Proposed East Manson Unit No.4

Application for Waterflood EOR

Manson, Manitoba

1/2/2014

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Introduction

In accordance to Section 71 of the Drilling and Production Regulations of Manitoba, Fort Calgary Resources Ltd, on behalf of Surge Energy Inc. is requesting the board's approval of a newly proposed East Manson Unit No.4 (EMU No.4). The unit will be located in Sections 12-14-29W1 and 7-14-28W1 with the intent of further extending a waterflood in the Bakken pool.

Since the first vertical discovery well in August 2010, Fort Calgary has drilled a total of 45 horizontal and 15 vertical wells targeting the Middle Bakken in the Manson area. The large Middle Bakken pool trends southeast to northwest from section 3-13-28W1 to section 14-14-29W1 respectively. A low pool-wide estimated ultimate recovery (EUR) of 7.2% is expected due to negligible solution gas and low initial pressure. The proposed waterflood and unit area will further expand the SEC 29 pilot to Sections 12 and 7. Preliminary results of the approved SEC 29 pilot flood demonstrate considerable response in horizontal wells surrounding the Surge 2-29-13-28W1 injection well within approximately 15 days of initial injection.

The proposed EMU#4 waterflood area is currently developed with 1 vertical and 8 horizontal wells. Following approval of the proposed unit, 1 new horizontal will be drilled and 3 existing wells will be converted to injectors in order to complete the waterflood scheme outlined in *Appendix D, figure 3.* Early results from the pilot SEC 29 waterflood and developed waterflood areas in analogous Bakken / Three Forks reservoirs in the Daly and Sinclair areas demonstrate that incremental recovery factors of over 13% can be attained.

Summary

1. The Proposed East Manson Unit No.4 will include all 16 legal subdivisions (LSD) in Section 12-14-29W1 and 4 LSDs in Section 7-14-28W1, where 1 vertical and 8 horizontal wells are completed in the Middle Bakken formation. A map of EMU No.4 can be seen in *Appendix A, figure 1*.

2. *Appendix C, figures 2 & 3* show oil production from the proposed East Manson Unit No.4 of 51 m3/d and an average water cut of 35% as of October 31st, 2013. It is to be noted that one additional well is planned from 4-7-14-28W1 surface to 4-12-14-29W1 bottom hole. Additional primary production is expected from the new infill well prior to injection conversion.

3. Original oil in place (OOIP) for the proposed unit is 820.8 e ^{3}m^3 or 41 e ^{3}m^3/ LSD. (see *Appendix C, figure 1*)

4. Cumulative oil production from the proposed unit as of October 31st 2013 is 15.6 e ^{3}m^3, giving a current recovery factor (RF) of 1.90% within the unit boundary.

5. Declines for the 9 current producing wells show an estimated ultimate recovery (EUR) of 96.85 e ^{3}m^3 and remaining recoverable oil in place as of October 31st of 81.25 e ^{3}m^3. This gives an ultimate recovery factor of 11.8% under primary depletion.

6. Initial reservoir pressure (Pi) of the Middle Bakken reservoir was 5500 kPa. This value was consistent with four different static gradients taken in SEC 12 TWP 14 RNG 29 and 20, 29, 28 TWP 13 RNG 28W1. Current reservoir pressure (Pr) is estimated to be approximately 2000 kPa.

7. The existing Daly Bakken A water flood in SEC 21, 28 and 29 TWP 10 RNG 29W1 can be used as an analogy with similar geology and reservoir characteristics where an 8% incremental waterflood recovery factor has been seen. Surge believes that favorable results can be achieved in EMU No.4 utilizing a horizontal injection pattern. Early results from the Surge SEC 29 pilot waterflood also show good waterflood response with a minimal response period. Post flood ultimate recovery of approximately 24.0% is forecasted for SEC 12 & 7 (*Appendix C, Figure 4)*.

8. Injector conversions will begin upon approval, beginning 2 horizontal wells. One infill horizontal well will subsequently be drilled and produced for approximately 3 months before it is converted to injection. A fully developed injection pattern is shown *Appendix D, figure 3*, with a target water injection date of April 1st, 2014.

Geological Discussion

Stratigraphy

The stratigraphy in EMU No. 4 is defined by the cross section A-A` seen in *Appendix B, figure 13.* Cross section A-A` can be observed on each of the Appendix B maps running from the Northwest to the Southeast of EMU No. 4. The section consists of the Upper Bakken Shale, the Middle Bakken Siltstone, the Torquay (Three Forks) Unit 3 shale and the Torquay (Three Forks) Unit 2 siltstone. The Torquay (Three Forks) Unit 2 siltstone, although highly variable, is an oxidized, silty reservoir layer with potential for contribution in areas of better facies development and thin overlying Unit 3. The Torquay (Three Forks) Unit 3 shale is a brick red, oxidized shale that forms the upper seal to Unit 2. Unit 3 is unconformably overlain by the Middle Bakken Siltstone which represents the main reservoir unit and will be later subdivided based on its lithological characteristics. The Upper Bakken Shale is a black, organic rich and platy shale that conformably overlies the Middle Bakken Siltstone to form the upper seal for the main Middle Bakken reservoir.

Reservoir Sedimentology

The Middle Bakken reservoir is composed of coarse grained siltstone to fine grained sandstone which can be subdivided into the upper, middle, and lower units.
The upper unit is generally a bioturbated, pale grey, medium to coarse silt. Although containing varying traces, the bioturbated beds are often represented by possible teichichnus and planolites with thin walled brachiopod shells occurring near the top of bedding surfaces. The upper unit was likely deposited in an offshore marine environment and is considered a non-reservoir unit in the majority of cases.
The middle unit is generally an interlaminated, tan to grey, coarse silt to very find sand and shale. There is an obvious lack of bioturbation in this unit indicating a restrictive environment. Overall, this unit contains multiple fining upwards successions that are dominated by coarse silt to very fine sand deposition near the base. This grades into interlaminated silts and shales near the top of each succession. Although the middle unit contains variability, it is considered a reservoir unit ranging from 0.5 to 1.5 meters thick. It is likely this unit represents a transitional stage between offshore marine and coastal environments.
The lower unit is generally a moderately to well sorted, tanish grey, coarse silt to fine sand with abundant ripple cross laminations. Occasional trough cross bedding and potential rip up clasts near the base indicates a higher energy influence. Lower unit thickness can vary, however it is generally between 2 and 4 meters thick and represents the main reservoir. This unit was likely deposited in a shoreface environment.

Structure

Structure maps for the Upper Bakken, Middle Bakken, Unit 3 (erosional unconformity of Middle Bakken) and Unit 2 can be seen *in Appendix B, Figures 1 to 4*. The structure in the area of the Bakken and

Torquay (Three Forks) consists of a gentle dip to the southwest. As an exception, the southwest corner of Section 12 is falling into a structural low causing slight variations in the regional dip across EMU No. 4. This is likely the result of dissolution of the underlying prairie evaporites. It is important to note that while these localized lows are present, they do not represent barriers to lateral fluid flow within the reservoir. This can be seen in cross section A-A`, where lateral continuity of the reservoir beds is present *(Appendix B, Figure 13*).

Reservoir Continuity

The cross section A-A` and isopach, seen in *Appendix B, figures 13 & 5,* confirm there is no significant thinning of the reservoir units in the Middle Bakken within SEC 12-14-29W1. An on-lap edge can however be seen northeast of the area resulting in a pinching of the main reservoir unit. Unit 2 is briefly described in stratigraphy; however as seen in *Appendix B, figure 11*, SEC 12 is beyond the zero edge of Unit 2 pay and will therefore not be contributing in EMU No. 4. This lack of reservoir development could be a result of depositional setting or weathering, either destroying the paleo-fabric or an absence of preventing reservoir conditions from forming.

Reservoir Quality

To examine reservoir quality, porosity (phi-h – por*m) and permeability (k-h – mD*m) maps for the main reservoir units are provided in *Appendix B, figures 7 to 10*. By separating each of the 24 cores by reservoir unit and compiling the porosity and permeability data, permeability-porosity cross plots were created to help with the prediction of permeability values for wells that were not cored. This core data was then subjected to a 1 mD permeability cut-off and the intervals greater than or equal to the criteria were multiplied by interval thickness to obtain phi-h and k-h values. A 1 mD permeability cut-off roughly correlates to a 12% porosity cut-off. It is important to note that a permeability cut-off was applied under the concept that contribution from intervals with permeabilities less than 1 mD will be limited. It is likely that there will be contribution from pore volume with less than 1mD of permeability; however the extent of contribution could prove difficult to predict and potentially result in unrealistic phi-h and k-h values. It is recommended the cut-off not be taken in the strictest sense and the absolute potential of the reservoir should still be explored. As a result, a bulk reservoir phi-h map was created and OOIP was calculated with a 1 mD cut-off.

Fluid Contacts

The oil-water contact of the Middle Bakken Reservoir has been interpreted from logs to be at approximately -192m subsea. Based on the structural mapping done, the contact is located too far down dip to appear on any of the EMU No. 4 maps, as the lowest structural elevation for the top of the Middle Bakken is approximately -155m subsea. Fluid contacts pose no risk to this reservoir.

Reservoir Characteristics and Current Recovery

Original Oil in Place

Porosity and water saturation values were taken from a combination of neutron- density logs and core samples where stratigraphic test holes are present. Petrophysical data such as open-hole logs and core analyses can be submitted upon request. Volumetric original oil in place (OOIP) was calculated for the proposed waterflood area using a combined beach (lower unit) and marl (upper unit) phi*h map. Planimetered phi*h and an average initial Sw of 32.0% over SEC 7 and 12 equated to an OOIP of 820.8 e3m3. Planimetered OOIP per LSD can be seen *in Appendix C, figure 1*.

Reservoir and Fluid Properties

Applicable reservoir and fluid properties are outlined in the following table. All information supporting the following values such as fluid analyses and static gradients can be submitted upon request.

Torquay Reservoir and Fluid Properties

Reservoir:		**Comments**
Initial Reservoir Pressure (Pi)	5.5 MPa	From static Gradient
Current Reservoir Pressure (Pr)	2.0 MPa	August 2013 build-up
Formation Breakdown Pressure (Pfrac)	14 MPa	Average from fracs
Average Water Saturation (Sw)	0.32	From Core Samples
Core Wettability	Moderate water wet	From 15-20 Rel perms
Fluid:		
Oil API Gravity @ 15 C	35.3	From 11-12 Oil analysis
Total Sulphur Mass Fraction	0.00315	From 11-12 Oil analysis
Absolute Viscosity @ 25 C (cP)	6.21	From 11-12 Oil analysis
Formation Water Salinity (ppm)	22,000	8-21 water analysis
Formation Water Resistivity @ 25 C	0.312 Ohm*m	8-21 water analysis

Historical Production

Sections 7-14-28 & 12-14-29W1 have been developed with 1 vertical, 6 East-West and 2 North-South horizontal wells. Spacing between horizontal wells varies between 200m to 400m as seen in *Appendix A, figure 1*. To date, 15.6 e3m3 of oil has been recovered from Sec 7 & 12 with production beginning in October 2012 and peaking in May 2013 at 79 m3/d oil and 32 m3/d water. A daily rate group plot showing historical production can be seen in *Appendix C, figure 2*.

Primary Depletion

Currently, only the 3-12-14-29W1 vertical well has been fracture stimulated in SEC 12 due to areas of high permeability trending throughout the middle and east side of the section. (*see k*h map in Appendix B, figure 10*). However, it is believed that maximum primary depletion will be achieved with some hydraulic fracture stimulation in the horizontal wells in LSDs 13,14,15,16 and 1,2,3,4 of SEC 12 where beach permeability is substantially lower. Much like the approved EMU#1 and #3, south of the currently

proposed unit area, proppant will be limited between 2 and 5 tonnes per stage due to the risk of fracture growth into the overlaying water bearing Lower Lodgepole. Formation breakdown pressure for the proposed Torquay waterflood is on average 14 MPa.

After fracture estimated ultimate oil recovery (EUR) for SEC 7 & 12 is 96.85 e3m3 using decline analysis on individual wells and a 0.32 m3/d per well economic cut-off. One additional horizontal well is planned within the unit boundaries and will be spud as described below:

UWI	Estimated Spud date
(4-7) 102/4-12-14-29W1 HZ	March 2014

A group plot of declines for all SEC 7-14-28 & 12-14-29W1 wells can be seen in *Appendix C, figure 4*, where horizontal wells have fitted to a hyperbolic decline with a hyperbolic exponent b of 0.5. An average yearly decline of 23% is expected in middle and later production periods.

No extensive PVT analysis has yet been conducted on reservoir fluids. Surface gas to oil ratio (GOR) has been measured to be between 2 and 5 m3/m3. It is believed that due to the low GOR, all gas can be considered solution gas. Current reservoir pressure conditions are expected to be undersaturated or near bubble point where reservoir drive is largely limited to fluid and rock expansion.

This is further demonstrated with the pilot SEC 29 waterflood, where response has been seen in approximately 15 days in producers 200m from a pilot injector. Rapid response is seen primarily due low reservoir gas saturation. This dictates fluid volume considered for the voidage replacement ratio (VRR) seen in the 'Waterflood Operating Strategy' portion of this application.

Unitization

Unit name: Surge Energy Inc. proposes that the name of the new unit will be East Manson Unit No.4 (EMU No.4).

Unit Operator: Surge Energy Inc. will assume operatorship of East Manson Unit No.4.

Unitized Zone(s): The proposed unitized zones will be the Bakken and Torquay (Three Forks) formations.

Unit Lands: All of section 12-14-29 and LSDs 4,5,12,13 of SEC 7-14-28 west of the prime meridian will be included in the proposed Manson Unit No.4.

Unitized wells: East Manson Unit No.4 will consist of 4 injectors and 6 producing wells. Proposed injectors will be converted or drilled upon approval of the unit and according to the proposed development plan outlined in *Appendix D, figure 3*. Following is a list of wells within the unit area:

Licence #	UWI	Proposed Status
9022	(4-7) 100/4-12-14-29W1 HZ	Producer
8928	3-12-14-29 Vertical	Producer
TBA	(4-7) 102/4-12-14-29W1 HZ	Injector (new drill)
9302	(5-7) 100/5-12-14-29W1 HZ	Producer
9315	(5-7) 100/6-12-14-29W1 HZ	Injector (conversion)
9235	(12-7) 100/11-12-14-29W1 HZ	Producer
9322	(12-7) 102/11-12-14-29W1 HZ	Injector (conversion)
9342	(13-7) 100/13-12-14-29W1 HZ	Producer
9360	(4-13)102/5-12-14-29W1 HZ	Producer
9486	(4-13)103/5-12-14-29W1 HZ	Injector (conversion)

Working interest and mineral owners: Surge Energy Inc. is currently the 100% working interest holder in sections 12-14-29 & 7-14-28W1 and will be the single working interest holder in the East Manson Unit No.4. Mineral lessors are outlined below:

NW/4 of SEC 7-14-28W1:

100% The Estate of Leo Glenn Leonard,
by Patrick Joseph Leonard, Administrator

SW/4 of SEC 7-14-28W1:

100% The Estate of Leo Glenn Leonard,
by Patrick Joseph Leonard, Administrator

SW/4 of SEC 12-14-29W1:

50% 6348395 MB, c/o Sandra Far Hunt, President
50% 6348409 MB, c/o Delmar Ray Sheane, President

NW/4 of SEC 12-14-29W1:

50% 6348395 MB, c/o Sandra Far Hunt, President
50% 6348409 MB, c/o Delmar Ray Sheane, President

NE/4 of SEC 12-14-29W1:

50% 6147675 MB, c/o Judy F. McAuley
50% Bens & Woods

SE/4 of SEC 12-14-29W1:

50% 6147675 MB, c/o Judy F. McAuley
50% Bens & Woods

Tract Factors: Tract factors will be determined as a factor of remaining oil in place per LSD and calculated with the following methodology:

- Original oil in place was first calculated on a per LSD basis.
- Horizontal production allocations per LSD were subsequently determined based on a 100m drainage area around each horizontal well. (Available upon request)
- Remaining oil in place per LSD was then determined and tabulated to calculate tract factors.

Tables outlining all 20 tract calculations are shown in *Appendix A, figure 3*.

Waterflood Project Development

Proposed Water Injection Well Conversions and Timing

Surge Energy proposes to convert a total of 1 vertical and 3 horizontal wells to Middle Bakken Injectors with injection set for Q2 of 2014 or upon the board's approval. A typical injector well schematic can be seen in *Appendix D, figure 1*.

