GROUNDWATER EVALUATION REPORT

Proposed Residential Subdivision Development
NE-30-054-01-W5M
Lac Ste. Anne County, Alberta

Submitted to:

Catalano Development Group
Calgary, Alberta

Submitted By:

Moncur Groundwater

May 15, 2008

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1.0 INTRODUCTION

Moncur Groundwater was retained by the Catalano Development Group of Calgary, Alberta, to prepare a hydrogeological assessment report to determine if there is sufficient groundwater available for a proposed residential subdivision development. The proposed development consists of approximately 61 acres that will be developed into 40 single country residential lots, in addition to an existing homestead. It has been proposed that each lot will have a private well on the property. The Alberta Water Act (1999) requires that 1,250 m^3 a^{-1} [0.52 Imperial gallons per minute (Igpm)] of potable water be available for each household where individual water wells are servicing individual lots. This implies that a sustained groundwater diversion of 51,250 m^3 a^{-1} (140.4 m^3 day^{-1} or 21.3 Igpm) must be available for the proposed 41-lot development. The diversion of groundwater should not interfere with any household users, licensees or traditional agricultural users who exist when the subdivision is approved.

2.0 OBJECTIVES

The objectives of this project were to conduct a regional hydrogeological and geochemical investigation of the area for the proposed subdivision. Responsibilities by Moncur Groundwater include:

- Review all available reports and maps in the area
- Review and summarize all well and borehole logs within a 1.6 km (1 mile) radius of the proposed subdivision
- Construct a stratigraphic cross-section across the area showing major sediment units and the hydrostratigraphy
- Review and summarize all available water chemistry data available within a 1.6 km (1 mile) radius of the proposed subdivision to determine if the water quality is within the Canadian drinking water guidelines
- Review geochemical analysis of groundwater collected from the water wells and determine if the water quality is within the Canadian drinking water guidelines
- Prepare a report detailing the results and conclusions of this project

3.0 SITE DESCRIPTION

The proposed subdivision is located in Lac Ste. Anne County, approximately 20 km northwest of Spruce Grove, Alberta (Figure 1). The proposed development is situated on Lot B, Plan 4722TR within the northeast of Section 30, Township 054, Range 01, West of the Fifth Meridian (NE-30-054-01-W5M). The property is bounded to the north the by a Canadian Pacific Railway track; on the east by Range Road 15; and on the west and south by farm land. A high-pressure gas line bi-sects the property running east-west. The property is heavily treed with undulating topography and used for grazing purposes.

The climate at Lac Ste. Anne County consists of long, cool summers and severe winters. The mean annual temperature, precipitation and evapotranspiration for the County is 3.4 ^{0}C, 536 mm and 515 mm, respectively, based on data collected from 1971 to 2000 (Environment Canada, 2008).

4.0 REGIONAL GEOLOGY

The surficial geology of the area includes pre-glacial materials and drift materials deposited directly or indirectly during glaciation. The lower surficial deposits include pre-glacial fluvial and lacustrine deposits. The lacustrine deposits include clay, silt, coal and fine-grained sand. The upper surficial deposits include glacial deposits of till and meltwater deposits.

Approximately 80% of the Lac Ste. Anne County is underlain by sand and gravel deposits (Hydrogeological Consultants, 1999). The surficial deposits consist of three hydraulic parts. The first is the sand and gravel deposits of the lower surficial deposits, the second is the saturated sand and gravel deposits of the upper surficial deposits and third is the sand and gravel close to ground level, which is usually unsaturated. Sand and gravel deposits in the upper part of the surficial deposits can extend above the upper limit of the saturation zone and because they are not saturated, do not produce water. A linear low in the bedrock surface underlies the proposed subdivision. The linear bedrock low is believed to be associated with a meltwater channel (Onoway Buried Valley) that trends from west to east and underlies Isle Lake and Lac Ste. Anne in the southern part of the county (Figure 2). There is potential for the meltwater channel to yield a large volume of water (Hydrogeological Consultants, 1999).

The bedrock in the county is the Paskapoo Formation and Edmonton Group (Figure 3). The Paskapoo Formation subcrops in the southwest part of the county and consists of cycles of thick, tablular sandstones, siltstone and mudstone layers (Glass, 1990). The thickness of the Paskapoo Formation is less than 328 ft (100 m) within the county and is the upper bedrock unit. The Edmonton Group consists of fresh and brackish-water deposits of fine-grained sandstone and silty shale, thick coal seams, and numerous bentonite beds (Carrigy, 1971). The thickness of the Edmonton Group varies from 300 to 500 m, and is underlain by the Bearpaw Formation. The Edmonton Group in the County includes the Scollard, Battle, Whitemud and Horseshoe Canyon formations (Hydrogeological Consultants, 1999).

The Scollard Formation underlies the Paskapoo Formation and has a maximum thickness of 394 ft (120 m) within the County and includes the Upper and Lower Scollard formations. The Upper Scollard subcrops in the southwest part of the county and consists mainly of sandstone, siltstone, shale and coal seams or zones. The Lower Scollard Formation has a maximum thickness of 130 ft (40 m) and is composed mainly of shale and sandstone.

Beneath the Scollard Formation are the Battle and Whitemud formations having a combined maximum thickness of 98 ft (30 m), present only in the southwestern part of the County. The Battle Formation is composed mainly of claystone, tuff, shale and bentonite. The Whitemud Formation is composed mainly of shale, siltstone, sandstone and bentonite. Because of the ubiquitous nature of the bentonite in the Battle and Whitemud formations, there is very little significant permeability within these two formations (Hydrogeological Consultants, 1999).

The Horseshoe Canyon Formation is the lower part of the Edmonton Group and is the upper bedrock in the remainder of the County and has a maximum thickness of 1150 ft (350 m) within the County including the Upper, Middle and Lower Horseshoe Canyon Formations. The Upper Horseshoe Canyon is the upper bedrock in the center of the County where the Scollard Formation is absent. The Middle Horseshoe Canyon, which underlies the proposed development, is the upper bedrock in the northeastern part of the County. The Lower Horseshoe Canyon is the upper bedrock in a few areas of the north part of the County. The Horseshoe Canyon Formation consists of deltaic and fluvial

sandstone, siltstone and shale with interbedded coal seams, bentonite and thin nodular beds of ironstone. Because of the low-energy environment in which deposition occurred, the sandstones, when present, tend to be finer grained (Hydrogeological Consultants, 1999). The lower 197 to 230 ft (60 to 70 m) and the upper 98 to 164 ft (30 to 50 m) of the Horseshoe Canyon Formation may include coarser grained sandstone deposits.

The Bearpaw Formation underlies the Horseshoe Canyon Formation and is in the order of 80 m thick within the County. The Bearpaw Formation includes transgressive, shallow marine and open marine facies deposits. In Lac Ste. Anne County, the Bearpaw Formation is composed mainly of shale forming a regional aquitard.

4.1 Site Geology

Figure 4 shows map view of the proposed development and well locations. Figure 5 shows a cross-section oriented northwest to southeast through the proposed development; A to A'. The cross-section includes overburden and bedrock stratigraphy and hydrostratigraphy from three water well logs obtained from the Alberta Environment (AENV) water well data base (Well ID No. 0445434, 01300045, 0416261, 0445402 and 0445404).

The bedrock in shown in figure 5 is part of the Middle Horseshoe Formation and dips to the northeast. The bedrock is composed of interbedded shale and sandy shale with two sandstone lenses to the northeast. Directly over the bedrock is a layer of saturated sand and gravel that was present in all well logs. Depth to the top and bottom of the gravel unit is from 175-181 ft (53-55 m) at the northwest of the cross-section, and from 52-84 ft (16-26 m) to the southeast. Overlying the gravel unit is a glacial till composed of clay with two lenses of sand.

Information on the local geology for the proposed development, NE-30-054-01-W5M, was available from two water well logs obtained from the AENV water well data base (Well ID No. 01300045 and 0416261, Figure 6 and 7) and a geotechnical evaluation conducted by McIntosh Lalani Engineering, 2008. Bedrock underlying the development ranges from 98 to 109 ft (30-33 m) below the ground surface and is composed of interbedded shale and sandy shale. A sand and gravel unit overlying the bedrock is located at a depth of 50 to 88 ft (15-27 m) and ranges in thickness from 3 to 29 ft (1-9 m).

Stratigraphy above the gravel unit consists of clay with two sand layers. McIntosh Lalani Engineering (2008) reported a surficial layer of topsoil covering the site ranging from 0.2 to 2 ft (5-60 cm). Beneath the topsoil layer is interbedded layers of silts, sands and silty clays that extend beyond 30 ft (9.1 m). The silts, sands and silty clays contained traces of sand, gravel, clay, silt and cobbles.

5.0 REGIONAL HYDROGEOLOGY

The AENV water well database lists 15 water well records within 1.6 km (1 mile) radius of NE-30-054-01-W5M (Figure 5; Appendix A). A list for all water well records is summarized in table 1. The records indicate that groundwater use in the area is primarily for domestic purposes (9 wells; 60%) with lesser use indicated for stock (3 wells; 20%) domestic and stock (2 wells; 13%) and industrial (1 well; 6.7%).

Water wells within the 1.6 km radius from NE-30-054-01-W5M range in depth from 87 ft (27 m) to 304 ft (93 m) below ground level (BGL), with a calculated average depth of 185 ft (56 m) BGL. Static water levels measured in the area range from 18 ft (5.5 m) to 100 ft (30.5 m) with a calculated average static water level depth of 62 ft (19 m) BGL. It should be noted that AENV well No. 0444519 was excluded from the calculations because it is an industrial well drilled to a depth of 1150 ft (350 m) and would over-estimate the average well depths in the area.

There are two water-bearing units within a radius of 1.6 km of NE-30-054-01-W5M that include an overburden aquifer (sand and gravel) and a bedrock aquifer. Ten wells are completed in the bedrock. The groundwater yield of the bedrock wells indicates that pumping rates range from 3 Igpm to 15 Igpm, with a calculated average test rate of 8.4 Igpm. The average depth of wells completed in bedrock is 218 ft (66 m). The groundwater yield form the 4 overburden wells indicates that pumping rates range from 4.5 Igpm to 10 Igpm, with a calculated average test rate of 6.4 Igpm. The average depth of wells completed in bedrock is 113 ft (34 m).

