



**Sunshine Oilsands Ltd.**  
**BA Code A2TF**

阳光油砂  
SUNSHINE OILSANDS LTD.

# **WEST ELLS SAGD**

**Scheme No. 11764G**  
**AER In Situ Performance Presentation**  
**June 30, 2021**



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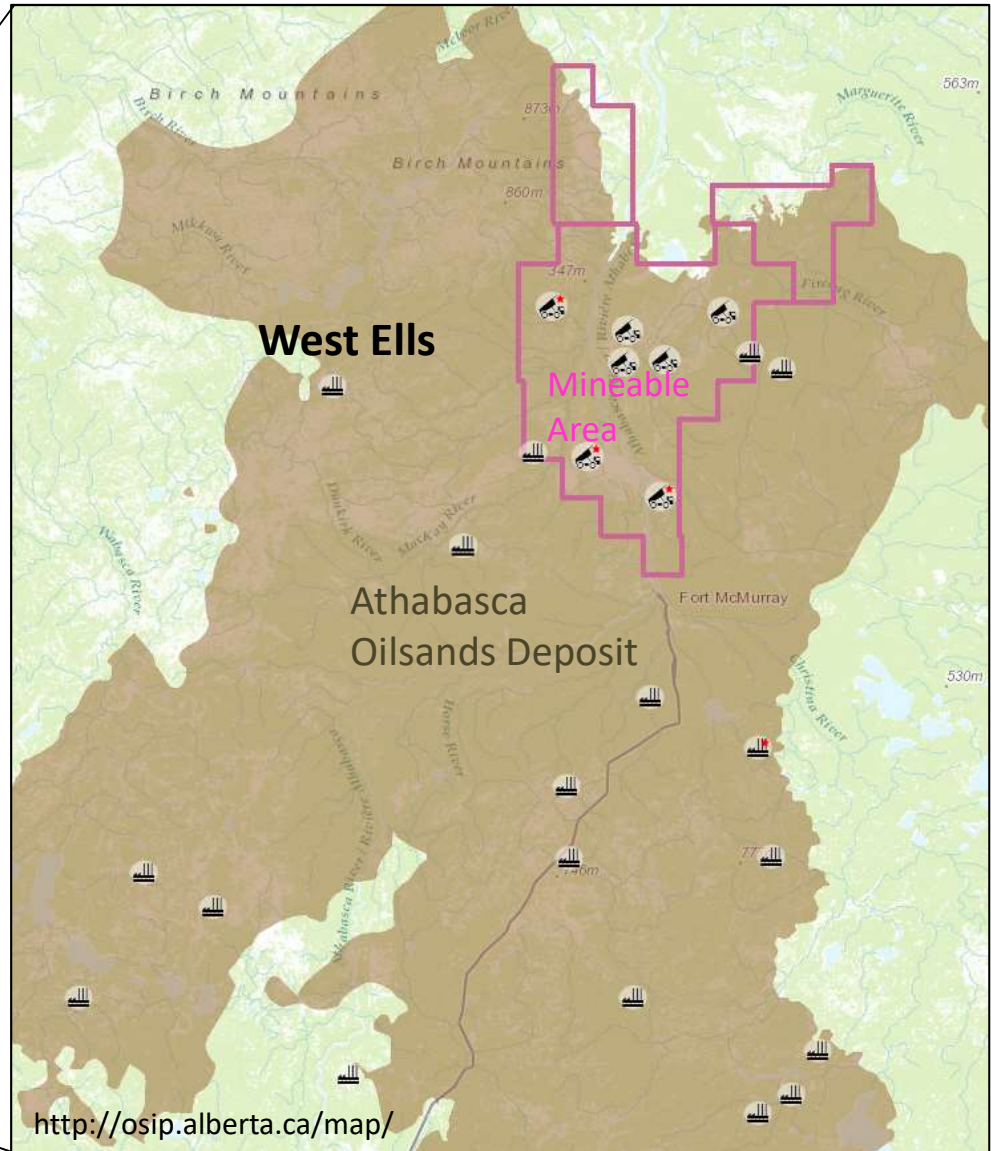
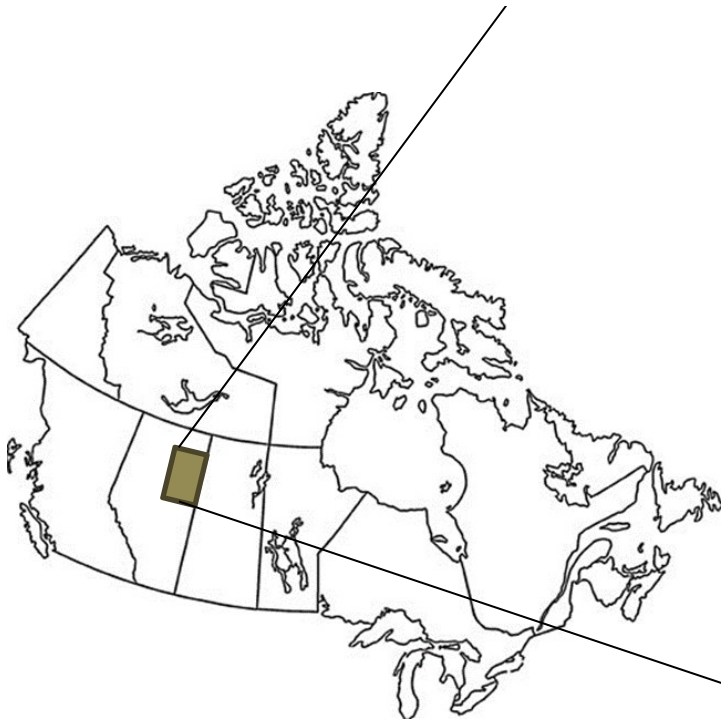


# Introduction



# Location within the Athabasca Oilsands Deposit

**West Ells SAGD Project**  
Located in the NW part of  
the Athabasca Oilsands  
Deposit, Alberta, Canada



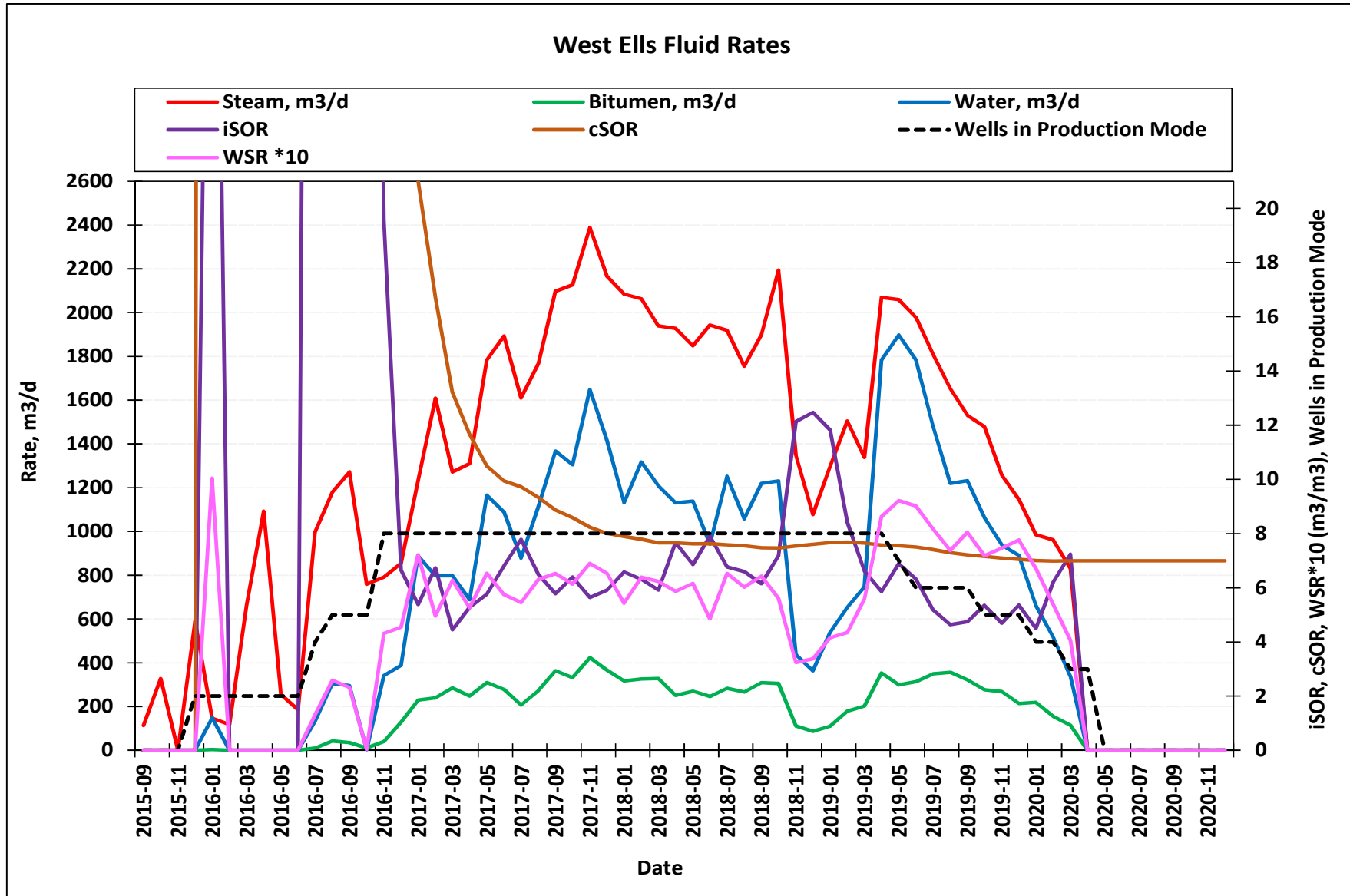




# Subsurface

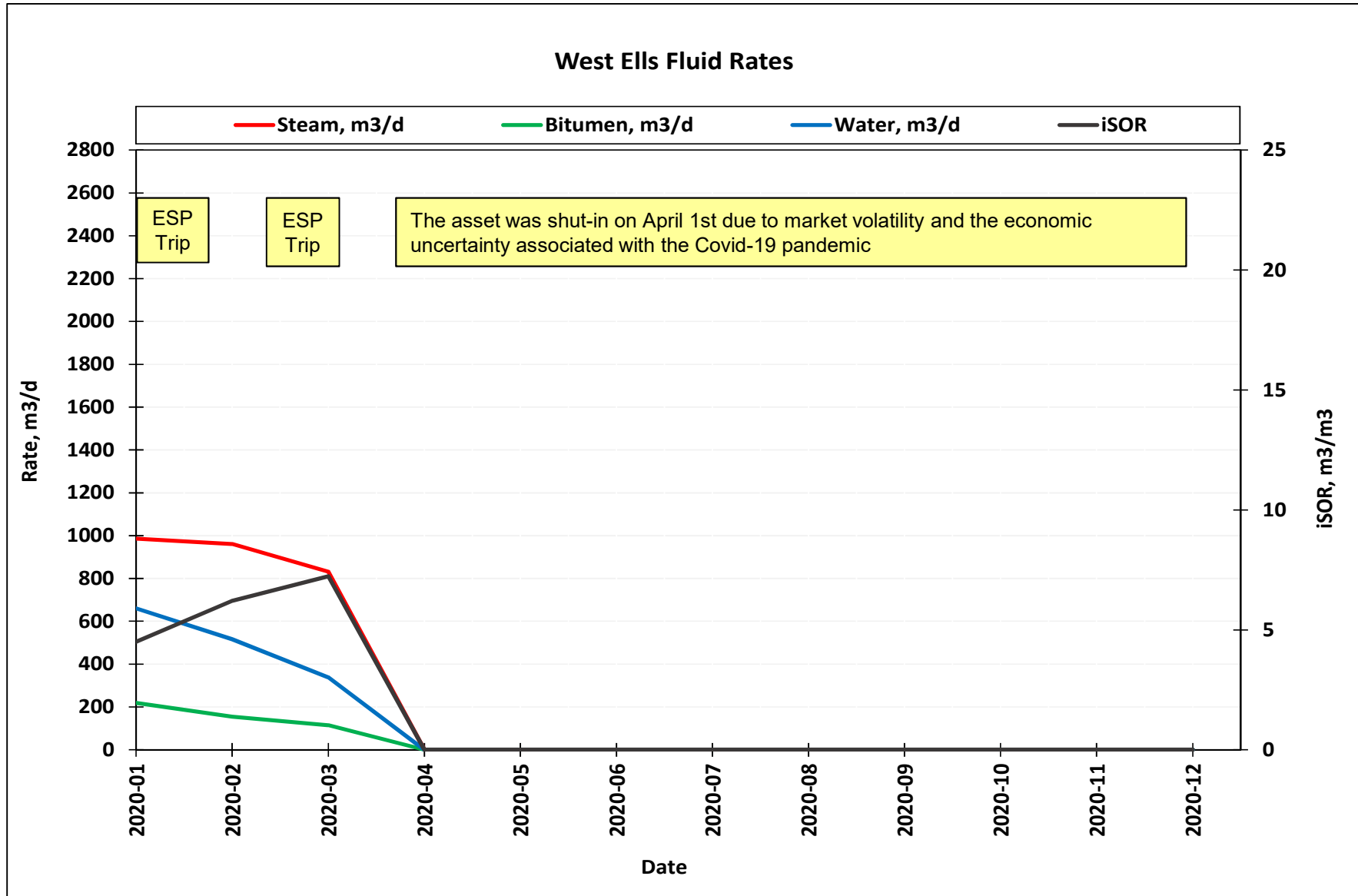


# Production Curves





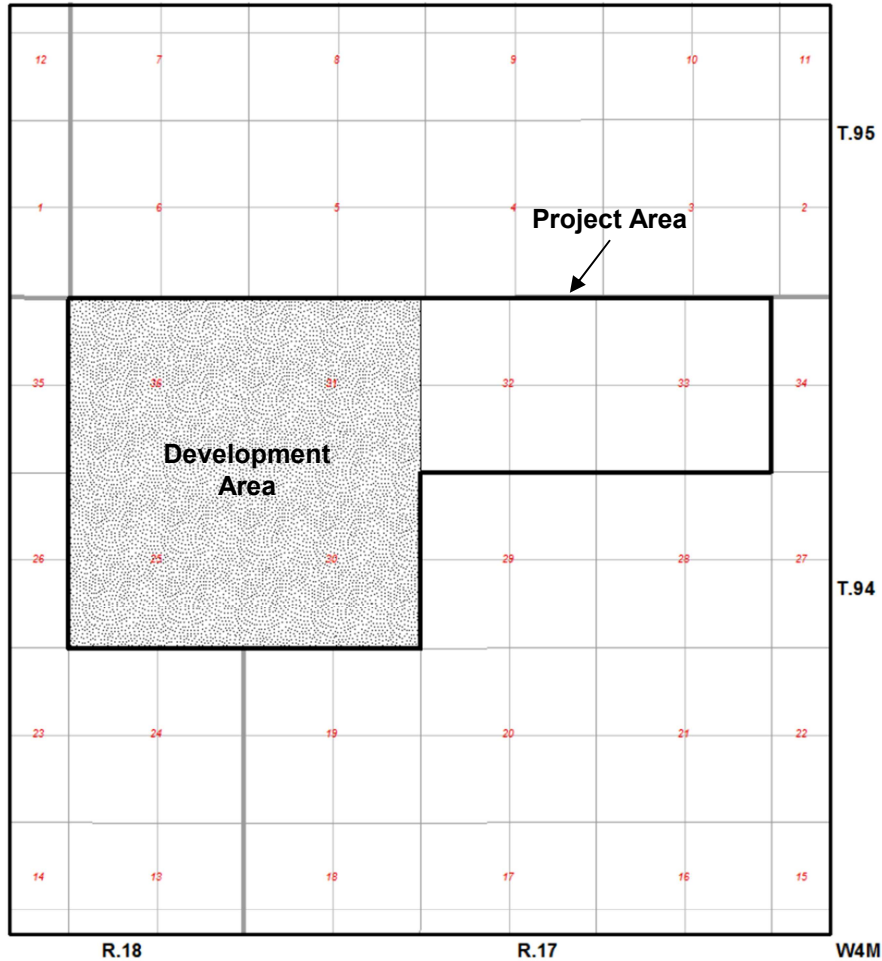
# Annotation of Major Events







# Development and Project Area



Area	Land Description
Development Area (4 sections)	T94 R17W4; Sec 30, 31 T94 R18W4; Sec 25, 36
Project Area (6 sections)	T94 R17W4; Sec 30, 31, 32, 33 T94 R18W4; Sec 25, 36

First Steam – September 2015

First Production – December 2015

ATHABASCA OIL SANDS AREA  
APPENDIX A TO APPROVAL NO. 11764G

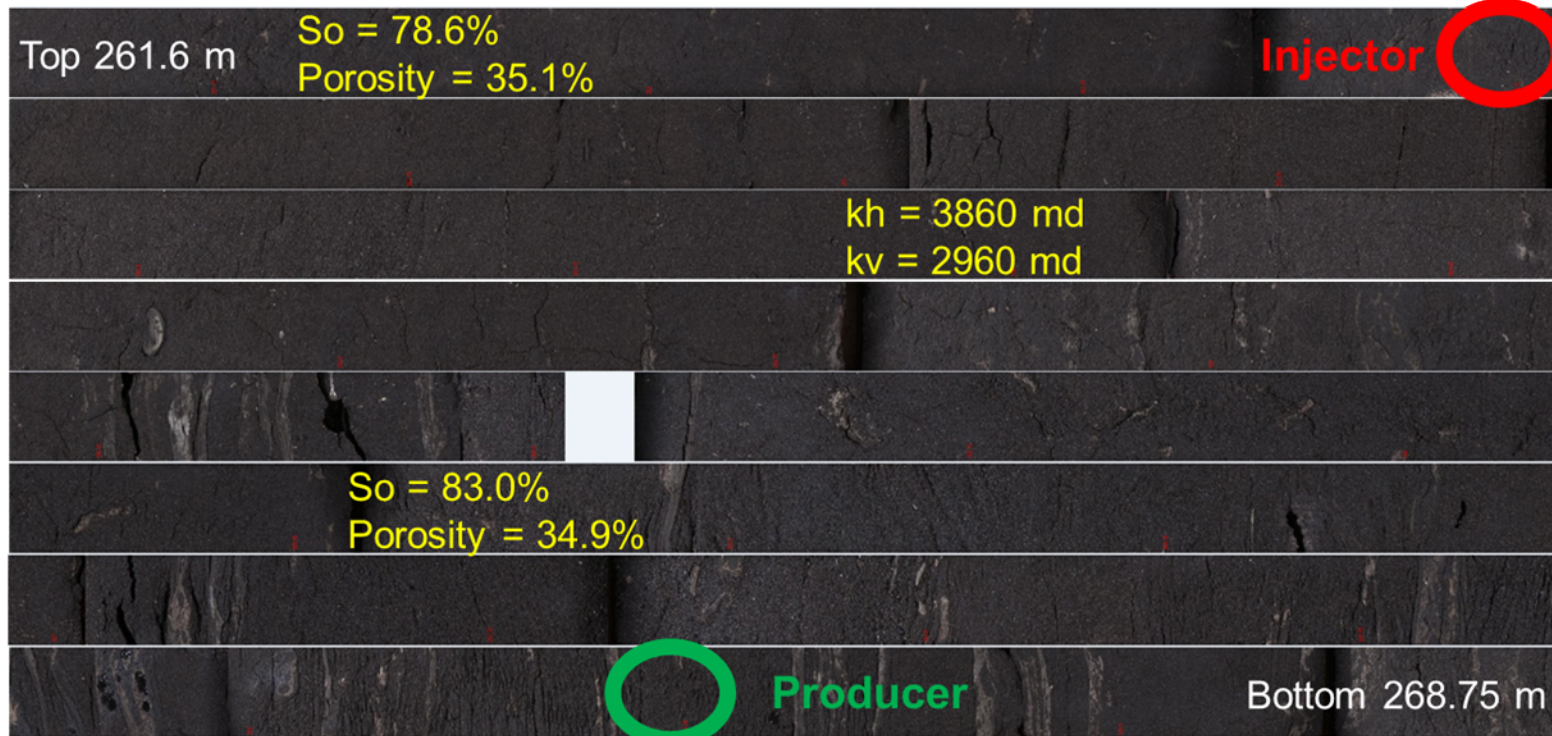
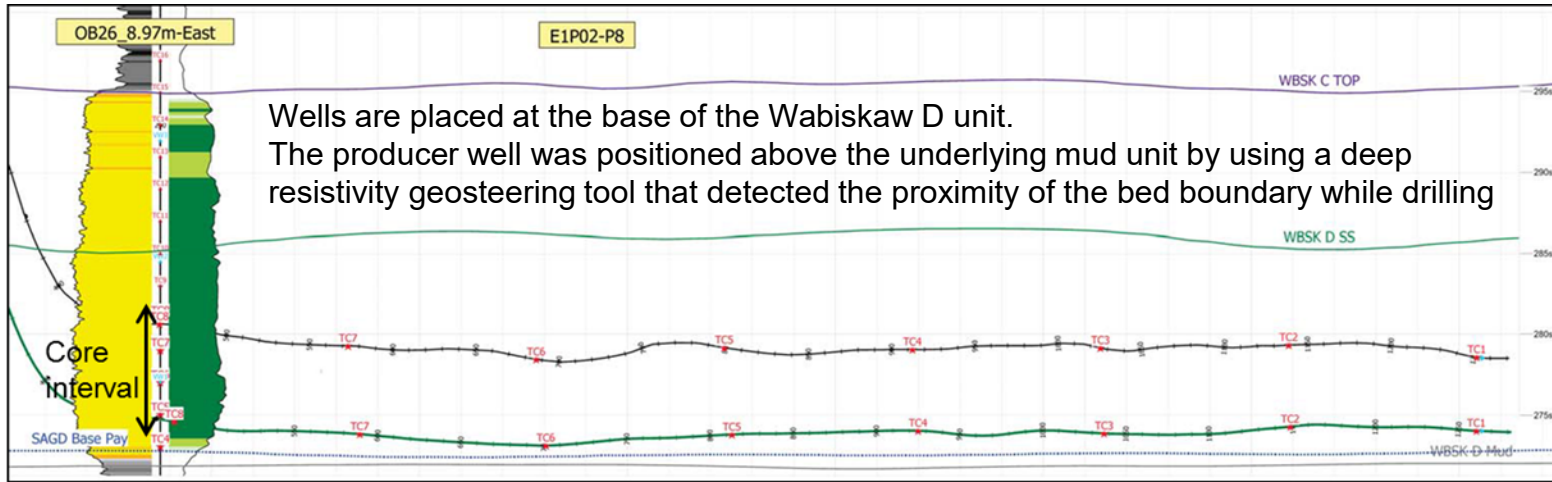
The AER does not warrant the accuracy or completeness of the information contained in this map and is not responsible for any errors or omissions in its content and accepts no liability for the use of this information.

Base Data Provided by Spatial Data Warehouse Ltd., 2003

Legend  
 Project Area  
 Development Area

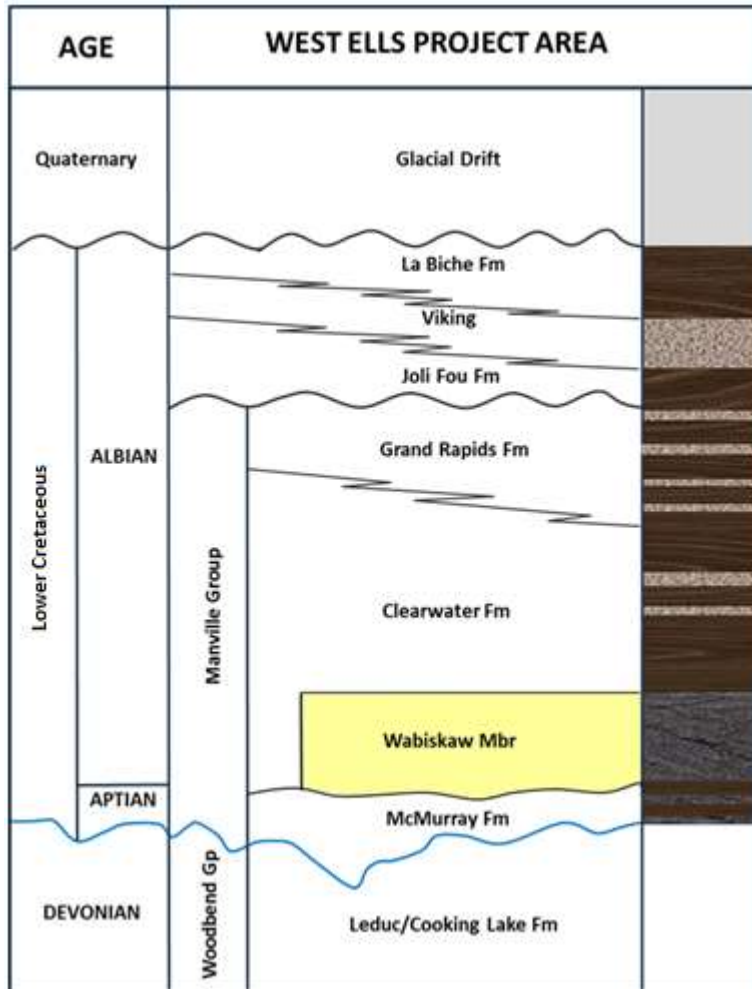


# Typical SAGD Well Placement (e.g. Pair 8)

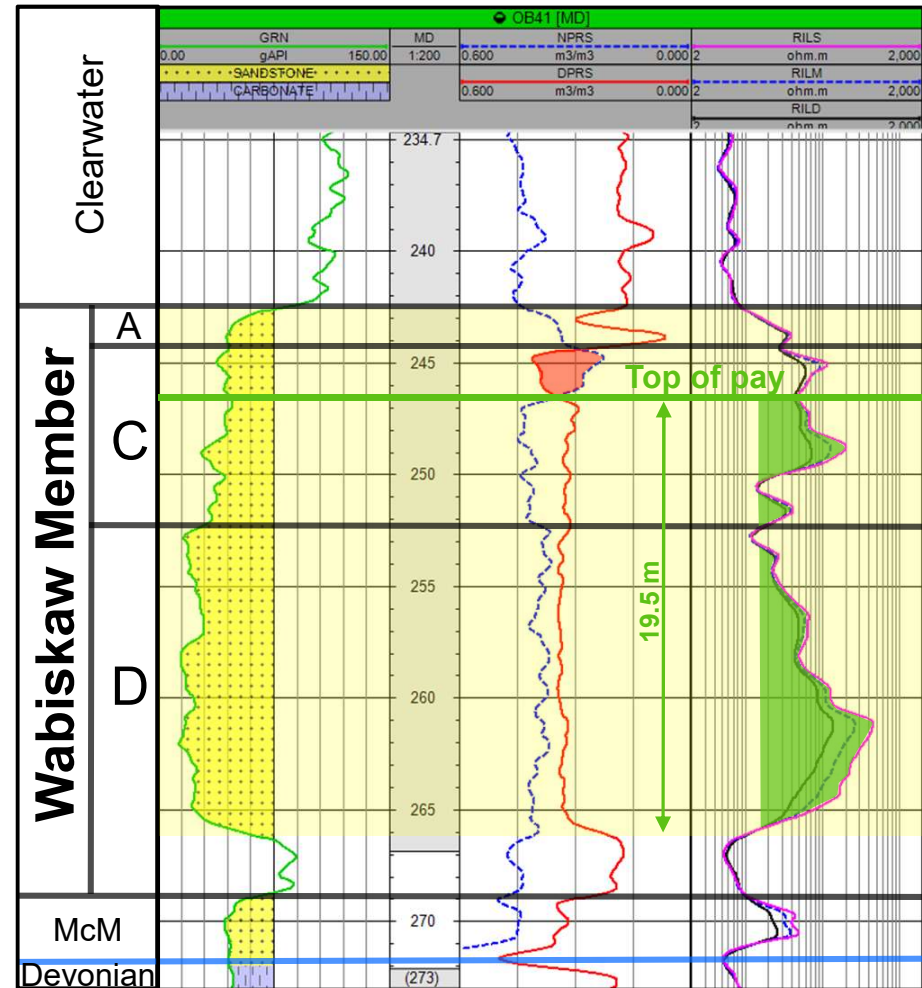


# Stratigraphic Chart & Type Well

Stratigraphic chart



Type Well – OB41 (102/06-31-094-17W4)

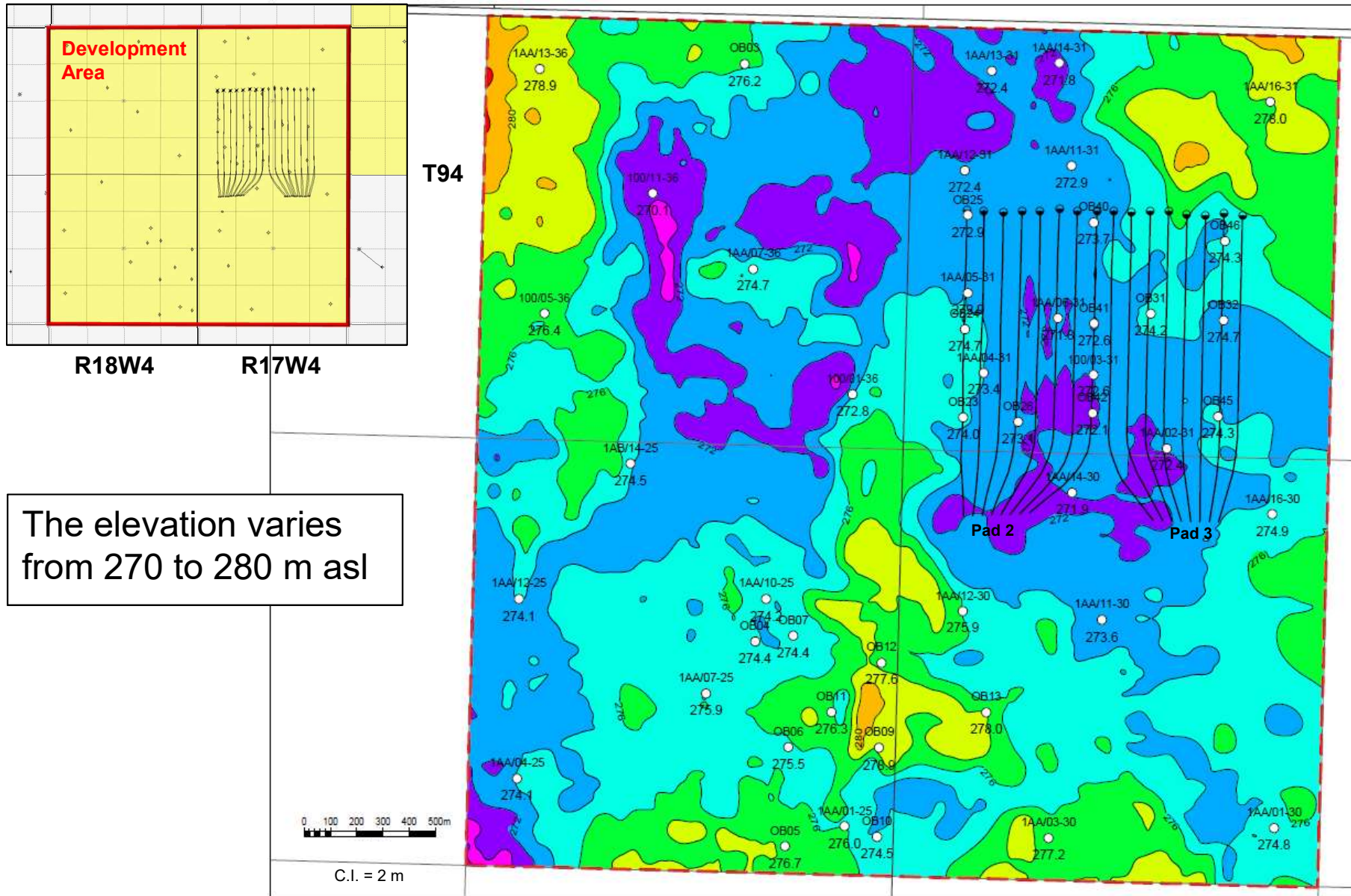


The SAGD wells are located at the base of the Wabiskaw D sand unit



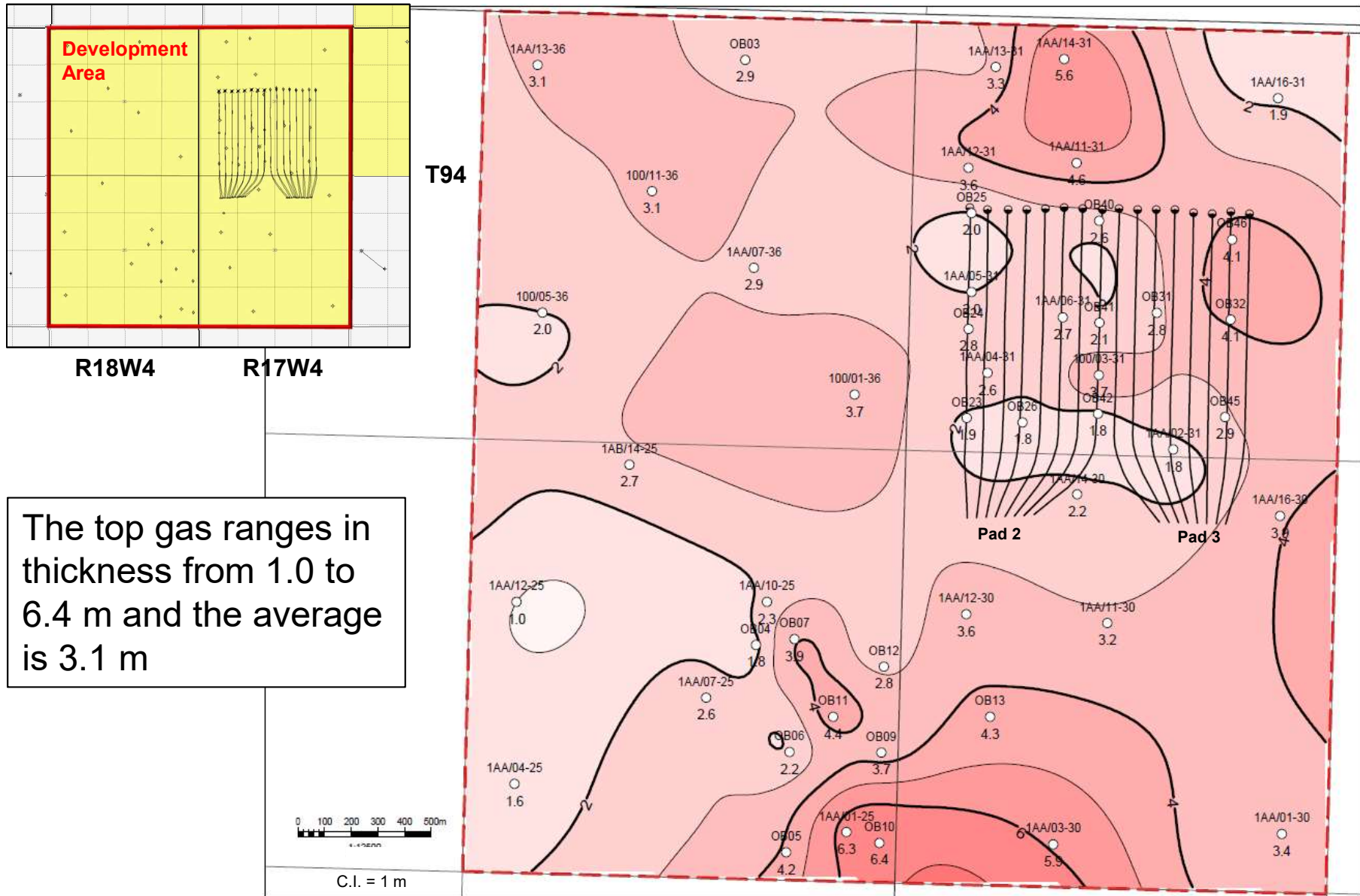


# Base of Bitumen Pay Structure Map





# Wabiskaw C Top Gas Isopach Map



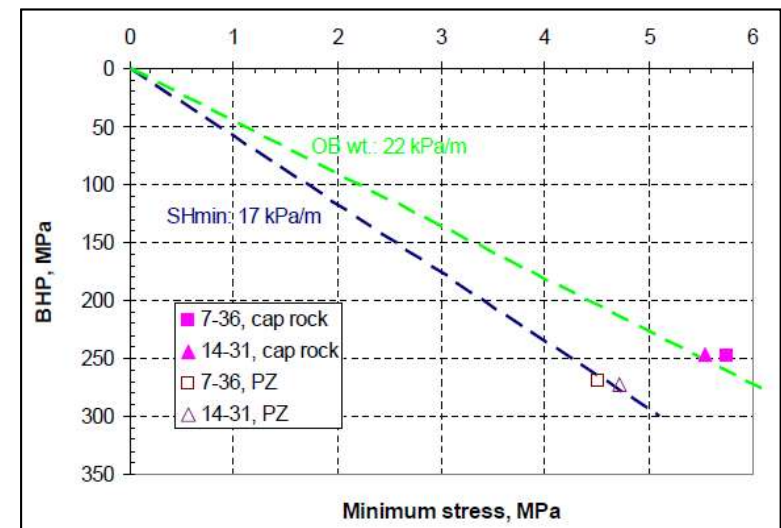
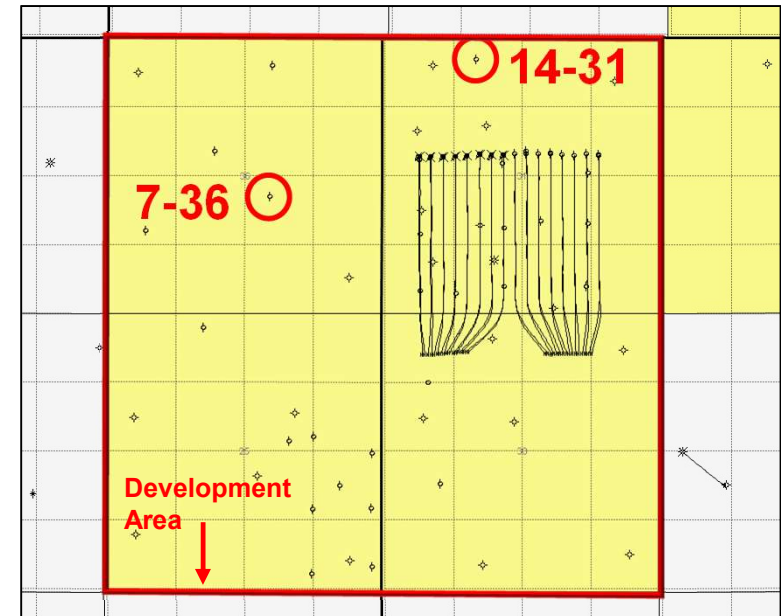




# Geomechanical Anomalies - Cap Rock Integrity

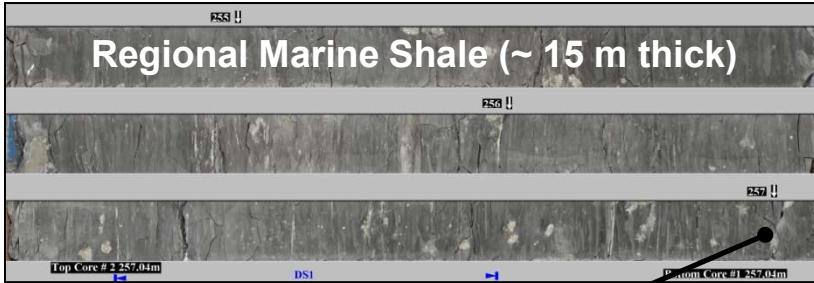
- No geomechanical anomalies reported in 2020 as the injection pressure was below MOP\*. The injection pressure before shut-in was between 1750 and 2100 kPa
- Mini-frac tests were performed at:
  - 1AA/14-31-094-17W4/0
  - 1AA/07-36-094-18W4/0
- Caprock average minimum stress gradient = **22 kPa/m** (Wabiskaw Shale Member)

\* The maximum operating pressure (MOP) of **4400** kPag was granted on March 10, 2016



# Geomechanics - Caprock and Oil Sand from 14-31-94-17W4 Location

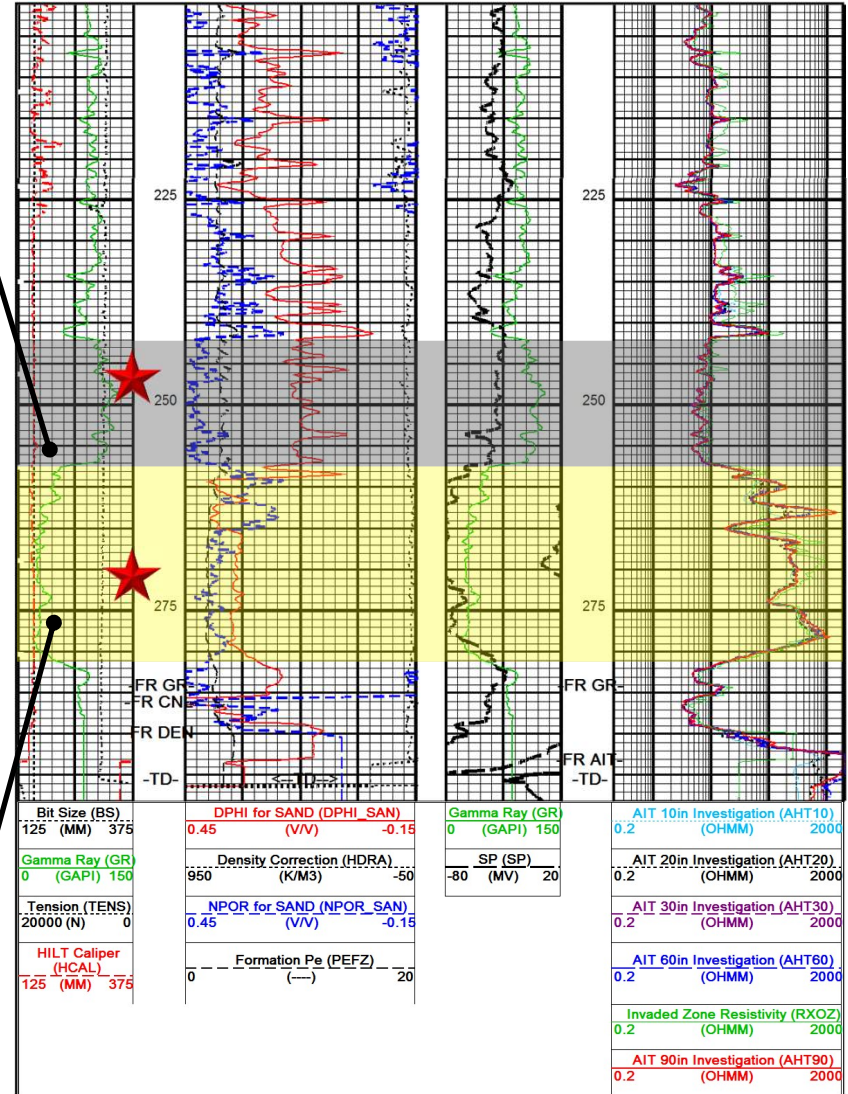
## Caprock - Wabiskaw Shale Member



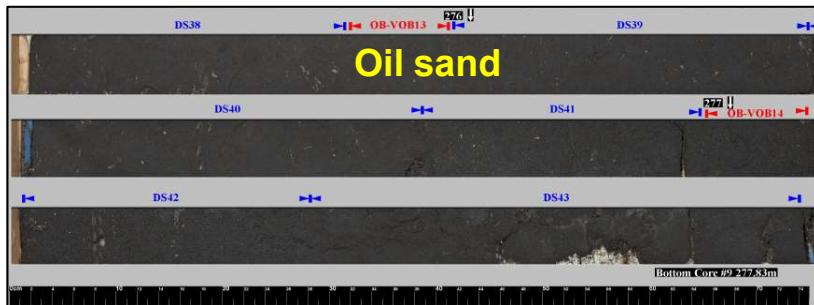
Caprock mini-frac

Oil sand mini-frac

## 1AA/14-31-094-17W4/0 Well Log



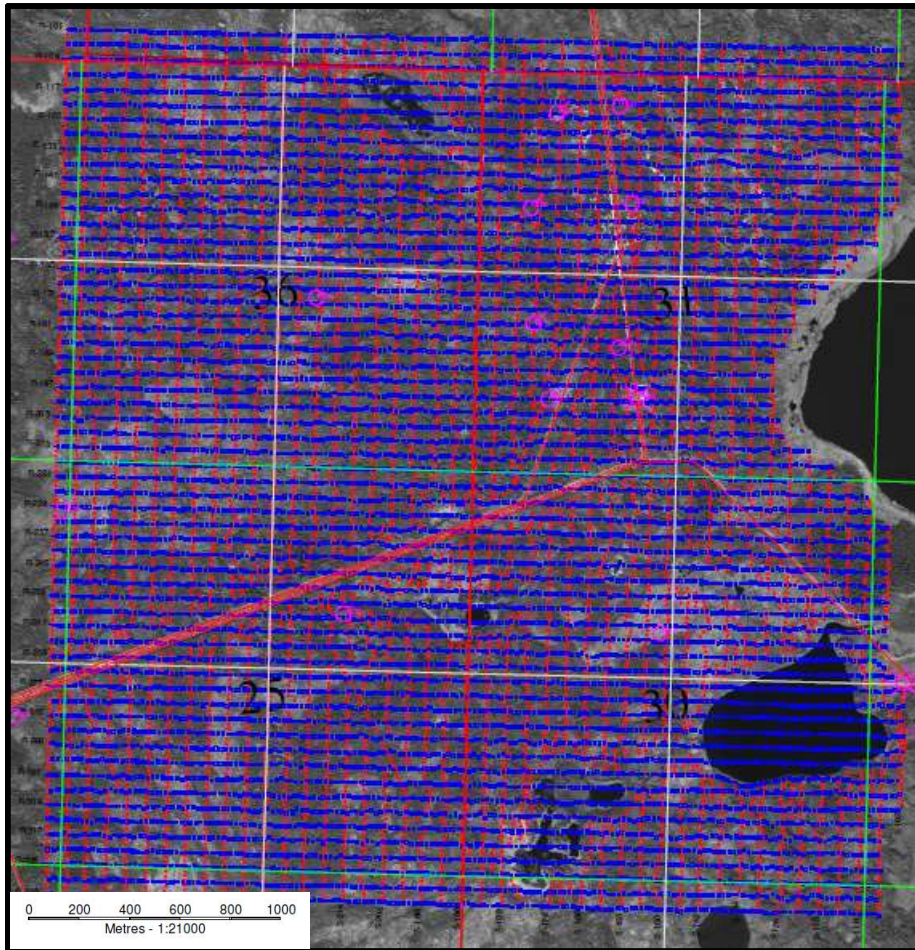
## Oil sand - Wabiskaw Sand



# 3D Seismic Survey and Acquisition Parameters

- No new seismic data acquired in this reporting period

## Survey Layout



## Acquisition Parameters

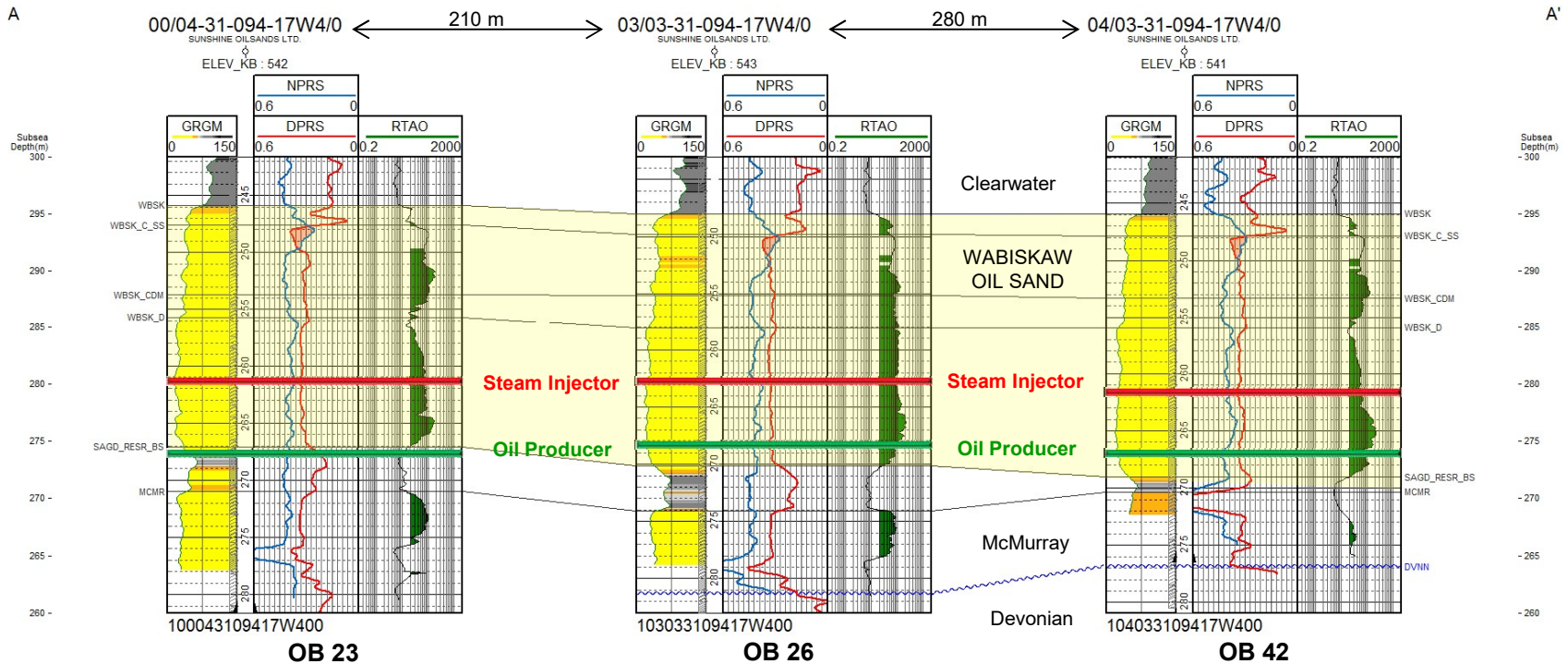
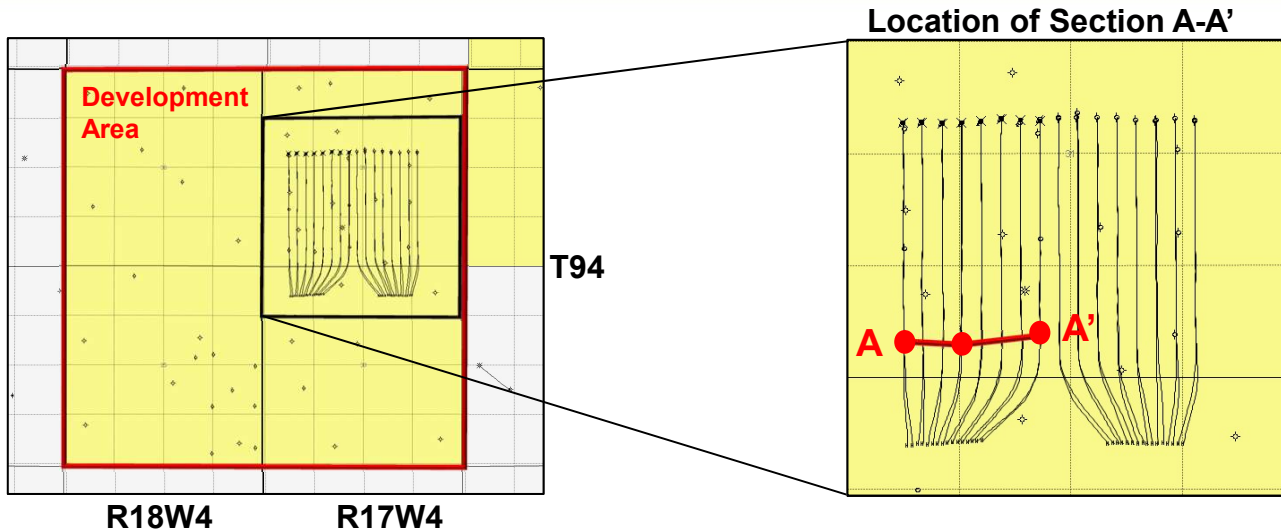
Area 10.7 (km <sup>2</sup> )			
Source Information		Receiver Information	
Source interval (m)	20	Receiver interval (m)	20
Source line interval (m)	80	Receiver line interval (m)	60
Line orientation	N-S	Line orientation	W-E
Total km of line	167.1	Total km of line	194.9
Number of source points	7078	Number of receiver points	9681
Source depth (m)	6		
Source type	Dynamite		



## 4-D Seismic

- As measured on the observation wells, the width of the steam chamber is narrow and less than 10 m from the SAGD well pair. Therefore, Sunshine did not plan a 4D seismic acquisition survey in 2020 because it is difficult to image a small steam chamber in the seismic data
- While there are no plans in 2021 to conduct a 4D seismic survey, Sunshine will consider a 4D seismic survey when it is appropriate and provides an advantage for resource recovery

# Cross-Section A-A' of the Active Development Area



West Ellis SAGD 2020 Performance



# OBIP for Pads 2 & 3 and Development Area

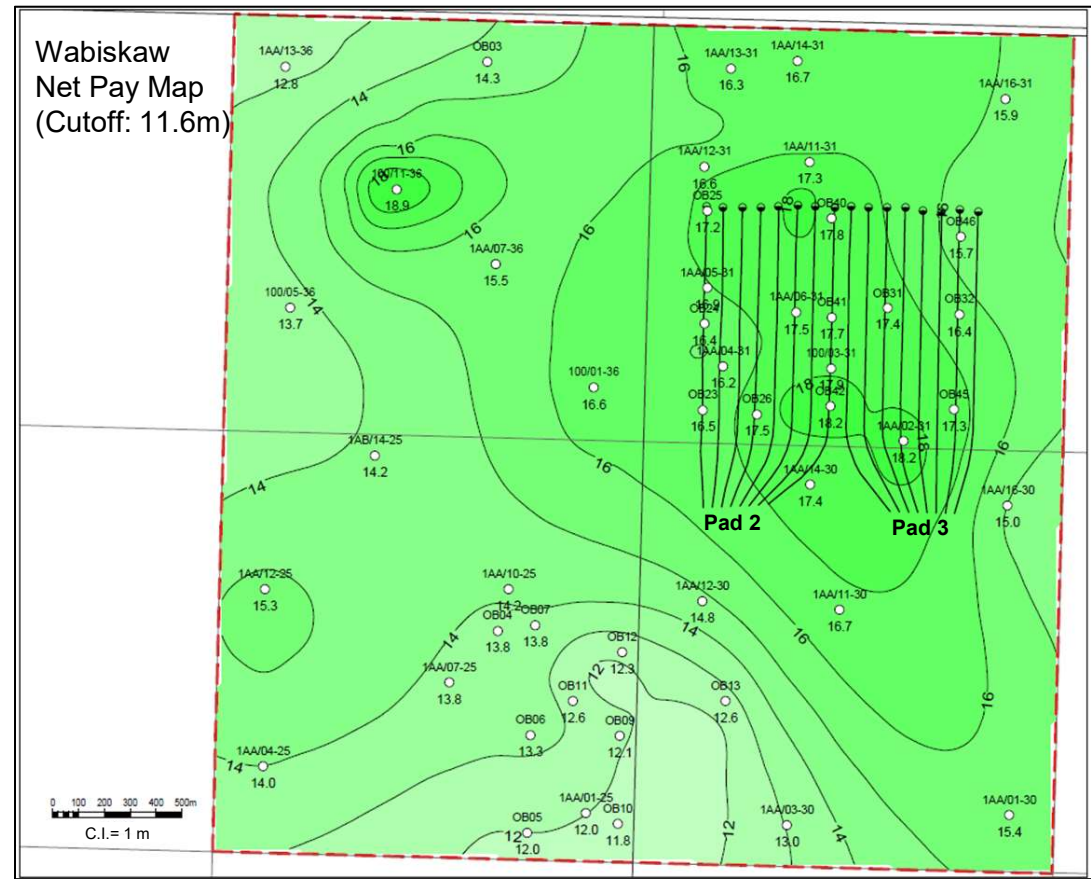
	Number of SAGD Well Pairs	Drainage Area 50m Boundary ( $10^3 \text{ m}^2$ )	Average Net Pay above producer (m)	Total OBIP ( $10^6 \text{ m}^3$ )	Producible Bitumen in Place ( $10^6 \text{ m}^3$ )	Cumulative Bitumen Produced* ( $\text{m}^3$ )	Current Recovery Factor (%)	Estimated Recovery Factor (%)
<b>Pad 2</b>	8	504	16.2	1.87	1.12	315,981	16.9	50-60
<b>Pad 3</b>	8	504	15.4	1.86	1.12	0	0	50-60

\*Production to December 31, 2020

	Area ( $10^3 \text{ m}^2$ )	Average Net Pay (m)	Total OBIP ( $10^6 \text{ m}^3$ )
<b>Development Area</b>	10,511	15.2	37.2
<b>Project Area</b>	15,734	14.7	53.7

OBIP = Area x Net Pay x Porosity x Bitumen Saturation / FVF

FVF = Formation Volume Factor = 1.005





# Average Reservoir Properties for Development Area

Property	Value
Bitumen saturation (%)	71
Porosity (%)	33
Grain size	Fine to medium
Net pay (m)	15.2
Horizontal perm. (D)	2.4
Vertical perm. (D)	1.7
Reservoir pressure (kpa)	600
Reservoir temperature (°C)	9
Reservoir depth (m TVD)	265
Bitumen viscosity (cp)	> 1 million
Well length (m)	800
Well spacing (m)	70

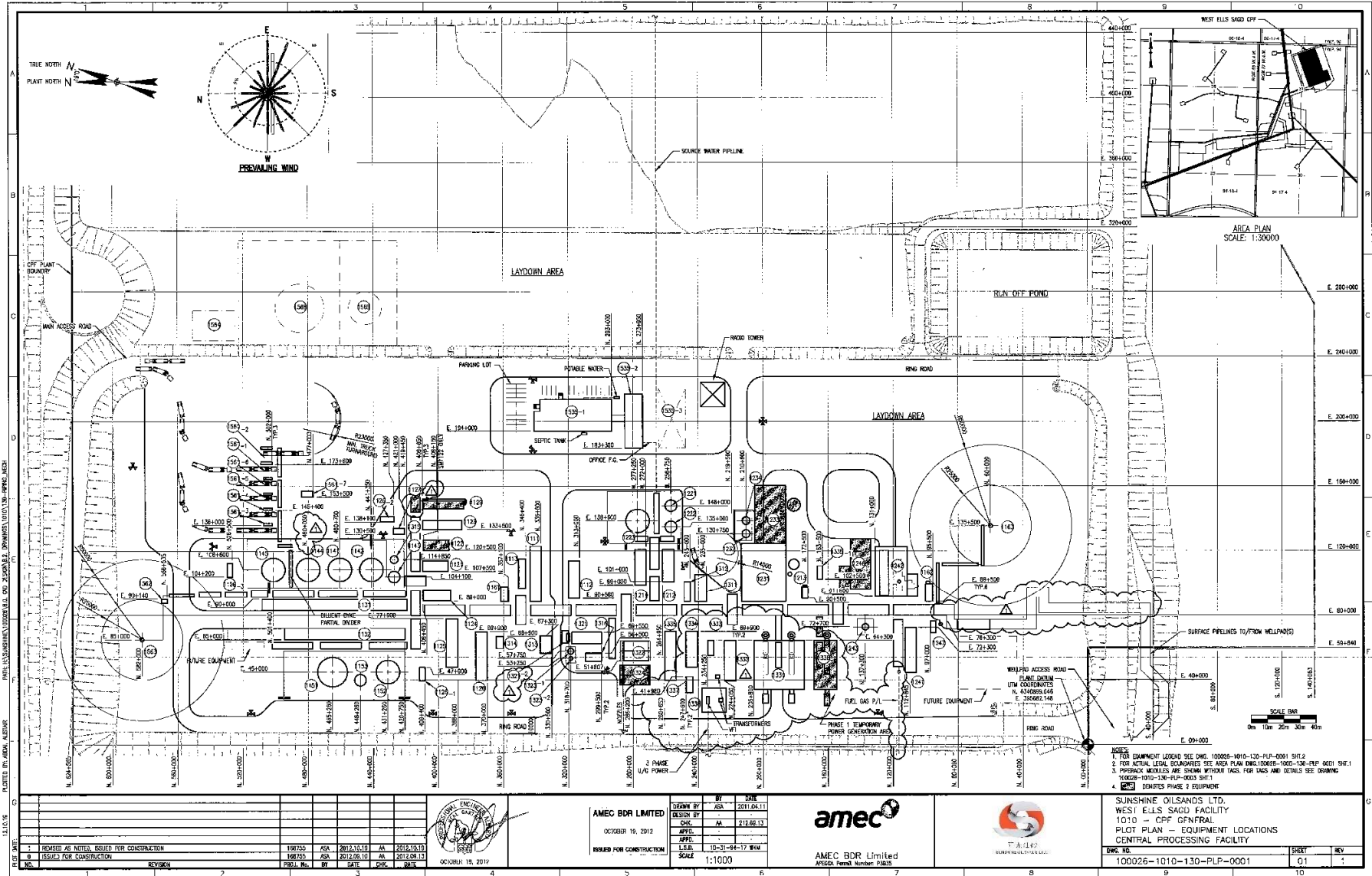
# Surface





# CPF Plot Plan

- No major facility modifications during this reporting period



DRAWN: H. S. CHEN / CHECKED: B. S. CHEN / DESIGNED: H. S. CHEN / DATE: 2012.12.13  
 PROJECT: WEST ELLS SAGD  
 SHEET: 100026-1010-130-PLP-0001

NO.	REVISION	DATE	BY	CHK.	DATE
1	ISSUED FOR CONSTRUCTION	2012.12.13	ASA	AA	2012.12.13
2	ISSUED FOR CONSTRUCTION	2012.12.13	ASA	AA	2012.12.13

**AMEC BDR LIMITED**  
 OCTOBER 19, 2012  
 ISSUED FOR CONSTRUCTION  
 SCALE: 1:1000

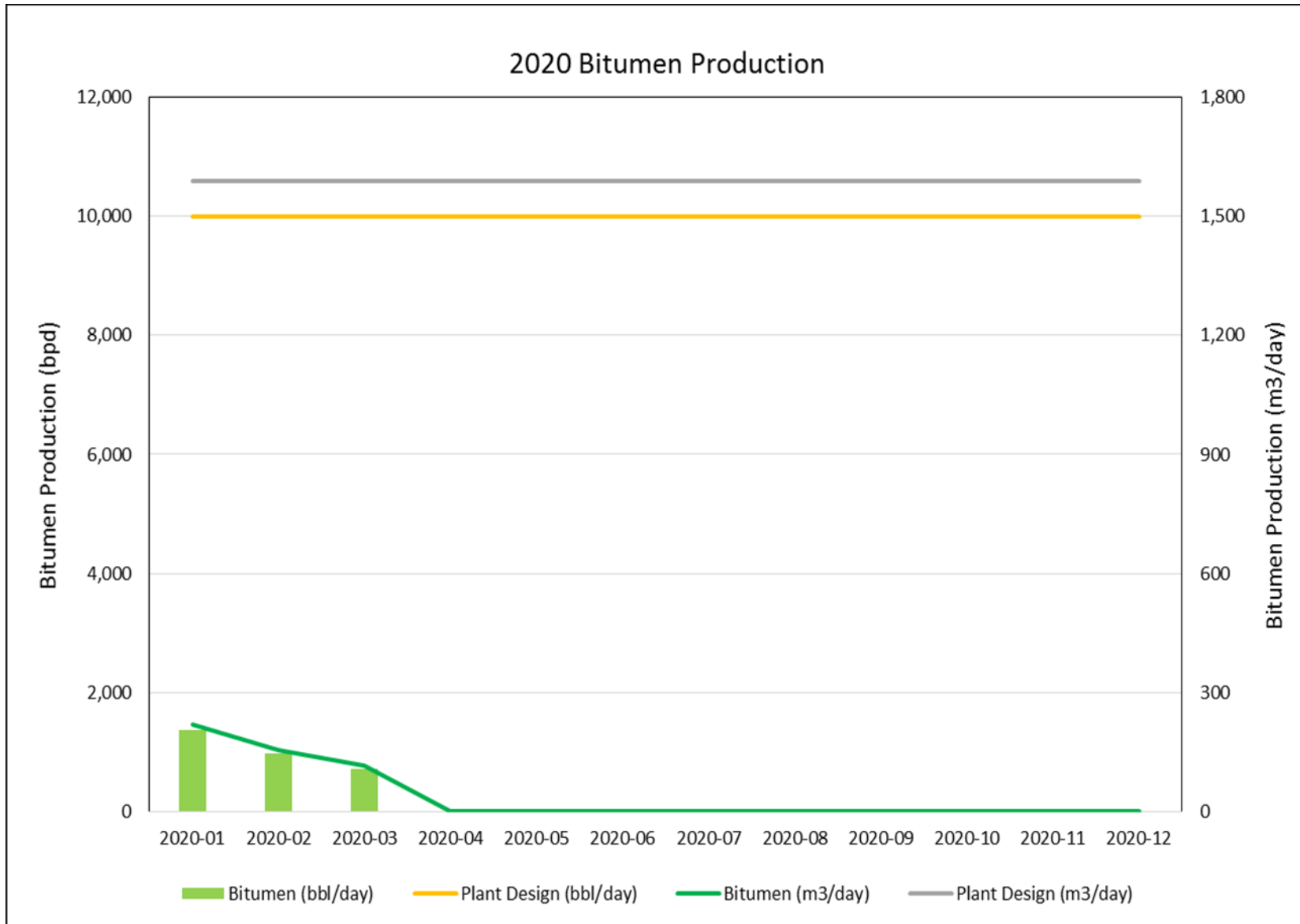
**amec**  
 AMEC BDR Limited  
 Alberta Permit Number: P435



SUNSHINE OILSANDS LTD. WEST ELLS SAGD FACILITY 1010 - OFF GENERAL PLOT PLAN - EQUIPMENT LOCATIONS CENTRAL PROCESSING FACILITY	
DWG. NO.	SHEET
100026-1010-130-PLP-0001	01

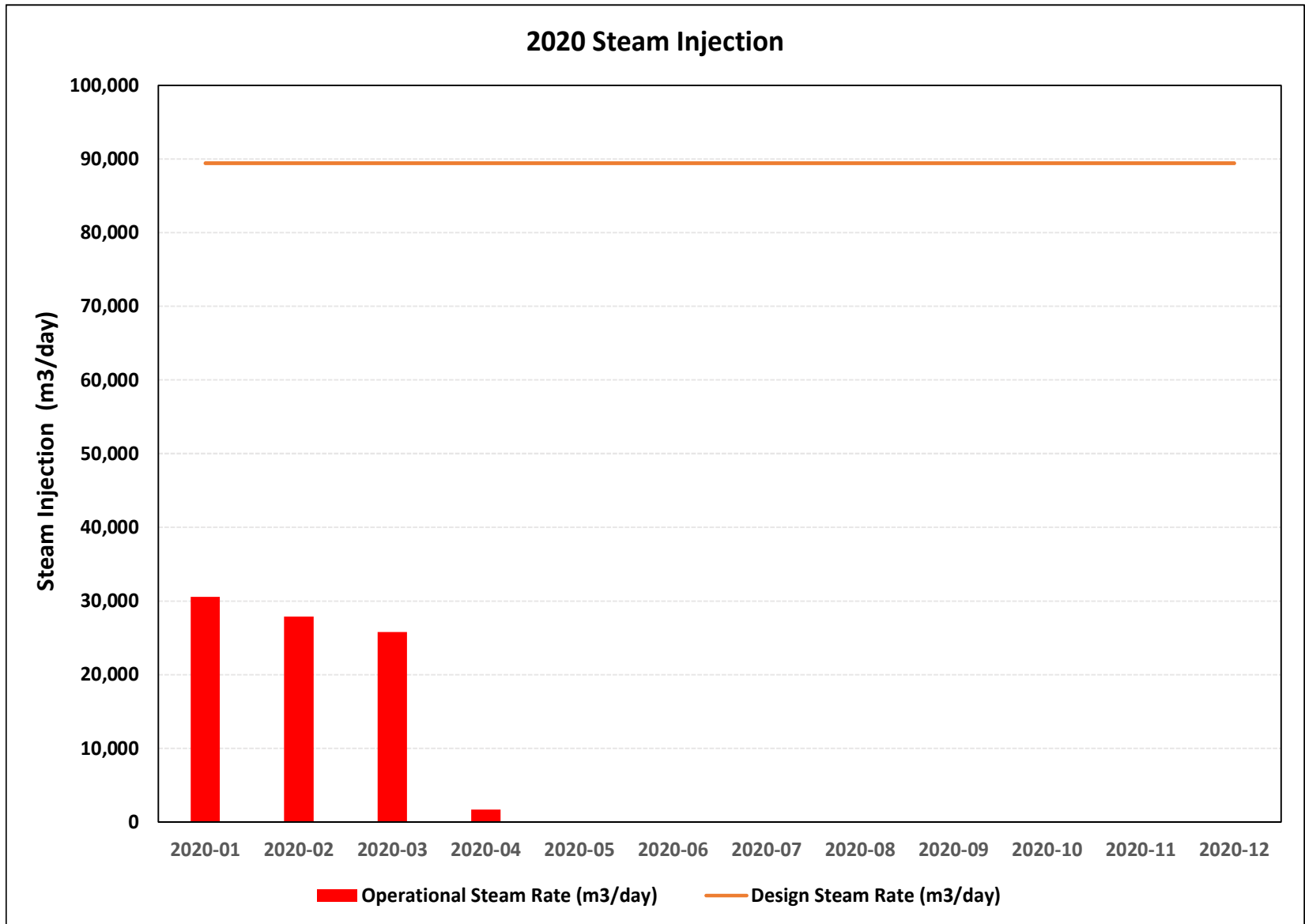


# Bitumen Production





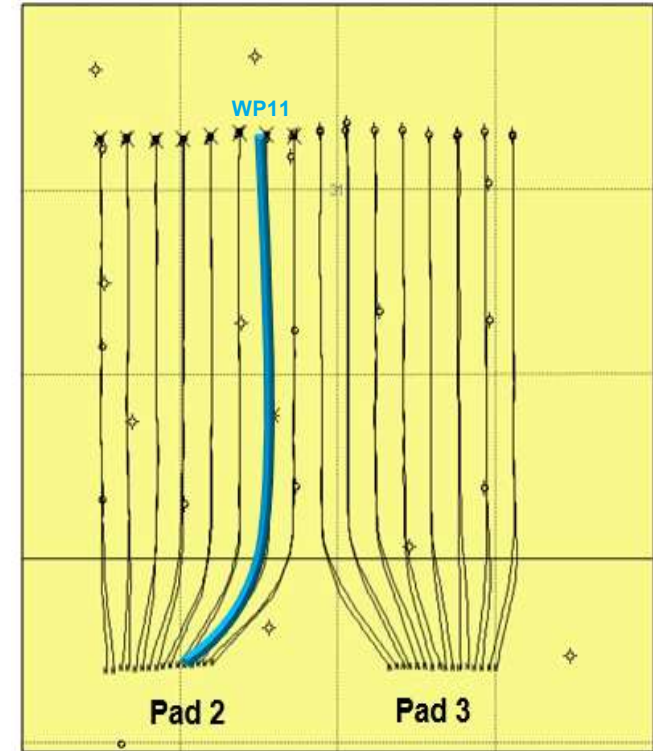
# Steam Injection



# Historical & Upcoming Activity

## Summary of Suspension Activity

- Pad 2 (WP11):
  - Has been suspended since May 1, 2019 and this suspension impacted production from well pairs 10 and 12
  - It was not economic to fix the well in 2020
  - 226,723 m<sup>3</sup> of remaining reserves
- Pad 2 (Temporarily suspended)
  - 4 ESPs will be replaced in Q3 2021
  - Production will resume in Q4 2021





# Regulatory and Operational Changes

Date	Approval/Amendment	Activity
May 29, 2020	EPEA Approval No. 00266890	Authorization request related to COVID-19 – environmental monitoring relaxation
July 20, 2020	EPEA Approval No. 00266890	Authorization request for environmental monitoring variance
July 23, 2020	WA Licence No. 00316770	Renewal submission extension

## Notes

- o EPEA – Environmental Protection and Enhancement Act Approval
- o WA - Water Act



## Regulatory and Operational Changes

In this reporting year there were:

- Unprecedented market volatility and the economic uncertainty associated with the ongoing COVID-19 pandemic that resulted in the temporary suspension of production in April 2020
- This materially affected scheme performance, energy or material balances
- No technological innovations or pilots were conducted



## Lessons, Success and Failures

- There were no major failures/incidents reported at the site
- 2020 was a challenging year for the Industry, Sunshine and West Ells. Despite the pandemic and difficult market conditions, West Ells successfully reduced its operating cost by suspending production
- Operating West Ells with no bitumen production and reduced staff proved to be a challenge. The team successfully maintained West Ells in good condition so production can resume in 2021
- The lack of continuity in knowledge and experience due to reduced staff has impacted the smoothness of operation. Sunshine can learn and improve from this experience
- Communication is the key to success. Sunshine's staff work closely together to overcome challenges and adversities





# Compliance History – Approval Contraventions

- The following list summarizes non-compliance events and two reportable releases in this reporting period

Date	CIC #	Description	Remediation
03-Feb	0363344	Failed to submit December 2019 CEMS data on time	Data has been submitted
17-Feb	0363784	Third Party truck and trailer rolled over into the ditch when leaving the site, releasing approximately 3.5m <sup>3</sup> of Evaporator Blowdown Water	Truck and trailer were removed, cleanup activities were completed and confirmatory sampling confirmed soil endpoints were within referenced Alberta Tier 1 Soil Remediation Guidelines
02-Mar	0364205	Failure to submit January 2020 CEMS data on time	Data has been submitted
01-Apr	0364977	Failed to submit February CEMS data, passive air monitoring data and the 2019 Annual Industrial Air Monitoring Report on time	Data and reports have been submitted
24-Apr	0365697	An erosion channel had formed under the ice on the surface of the well pad and an uncontrolled release of surface run-off water into the environment occurred	A temporary patch to the well pad berm was installed
01-Dec	0374114	Failure to submit the second Soil Monitoring Report by December 1, 2020	Variance was received and report will be submitted by December 1, 2021



## Future Plans

- Sunshine plans to resume production in Q4 2021
- No new initiatives planned within the next 5 years
  - Continue to fully demonstrate the reservoir productivity before advancing to Phase II (10,000 bpd production)
- EPEA Approval (266890) renewal application expected to be submitted in July 2021



## Contact

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