Total daily injection demand for EMU#4 is expected to be approximately 235 m3/d, as outlined in the following table. Source water injection demand both EMU #1, 3 and 4 will be met from the following sources:

- 360 m3/d from existing pool-wide Manson production
- Reversal of the current 3-32-13-28W1 Lodgepole disposal well
- Proposed 15-30-13-28W1, 11-28-13-28W1 Lodgepole source wells
- Possible 3-21-13-28W1 and 2-21-13-28W1 Jurassic source wells (pending compatibility study)

An extensive study has been conducted by J.N. Fox & C.D. Martiniuk (1994) from Manitoba Energy and Mines on analogous Middle Bakken pools and waterfloods in the Daly area. Fox and Martiniuk outline waterflood compatibility and sensitivity studies indicate that produced water from the Lodgepole and Jurassic source water were compatible with Bakken formation fluids and would not cause clay swelling problems.

Currently, only Lodgepole source water is approved for injection. Surge Energy will also be requesting approval for the use of Jurassic source water pending an updated Shaunavon water compatibility test.

Produced injection water will be treated, separated at the Surge 13-29-13-28W1 battery then filtered and pumped to the proposed injection wells. Vacant fiber reinforced polyethylene lines are installed adjacent to current production lines and will be utilized for injection. A flow diagram of the proposed injection system and addition to the current 13-29-13-28W1 battery can be seen *in Appendix D, figure 2.* Corrosion mitigation measures will also be implemented throughout the duration of the proposed water flood and are outlined in *Appendix D, figure 4.* A schedule of injectors and anticipated injection rates can be seen below:

Licence #	UWI	Conversion Timing	Anticipated Initial Injection Rate
TBA	(4-7) 102/4-12-14-29W1 HZ	June 2014	50 m3/d
9315	(5-7) 100/6-12-14-29W1 HZ	March 2014	55 m3/d
9322	(12-7) 102/11-12-14-29W1 HZ	March 2014	65 m3/d
9486	(4-13)103/5-12-14-29W1 HZ	September 2014	65 m3/d

Anticipated injection rates are based on historical fluid production for each well and will vary according to the following injection parameters:

Formation Fracture Pressure	14 MPa
Formation Fracture Wellhead Pressure	12.6 MPa
Injection line Maximum Working Pressure	10.3 MPa

Formation and wellhead fracture pressures were determined from extensive hydraulic fracture data throughout sections 20, 21 and the Manson field. The lowest limiting pressure will be approximately 10.3 MPa on the surface injection line. Therefore Surge requests a maximum injection pressure of 90% of the limiting pressure or 9 MPa.

Waterflood Operating Strategy

Injector conversions are proposed to begin in March 2014, where 2 wells will be initially converted. A fill-up period of less than 1 month is expected due to negligible gas saturation (Sg), and has been seen in the SEC 29 pilot. Target reservoir pressure will be 5.5 MPa, while maintaining a voidage replacement

ratio (VRR) between 1 and 1.3. Some out of zone thieving to the Lower Lodgepole is expected as some natural fractures are believed to have reached porosity in the Lodgepole. Voidage replacement will be monitored and modeled throughout the injection process to maximize reserve recovery.
The following surveillance data and calculations will be acquired throughout the duration of the SEC 20 & 21 flood:

- Initial dye and chemical tracers to observe potential communication and breakthrough
- Frequent short-term pressure build-ups on both producers and injectors to monitor reservoir pressure.
- Wellhead flow meters on all wells to acquire daily rates
- Continuous wellhead injection pressure monitoring
- Weekly water cuts on all wells
- The use of fractional flow and Hall plots
- Analysis of acquired data and observation of trends in: water oil ratio (WOR), reservoir pressure (Pr), production rate, injection rate, cumulative production, etc.

In accordance to Section 73 of the Drilling and Production Regulations, an annual EOR report outlining the above data and calculations will be submitted within 60 days of initial injection and within 60 days after the end of each calendar year.

Technical Studies

Listed below are several technical studies have been carried out with respect to the Manson Bakken waterflood project.

Core Anaylses:

- 24 cores taken throughout the Manson field
- 4 cores within or adjacent to EMU No.4

Special Core Analysis (SCAL):

- Performed on 2 Middle Bakken core plugs from the 15-20-13-28W1 vertical well
- Relative permeability indicates that the core is water wet
- Calculated mobility ratio (M) of 0.7 with an oil viscosity of 2.48 cp
- Calculated response time of 10 days at r = 200m (neglecting Sg)

Numerical Simulation:

- Numerical simulation on-going (Petrel + Frontsim 2013), starting with SEC 29-13-28W1
- History matched primary production showing very rapid pressure depletion
- Preliminary waterflood runs showing recoveries upwards of 30% with near piston-like displacement

SEC 29-13-28W1 Pilot Data:

- 2-29-13-28W1 vertical well currently injecting on average 50 m3/d
- Pressure response in 15 days in 3 horizontal wells at a distance of 200m
- Watercuts in responding wells decreasing due to additional inflow from Middle Bakken beach
- Production plots of responding wells and a group plot can be seen in *Appendix E, Figures 1 to 4*

Analogous Pool:

- The Daly Bakken A pool and waterflood, operated by Tundra Oil & Gas Ltd., in Sections 21, 28 and 29 TWP 10 RNG 29W1 can be used as a direct analogue
- The Middle Bakken facies in both Daly and Manson area consist of the same upper bioturbated medium to fine silt, middle interlaminated silts and lower coarse silt to fine sand. In both cases, main reservoir thickness is 2 to 4 m. The regional Bakken Shale also offers a pressure boundary
- Daly A Bakken reservoir properties exhibiting similar permeability of 3 to 25md and average porosity of 17%.
- An incremental post-flood recovery factor of 8% was achieved in the Daly Bakken A pool with four vertical incomplete 9 spot injection patterns
- A map showing the Daly Bakken A analogue along with decline analysis for the pool can be seen in *Appendix C, figure 5 & 6* respectively

Secondary Recovery and Production Forecast

Surge Energy believes that incremental recovery upwards of 12.2% can be forecasted in the Manson Section 7 & 12 flood with the proposed injection scheme where horizontal injectors will allow for uniform lateral sweep from well paths. Furthermore, inflatable packers will enable adaptable injection patterns by isolating chosen injection intervals and know heterogeneity or fractured areas can subsequently be avoided. Selective intervals can also be mirrored in the horizontal producers to isolate or delay breakthrough.

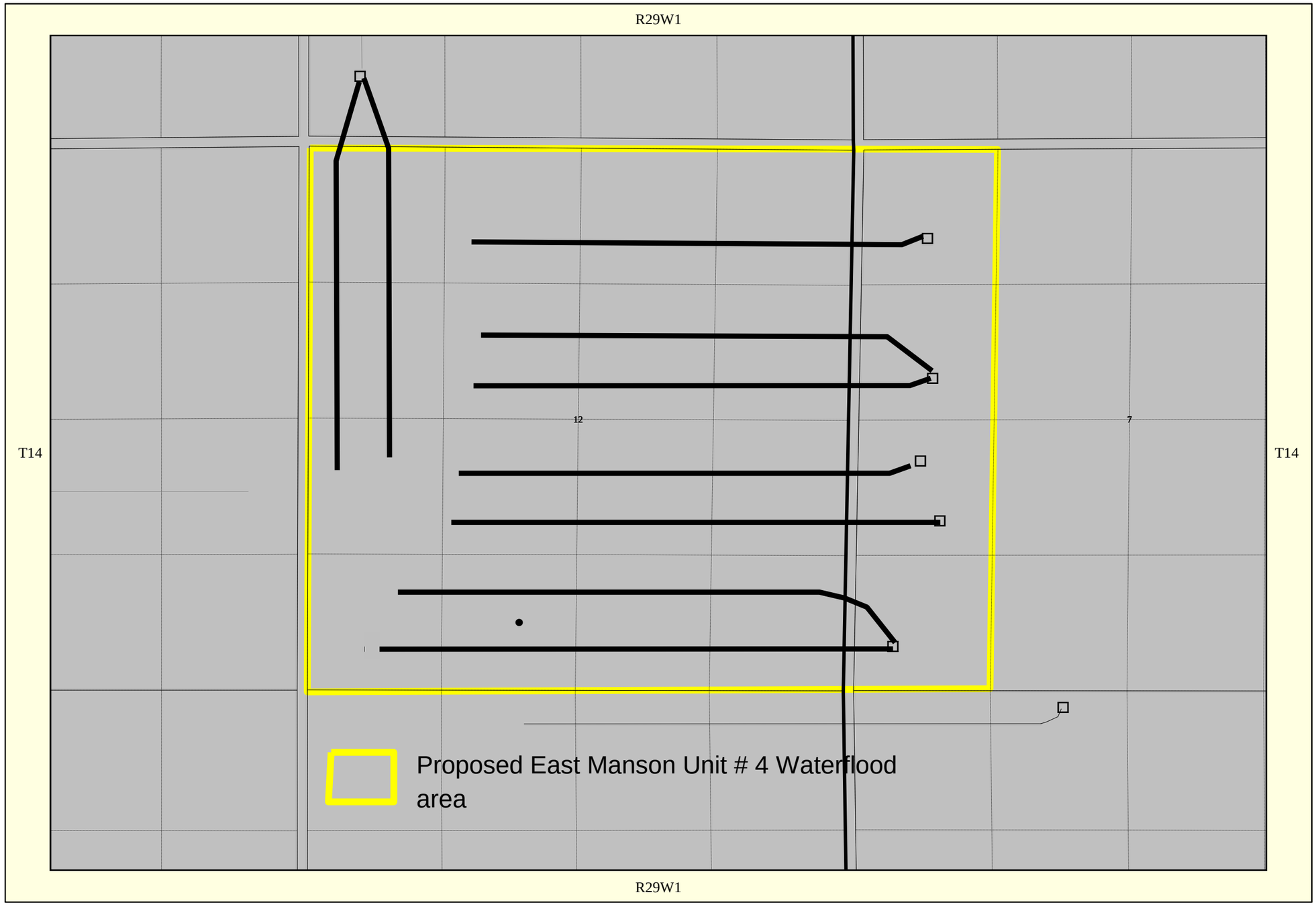
Recovery has been calculated for the WF area based on forecasted individual well declines under pressure support. An elevated economic cut-off of 0.4 m3/d of oil was used in this scenario as fixed injection well costs were allocated to the remaining producers. The resultant post flood EUR is 197.0 e3m3 which yields an incremental and ultimate post flood recovery factor of 12.2% and 24% respectively. Forecasted production profiles for both primary and waterflood can be seen in *Appendix C, figure 4*.

After water flood implementation, project success will be evaluated by:

- Recording continuous incremental recovery
- Recovery comparisons with adjacent sections, forecasted recovery and Sinclair analogues
- A regularly updated numerical model to predict breakthrough time, injection pattern etc.

Appendix A: Unit & Notification

Appendix A, Figure 1: East Manson Unit No.4 Map



File: EMU #2 Notification Area.MAP Datum: NAD83 Projection: Stereographic Center: N50.17344 W101.31797 Created in AccuMap™, a product of IHS

Appendix A, Figure 2: Sample Notification Letter

November 26th, 2013

Surface / Mineral Holder
360-1395 Ellice Avenue
Winnipeg, Manitoba
R3G 3 P2

Attention: Surface / Mineral Holder

RE: Surge Manson Unit No.4 Proposal & Water Flood:
SEC 12 TWP 14 RNG 29 W1 & LSD 4,5,12,13 of SEC 7 TWP 14 RNG 28 W1

Please be advised that Surge Energy Inc. will be applying under Section 71 of the Manitoba Drilling and Production Regulations for a water flood in section 12 of TWP 14 RNG 29 W1 and LSDs 4,5,12,13 of SEC 7 TWP 14 RNG 28 W1 (see attached unit and waterflood area map). Upon approval of the unit and waterflood application, the following wells will be converted or drilled as Three Forks water injectors:

(4-7) 102/4-12-14-29W1 HZ (new drill)
(5-7) 102/6-12-14-29W1 HZ (conversion)
(5-7) 102/11-12-14-29W1 HZ (conversion)
(4-13) 104/5-12-14-29W1 HZ (conversion)

Injected water will be transported via flow line to the above wells from the Surge 13-29-13-28W1 battery site. Source water will be Three Forks produced water along with Lodgepole water from the 3-32-13-28W1 and 15-30-13-28W1 source wells.

Any questions or concerns can be directed to the undersigned at 403-800-6601 or twillson@fortcal.com.

Sincerely,

Fort Calgary Resources, on behalf of Surge Energy Inc.

Tristan Willson

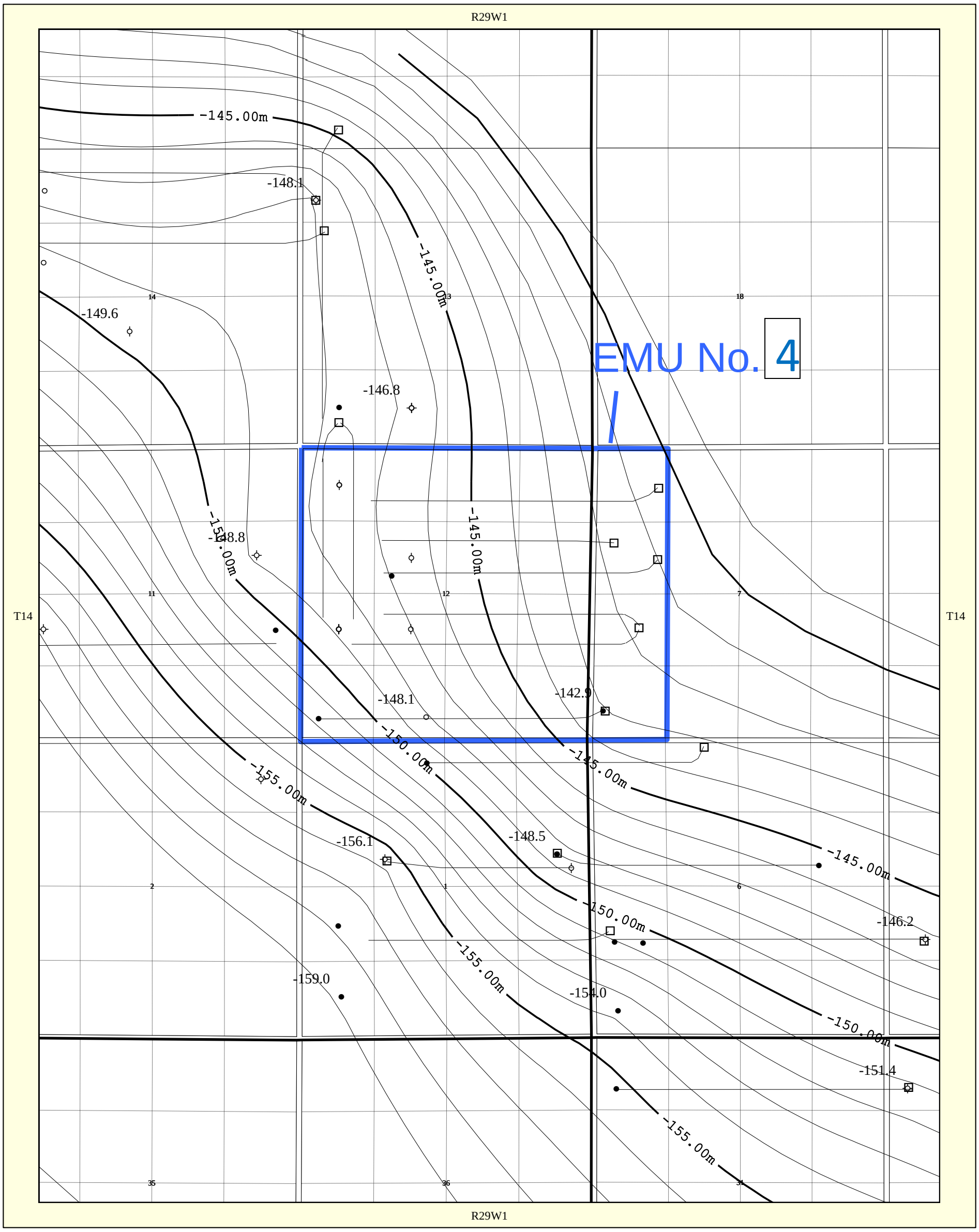
Tristan Willson
TW

Appendix A, Figure 3: Tract Factors

East Manson Unit No.4 Tract Factors								
				Oil Production			Volume Allocation (e3m3)	Tract Factor
Legal Desciption	Royalty Owner	Working Interest	OOIP (e3m3)	Wellbores	Cumulative Production per Well (e3m3)	Production Allocation		
4-7-14-28W1	100% Estate of Leo Glenn Leonard	100% Surge Energy Inc.	37.50				37.50	**4.655025177%**
5-7-14-28W1	100% Estate of Leo Glenn Leonard	100% Surge Energy Inc.	13.82	100/5-12-14-29W1 HZ	1.90	12%	13.46	**1.670677098%**
				100/6-12-14-29W1 HZ	1.15	13%		
12-7-14-28W1	100% Estate of Leo Glenn Leonard	100% Surge Energy Inc.	1.46	100/11-12-14-29W1 HZ	4.17	16%	0.39	**0.048596189%**
				102/11-12-14-29W1 HZ	2.31	18%		
13-7-14-28W1	100% Estate of Leo Glenn Leonard	100% Surge Energy Inc.	0.00				0.00	**0.000000000%**
1-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	63.97	100/4-12-14-29W1 HZ	1.95	24%	63.51	**7.884107873%**
2-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	59.77	100/4-12-14-29W1 HZ	1.95	26%	59.26	**7.357002391%**
3-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	44.57	100/4-12-14-29W1 HZ	1.95	26%	43.74	**5.430256008%**
				100/3-12-14-29W1 Vert	0.31	100%		
4-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	36.60	100/4-12-14-29W1 HZ	1.95	24%	36.13	**4.485799166%**
5-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	54.70	100/5-12-14-29W1 HZ	1.90	18%	53.65	**6.660783829%**
				102/5-12-14-29W1 HZ	2.23	22%		
				103/5-12-14-29W1 HZ	0.96	19%		
				100/6-12-14-29W1 HZ	1.15	3%		
6-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	65.31	100/5-12-14-29W1 HZ	1.90	23%	64.54	**8.012464181%**
				103/5-12-14-29W1 HZ	0.96	1%		
				100/6-12-14-29W1 HZ	1.15	28%		
7-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	61.45	100/5-12-14-29W1 HZ	1.90	23%	60.69	**7.534016808%**
				100/6-12-14-29W1 HZ	1.15	28%		
8-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	37.84	100/5-12-14-29W1 HZ	1.90	24%	37.05	**4.599694416%**
				100/6-12-14-29W1 HZ	1.15	29%		
9-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	17.80	100/11-12-14-29W1 HZ	4.17	29%	15.93	**1.978051286%**
				102/11-12-14-29W1 HZ	2.31	28%		
10-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	42.98	100/11-12-14-29W1 HZ	4.17	28%	41.19	**5.112888791%**
				102/11-12-14-29W1 HZ	2.31	27%		
11-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	63.93	100/11-12-14-29W1 HZ	4.17	27%	62.18	**7.718854431%**
				100/13-12-14-29W1 HZ	0.27	0%		
				103/5-12-14-29W1 HZ	0.96	2%		
				102/11-12-14-29W1 HZ	2.31	26%		
12-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	72.93	100/11-12-14-29W1 HZ	4.17	0%	71.61	**8.889871631%**
				102/5-12-14-29W1 HZ	2.23	41%		
				103/5-12-14-29W1 HZ	0.96	40%		
				100/13-12-14-29W1 HZ	0.27	0%		
				102/11-12-14-29W1 HZ	2.31	1%		
13-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	71.01	102/5-12-14-29W1 HZ	2.23	37%	69.82	**8.667141244%**
				100/13-12-14-29W1 HZ	0.27	7%		
				103/5-12-14-29W1 HZ	0.96	36%		
14-12-14-29W1	50% 6348395 MB, c/o Sandra Far Hunt 50% 6348409 MB, c/o Delmar Ray Sheane	100% Surge Energy Inc.	46.44	102/11-12-14-29W1 HZ	2.31	0%	46.34	**5.752835576%**
				103/5-12-14-29W1 HZ	0.96	2%		
				100/13-12-14-29W1 HZ	0.27	31%		
15-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	24.55	102/11-12-14-29W1 HZ	2.31	0%	24.46	**3.036576189%**
				100/13-12-14-29W1 HZ	0.27	31%		
16-12-14-29W1	50% 6147675 MB, c/o Judy F. McAuley 50% Bens & Woods	100% Surge Energy Inc.	4.16	100/13-12-14-29W1 HZ	0.27	32%	4.07	**0.505357716%**
TOTAL			**820.79**				**805.53**	**100.000000000%**

Appendix B: Geological Maps

Appendix B, Figure 1: Upper Bakken Structure Contour Map



WELL LEGEND	
Bottom Hole Locations:	
○ Location	☼ Suspended
● Oil	☼ Dry & Abandoned
Well Postings:	
BKKN SHAL(U-Sub) (m) ☼	

PROPRIETARY DATA LEGEND
Lines:
——— Sask Seismic Lines

Fort Calgary Resources Ltd.

Top Upper Bakken Structure

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Author: David Rose
Date: October 1, 2013
File: Torq Waterflood Middle Bakken
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17322 W101.31791

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

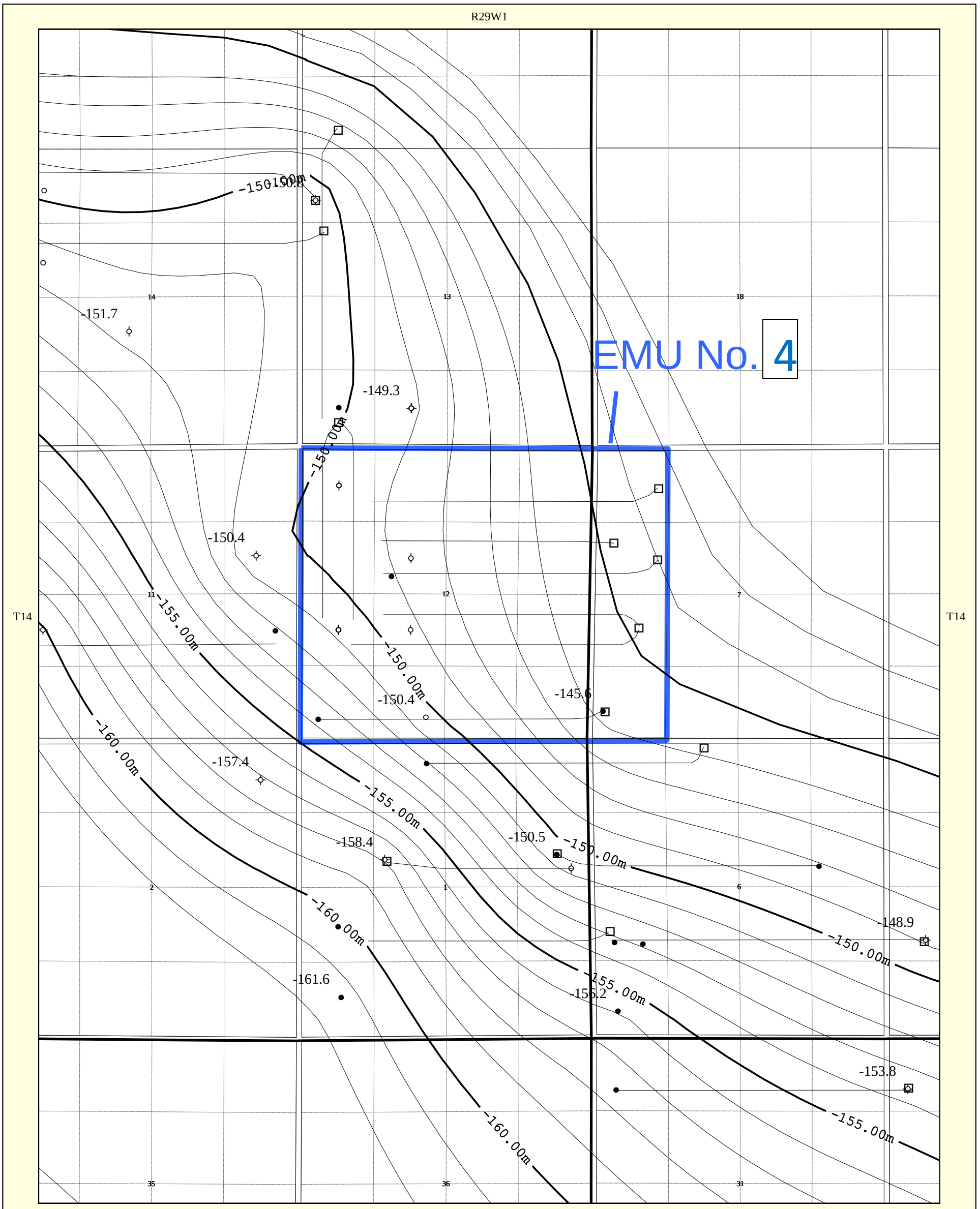
Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Contours: BKKN SHAL(U-Sub) (m)
Contour interval = 1m

Appendix B, Figure 2: Middle Bakken Structure Contour Map



WELL LEGEND

Bottom Hole Locations:

- Location
- Oil
- Suspended
- Dry & Abandoned

Well Postings:

Marl(U-Sub) (m)

PROPRIETARY DATA LEGEND

Lines:

Sask Seismic Lines

Fort Calgary Resources Ltd.

Top Middle Bakken Structure

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(403) 770-4646

Author: David Rose
Date: October 1, 2013
File: Torq Waterflood Middle Bakken
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17322 W101.31791

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

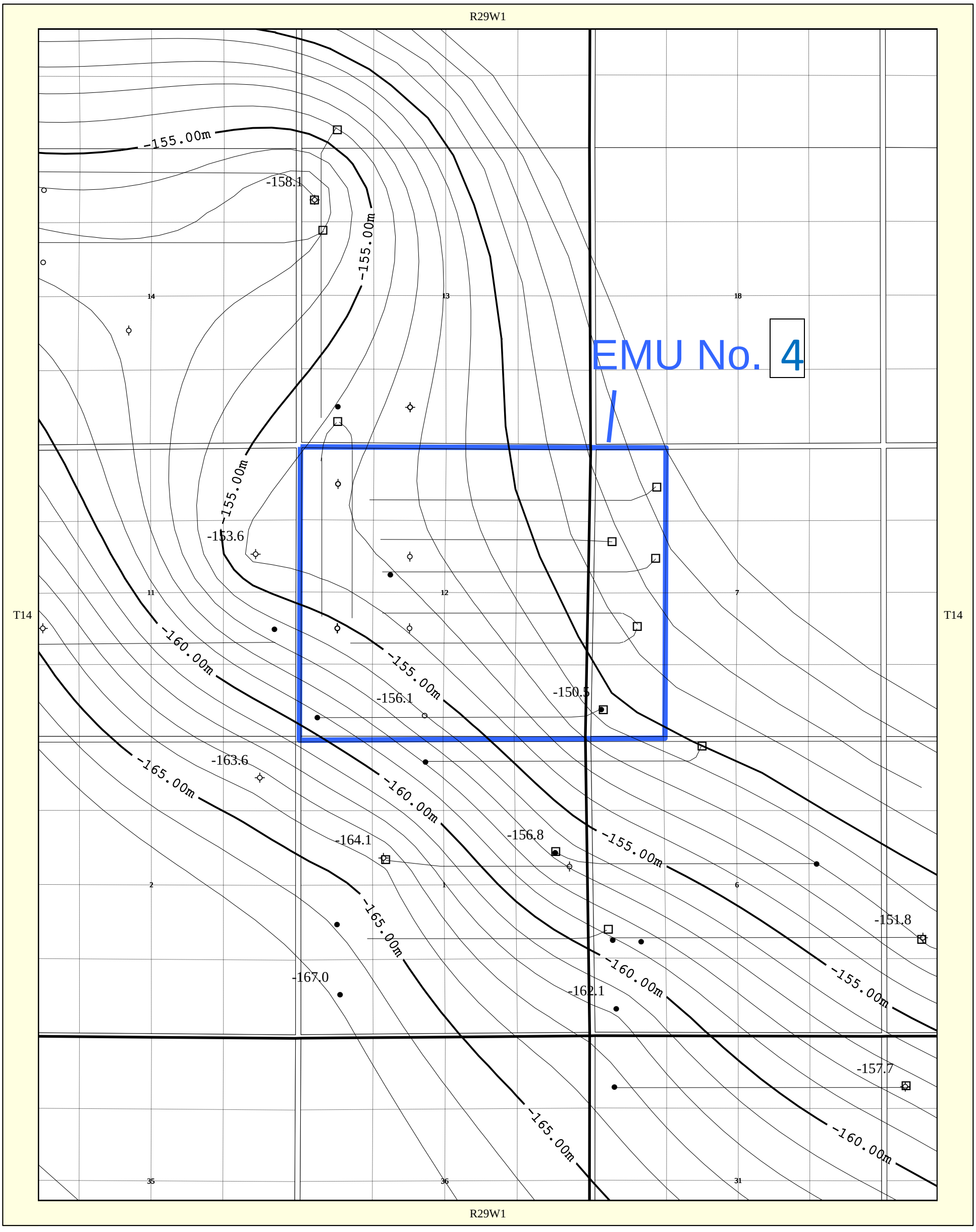
Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Contours: Marl(U-Sub) (m)
Contour interval = 1m

Appendix B, Figure 3: Torquay Unit 3 (Middle Bakken Unconformity) Structure Contour Map



WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
● Oil	◇ Dry & Abandoned
Well Postings:	
Unit 3(U-Sub) (m) ☼	

PROPRIETARY DATA LEGEND
Lines:
——— Sask Seismic Lines

Fort Calgary Resources Ltd.

Top Torquay Unit 3 Structure

Created in AccuMap™ Product of IHS Datum: NAD83 Vol. 23 No. 09, Sep 4 2013 (403) 770-4646 Copyright © 1991-2013	Author: David Rose Date: October 1, 2013 File: Torq Waterflood Middle Bakken Scale: 1 : 20000 Projection: Stereographic Center: N50.17322 W101.31791
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 4.1 BC: PRB 2.0 SK: STS 2.5 MB: MLI07

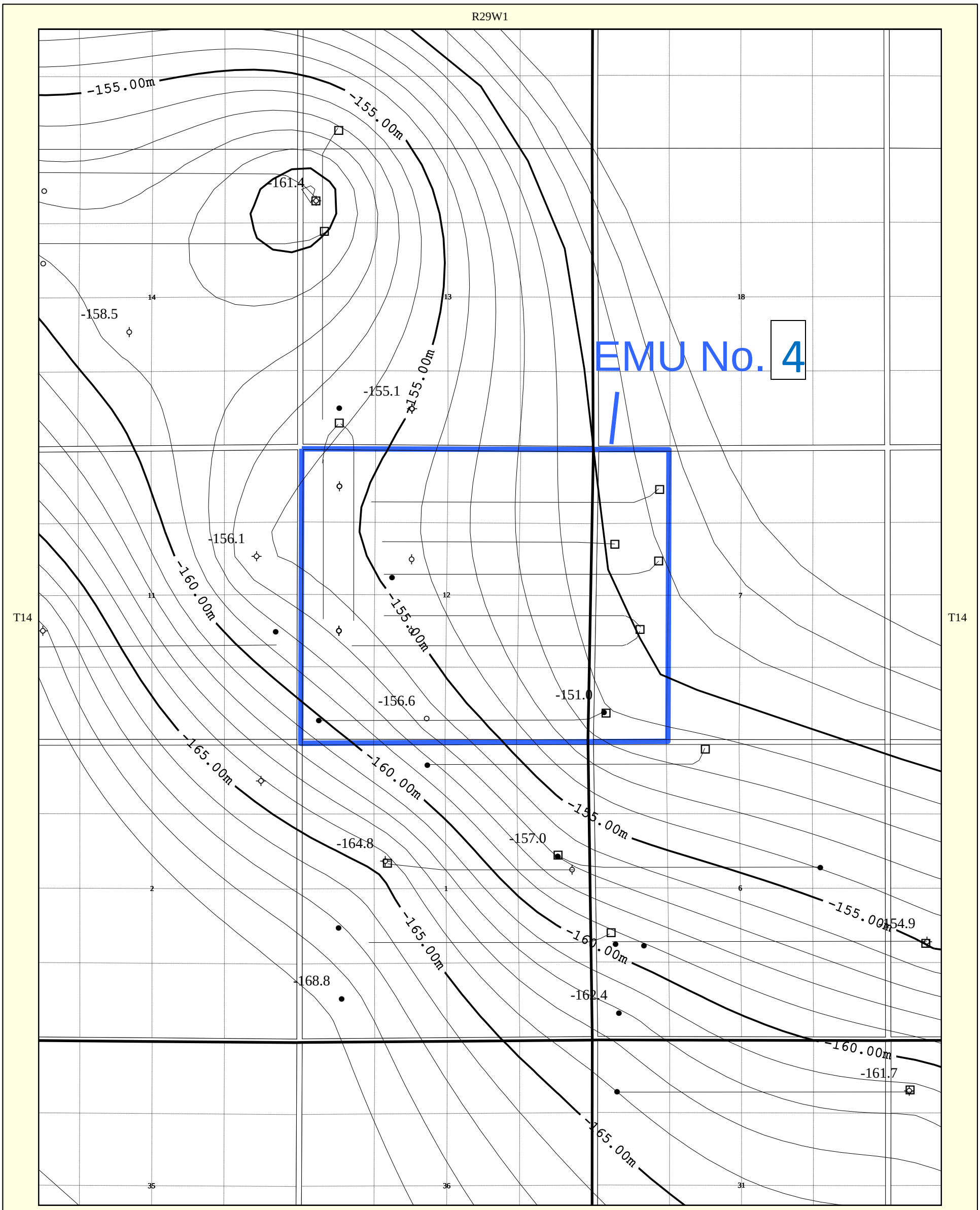
Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Contours: Unit 3(U-Sub) (m)
Contour interval = 1m

Appendix B, Figure 4: Torquay Unit 2 (Middle Bakken Unconformity) Structure Contour Map



WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
● Oil	◈ Dry & Abandoned
Well Postings:	
Unit 2(U-Sub) (m) ☼	

PROPRIETARY DATA LEGEND
Lines:
——— Sask Seismic Lines

Fort Calgary Resources Ltd.

Top Torquay Unit 4 Structure

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Author: David Rose
Date: October 1, 2013
File: Torq Waterflood Middle Bakken
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17322 W101.31791

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

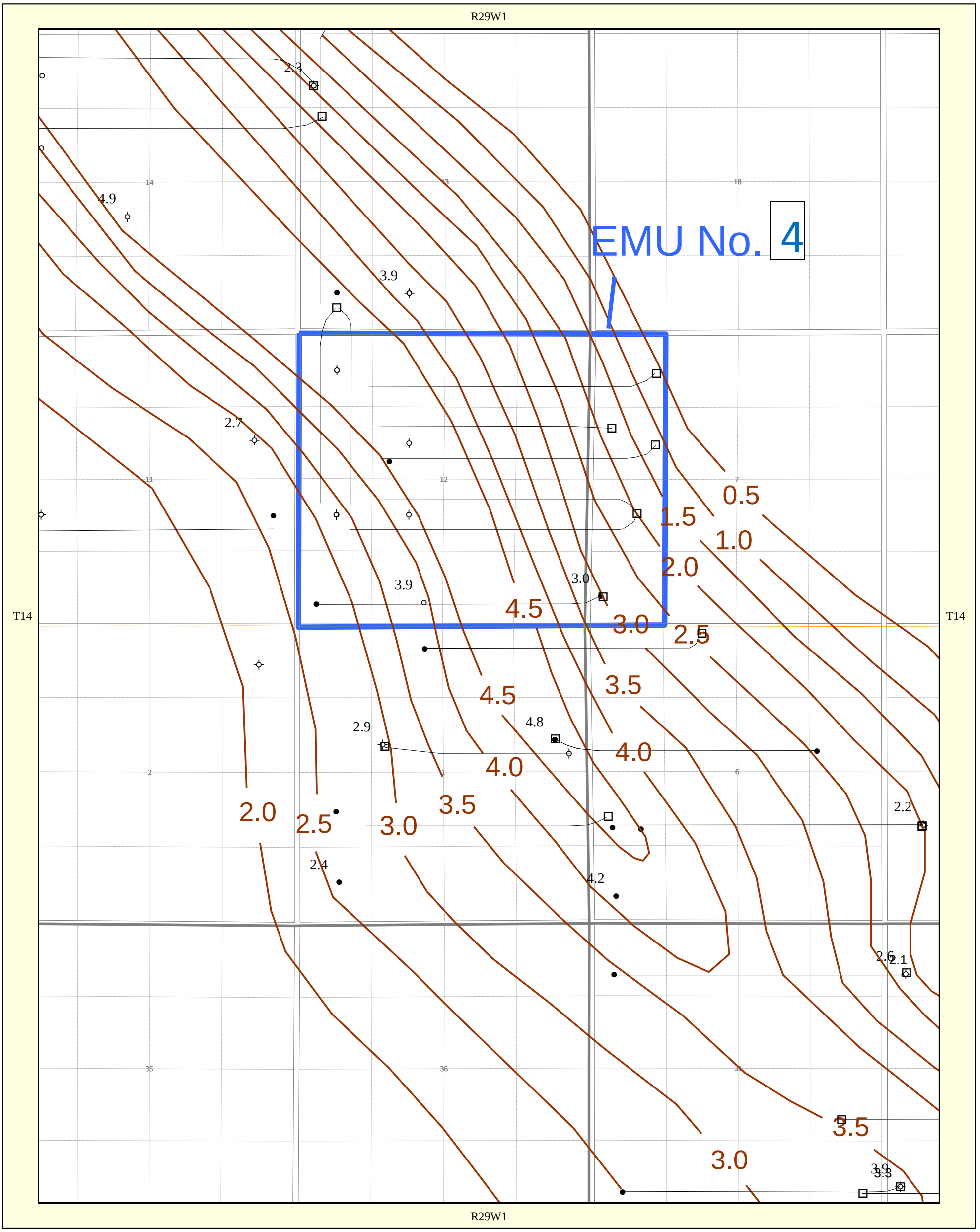
DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9
0 Miles 0.5

Contours: Unit 2(U-Sub) (m)
Contour interval = 1m

Appendix B, Figure 5: Middle Bakken Reservoir Isopach Including Middle and Lower Units



WELL LEGEND	
Bottom Hole Locations:	
○ Location	☼ Suspended
● Oil	☼ Dry & Abandoned
Well Postings:	
hmite to Unit 3(U-IsC) (m)	☼

PROPRIETARY DATA LEGEND	
Points:	
▫	Manson Reliable+Tundra Surface
Lines:	
———	Manson Reliable+Tundra wells

Fort Calgary Resources Ltd.

Middle Bakken Reservoir
Isopach 0.5 m Contour Interv

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(403) 770-4646

Author:	David Rose
Date:	October 1, 2013
File:	Torq Waterflood Reservoir Isop
Scale:	1 : 20000
Projection:	Stereographic
Center:	N50.16748 W101.31778

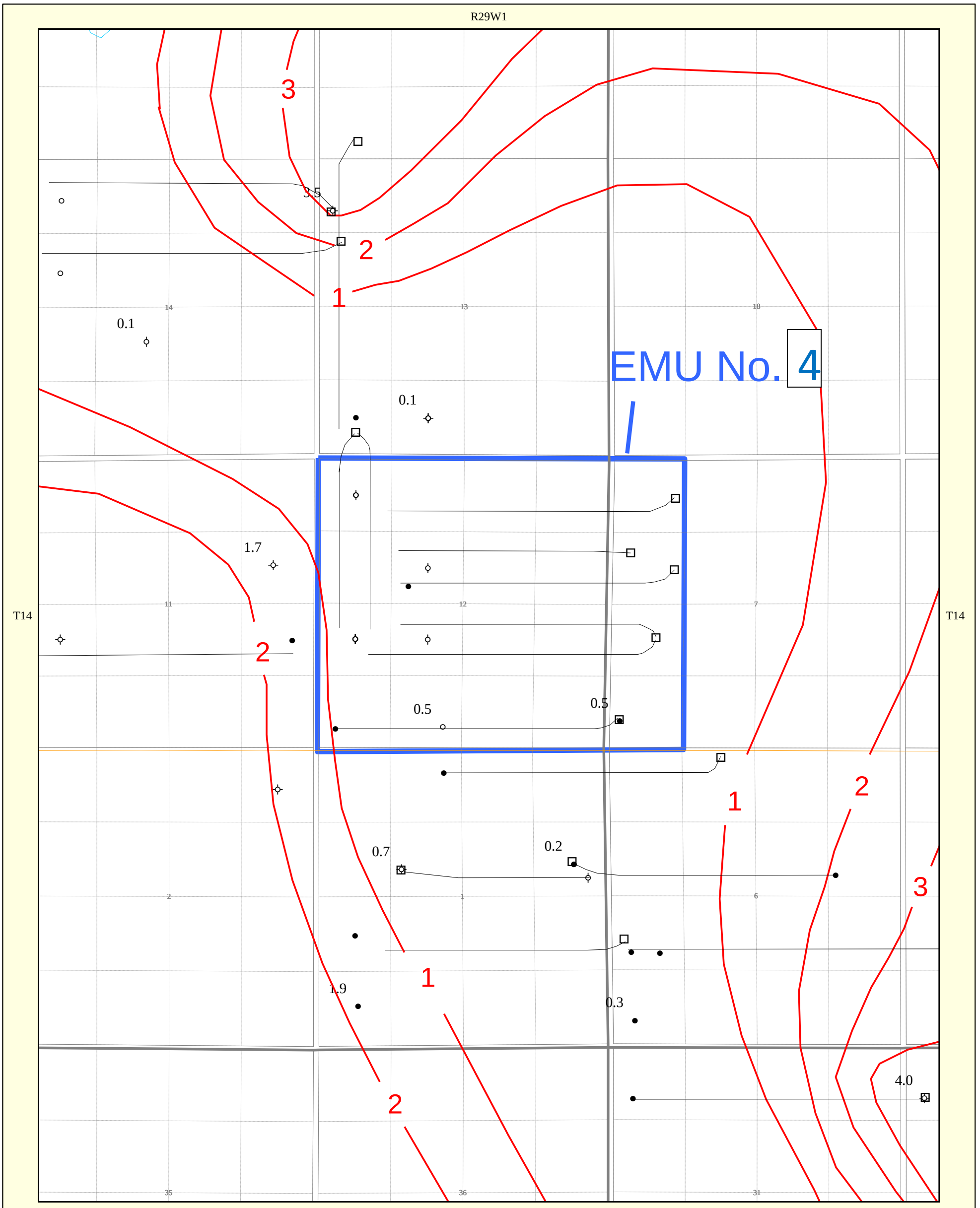
Grid Information:	DLS Version Information:
DLS: IHS Enhanced Grid	AB: ATS 4.1
NTS: Theoretical Grid	BC: PRB 2.0
FPS: Theoretical Grid	SK: STS 2.5
US: IHS US Grid	MB: MLI07

Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Appendix B, Figure 6: Torquay Unit 3 Isopach Map



WELL LEGEND

Bottom Hole Locations:

- Location
- Oil
- Suspended
- Dry & Abandoned

Well Postings:

Unit 3(U-Iso) (m)

Fort Calgary Resources Ltd.

Torquay Unit 3 Isopach
1 m Contour Interval

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Datum: NAD83
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(403) 770-4646

Author: David Rose
Date: October 1, 2013
File: Torq Waterflood Unit 3 Isopach
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17374 W101.31926

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

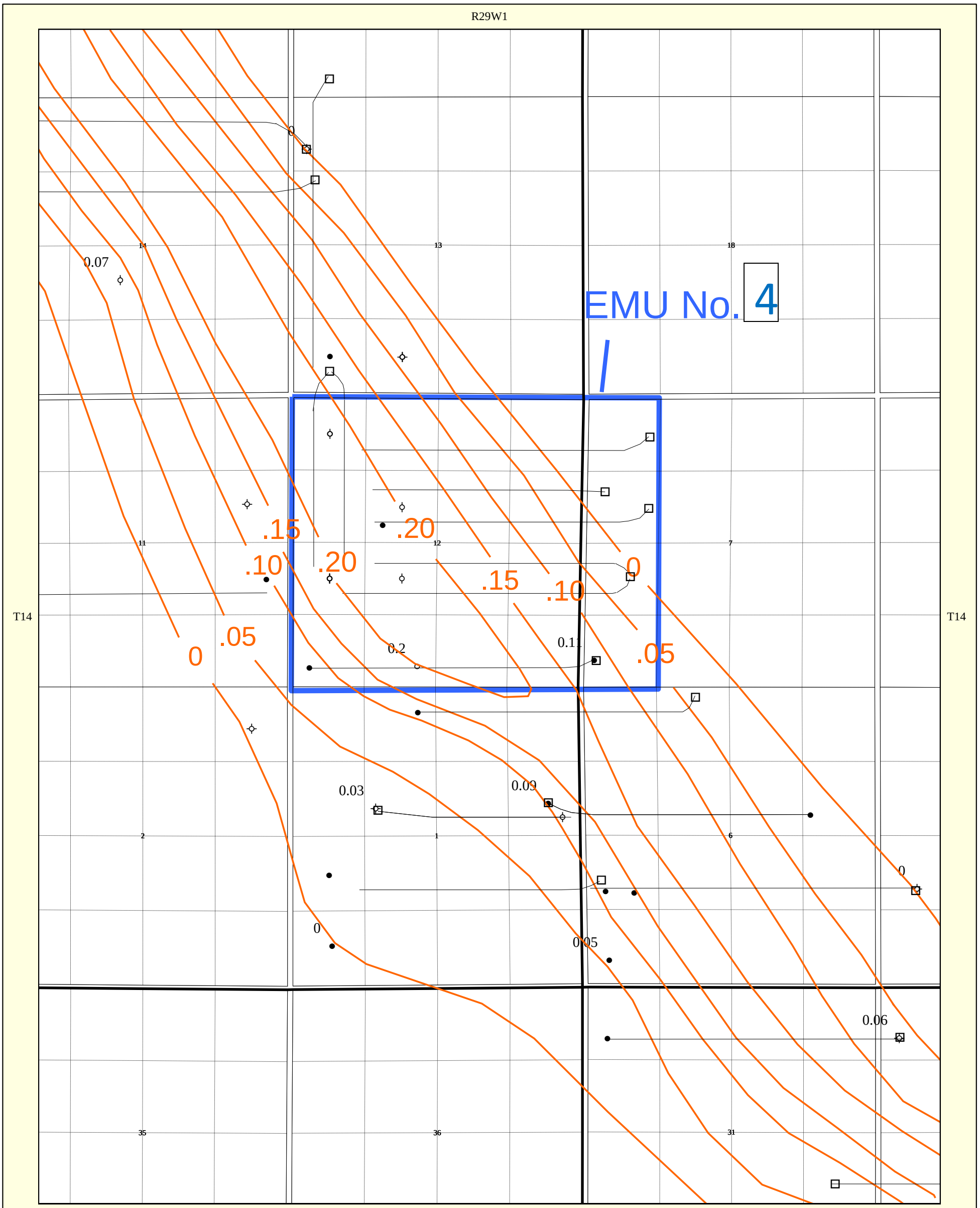
DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Appendix B, Figure 7: Phi-h Map of Middle Unit of the Middle Bakken Reservoir (1 md Cutoff)



WELL LEGEND

Bottom Hole Locations:

- Location
- Oil
- Suspended
- Dry & Abandoned

Well Postings:

Column 4

Fort Calgary Resources Ltd.

Middle Unit - Middle Bakken
0.05 por*m Contour Interval

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Author: David Rose
Date: October 1, 2013
File: Torq Rythmite phi-h 1md cutoff
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17065 W101.31721

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

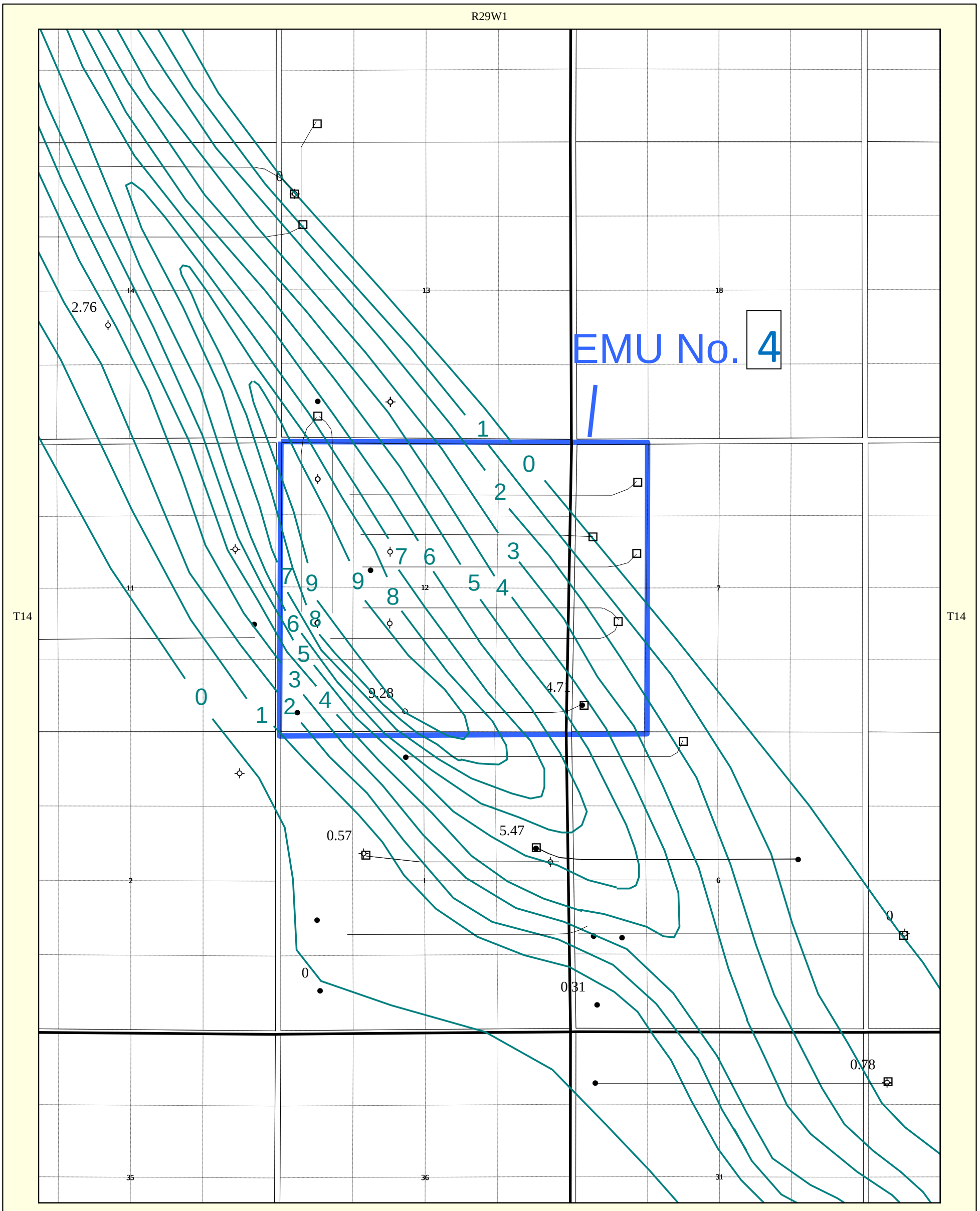
DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Appendix B, Figure 8: K-h Map of the Middle Unit of the Middle Bakken Reservoir (1 md Cutoff)



WELL LEGEND	
Bottom Hole Locations:	
Location	Suspended
Oil	Dry & Abandoned
Well Postings:	
Column 7	

Fort Calgary Resources Ltd.

Middle Unit - Middle Bakken
1 md*m Contour Interval

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Author: David Rose
Date: October 1, 2013
File: Torq Rythmite k-h 1 md cutoff.
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17291 W101.31628

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

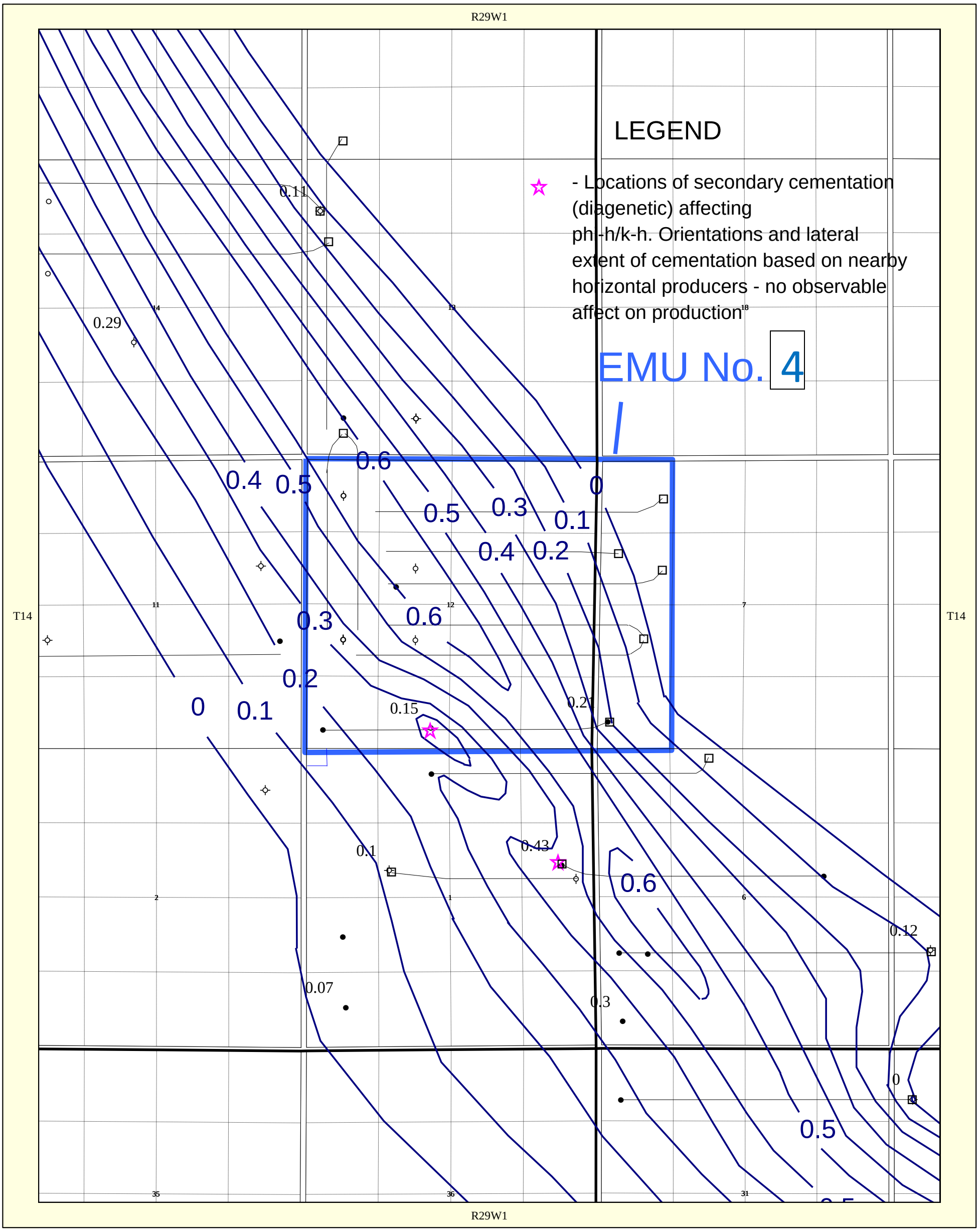
DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Appendix B, Figure 9: Phi-h Map of the Lower Unit of the Middle Bakken Reservoir (1 md Cutoff)



WELL LEGEND	
Bottom Hole Locations:	
○ Location	☼ Suspended
● Oil	☼ Dry & Abandoned
Well Postings:	
Column 3 ☼	

Fort Calgary Resources Ltd.

Lower Unit - Middle Bakken
0.1 por*m Contour Interval

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Author:	David Rose
Date:	October 1, 2013
File:	Torq Waterflood Beach+Hz Phi-h
Scale:	1 : 20000
Projection:	Stereographic
Center:	N50.17376 W101.31828

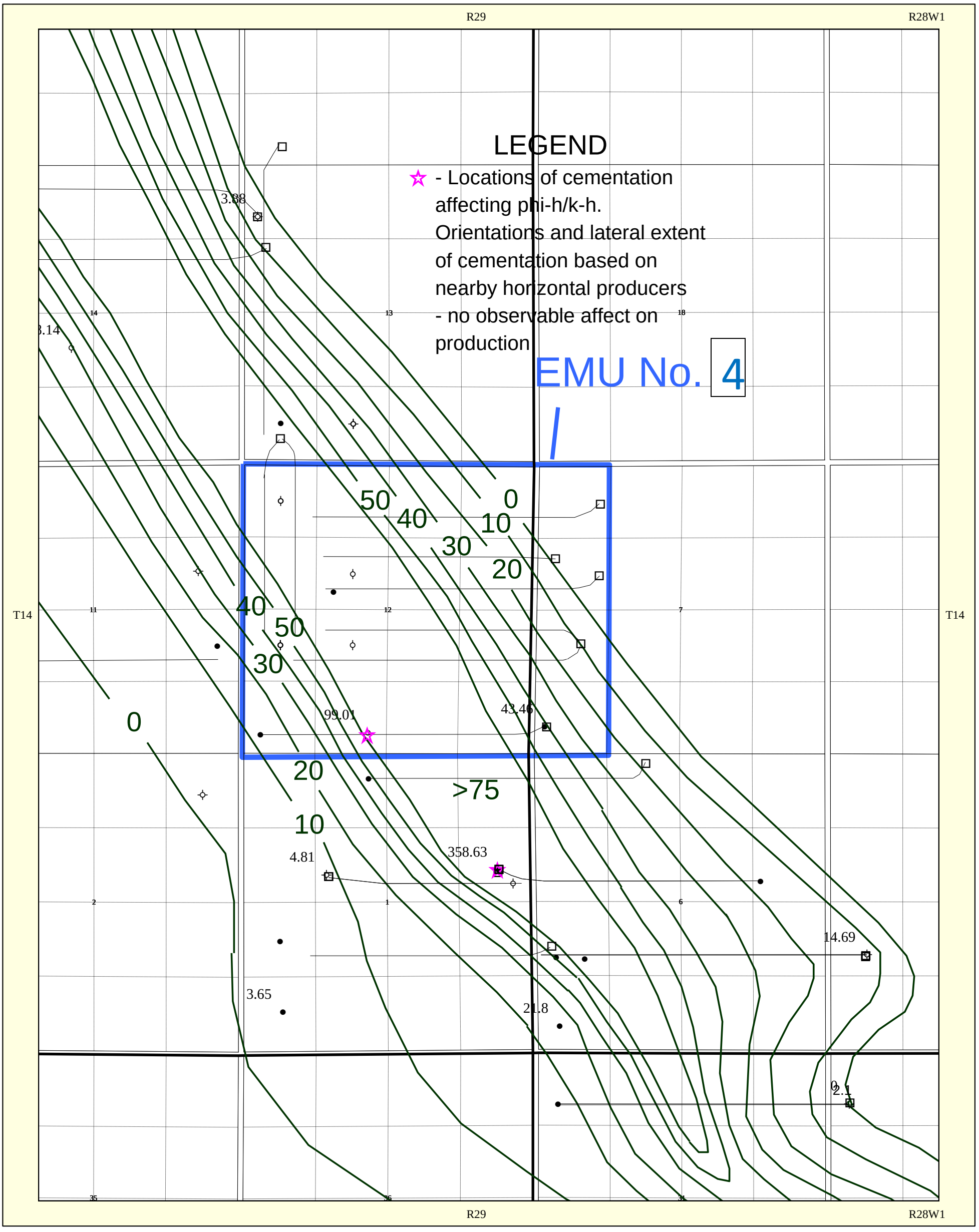
Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9
0 Miles 0.5

Appendix B, Figure 10: k-h Map of the Lower Unit of the Middle Bakken Reservoir (1 md Cutoff)



WELL LEGEND

Bottom Hole Locations:

- ○ Location
- ● Oil
- ⊖ Suspended
- ⊖ Dry & Abandoned

Well Postings:

Column 6 ☼

Fort Calgary Resources Ltd.

Lower Unit - Middle Bakken
10 md*m Contour Interval

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Author: David Rose
Date: October 1, 2013
File: Torq Waterflood Beach k-h 1 md
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17406 W101.31342

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

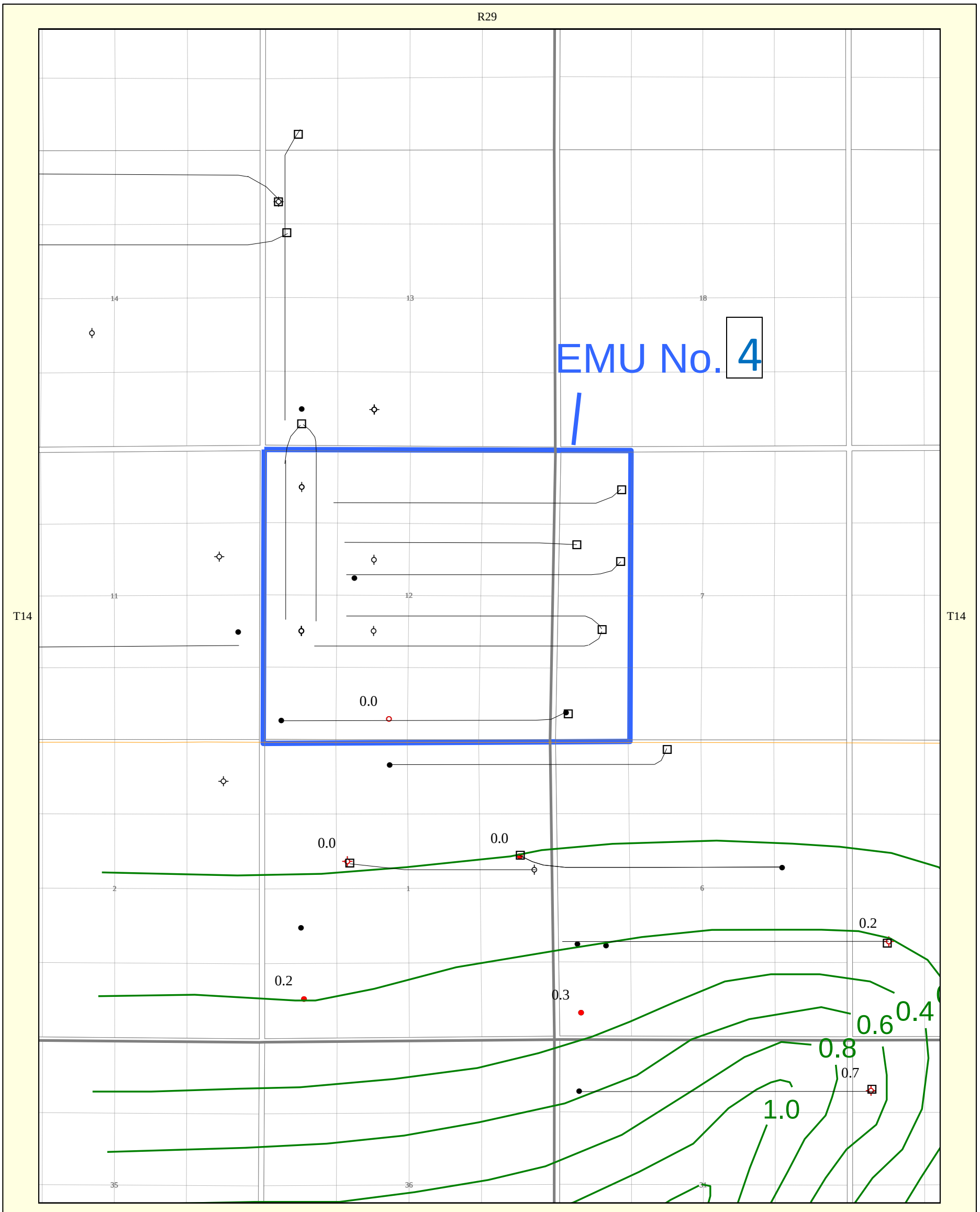
DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

0 Kilometers 0.9

0 Miles 0.5

Appendix B, Figure 11: Torquay Unit 2 Net Pay Map



WELL LEGEND	
Bottom Hole Locations:	
Location	Suspended
Oil	Dry & Abandoned
Well Postings:	
Unit 2(U-NPy) (m)	

WELL LISTS
Has Unit 2 Pay

Fort Calgary Resources Ltd.

Torquay Unit 2 Net Pay
0.2m Contour Interval

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Author: David Rose
Date: October 1, 2013
File: Manson Unit 2 Net Pay.MAP
Scale: 1 : 20000
Projection: Stereographic
Center: N50.17330 W101.31502

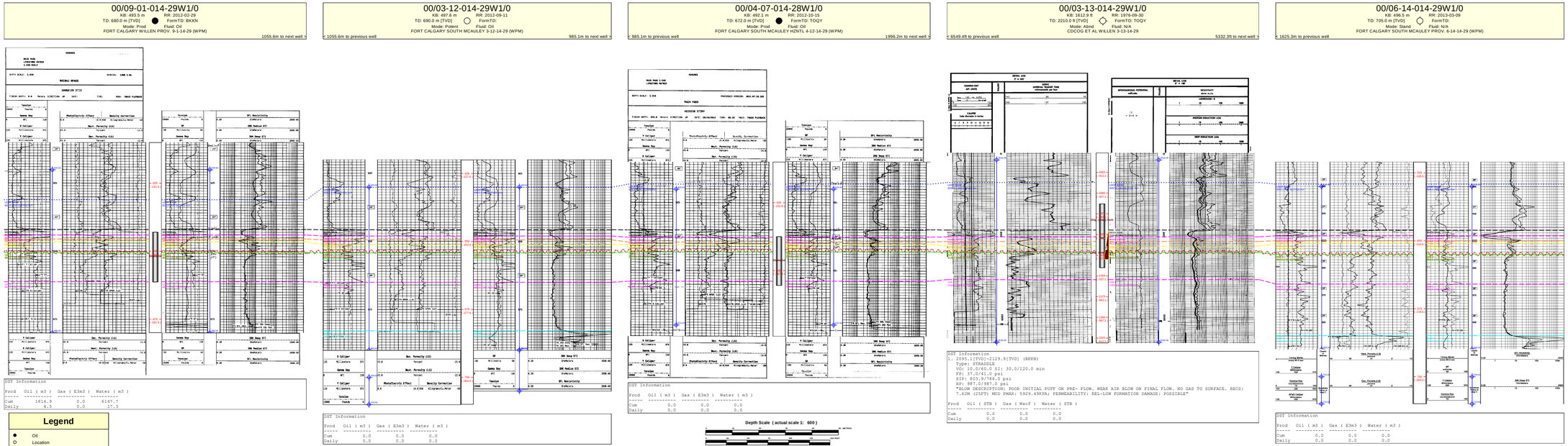
Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Scale 1:20000

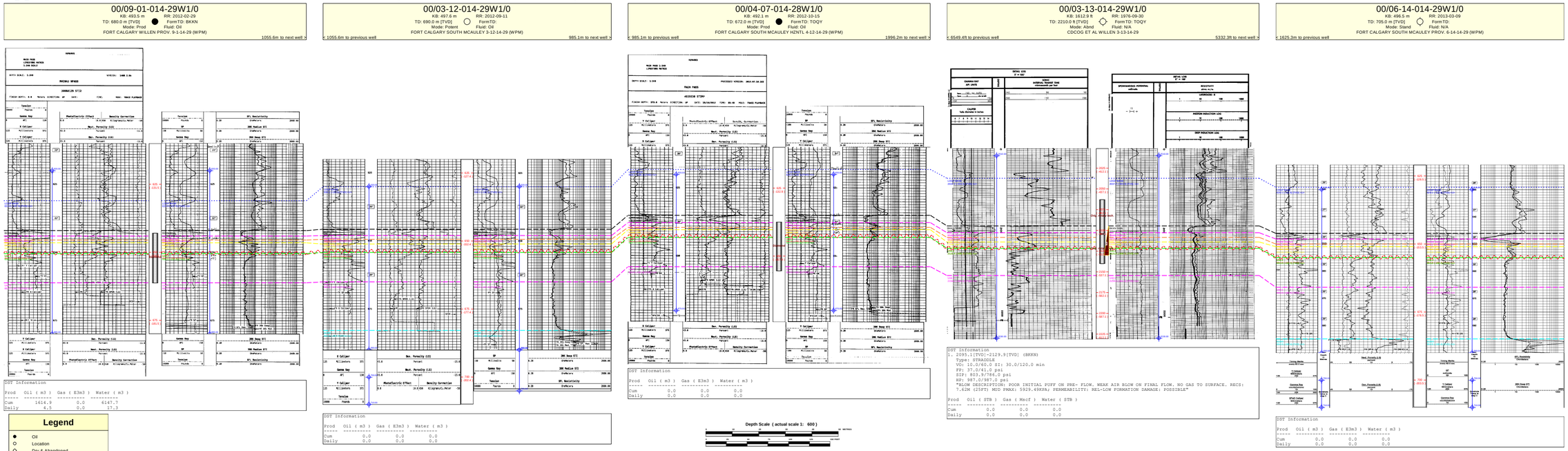
0 Kilometers 0.9
0 Miles 0.5

Appendix B, Figure 12: Stratigraphic Cross Section A-A' (Northwest to Southeast) across EMU No.4



**Orange and Yellow tops represent subdivision of Middle Bakken into the middle and lower reservoir units, respectively.

Appendix B, Figure 13: Structural Cross Section A-A' (Northwest to Southeast) across EMU No.4



x:\davidrose\dc\MANSONNW.asc
Projection: None. Fixed spacing: 1.00 inch

[Accu.ogs, v8.0.2.48254] Oct 01, 2013 16:51:34
Datum: NAD83

**Orange and Yellow tops represent subdivision of Middle Bakken into the middle and lower reservoir units, respectively.

Appendix C: Reservoir Characteristics & Recovery

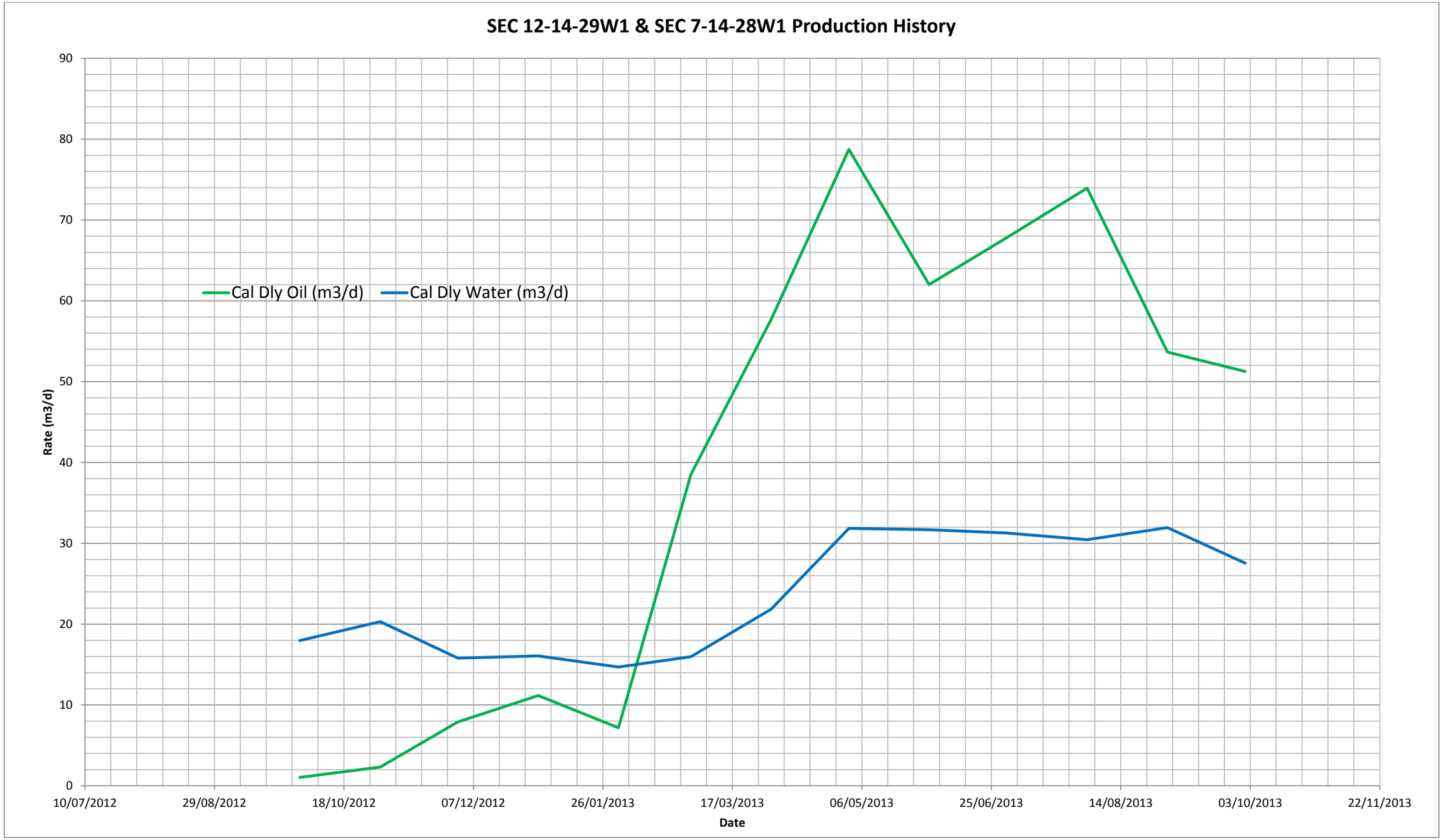
Appendix C, Figure 1: East Manson Unit No.4 (SEC 7-14-28W1 & 12-14-29W1) OOIP

East Manson Unit No.4 OOIP Calculation						
	Beach / Breccia Unit		Rythmite Unit		Unit 2	
Legal Desciption	Total Pore Volume (e3m3)	OOIP (e3m3)	Total Pore Volume (e3m3)	OOIP (e3m3)	Total Pore Volume	OOIP (e3m3)
SEC 7-14-28 W1						
4-7-14-28W1	47.34	31.56	10.09	5.94	0.00	0.00
5-7-14-28W1	17.69	11.79	3.45	2.03	0.00	0.00
12-7-14-28W1	1.97	1.31	0.25	0.15	0.00	0.00
13-7-14-28W1	0.00	0.00	0.00	0.00	0.00	0.00
SEC 12-14-29 W1						
1-12-14-29W1	78.90	52.60	19.33	11.37	0.00	0.00
2-12-14-29W1	64.20	42.80	28.85	16.97	0.00	0.00
3-12-14-29W1	41.95	27.97	28.22	16.60	0.00	0.00
4-12-14-29W1	38.59	25.72	18.49	10.88	0.00	0.00
5-12-14-29W1	58.48	38.99	26.70	15.71	0.00	0.00
6-12-14-29W1	74.72	49.81	26.35	15.50	0.00	0.00
7-12-14-29W1	75.87	50.58	18.48	10.87	0.00	0.00
8-12-14-29W1	47.02	31.35	11.04	6.49	0.00	0.00
9-12-14-29W1	22.60	15.06	4.66	2.74	0.00	0.00
10-12-14-29W1	53.90	35.93	11.99	7.05	0.00	0.00
11-12-14-29W1	77.38	51.59	20.97	12.34	0.00	0.00
12-12-14-29W1	82.76	55.17	30.20	17.76	0.00	0.00
13-12-14-29W1	84.13	56.08	25.38	14.93	0.00	0.00
14-12-14-29W1	57.03	38.02	14.31	8.42	0.00	0.00
15-12-14-29W1	31.44	20.96	6.10	3.59	0.00	0.00
16-12-14-29W1	5.74	3.83	0.55	0.33	0.00	0.00
Total	961.71	641.14	305.41	179.65	0.00	0.00
	Average Swi	32%	Average Swi	40%	Average Swi	40%
	Boi (res m3/m3)	1.02	Boi (res m3/m3)	1.02	Boi (res m3/m3)	1.02

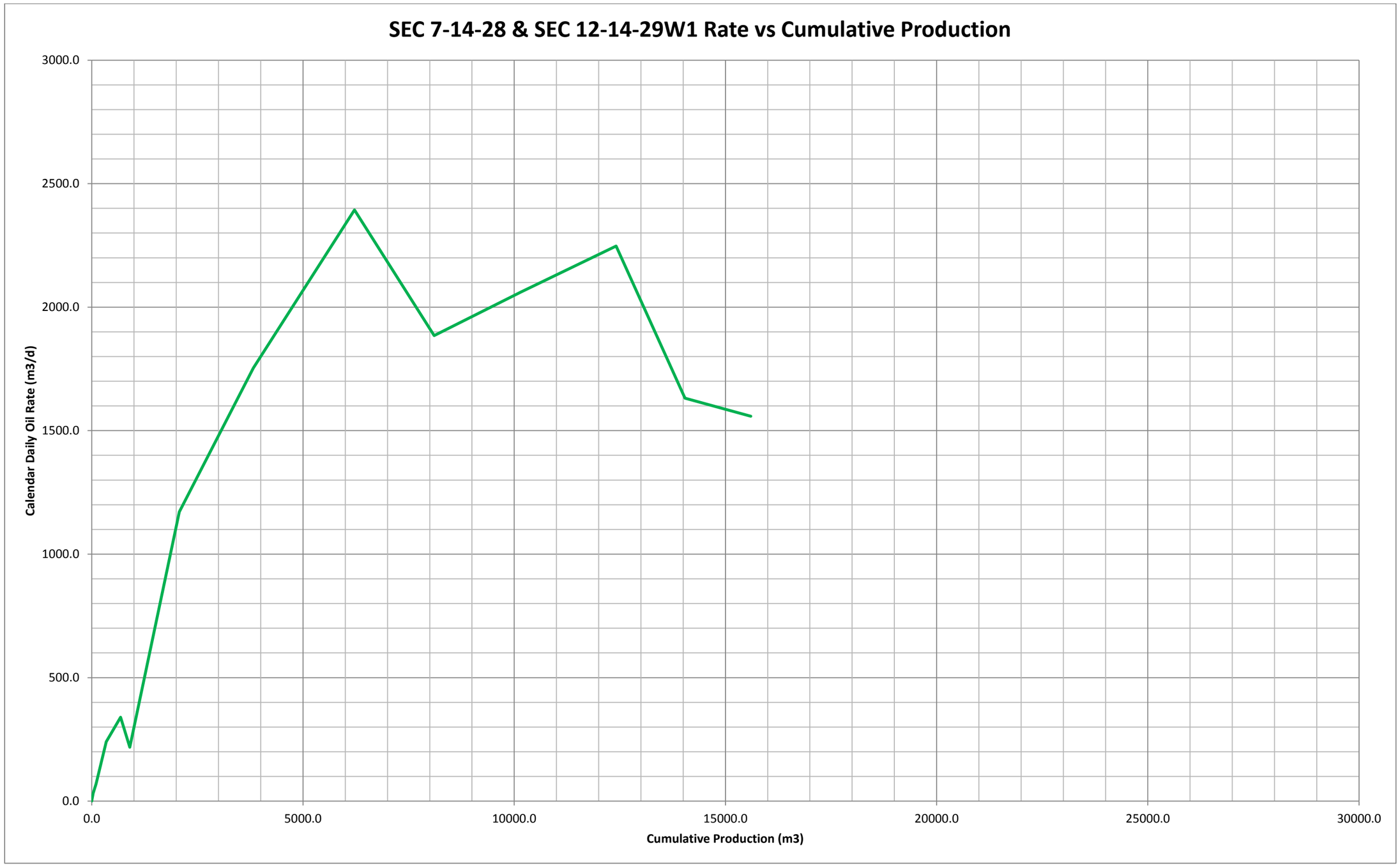
** 1 md cut-off used for phi * h interpretation

Total Section 7 & 12 OOIP (e3m3)	820.8
Total Section 7 & 12 OOIP (MBBL)	5162.5

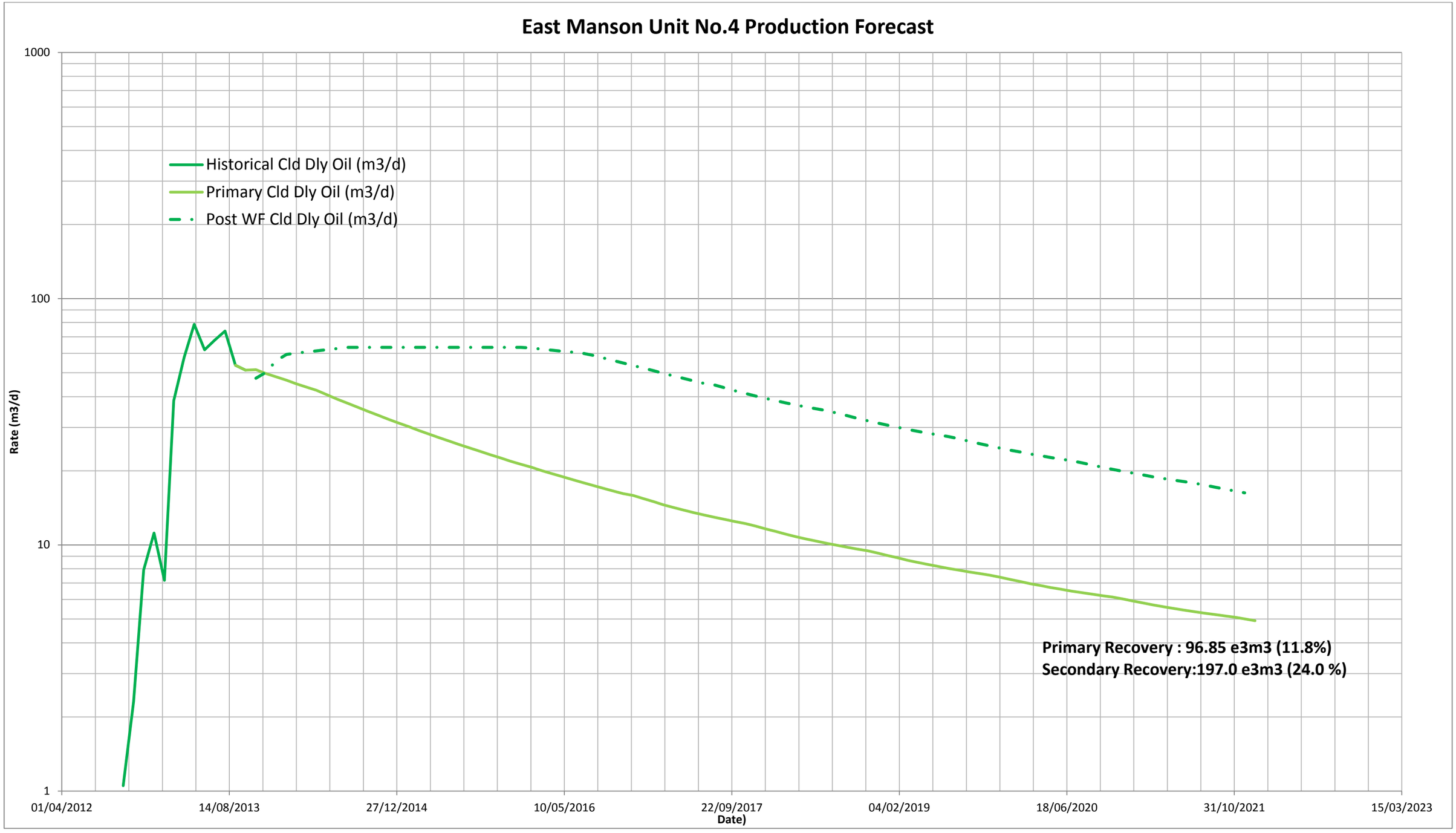
Appendix C, Figure 2: SEC 7-14-28W1 & 12-14-29W1 Production History



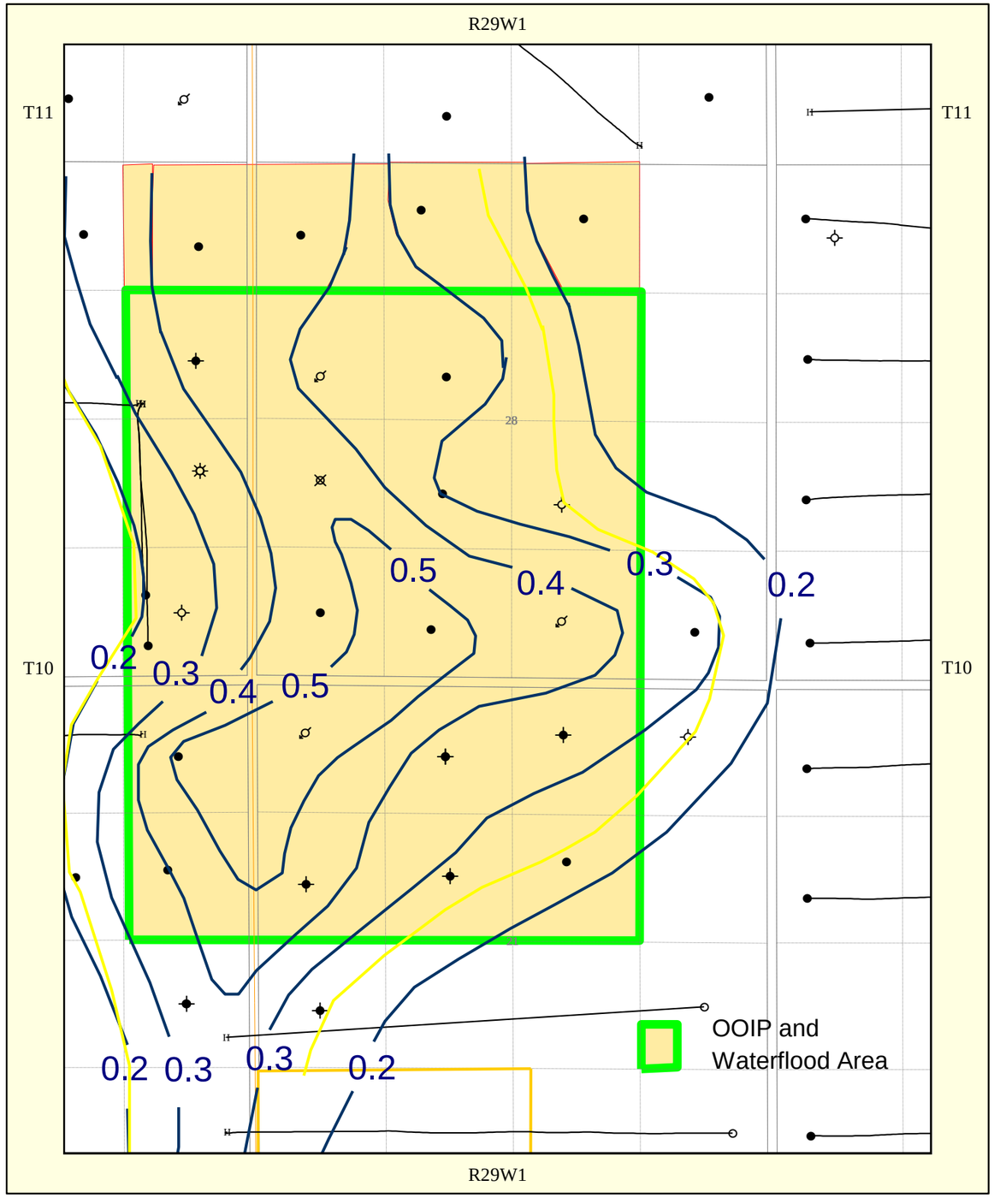
Appendix C, Figure 3: SEC 7-14-28 & 12-14-29W1 Production Rate vs Cumulative Production



Appendix C, Figure 4: East Manson Unit No.4 Production Forecasts



Appendix C, Figure 5: Daly Bakken A Analogue Map



WELL LEGEND

Bottom Hole Locations:

- Location
- Oil
- Abandoned Oil
- Injection
- Service or Drain
- Dry & Abandoned
- Abandoned Service

Surface Hole Locations:

- Horizontal

PROPRIETARY DATA LEGEND

Regions:

- Fort Calgary Land

Scale 1:18329

0 Kilometers 0.8

0 Miles 0.5

Fort Calgary Resources Ltd.

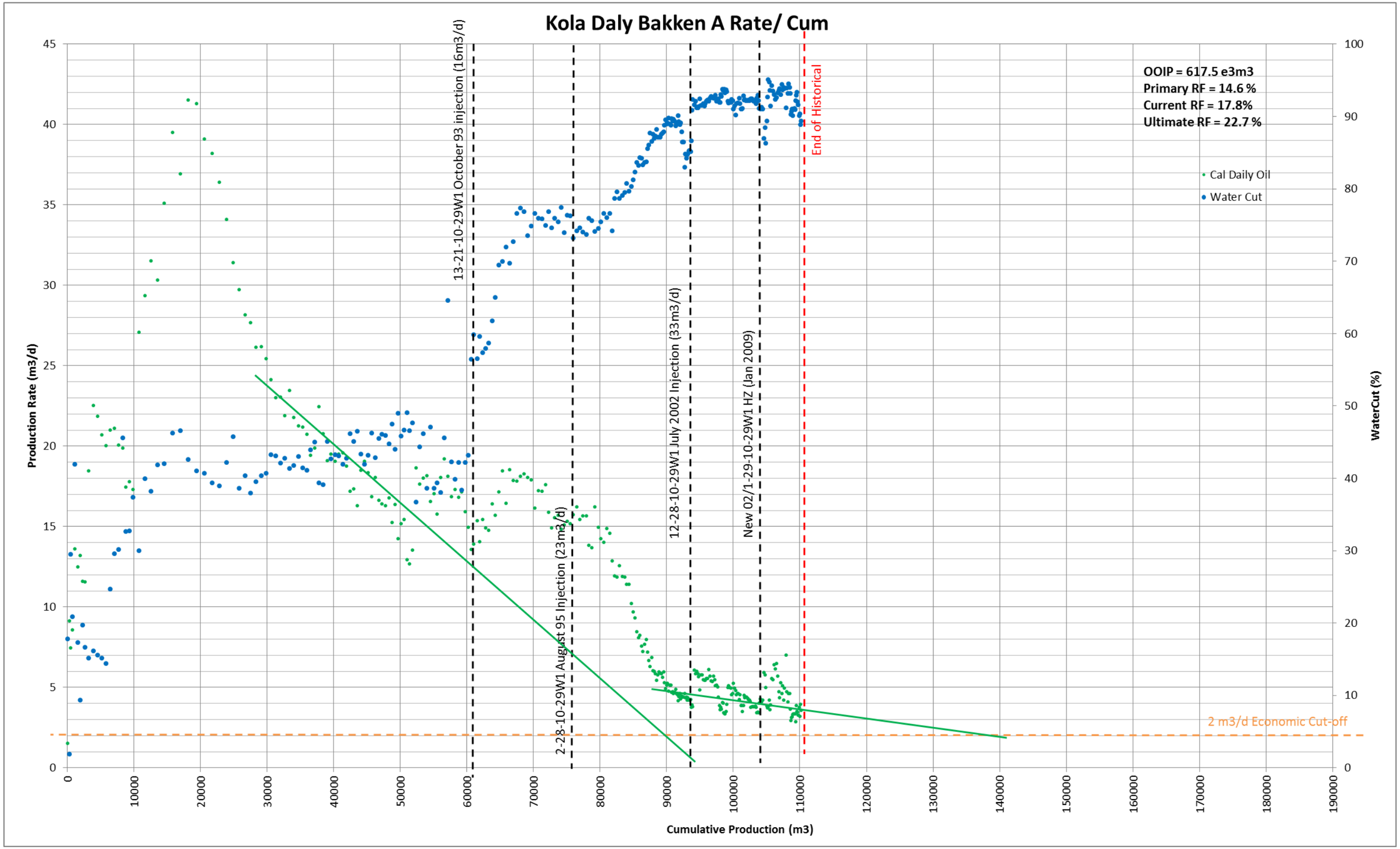
Created in AccuMap™
Product of IHS
Datum: NAD83
Vol. 22 No. 11, Nov 12 2012
(403) 770-4646

Author: David Rose
Date: December 13, 2012
File: Kola phi-h.MAP
Scale: 1 : 18329
Projection: Stereographic
Center: N49.85959 W101.36174

Grid Information:
DLS: IHS Enhanced Grid
NTS: Theoretical Grid
FPS: Theoretical Grid
US: IHS US Grid

DLS Version Information:
AB: ATS 4.1
BC: PRB 2.0
SK: STS 2.5
MB: MLI07

Appendix C, Figure 6: Daly Bakken A Analogue Recovery



Appendix D: Proposed Waterflood Design

Appendix D, Figure 1: Typical Injector

SURGE ENERGY INC

WELL NAME: Surge Energy East Manson (Typical horizontal injection well)

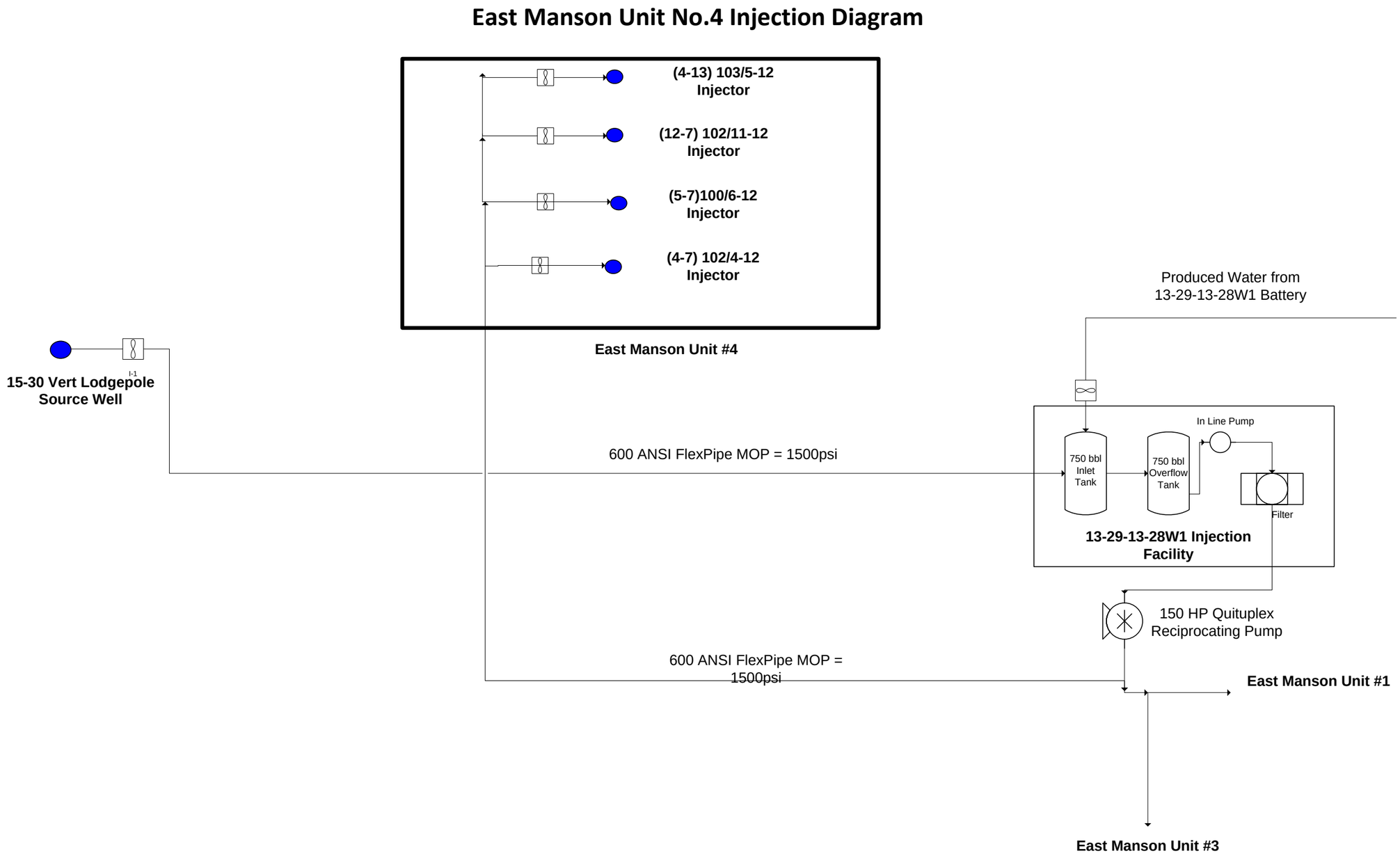
Typical Configuration			
Prepared By: TRML			
Elevations in metres / Depths in mKB (measured depth)			
KB Elevation	494.90	Casing Flange Elevation	490.90
Ground Elevation	490.90	KB to CF	4.00
Casing/Tubing	**Jts / Size mm**	**Wt Kg/m / Grade**	**mKB**
Surface	10jts / 244.5	48.07 / H-40	140
	Casing cememted to suface		
Production	57jts / 177.8	34.23 / J-55	775
	Casing cemented to surface		
Tubing	78jts / 73mm	9.67 / J-55	760

Tubing String:

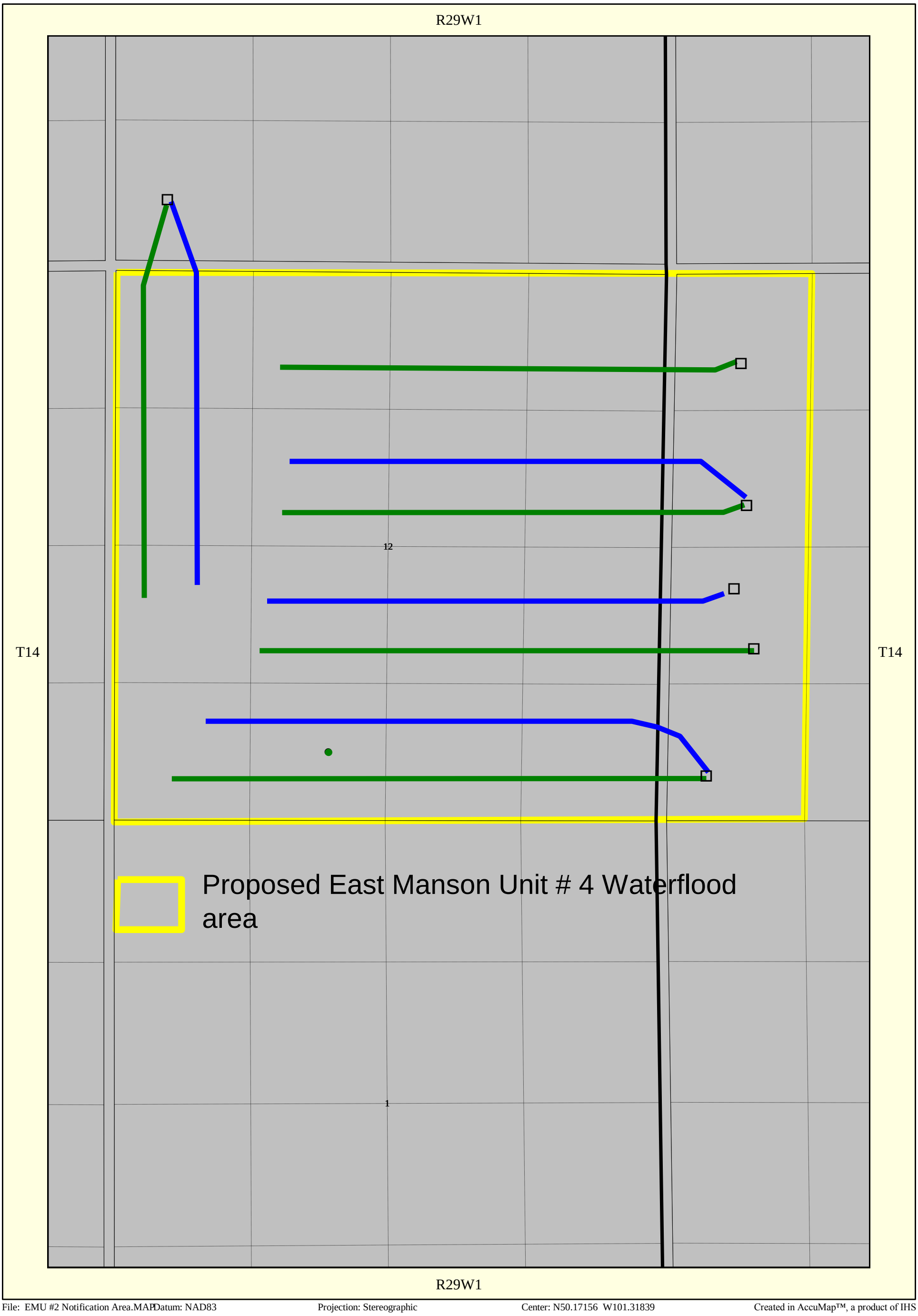
No.	Description	Length metres	Top at mKB
1	Tubing hanger (coated)	0.13	-0.13
2	73mm x 3.05m 9.67kg/m J-55 EUE coated pup joint	3.05	-3.18
3	73mm x 9.67kg/m J-55 EUE coated tubing	751.42	-754.60
4	139.7mm x 73mm coated double grip packer	1.40	
	Total String Length (metres)	756.00	
	KB to CF	4.00	
	Packer Bottom Landed Depth mKB		760.00

Horizontal Schematic final Dec 2013

Appendix D, Figure 2: Injection Diagram



Appendix D, Figure 3: Injection Scheme



File: EMU #2 Notification Area.MAP Datum: NAD83 Projection: Stereographic Center: N50.17156 W101.31839 Created in AccuMap™, a product of IHS

Appendix D, Figure 4: Corrosion Control

East Manson Unit No.3 Corrosion Control Program

Surface Lines:

- All surface flow lines will consists of Flexpipe fiberglass reinforced polyethylene pipe.
- Surface lines to injection wells will be have a maximum allowable pressure of 1500 psi
- Stainless steel valves and fittings
- Isolation valves at wellheads and injection facility
- High a low pressure shut-down

Injection Facilities

- Internally coated storage tanks
- Stainless steel filtration system
- Pump unit consisting of ceramic plungers, stainless steel disc valves

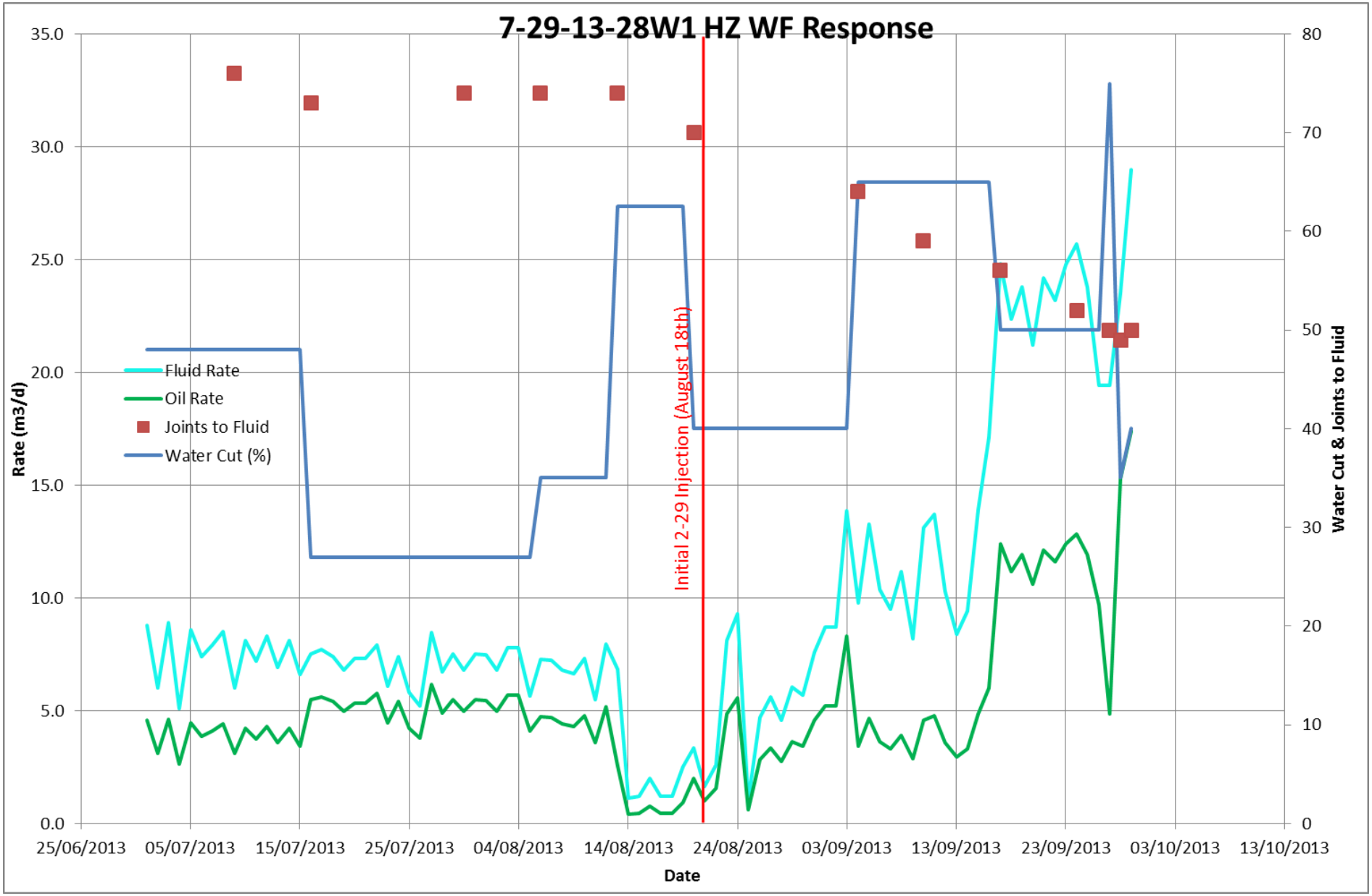
Injection Wells

- Injector tubing will be fusion epoxy coated (FBE)
- Casing, tubing and wellhead cathodic protection
- Corrosion resistant surface line and master valves
- Inhibited water in annular space

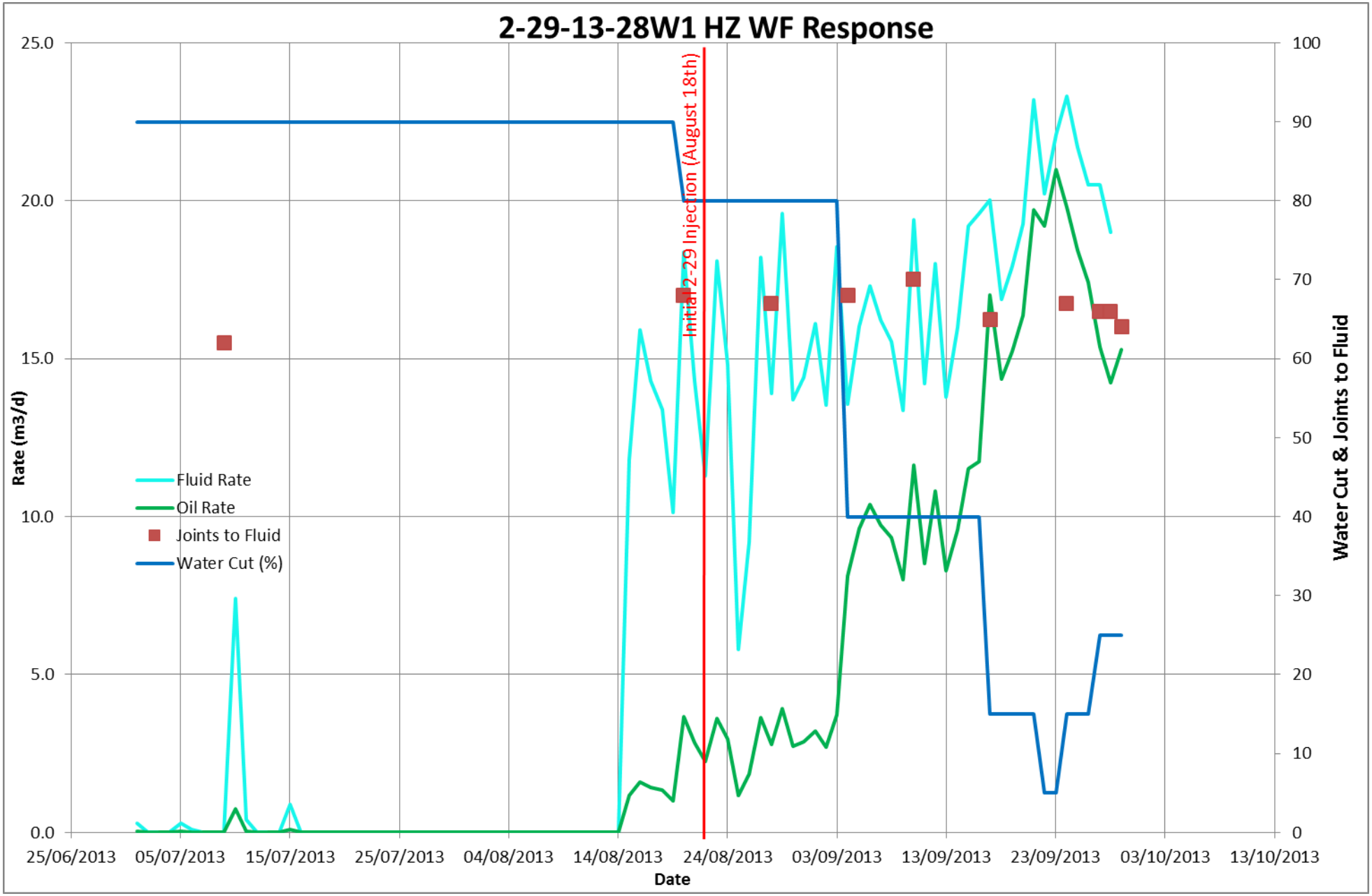
Producing and Source Wells

- Fusion epoxy coated tubing
- Downhole corrosion inhibitor batch treatments
- Cathodic protection

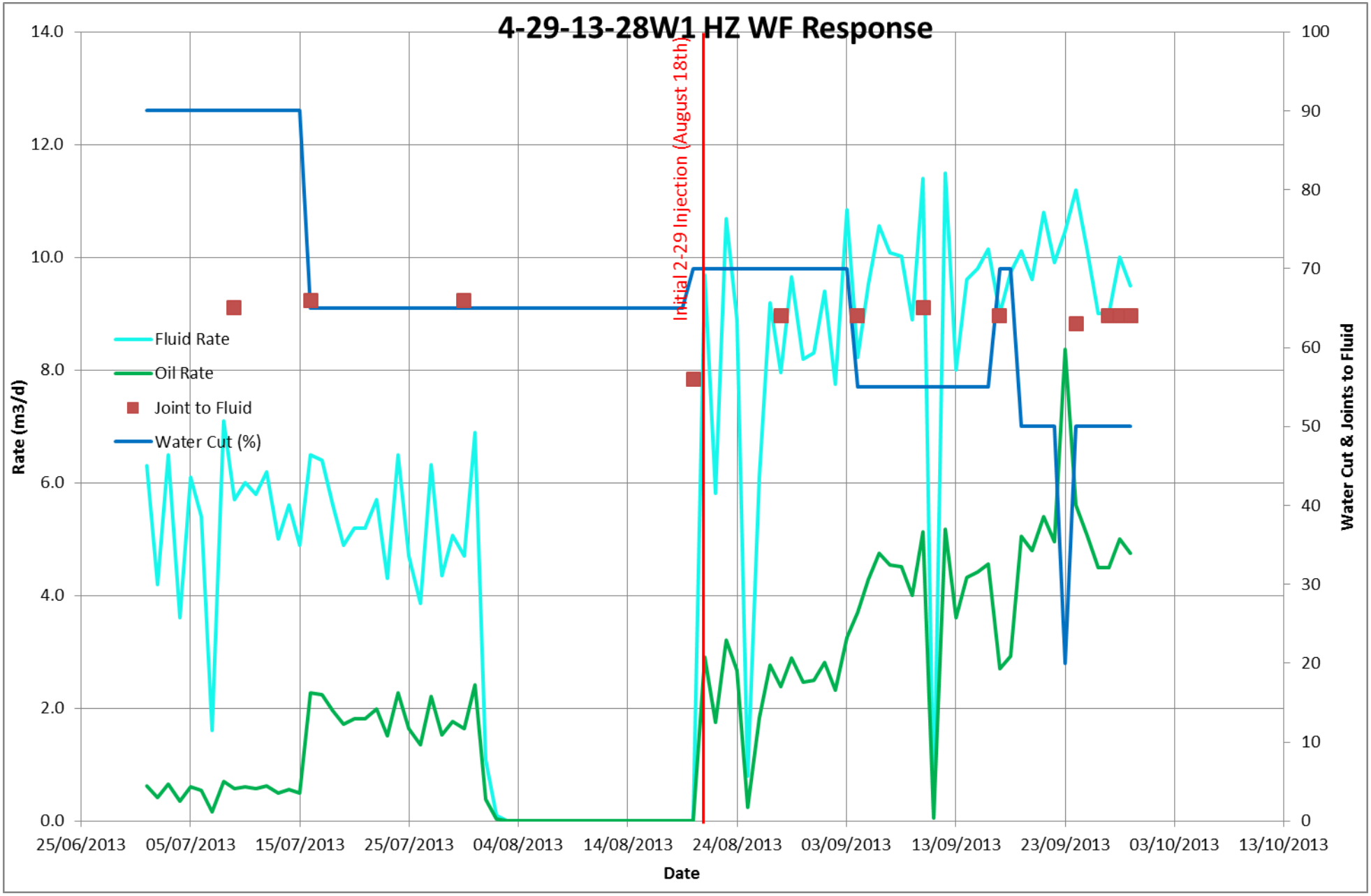
Appendix E, Figure 1: 7-29-13-28W1 HZ (2-29 Vert Pilot Response)



Appendix E, Figure 2: 2-29-13-28W1 HZ (2-29 Vert Pilot Response)



Appendix E, Figure 3: 4-29-13-28W1 HZ (2-29 Vert Pilot Response)



Appendix E, Figure 3 Well Group Plot (2-29 Vert Pilot Response)