4.1 Site Hydrogeology

Within the section NE-30-054-01-W5M, the AENV water well database lists 2 wells, AENV Well No. 1300045 and 0416261 (Figures 6 and 7, respectively). The location of the wells, provided by the AEVR Water Well Database, is shown in figure 8. The AENV report shows the location of the wells to be in the south-central portion of the development, however, the location of the wells is likely adjacent to the residences near the eastern portion of the development. A site visit will be required to locate the wells.

Groundwater from well 0416261 is used for stock purposes. The well is completed in a gravel unit and screen over a 5 ft interval, from 111 to 116 ft (33.8-35.4 m). The static water level is 18.2 ft (5.6 m) and the estimated yield from the well is 10 Igpm.

Well 1300045 is used as a domestic groundwater supply. The well is completed in bedrock and screen over a 173 ft interval, from 131 to 304 ft (40-93 m). The static water level is 85 ft (26 m) and the estimated yield from the well is 8 Igpm.

These well test rates indicate that groundwater could be readily developable and will chiefly depend upon well location and completion.

5.0 REGIONAL GROUNDWATER QUALITY

The Guidelines for Canadian Drinking Water Quality (GCDWQ, 1996) set standards based on Aesthetic Objectives (AO), and on acceptable concentrations, either maximum (MAC) or interim (IMAC). Aesthetic objectives apply to certain substances or characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water. For some parameters, both AO and MAC have been derived. Where only AO are specified, these values are below those considered to constitute a health hazard. However, if concentrations in drinking water are well above an AO, there is a possibility of a health hazard. Maximum acceptable concentrations were established for certain substances that are known or suspected to cause adverse effects on health. Each MAC has been derived to safeguard health, assuming life-long consumption of drinking water containing the substance at that concentration (GCDWQ, 1996).

There are 2 water quality reports available from the AENV water well database within a 1.6 km radius of NE-30-054-01-W5M (Appendix B). Geochemical data from the

reports are summarized in table 2. All groundwater samples from the wells are below the MAC guidelines with only total dissolved solids TDS and iron exceeding the AO. Water analysis from wells 1300045 and 0416261 located NE-30-054-01-W5M was not available.

The average TDS concentration of 1037 mg L^{-1} measured in the groundwater from the wells exceeds the 500 mg L^{-1} AO guideline. TDS refers mainly to the inorganic substances dissolved in the water. The effect of TDS on drinking water quality depends on the level of its individual components; excessive hardness, taste, mineral deposition and corrosion are common properties of highly mineralized water (GCDWQ, 1996).

The average total iron concentration of 4.47 mg L^{-1} exceeds the 0.3 mg L^{-1} AO guideline. At concentrations of 0.3 mg L^{-1} and higher iron can rust taps and fixtures, stain laundry, and develop and undesirable taste. There is no evidence that iron contained in drinking water has adverse affects on human health (QCDWQ, 2006).

Based on the results provided from the water AENV quality reports, the groundwater in the area of the proposed subdivision is considered potable in Alberta with only TDS, and iron exceeding the AO guidelines in both wells. Total dissolved solids and iron are considered nuisance parameters rather than a health hazard.

6.0 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that:

- There are two potential aquifers located beneath the proposed development NE-30-054-01-W5M; confined sand and gravel aquifer and a fractured bedrock aquifer consisting of interbedded shale and sandy shale located in the Middle Horseshoe Formation. Surficial sand and gravel units in meltwater channels at or near the site may contain high yields of groundwater.

- The aquifers are capable of yielding sufficient quantities of groundwater for the proposed development (yields far greater than the 0.52 Igpm required can be developed). This assumes a properly constructed and developed well.

- The regional groundwater chemistry within a 1.6 km radius of NE-30-054-01-W5M meets or exceeds guidelines for Canadian drinking water quality.

It is recommended that:

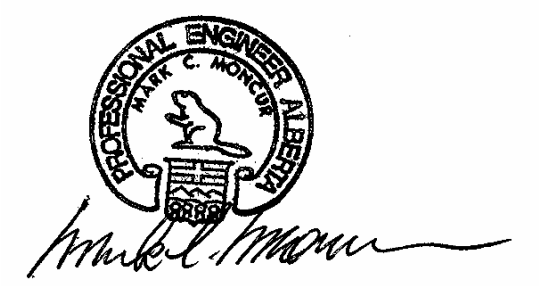
- A 48 hour pump test be conducted on well(s) 1300045 and/or 0416261 and evaluated by a groundwater professional

- Wells 1300045 and 0416261should be tested for water quality including chemical and bacteriological constituents.

- Future production wells be properly spaced, constructed, developed, and tested under the supervision of a qualified and experienced groundwater engineer or hydrogeologist.

It should be noted that findings presented in this report are based upon a review of published maps and reports, information available from the Alberta Environment water well database, and analysis of the pumping test data and groundwater samples collected by Moncur Groundwater.

Respectfully Submitted,
Moncur Groundwater



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TABLES

Table 1. Regional water well evaluation summary.
Table 2. Regional chemical analysis summary.

Well Evaluation Report
Proposed 70 Lot Subdivision
NW-15-55-03-W5M, Lac Ste Anne County
Submitted to The Catalano Development Group

Table 1. Water Well Reconnaissance Report for Water Wells Within a 1.6 km radius of NW-15-055-03-W5M

Well ID	W_M	TWP	RGE	SEC	LSD	Drilling Company	Date Completed (M/D/Yr)	Depth (ft BGL)	Use	CHM	LT	PT	Well Owner	Static Water level (ft BTOC)	Test Rate (lgpm)	Casing Perfs From (ft BGL)	Casing Perfs To (ft BGL)
340922	5	55	3	22	SE	RODCO DRILLING	1/25/2002	96	Domestic	0	0	24	NAPRAW, HAROLD #BARN WELL	62	6.5		
340923	5	55	3	22	SE	RODCO DRILLING	1/25/2002	113	Domestic	0	0	25	NAPRAW, HAROLD #WEST WELL	49.2	6		
340991	5	55	3	22	SE	RODCO DRILLING	1/25/2002	180	Domestic	0	0	46	MACDONALD, CAM	37	6		
														39	6		
359926	5	55	3	15	WH	MAR-WAYNE WATER WELL DRILLING	8/28/1991	200	Domestic	0	12	0	JAMES, HAROLD	89	9	140	200
360124	5	55	3	15	NW	D&D WATER WELL DRILLING &	10/03/1991	200	Domestic	0	8	0	CHESSIE, LARRY	98	4	160	200
363786	5	55	3	15	NE	RODCO DRILLING	5/18/1991	175	Domestic & Stock	0	16	0	VELTMAN'S DAIRY FARM LTD	14	1.5	55	75
367080	5	55	3	15	SE	UNKNOWN DRILLER		35	Domestic	1	0	0	BRELAND, TONNO				
378811	5	55	3	15	WH	MAR-WAYNE WATER WELL DRILLING	6/16/1995	204	Domestic	0	16	19	DANIELS, VERA	99	6	140	200
399472	5	55	3	15	NE	BLAKEMAN'S, NORM DRILLING LTD.	11/01/1994	160	Domestic	0	6	7	BRELAND, TONNO	58	7		
401475	5	55	3	22	8	ALBERTA ENVIRONMENT	11/07/1975	170	Monitoring	0	11	0	ALTA ENV #1537E H				
447285	5	55	3	15	SW	GROVE DRILLING LTD	10/10/1977	85	Other	0	6	0	NICKERSON, ROY	18	5		
447286	5	55	3	15	NE	UNKNOWN DRILLER		33	Domestic	1	0	0	ABBOT, A.L.				
447331	5	55	3	16	NW	CLEAR WATER DRILLING LTD.	4/14/1975	81	Domestic & Stock	0	9	0	HELAER, EDO	10	10		
447335	5	55	3	16	NW	UNKNOWN DRILLER		85	Domestic	1	0	0	PAHOLKIN, MARY				
447336	5	55	3	16	NE	GROVE DRILLING LTD	09/01/1978	260	Other	0	13	0	GISSELLE, KIRK		5		
447402	5	55	3	22	SE	UNKNOWN DRILLER		240	Domestic	1	0	0	VELTMAN, C.				
447404	5	55	3	22	SE	BIG IRON DRILLING LTD.	10/28/1974	180	Domestic & Stock	0	13	0	VELTMAN, CHRIS	40	15	140	170
447406	5	55	3	22	SE	BLAKEMAN'S, NORM DRILLING LTD.	04/12/1986	180	Domestic & Stock	0	18	6	VELTMAN DAIRY FARM LTD	47	6	145	178
447408	5	55	3	22	SE	UNKNOWN DRILLER			Domestic	2	0	0	VELTMAN'S DAIRY FARM				
490508	5	55	3	15	NE	BLAKEMAN'S, NORM DRILLING LTD.	10/20/1997	180	Domestic	0	9	3	KASSIAN, DAVID	37	11		
490509	5	55	3	16	SE	BLAKEMAN'S, NORM DRILLING LTD.	5/14/1996	304	Domestic	0	22	6	CLARK, PETER	137	2		
495910	5	55	3	22	SE	RODCO DRILLING	03/01/1999	212	Domestic	0	16	64	VELTMA DAIRY/NAPRAW, HAROLD	108	6.5	140	155
														63	7		
														63	7		
496215	5	55	3	16	NW	KAP'S DRILLING LTD.	11/26/1992	280	Domestic	0	14	0	MAXWELL, CLIFF	104	3	175	280
1130209	5	55	3	16	NE	BIG IRON DRILLING LTD.	09/09/2003	200	Domestic				WEGNER, MIKE & TAMMY	60	1	140	200
1165300	5	55	3	15	SW	CALIBRE DRILLING LTD.	9/25/2007	240	Domestic				HARDER, A. & REBER, R.	47.01	2	136	151
1165339	5	55	3	15	5	CALIBRE DRILLING LTD.	9/27/2007	170	Domestic				TYSCHUK, JIM	103.18	1.5		
1370110	5	55	3	16	NE	HOLLAND WATER WELLS	7/20/2005	135	Domestic				JOHNSTONE, DARCY	4.5	2.5	115	135
1495217	5	55	3	16	NE	MAR-WAYNE WATER WELL DRILLING	3/17/2006	220	Domestic				GRATTON, CONNIE	61.97	4	120	215
1760074	5	55	3	22	NE	TOM MEASURES DRILLING	10/26/2005	255	Domestic & Stock				HOVE, TYSON	36	25	200	250
							Average:	174						59	6	139	185
							Minimum:	33						4.5	1	55	75
							Maximum:	304						137	25	200	280

moncur GROUNDWATER

Well Evaluation Report
Proposed 55 Lot Subdivision
NE-30-054-01-W5M, Lac Ste. Anne County
Submitted to: Catalano Development Group

Table 2. Groundwater Chemistry Report from Wells Within a 1.6 km Radius of NE-30-054-01-W5M

Well ID	Depth (ft BGL)	pH	Conductivity ($\mu S\ cm^{-1}$)	TDS ($mg\ L^{-1}$)	Total Hardness ($mg\ L^{-1}$)	Total Alkalinity ($mg\ L^{-1}\ CaCO_3$)	Bicarbonate ($mg\ L^{-1}$)	Calcium ($mg\ L^{-1}$)	Sodium ($mg\ L^{-1}$)	Magnesium ($mg\ L^{-1}$)	Potassium ($mg\ L^{-1}$)	Iron ($mg\ L^{-1}$)	Sulfate ($mg\ L^{-1}$)	Chloride ($mg\ L^{-1}$)	Flouride ($mg\ L^{-1}$)	Silica ($mg\ L^{-1}$)	$NO_2 + NO_3$ ($mg\ L^{-1}$)
444531	140	7.6	1600	1215	155	712	n/a	42.9	n/a	11.01	n/a	2.30	198	2.00	n/a	n/a	0.028
445429	115	7.2	1389	858	521	561	684	137.7	95	43	3.74	6.64	240	<1.0	0.17	15.00	<0.014
Average	127.5	7.40	1495	1037	338	637	684	90.3	95	27.0	3.74	4.47	219	2.00	0.17	15.00	0.03
MAC[A]															1.5		45
AO[B]		6.5-8.5		<500					<200			<0.3	<500	<250			

[A]MAC: maximum acceptable concentration (Guidelines for Canadian drinking water Quality, 2006)
[B]AO: aesthethic objective (Guidelines for Canadian drinking water Quality, 2006)

FIGURES

Figure 1. Site location map.

Figure 2. Location of Onoway Buried Valley in Lac Ste. Anne County.

Figure 3. Bedrock map of Lac Ste. Anne County.

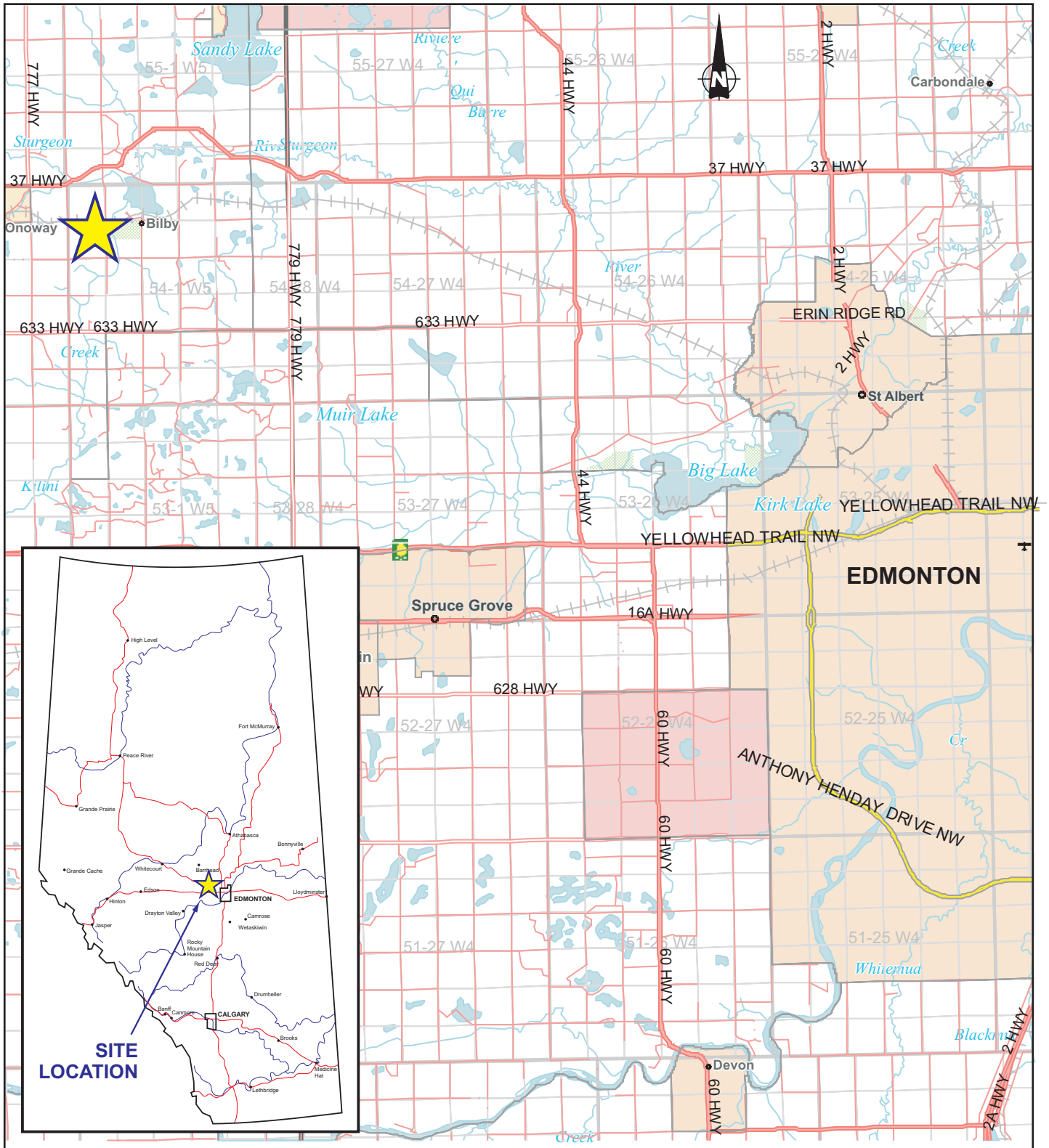
Figure 4. Water well location map.

Figure 5. Stratigraphic cross-section of the site.

Figure 6. Well completion diagram for the AENV well No. 1300045.

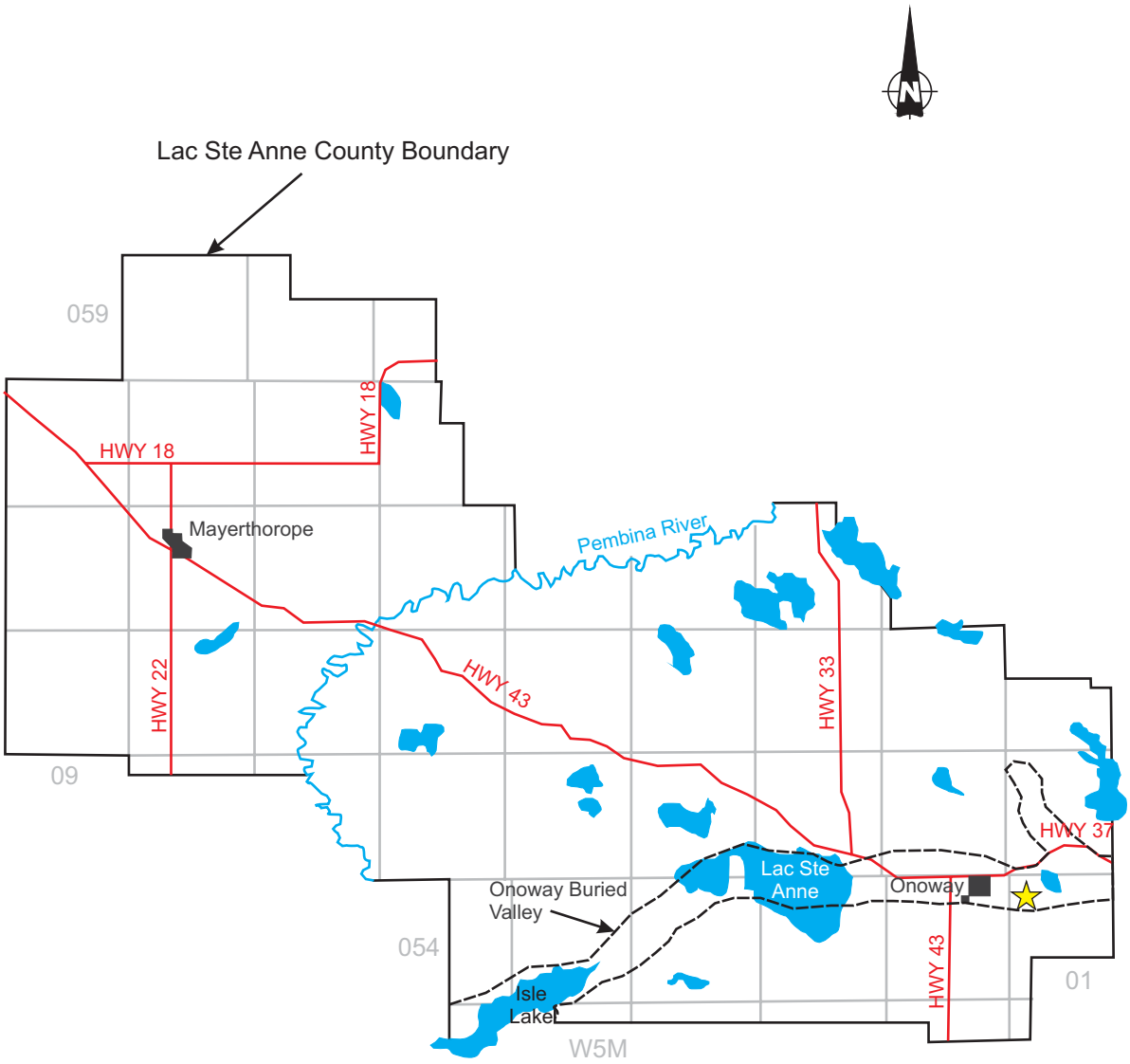
Figure 7. Well completion diagram for the AENV well No. 0416261.

Figure 8. Aerial photo of proposed development NE-30-054-01-W5M.



Scale 1 : 250 000

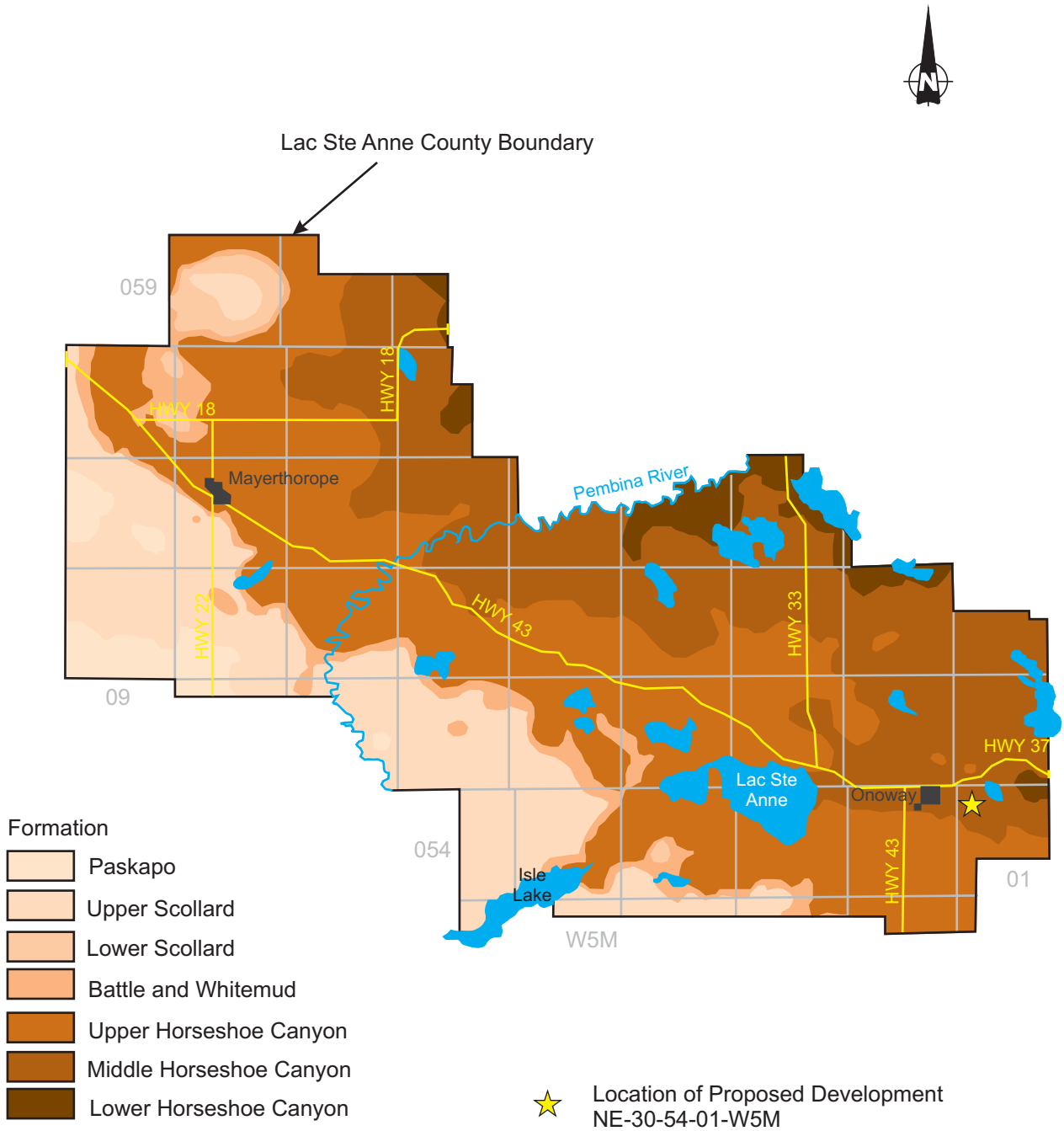
The Catalano Development Group	DRAWN Mike Moncur	**Residential Development, Lac Ste. Anne County** **NE-30-054-01-W5M**		
moncur GROUNDWATER	DESIGN Mike Moncur	★	**SITE LOCATION MAP**	
	APP Mark Moncur			
	FILE ---.CDR	JOB NO. —	DATE 09/05/2008	SCALE As shown	**FIGURE 1**



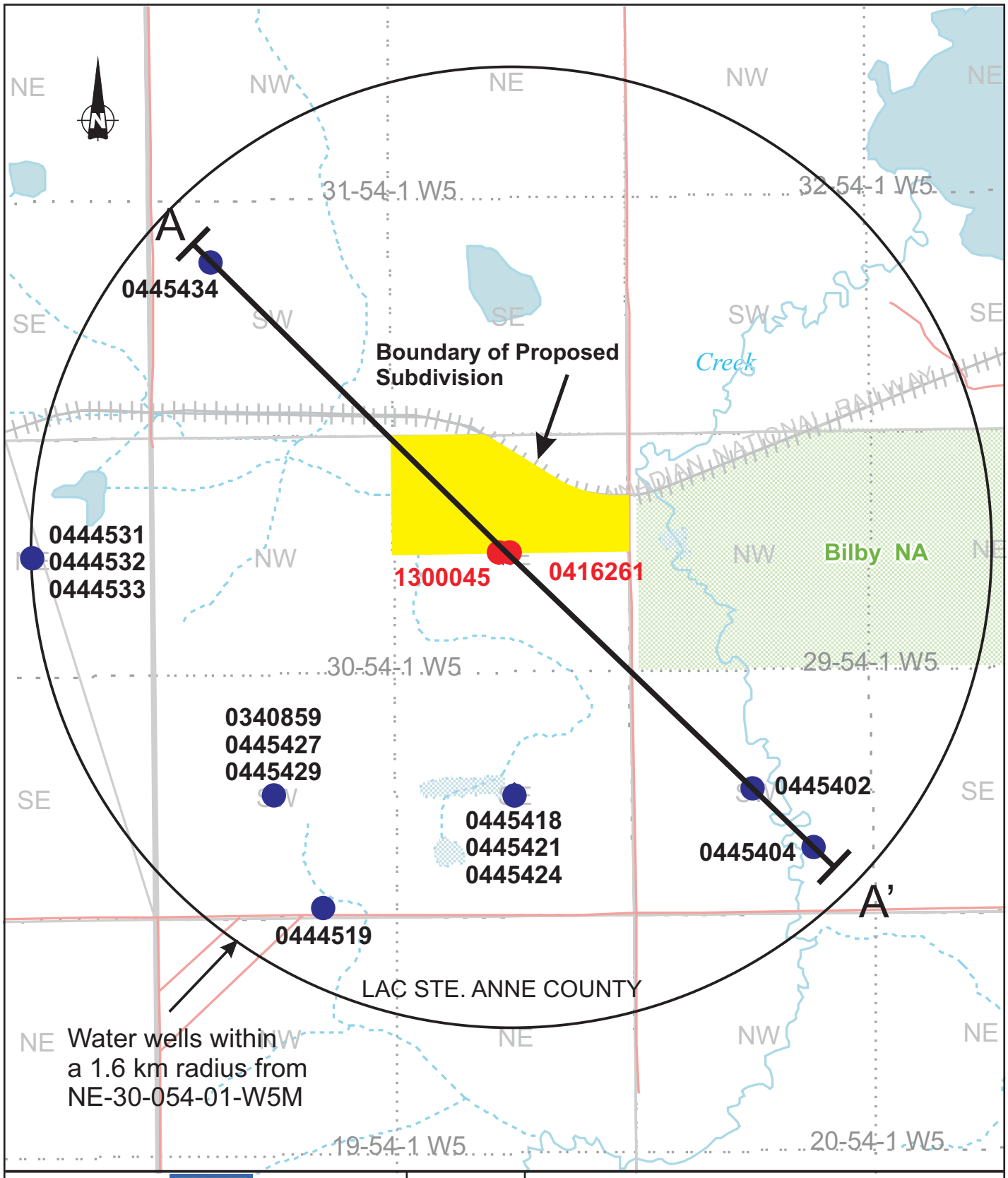
Boundary of Onoway Buried Bedrock Valley

Location of Proposed Development
NE-30-54-01-W5M

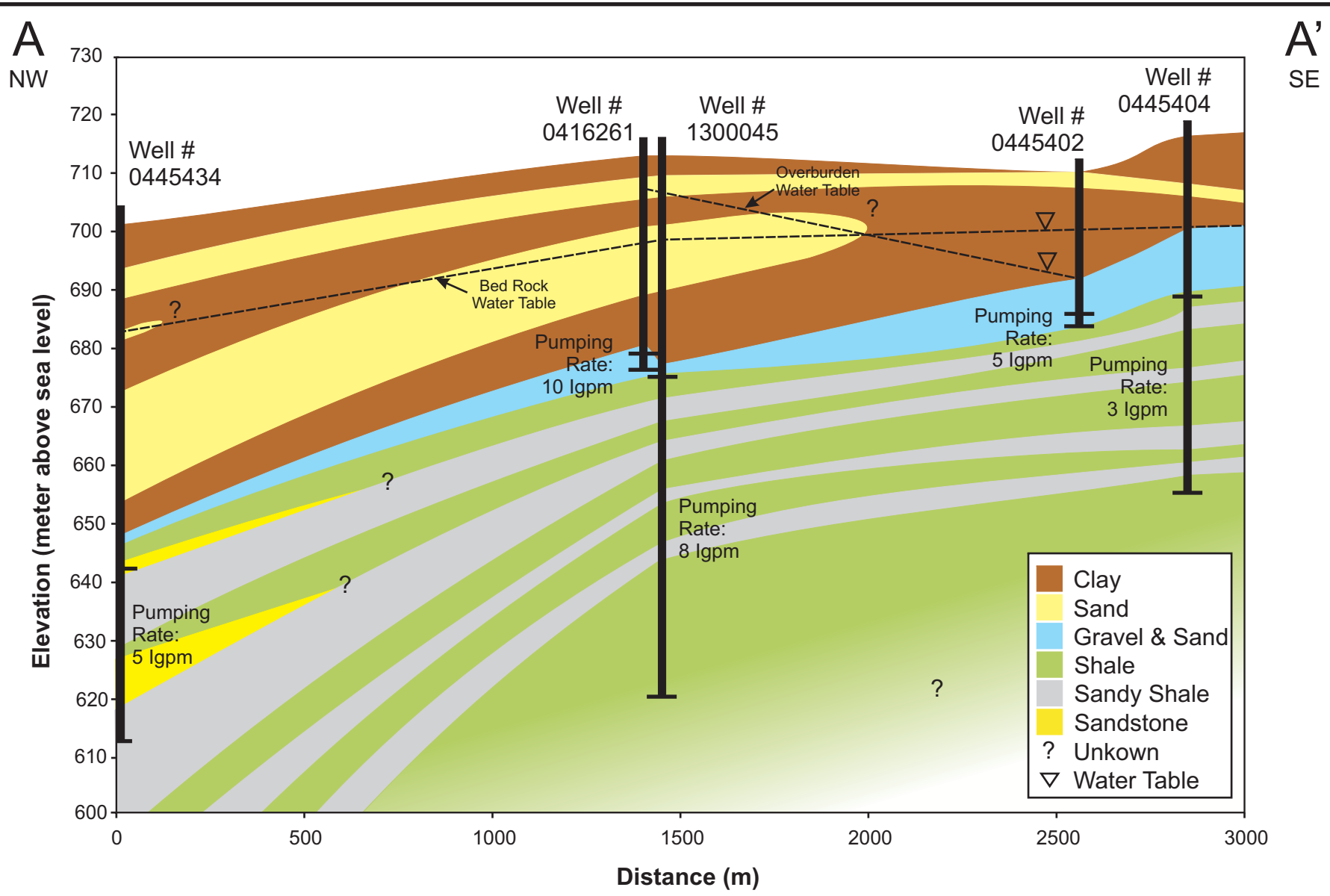
The Catalano Development Group	DRAWN Mike Moncur	**Residential Development, Lac Ste. Anne County NE-30-054-01-W5M**	
moncur GROUNDWATER	DESIGN Mike Moncur	**LOCATION OF ONOWAY BURIED VALLEY**	
	APP Mark Moncur		
	FILE ---.CDR	JOB NO. — DATE 09/05/2008 SCALE As shown	**FIGURE 2**



The Catalano Development Group	DRAWN Mike Moncur	**Residential Development, Lac Ste. Anne County NE-30-054-01-W5M**		
moncur GROUNDWATER	DESIGN Mike Moncur	**BEDROCK GEOLOGY**		
	APP Mark Moncur			
	FILE ---.CDR	JOB NO. —	DATE 09/05/2008	SCALE As shown	**FIGURE 3**



The Catalano Development Group	DRAWN Mike Moncur	Residential Development, Lac Ste. Anne County NE-30-054-01-W5M	
moncur GROUNDWATER	DESIGN Mike Moncur	WATER WELL LOCATIONS ● Well Location	
	APP Mark Moncur		
	FILE ---.CDR	JOB NO. —	DATE 09/05/2008	SCALE As shown	FIGURE 4



moncur GROUNDWATER

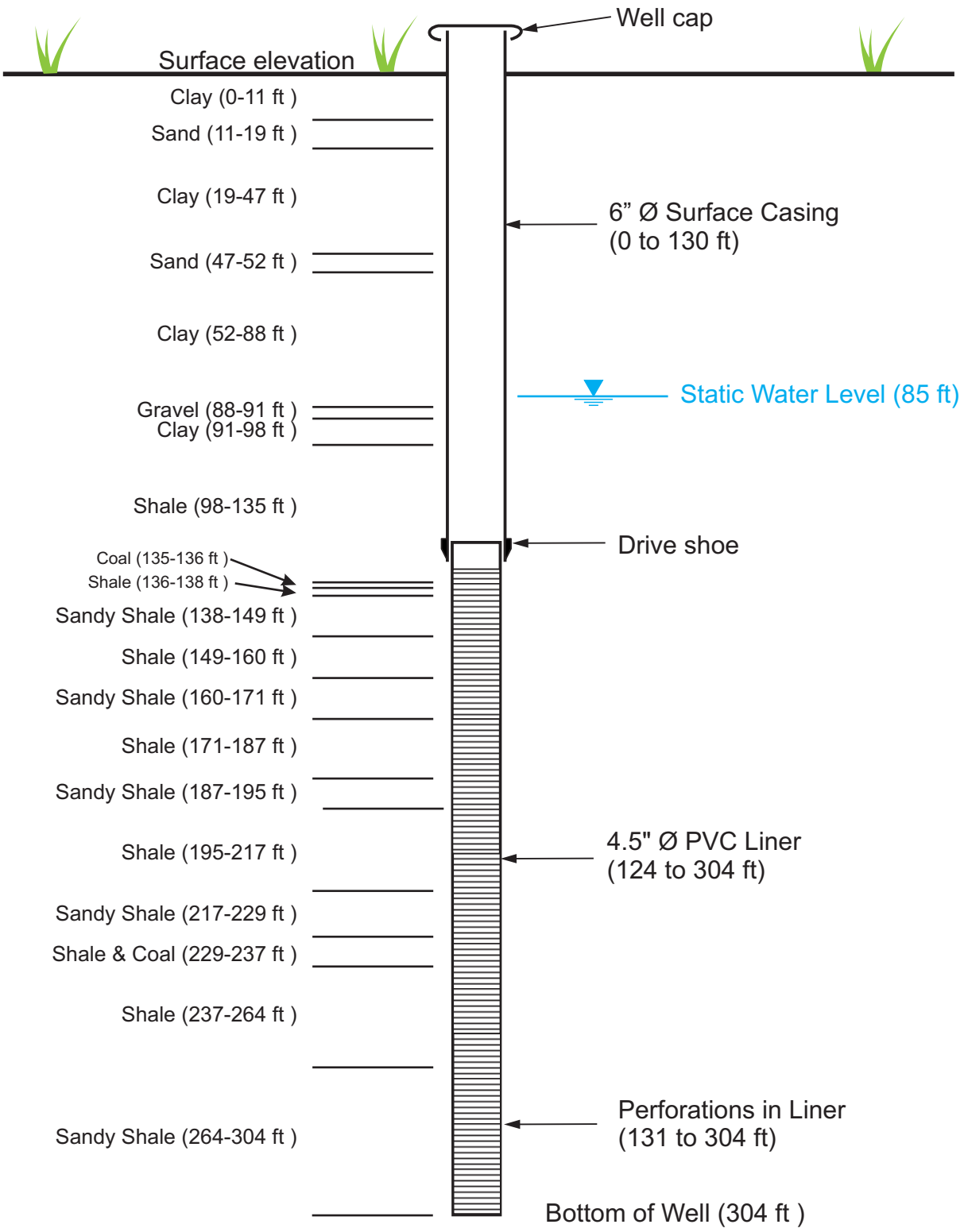
The Catalano Development Group

DRAWN	Mike Moncur
DESIGN	Mike Moncur
APP	Mark Moncur
FILE	---.CDR

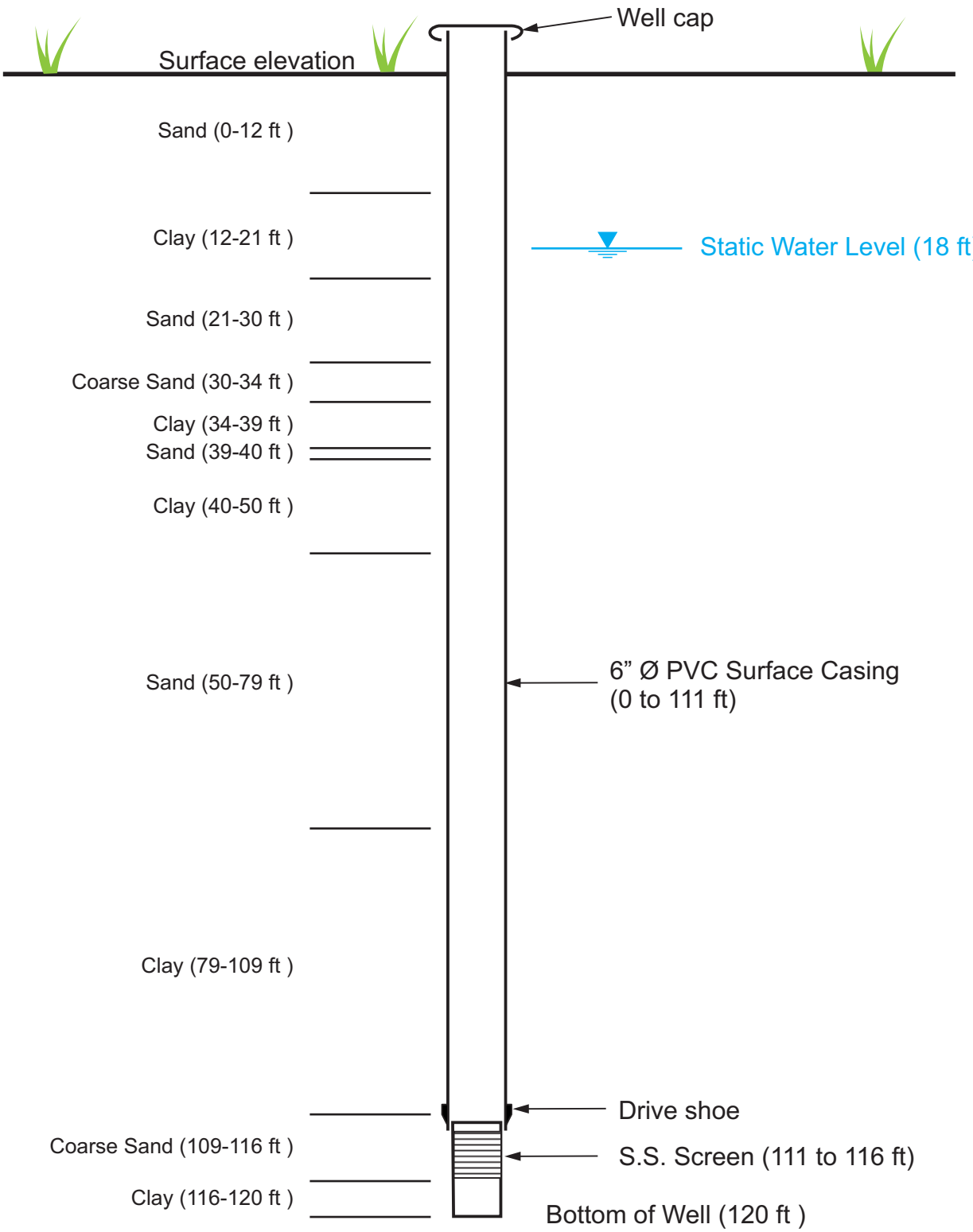
Residential Development, Lac Ste. Anne County
NE-30-054-01-W5M

SITE STRATIGRAPHY: A - A'

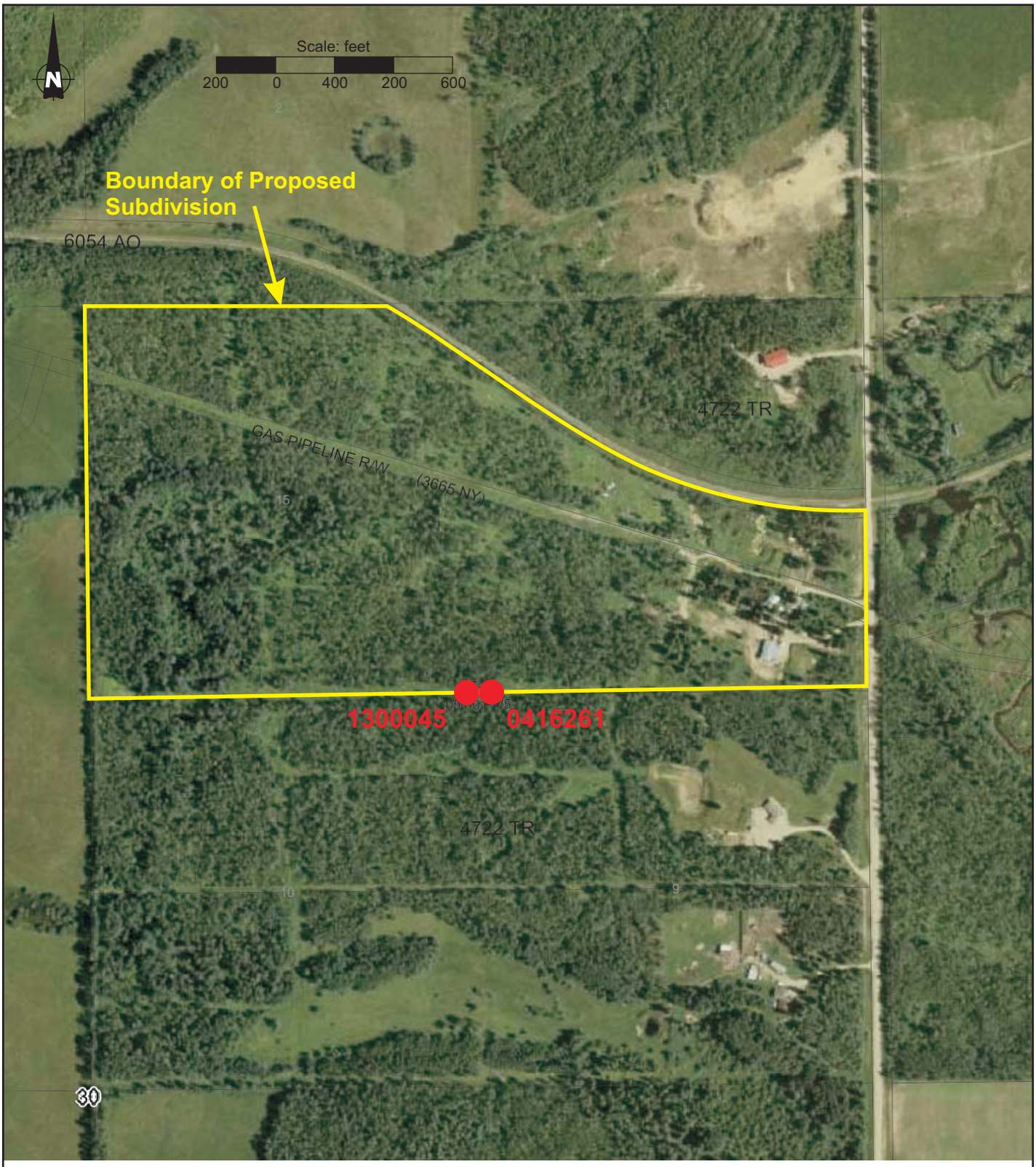
JOB NO.	DATE	SCALE	
—	09/05/08	As shown	**FIGURE 5**



The Catalano Development Group	DRAWN Mike Moncur	**Residential Development, Lac Ste. Anne County** **NE-30-054-01-W5M**
	DESIGN Mike Moncur	**WELL COMPLETION DIAGRAM** **AENV. WELL # 1300045**
moncur GROUNDWATER	APP Mark Moncur	**Well drilled 15/07/2004**
	FILE .CDR	JOB NO. | DATE 09/05/08 | SCALE As shown | **FIGURE 6**



The Catalano Development Group	DRAWN Mike Moncur	**Residential Development, Lac Ste. Anne County** **NE-30-054-01-W5M**
	DESIGN Mike Moncur	**WELL COMPLETION DIAGRAM** **AENV. WELL # 0416261**
moncur GROUNDWATER	APP Mark Moncur	**Well drilled 12/08/1995**
	FILE .CDR	JOB NO. | DATE 09/05/08 | SCALE As shown | **FIGURE 7**



Scale 1:12000

The Catalano Development Group	DRAWN Mike Moncur	Residential Development, Lac Ste. Anne County NE-30-054-01-W5M		
moncur GROUNDWATER	DESIGN Mike Moncur	WELL LOCATIONS ON PROPOSED SUBDIVISION		
	APP Mark Moncur			
	FILE ---.CDR	JOB NO. —	DATE 09/05/2008	SCALE As shown	FIGURE 8

APPENDIX A

Alberta Environment Water Well Data Base Records

Selected Water Well Reports

moncur GROUNDWATER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0340859
Map Verified:	Map
Date Report Received:	2002/03/12
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: ACRES, SPREEN	Well Location Identifier:	
P.O. Box Number: 646	Mailing Address: ONOWAY	Postal Code: T0E 0V0
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SW	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
32	Yellow Clay
76	Blue Clay
98	Gravel
100	Gray Dry Shale
113	Gray Shale
118	Brown Shale
120	Gray Shale
125	Brown Shale
133	Greenish Gray Shale
289	See Comments

5. Well Completion

Date Started(yyyy/mm/dd): 2002/02/05
Date Completed (yyyy/mm/dd): 2002/02/08
Well Depth: 289 FT
Borehole Diameter: 0 Inches
Casing Type: Plastic
Size OD: 6 Inches
Wall Thickness: 0.39 Inches
Bottom at: 135 FT
Liner Type: Plastic
Size OD: 4.5 Inches
Wall Thickness: 0.228 Inches
Top: 130 FT Bottom: 286 FT
Perforations from: 135 FT to: 286 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size: 0.062 Inches x 12 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches
Perforated by: Saw
Seal: Formation Seal from: 0 FT to: 135 FT
Seal: from: 0 FT to: 0 FT
Seal: from: 0 FT to: 0 FT
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top: Bottom:
Pack:
Grain Size: Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0 Documents Held: 1
Pitless Adapter Type:
Drop Pipe Type:
Length: FT Diameter: Inches
Comments:
DRILLER REPORTS DISTANCE FROM TOP OF CASING TO GROUND LEVEL: 18". 289' EDMONTON ZONE.

6. Well Yield

Test Date (yyyy/mm/dd): 2002/02/08
Start Time: 11:00 AM
Test Method: Bailer
Non pumping static level: 100 FT
Rate of water removal: 3.5 Gallons/Min
Depth of pump intake: 205 FT
Water level at end of pumping: 205 FT
Distance from top of casing to ground level: Inches

Depth To water level (feet) Drawdown	Elapsed Time Minutes:Sec	Recovery
100	0:00	205
120	1:00	198
137	2:00	192
150	3:00	187
160	4:00	183
167	5:00	178
175	6:00	174
181	7:00	170
186	8:00	166
189	9:00	162
191	10:00	158
193	14:00	155
196	20:00	152
198	25:00	150
200	30:00	148
201	40:00	145
202	50:00	144
203	60:00	142
204	75:00	140
205	90:00	138
205	105:00	137
205	120:00	136

Total Drawdown: 105 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 3 Gallons/Min
Recommended pump intake: 225 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.: 3824

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445434
Map Verified:	Not Verified
Date Report Received:	
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: CORALTA DRLG		Drilling Company Approval No.: 55664
Mailing Address: PO. BOX 4104	City or Town: EDMONTON AB CA	Postal Code:
WellOwner's Name: BAROID OF CAN LTD	Well Location Identifier:	
P.O. Box Number: 250	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
05	31	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: 2300 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No

Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
25	Brown Clay & Boulders
28	Sand
42	Brown Clay
60	Blue Clay
65	Brown Sand
95	Blue Clay
160	Fine Grained Sand
175	Blue Clay
181	Sand
192	Blue Shale
195	Sandstone
238	Shale & Sandstone
243	Soft Sandstone
272	Shale & Sandstone
276	Coal
289	Sandy Shale

5. Well Completion

Date Started(yyyy/mm/dd):	Date Completed (yyyy/mm/dd): 1959/07/17
Well Depth: 289 FT	Borehole Diameter: 0 Inches
Casing Type: Steel	Liner Type: Steel
Size OD: 6.63 Inches	Size OD: 4.56 Inches
Wall Thickness: 0.188 Inches	Wall Thickness: 0 Inches
Bottom at: 190 FT	Top: 0 FT Bottom: 289 FT
Perforations from: 0 FT to: 0 FT from: 0 FT to: 0 FT from: 0 FT to: 0 FT	Perforations Size: 0.188 Inches x 0 Inches 0 Inches x 0 Inches 0 Inches x 0 Inches
Perforated by: Unknown	
Seal: Driven from: 0 FT Seal: from: 0 FT Seal: from: 0 FT	to: 0 FT to: 0 FT to: 0 FT
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Installation Method:	
Fittings Top:	Bottom:
Pack: Grain Size:	Amount:
Geophysical Log Taken: Retained on Files:	
Additional Test and/or Pump Data Chemistries taken By Driller: No Held: 0	Documents Held: 1
Pitless Adapter Type: Drop Pipe Type: Length: FT	Diameter: Inches
Comments:	

6. Well Yield

Test Date (yyyy/mm/dd): 1959/07/17 Test Method: Bailer	Start Time: 11:00 AM
Non pumping static level:	60 FT
Rate of water removal:	5 Gallons/Min
Depth of pump intake:	289 FT
Water level at end of pumping:	FT
Distance from top of casing to ground level:	Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 0 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min

Recommended pump intake: 185 FT

Type Pump Installed
Pump Type: SUB
Pump Model:
H.P.: 3/4
Any further pumptest information?

7. Contractor Certification

Driller's Name:	UNKNOWN DRILLER
Certification No.:	

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445429
Map Verified:	Map
Date Report Received:	1974/10/29
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: SPREEN, ROBERT	Well Location Identifier:	
P.O. Box Number: 329	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SW	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot | Block | Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No

Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date (yyyy/mm/dd): 1974/10/18
Start Time: 11:00 AM
Test Method: Bailer
Non pumping static level: 70 FT
Rate of water removal: 4.5 Gallons/Min
Depth of pump intake: 80 FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 0 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min
Recommended pump intake: 0 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
12	Yellow Clay & Rocks
30	Blue Clay
36	Sand & Gravel
52	Blue Clay
54	Sand & Gravel
90	Blue Clay
109	Sand & Gravel
115	Blue Clay

5. Well Completion

Date Started(yyyy/mm/dd): 1974/10/16
Date Completed (yyyy/mm/dd): 1974/10/18
Well Depth: 115 FT
Borehole Diameter: 0 Inches
Casing Type: Galvanized Steel
Liner Type:
Size OD: 4.5 Inches
Size OD: 0 Inches
Wall Thickness: 0.156 Inches
Wall Thickness: 0 Inches
Bottom at: 104 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type: Stainless Steel
from: 104 FT to: 108 FT
Screen ID: 3 Inches
Slot Size: 0.012 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Welded
Bottom: Plug

Pack: Sand
Grain Size:
Amount: 3000 Pounds

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 1
Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inches

Comments:
DRILLER REPORTS WATER IS HARD

7. Contractor Certification

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445427
Map Verified:	Map
Date Report Received:	1969/12/15
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: SPREEN, ROBERT	Well Location Identifier:	
P.O. Box Number:	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SW	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: 2380 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No

Proposed well use: Domestic & Stock
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date (yyyy/mm/dd): 1968/12/01
Start Time: 11:00 AM
Test Method: Unknown
Non pumping static level: 71 FT
Rate of water removal: 7 Gallons/Min
Depth of pump intake: 0 FT
Water level at end of pumping: 72 FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 1 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min
Recommended pump intake: 75 FT

Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
19	Yellow Clay
85	Blue Clay
105	Gravel
108	Clay & Sand
122	Sand & Gravel
136	Shale

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed (yyyy/mm/dd): 1969/12/01

Well Depth: 136 FT
Borehole Diameter: 0 Inches

Casing Type: Galvanized Steel
Liner Type:

Size OD: 4 Inches
Size OD: 0 Inches

Wall Thickness: 0.151 Inches
Wall Thickness: 0 Inches

Bottom at: 120 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT

Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal: Loose
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Bottom:

Pack: Pea Gravel
Grain Size: Amount: 50 Gallons

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 0 Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: FT Diameter: Inches

Comments:
DRILLER REPORTS WATER IS HARD

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445424
Map Verified:	Not Verified
Date Report Received:	1989/09/12
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: UNKNOWN DRILLER		Drilling Company Approval No.: 99999
Mailing Address: UNKNOWN	City or Town: UNKNOWN AB CA	Postal Code:
WellOwner's Name: WILDING, NANCY	Well Location Identifier:	
P.O. Box Number: 59	Mailing Address: ONOWAY	Postal Code: T0E 1V0
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SE	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: Chemistry Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Unknown
Flowing Well: No Rate: Gallons
Gas Present: No Oil Present: No

Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description

5. Well Completion

Date Started(yyyy/mm/dd):	Date Completed (yyyy/mm/dd):
Well Depth: 155 FT	Borehole Diameter: 0 Inches
Casing Type:	Liner Type:
Size OD: 0 Inches	Size OD: 0 Inches
Wall Thickness: 0 Inches	Wall Thickness: 0 Inches
Bottom at: 0 FT	Top: 0 FT Bottom: 0 FT
Perforations from: 0 FT to: 0 FT from: 0 FT to: 0 FT from: 0 FT to: 0 FT	Perforations Size: 0 Inches x 0 Inches 0 Inches x 0 Inches 0 Inches x 0 Inches
Perforated by:	
Seal: from: 0 FT Seal: from: 0 FT Seal: from: 0 FT	to: 0 FT to: 0 FT to: 0 FT
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Installation Method:	
Fittings Top:	Bottom:
Pack: Grain Size:	Amount:
Geophysical Log Taken: Retained on Files:	
Additional Test and/or Pump Data Chemistries taken By Driller: No Held: 1	Documents Held: 1
Pitless Adapter Type: Drop Pipe Type: Length:	Diameter:
Comments:	

6. Well Yield

Test Date (yyyy/mm/dd):
Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery

Total Drawdown: FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445421
Map Verified:	Not Verified
Date Report Received:	1988/07/22
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: MIDWEST WATER WELL LTD.
Drilling Company Approval No.:
Mailing Address:
City or Town:
Postal Code:
WellOwner's Name: WILDING, NANCY
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SE	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary
Lot
Block
Plan
Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
22	Clay & Rocks
87	Sandy Clay & Rocks
109	Fine Grained Sand & Gravel
112	Coarse Grained Gravel
120	Gravel
141	Gray Shale
167	Sandstone
183	Green Shale
216	Sandstone
235	Gray Shale
247	Sandstone
250	Gray Shale

5. Well Completion

Date Started(yyyy/mm/dd): 1988/06/08
Date Completed (yyyy/mm/dd): 1988/06/08
Well Depth: 250 FT
Borehole Diameter: 0 Inches
Casing Type: Steel
Liner Type:
Size OD: 5.56 Inches
Size OD: 0 Inches
Wall Thickness: 0.244 Inches
Wall Thickness: 0 Inches
Bottom at: 112 FT
Top: 0 FT Bottom: 0 FT
Perforations
Perforations Size:
from: 0 FT to: 0 FT 0 Inches x 0 Inches
from: 0 FT to: 0 FT 0 Inches x 0 Inches
from: 0 FT to: 0 FT 0 Inches x 0 Inches
Perforated by:
Seal: Drive Shoe
from: 0 FT to: 112 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
Screen ID: 0 Inches
from: 0 FT to: 0 FT
Slot Size: 0 Inches
Screen Type:
Screen ID: 0 Inches
from: 0 FT to: 0 FT
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 1
Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inches
Comments:

6. Well Yield

Test Date (yyyy/mm/dd): 1988/06/08
Start Time: 11:00 AM
Test Method: Air
Non pumping static level: 0 FT
Rate of water removal: 15 Gallons/Min
Depth of pump intake: 0 FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 42 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 15 Gallons/Min
Recommended pump intake: 0 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.: VC6418

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445418
Map Verified:	Not Verified
Date Report Received:	1970/09/09
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: WALDOWSKI, HARRY	Well Location Identifier:	
P.O. Box Number: 311	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SE	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No

Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date (yyyy/mm/dd): 1970/06/23
Start Time: 11:00 AM
Test Method: Pump
Non pumping static level: 89 FT
Rate of water removal: 5 Gallons/Min
Depth of pump intake: 0 FT
Water level at end of pumping: 93 FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 4 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min
Recommended pump intake: 103 FT

Type Pump Installed
Pump Type: SUB
Pump Model: MCDOUGALL
H.P.: 1/2
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
23	Yellow Clay
36	Blue Clay
37	Sand
38	Blue Clay
39	Sand
89	Blue Clay
112	Sand & Gravel
115	Blue Clay
118	Gray Shale

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed (yyyy/mm/dd): 1970/06/23

Well Depth: 118 FT
Borehole Diameter: 0 Inches

Casing Type: Galvanized Steel
Liner Type:

Size OD: 4.5 Inches
Size OD: 0 Inches

Wall Thickness: 0 Inches
Wall Thickness: 0 Inches

Bottom at: 104 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal: Loose
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type: Stainless Steel
from: 104 FT to: 108 FT
Screen ID: 4 Inches
Slot Size: 0.012 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Welded
Bottom: Plug

Pack:
Grain Size:
Amount: 0

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 0
Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: 100 FT
Diameter: 1 Inches

Comments:
DRILLER REPORTS WATER IS HARD

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445404
Map Verified:	Map
Date Report Received:	1981/11/19
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: MAR-WAYNE WATER WELL DRILLING SERVICES LTD.		Drilling Company Approval No.: 118900
Mailing Address: BOX 4, SITE 5, RR 1	City or Town: CALAHOO AB CA	Postal Code: T0G 0J0
WellOwner's Name: DOW, CHUCK	Well Location Identifier:	
P.O. Box Number:	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
03	29	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: 2350 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Stock
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
17	Clay
25	Blue Clay
33	Sand
52	Blue Clay
84	Gravel
96	Green Shale
106	Light Gray Sandstone
109	Green Shale
118	Gray Shale
122	Brown Shale & Coal
130	Green Shale
138	Light Gray Sandstone
160	Gray Shale
162	Brown Shale & Coal
176	Light Gray Sandstone
183	Gray Shale
190	Light Gray Sandstone
192	Coal
200	Gray Shale

5. Well Completion

Date Started(yyyy/mm/dd): 1981/06/22	Date Completed (yyyy/mm/dd): 1981/06/23
Well Depth: 200 FT	Borehole Diameter: 0 Inches
Casing Type: Steel	Liner Type: Steel
Size OD: 5.56 Inches	Size OD: 4.56 Inches
Wall Thickness: 0.156 Inches	Wall Thickness: 0 Inches
Bottom at: 90 FT	Top: 0 FT Bottom: 200 FT
Perforations from: 90 FT to: 200 FT from: 0 FT to: 0 FT from: 0 FT to: 0 FT	Perforations Size: 0.25 Inches x 14 Inches 0 Inches x 0 Inches 0 Inches x 0 Inches
Perforated by: Torch	
Seal: Driven from: 89 FT	to: 90 FT
Seal: from: 0 FT	to: 0 FT
Seal: from: 0 FT	to: 0 FT
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT	Screen ID: 0 Inches Slot Size: 0 Inches
Screen Installation Method:	
Fittings Top:	Bottom:
Pack: Grain Size:	Amount:
Geophysical Log Taken: Retained on Files:	
Additional Test and/or Pump Data Chemistries taken By Driller: Yes Held: 0	Documents Held: 1
Pitless Adapter Type: Drop Pipe Type: Length: 180 FT	Diameter: 1 Inches
Comments: DRILLER REPORTS WATER IS SOFT	

6. Well Yield

Test Date (yyyy/mm/dd): 1981/06/23
Start Time: 11:00 AM
Test Method: Bailer
Non pumping static level: 50 FT
Rate of water removal: 3 Gallons/Min
Depth of pump intake: 180 FT
Water level at end of pumping: 180 FT
Distance from top of casing to ground level: Inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 130 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 3 Gallons/Min
Recommended pump intake: 188 FT
Type Pump Installed
Pump Type: SUB
Pump Model:
H.P.: 3/4
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0445402
Map Verified:	Not Verified
Date Report Received:	1968/09/08
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: COATES, CEDRIC	Well Location Identifier:	
P.O. Box Number: 160	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
SW	29	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: 2330 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Domestic & Stock
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
9	Sand
24	Yellow Clay
60	Blue Clay
87	Water Bearing Gravel

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed (yyyy/mm/dd): 1968/07/15

Well Depth: 87 FT
Borehole Diameter: 0 Inches

Casing Type: Galvanized Steel
Liner Type:

Size OD: 4 Inches
Size OD: 0 Inches

Wall Thickness: 0.151 Inches
Wall Thickness: 0 Inches

Bottom at: 80 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Bottom:

Pack:
Grain Size: Amount:

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 0 Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: 66 FT Diameter: 1 Inches

Comments:
DRILLER REPORTS WATER IS CLEAR AND HARD

6. Well Yield

Test Date (yyyy/mm/dd): 1968/07/15
Start Time: 11:00 AM
Test Method: Unknown

Non pumping static level: 60 FT

Rate of water removal: 5 Gallons/Min

Depth of pump intake: 0 FT

Water level at end of pumping: FT

Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 0 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min

Recommended pump intake: 67 FT

Type Pump Installed
Pump Type: SUB
Pump Model: MCDOUGALL
H.P.: 1/3
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0444533
Map Verified:	Map
Date Report Received:	
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: WAREHIME, JACK DRILLING		Drilling Company Approval No.:
Mailing Address:	City or Town:	Postal Code:
WellOwner's Name: GILBERTS, R	Well Location Identifier:	
P.O. Box Number:	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
NE	25	054	02	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot | Block | Plan

Well Elev: 2320 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Stock
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
80	Sand & Gravel
100	Clay
145	Gravel
200	Shale

5. Well Completion

Date Started(yyyy/mm/dd): 1976/02/01
Date Completed (yyyy/mm/dd): 1976/02/19
Well Depth: 200 FT
Borehole Diameter: 0 Inches
Casing Type: Galvanized Steel
Liner Type:
Size OD: 4.5 Inches
Size OD: 0 Inches
Wall Thickness: 0.144 Inches
Wall Thickness: 0 Inches
Bottom at: 153 FT
Top: 0 FT Bottom: 0 FT
Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches
Perforated by:
Seal: Driven
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top: Bottom:
Pack:
Grain Size: Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 0 Documents Held: 1
Pitless Adapter Type:
Drop Pipe Type:
Length: FT Diameter: Inches
Comments:
DRILLER STATES WATR IS SOFT.

6. Well Yield

Test Date (yyyy/mm/dd): 1976/02/19
Start Time: 11:00 AM
Test Method: Air
Non pumping static level: 25 FT
Rate of water removal: 15 Gallons/Min
Depth of pump intake: 100 FT
Water level at end of pumping: 100 FT
Distance from top of casing to ground level: Inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 75 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 10 Gallons/Min
Recommended pump intake: 0 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0444532
Map Verified:	Not Verified
Date Report Received:	
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: JALBERT ENTERPRISES		Drilling Company Approval No.:
Mailing Address:	City or Town:	Postal Code:
WellOwner's Name: WORDILL, J	Well Location Identifier:	
P.O. Box Number:	Mailing Address: ONOWAY	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
NE	25	054	02	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Drilled
Flowing Well: No Rate: Gallons
Gas Present: No Oil Present: No

Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
10	Sand
35	Clay
70	Sand
120	Clay
130	Gravel
150	Clay
180	Sandstone

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed (yyyy/mm/dd): 1959/10/20

Well Depth: 180 FT
Borehole Diameter: 0 Inches

Casing Type: Unknown
Liner Type:

Size OD: 4.5 Inches
Size OD: 0 Inches

Wall Thickness: 0 Inches
Wall Thickness: 0 Inches

Bottom at: 155 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT

Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Bottom:

Pack:
Grain Size: Amount:

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 0 Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: FT Diameter: Inches

Comments:
DRILLER STATES WATER IS CLEAR AND SOFT.

6. Well Yield

Test Date (yyyy/mm/dd): 1959/10/20
Start Time: 11:00 AM
Test Method: Unknown

Non pumping static level: 80 FT

Rate of water removal: 4 Gallons/Min

Depth of pump intake: 0 FT

Water level at end of pumping: FT

Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 0 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gallons/Min

Recommended pump intake: 0 FT

Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0444531
Map Verified:	Not Verified
Date Report Received:	1968/12/19
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: JALBERT ENTERPRISES
Drilling Company Approval No.:
Mailing Address:
City or Town:
Postal Code:
WellOwner's Name: STROBLE, JOE
Well Location Identifier:
P.O. Box Number:
Mailing Address: ONOWAY
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
NE	25	054	02	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary
Lot
Block
Plan
Well Elev: 2320 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Rate: Gallons
Gas Present: No
Oil Present: No
Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
8	Clay
12	Sand
30	Clay
36	Sand
50	Clay
135	Fine Grained Sand
140	Coarse Grained Sand & Gravel

5. Well Completion

Date Started(yyyy/mm/dd): 1968/10/18
Date Completed (yyyy/mm/dd): 1968/10/18
Well Depth: 140 FT
Borehole Diameter: 0 Inches
Casing Type:
Liner Type: Galvanized Steel
Size OD: 0 Inches
Size OD: 2.5 Inches
Wall Thickness: 0 Inches
Wall Thickness: 0 Inches
Bottom at: 0 FT
Top: 0 FT Bottom: 140 FT
Perforations
from: 130 FT to: 140 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches
Perforated by:
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: Yes
Held: 1
Documents Held: 2
Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inches
Comments:
DRILLER STATES WATER IS MED HARD.

6. Well Yield

Test Date (yyyy/mm/dd): 1968/10/18
Start Time: 11:00 AM
Test Method: Bailer
Non pumping static level: 40 FT
Rate of water removal: 6 Gallons/Min
Depth of pump intake: 0 FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 0 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 0 Gallons/Min
Recommended pump intake: 0 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0444519
Map Verified:	Not Verified
Date Report Received:	
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: UNKNOWN DRILLER		Drilling Company Approval No.: 99999
Mailing Address: UNKNOWN	City or Town: UNKNOWN AB CA	Postal Code:
WellOwner's Name: UNION OIL CO	Well Location Identifier:	
P.O. Box Number:	Mailing Address:	Postal Code:
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
03	30	054	01	5

Location in Quarter
50 FT from S Boundary
806 FT from E Boundary

Lot | Block | Plan

Well Elev: 2396 FT
How Obtain: Survey-Tra

3. Drilling Information

Type of Work: Structure Test Hole
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Drilled
Flowing Well: No Rate: Gallons
Gas Present: No Oil Present: No

Proposed well use: Industrial
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description

5. Well Completion

Date Started(yyyy/mm/dd):	Date Completed (yyyy/mm/dd): 1952/07/07
Well Depth: 1150 FT	Borehole Diameter: 0 Inches
Casing Type:	Liner Type:
Size OD: 0 Inches	Size OD: 0 Inches
Wall Thickness: 0 Inches	Wall Thickness: 0 Inches
Bottom at: 0 FT	Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT — Perforations Size: 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
Perforated by:

Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type:	Screen ID: 0 Inches
from: 0 FT to: 0 FT	Slot Size: 0 Inches
Screen Type:	Screen ID: 0 Inches
from: 0 FT to: 0 FT	Slot Size: 0 Inches

Screen Installation Method:

Fittings
Top: Bottom:

Pack:
Grain Size: Amount:

Geophysical Log Taken: ELECTRIC
Retained on Files: ELECTRIC yes

Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0 Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: Diameter:

Comments:

6. Well Yield

Test Date (yyyy/mm/dd): Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recovery

Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	0416261
Map Verified:	Not Verified
Date Report Received:	1995/10/16
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: MAR-WAYNE WATER WELL DRILLING SERVICES LTD.		Drilling Company Approval No.: 118900
Mailing Address: BOX 4, SITE 5, RR 1	City or Town: CALAHOO AB CA	Postal Code: T0G 0J0
WellOwner's Name: SORGEN, ORVIS	Well Location Identifier:	
P.O. Box Number:	Mailing Address: ONOWAY	Postal Code: T0E 1V0
City:	Province:	Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
NE	30	054	01	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No

Proposed well use: Stock
Anticipated Water Requirements/day 300 Gallons

6. Well Yield

Test Date (yyyy/mm/dd): 1995/08/12
Start Time: 11:00 AM
Test Method: Air

Non pumping static level: 18.2 FT

Rate of water removal: 10 Gallons/Min

Depth of pump intake: 0 FT

Water level at end of pumping: 27.6 FT

Distance from top of casing to ground level: Inches

Depth To water level (feet) Elapsed Time Drawdown Minutes:	Sec Recovery
0:00	27.624
1:00	22.178
2:00	20.997
3:00	20.505
4:00	20.21
5:00	20.013
6:00	21.653
7:00	19.75
8:00	19.652
9:00	19.586
10:00	19.521
12:00	19.39
14:00	19.291
16:00	19.193
20:00	19.061
25:00	18.93
30:00	18.865
120:00	18.208

Total Drawdown: 9 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 10 Gallons/Min

Recommended pump intake: 78 FT

Type Pump Installed
Pump Type: SUB
Pump Model:
H.P.: .5
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
12	Brown Sand
21	Brown Clay
30	Sand
34	Coarse Grained Sand
39	Gray Clay
40	Sand
50	Gray Clay
79	Sand
109	Gray Clay
116	Coarse Grained Sand
120	Clay

5. