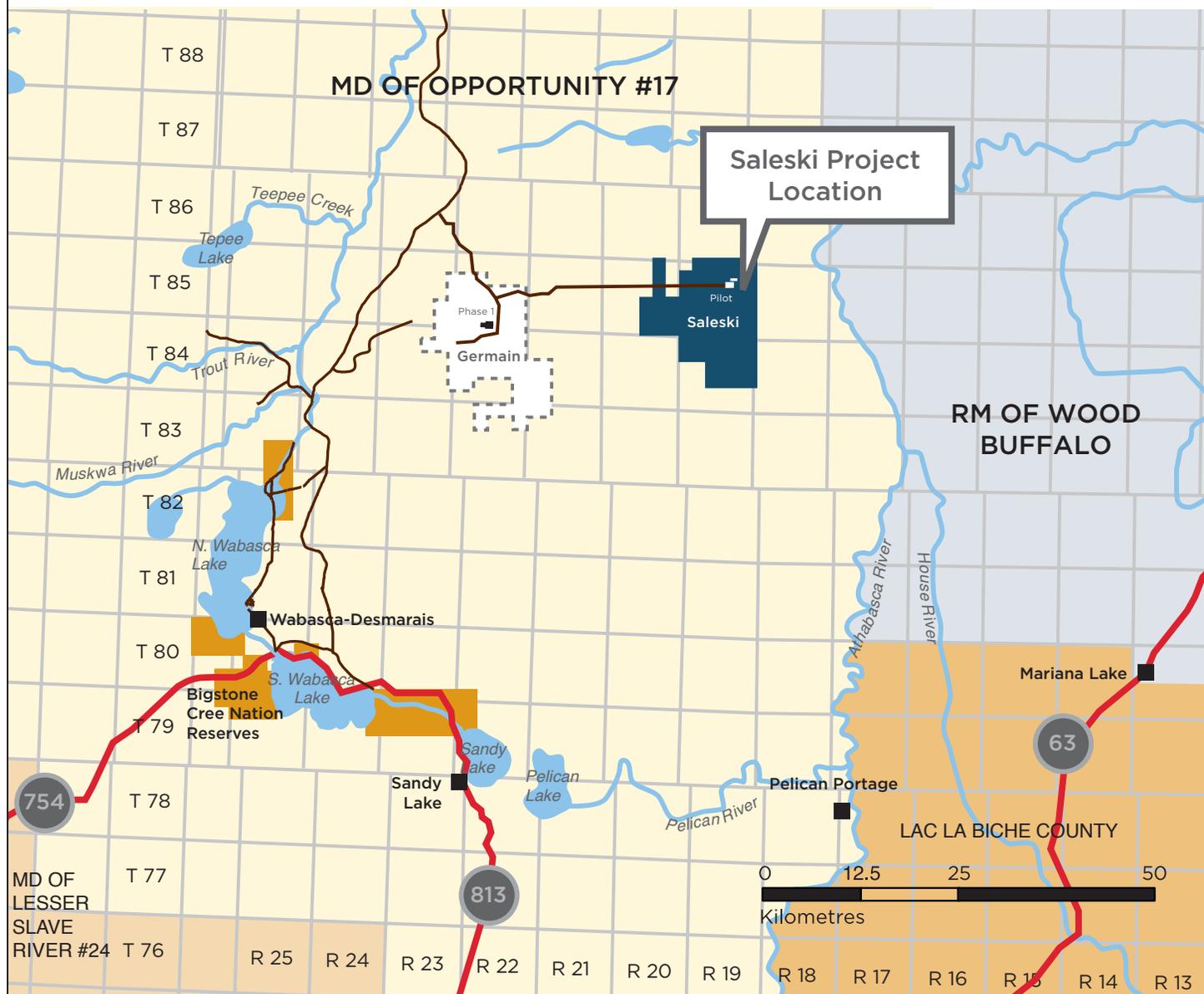
# SALESKI PROJECT LOCATION

The Saleski Project is located in the west Athabasca Oil Sands region, in Townships 84 and 85 and in Ranges 19 and 20 W4M.

## LEGEND

- Communities
- Bigstone Cree Nation Reserves
- Saleski Leases
- Germain Leases
- Highway
- Road
- Rivers
- Lakes

Saleski is approximately 70 kilometres northeast of the community of Wabasca-Desmarais, in the Municipal District of Opportunity #17. The Saleski Project's Phase 1 expansion will be located to the southwest of the Pilot plant site in Township 85 and Range 19 W4M. This will allow the Phase 1 development to use a number of the components constructed and used for the Pilot, including roads, fuel gas pipelines, source and disposal wells and the construction and operations camp.



# TECHNOLOGY

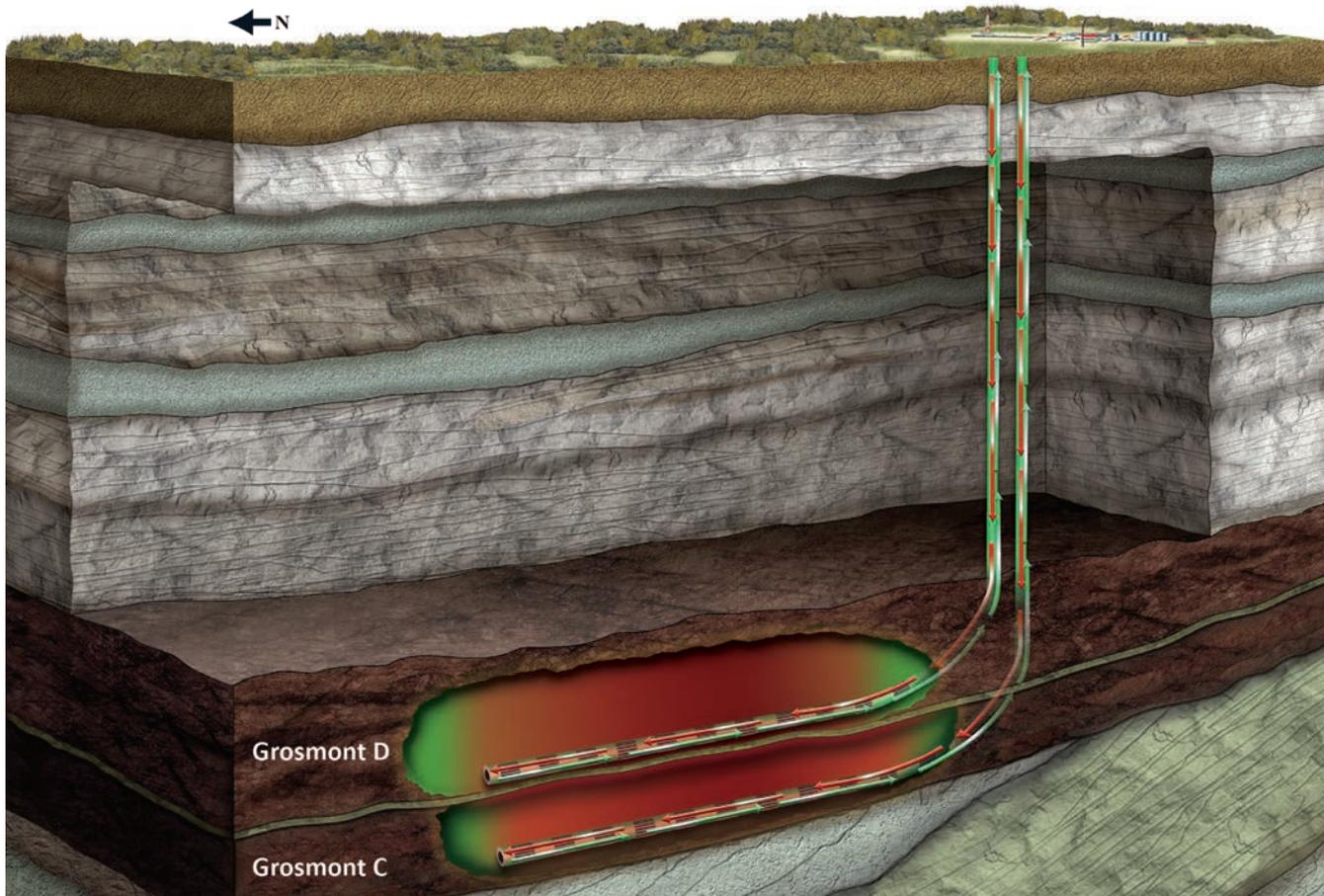
C-SAGD involves drilling a single horizontal well into the Grosmont bitumen reservoir approximately 350 meters below ground. Steam is injected and bitumen produced from the same well in a cyclic manner.

Steam is injected into the horizontal well for several weeks until the steam injection pressure plateaus and a targeted steam volume is achieved, heating and mobilizing the thick bitumen. The steam injection is then stopped and the well is converted to production. During the production stage, gravity takes over and the bitumen and condensed steam drains down into the horizontal well and is pumped to surface. The bitumen is processed for transport and condensed steam is recycled for re-injection. The production stage of several months ends when bitumen production slows because of decreasing reservoir temperature. The process is then repeated in another injection and production cycle, with cycle times increasing in length.

Several cycles are conducted over the typical life of a well of five to 10 years. The amount of bitumen recovered from the reservoir and economic return is expected to be comparable to other steam-assisted gravity drainage and cyclic steam stimulation oil sands projects. Conversion to a continuous injection and production process exists in the future providing the opportunity to further enhance reservoir recovery.

Laricina's Saleski Pilot is the first project to recover bitumen from a carbonate deposit using C-SAGD technology as a recovery method based on established thermal processes and an innovative design.

*C-SAGD: Single horizontal well cyclic recovery in the Grosmont C and D zones*



Laricina is targeting two zones in the Grosmont deposit (zones C and D) which are separated by a thin layer of shale, referred to as a marl. Early indications from the Pilot have shown evidence of localized temperature and pressure communication across the C-D marl, suggesting that the Grosmont D zone is being affected by heating in the underlying Grosmont C zone; however the degree of this communication is not yet fully understood and continues to be a focus of the Pilot.

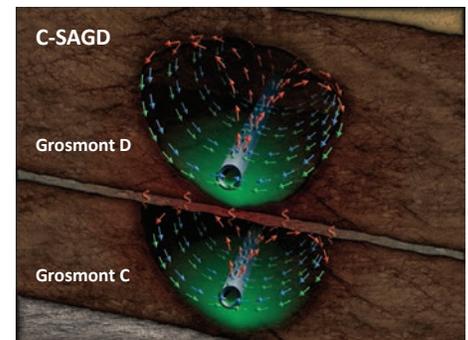
Phase 1 operations will initially target the C zone. Horizontal wells will be drilled into the C zone from a common well pad on surface, which is estimated to be 200 metres by 400 metres in size. The first Phase 1 well pad will be designed to accommodate up to 32 single horizontal wells. As production from the initial wells decline, additional well pads with up to 32 wells each will be required to maintain production at facility design rates. The wells are expected to have approximately 900 metres of horizontal reach with approximately 60 metres of spacing between each well.

Laricina plans to add wells in the Grosmont D zone in Phase 1 and future phases of the Saleski Project, as better understanding of the interaction between C and D zones is gained.

## THE SOLVENT ADVANTAGE

Solvent cyclic SAGD (SC-SAGD) is an improvement to C-SAGD technology that involves the co-injection of solvents and steam into the reservoir in a series of phases. Bitumen viscosity can be reduced using either heat (steam) or solvents.

In the SC-SAGD process, as in the C-SAGD process, wells are started with steam injection. After the reservoir has been initially heated with steam, solvent is then injected. In the SC-SAGD process, the steam injection volume is reduced and solvent is co-injected with steam into the reservoir to aid in reducing bitumen viscosity. The solvents being contemplated are heavier hydrocarbons (>C5, diluent, or condensate blend). By combining solvent injection with steam, Laricina expects to realize a material reduction in the cumulative steam-oil ratio, water use and air emissions; an increase in bitumen production rates and improved overall recovery, as compared to steam alone. Laricina will continue to test C-SAGD and SC-SAGD at the Pilot.



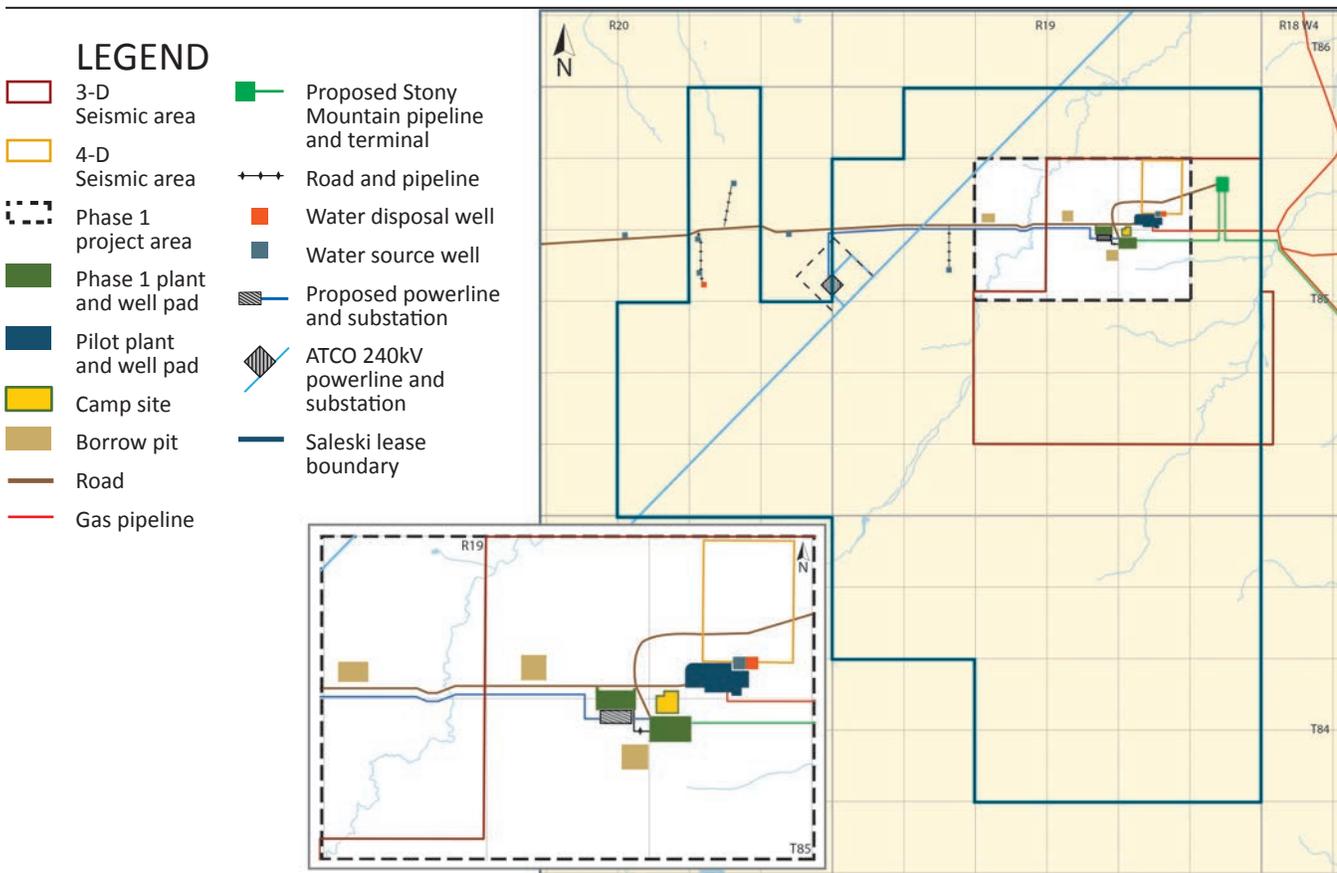
# PRODUCTION FACILITIES

In addition to horizontal wells and well pads, surface facilities will be required to generate and distribute steam and solvents, gather well production, process bitumen and treat produced water. Much of the infrastructure put in place for the Pilot will be used in additional phases and some additional roads and other offsite infrastructure will be required.

Saleski Phase 1 will consist of the following components:

- Central processing facility
- Associated infrastructure such as office building, storage sheds
- Soil storage areas, borrow pits
- Equipment lay down and staging area
- Operational and construction camp facilities
- Electrical substation
- Well pads
- Observation wells
- Groundwater monitoring sites
- Water source and disposal wells
- Gathering corridors including roads, gathering pipelines and transmission lines, and natural gas pipeline (for fuel gas).

# SALESKI PHASE 1 DEVELOPMENT PLAN



# SALESKI PHASE 1 EXPANSION OVERVIEW

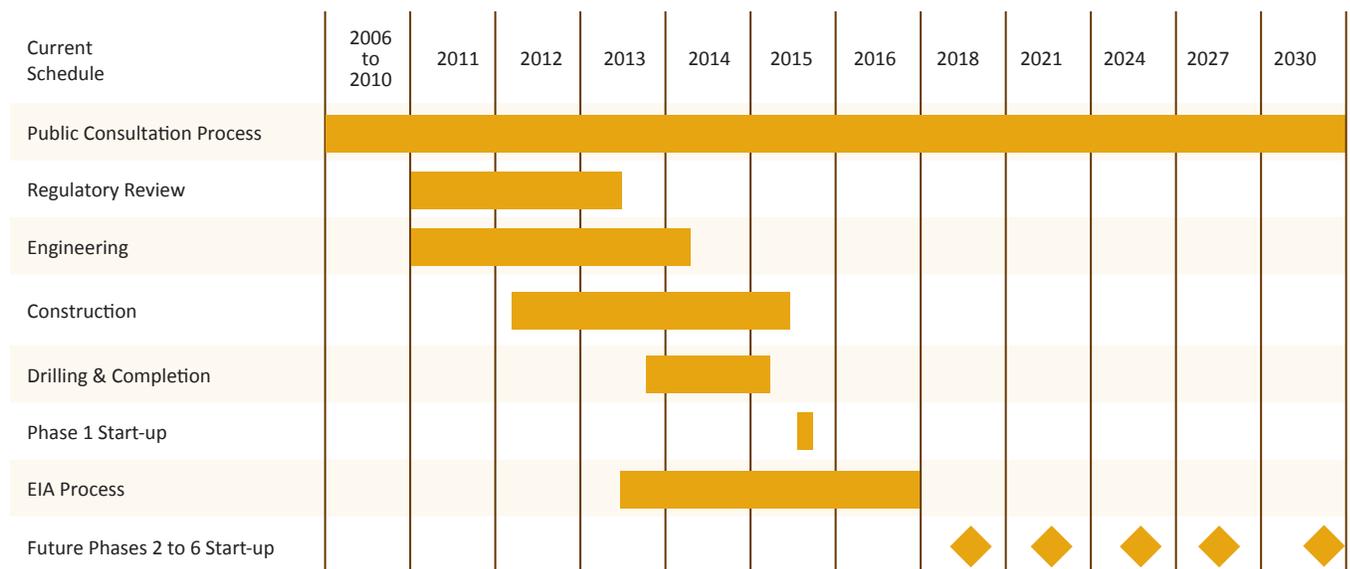
Beginning with the Phase 1 expansion, Laricina is seeking to develop the Saleski Project into a full commercial-scale production facility.

Phase 1 will expand and integrate the original 1,800 barrel-per-day Pilot into a 12,500 barrel-per-day bitumen recovery operation. Laricina is currently advancing the design elements, including engineering, module sourcing and fabrication. Pending regulatory approval and financing, we expect to begin initial field construction, equipment installation, and drilling the first wells for Phase 1 in late 2013.

Operating activities are scheduled to begin with first steam expected in the third quarter of 2015, and full production rates achieved within 12 months after initial production.

Following Phase 1, Laricina intends to carry out five additional expansion phases aimed at achieving production of 282,500 gross barrels per day over 30 years. Future project phases will increase production by approximately 30,000 to 60,000+ barrels per day each as Project design, execution and enhancements are proven with each expansion.

## SALESKI PROJECT EXPANSION TIMELINE



## COMMITMENT TO OUR STAKEHOLDERS

Laricina plays a positive role in the communities where we operate through meaningful consultation and contributing to community well-being through donations, partnerships and volunteerism. This commitment has been integral to Laricina's operations in the Wabasca region since 2006.

We work in an open, transparent and inclusive manner with all the communities and stakeholders that may be impacted by our operations. Laricina's goal is to ensure that our projects are well understood by our stakeholders. We work to achieve this goal by ensuring our teams are available for consultation in a number of different ways including, but not limited to, community initiatives, public forums and website updates.

Laricina is committed to collaborative and transparent consultation with all of our stakeholders, including the Bigstone Cree Nation, the Métis Local 90 and the MD of Opportunity #17. Since the start-up of our operations in the Wabasca area in 2010, Laricina hosted workshops, held formal and informal meetings and provided written updates on Saleski's plans and activities. Feedback from stakeholders indicates our consultation efforts are being positively received.



*Laricina conducts Traditional Land Use Assessments, drawing on information shared by Bigstone Cree Nation land users.*

## PEOPLE

Based on current estimates, our total investment in Phase 1 will be between \$500-600 million, which will produce economic benefits for the regional community. The Phase 1 project will create approximately 300 to 450 jobs during the construction phase, and it is anticipated that future phases will require similar labour capital.

Laricina intends to work closely with the local community and Aboriginal groups in the region to build strong ties and help communities broaden their economic base. Specifically, we will help grow local Aboriginal economies by identifying spin-off economic opportunities from our operations and focusing on services communities can offer the oil industry. Accordingly, our company and employees will also continue to focus on education and awareness initiatives, such as community-wide career fairs and employment information sessions.

The Saleski Project will benefit all Albertans by contributing to the province's oil sands development and will provide an important offset as conventional oil production declines.

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At Laricina, we pride ourselves on being a good neighbour and creating opportunities for the communities where we operate. As Phase 1 gets underway, we will continue to buy and hire locally, conduct safety training for our workers and award local contracts associated with the development of Saleski whenever possible.

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## ENVIRONMENT

No surface water will be used to generate steam for the Saleski Phase 1 Project. Instead, non-potable water will be drawn from deep wells in the lower Grand Rapids Formation. Treatment facilities will maximize and ensure that the Project's produced water is recycled and used for generating steam to inject into the wells. Based on preliminary estimates, Laricina expects to use approximately 3,600 cubic metres per day of non-potable, subterranean water to support 12,500 barrels (1,985 cubic metres) of bitumen production per day during steady operations.

The use of solvent technology is expected to increase bitumen recovery while reducing steam and energy use. This will result in higher efficiency and, consequently, reduced carbon emission intensity and water utilization.

Laricina is committed to mitigating the physical disturbance of the surrounding environment and impacts on wildlife. Our goal is to reclaim developed lands to achieve an environment similar to pre-disturbance conditions, resulting in reclaimed landscapes that are compatible with the surrounding area. The Saleski site has numerous wildlife cameras placed around the Project area. The cameras monitor the woodland caribou and other species in the Project area. The data obtained from these cameras will assist us in understanding the wildlife population and habitat while also helping us identify areas where mitigative measures, such as wildlife crossings, should be applied.

Laricina has been collecting and assessing baseline data since 2007. In 2008 and 2009, we sponsored a collaborative, field-based Traditional Land Use Assessment with the Bigstone Cree Nation and local trappers. Information collected will be used to support additional environmental and socio-economic measures for future expansion. Preliminary baseline studies in the area include work on existing surface and groundwater conditions, air quality, wildlife population and habitat inventories, vegetation and soil conditions, aquatic resources, human health, traffic, socio-economic effects and historical resources. Laricina will continue to engage the local Aboriginal communities to understand traditional ecological knowledge and traditional land use.

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Innovative technologies applied at the Saleski Project will allow Laricina to manage and mitigate environmental impacts commonly associated with oil sands development.

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# REGULATORY

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Laricina filed a regulatory application for the first phase of the Saleski Project expansion in December 2010. This application set in motion our regulatory process for Saleski Phase 1.

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In November 2010, Laricina submitted its First Nations Consultation Plan (FNCP) to Alberta Environment (AENV) for review and approval. After receiving approval for the FNCP, we filed the regulatory application with the Energy Resources Conservation Board (ERCB) and AENV on December 23, 2010 to begin the regulatory review process for the Phase 1 expansion of Saleski.

In October 2012, Laricina filed an update to change the recovery process to C-SAGD.

Should approvals be granted by mid-2013, we expect construction and drilling of Phase 1 to begin in late 2013.



*Members of Laricina's clean-up crew working along the Wabasca channel, between the north and south Wabasca Lake.*

*A moose with her calf as seen by Laricina's remote camera. Remote cameras monitor moose and other species to assist in understanding the wildlife population and identifying areas where mitigative measures should be applied.*



## CONTACT INFORMATION

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For further information regarding the Saleski Project Expansion, please contact:

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Laricina Energy Ltd.  
Suite 800  
425 – 1<sup>st</sup> Street S.W.  
Calgary, AB T2P 3L8

T: 403.718.9300  
F: 403.263.0767  
saleski@laricinaenergy.com  
[www.laricinaenergy.com](http://www.laricinaenergy.com)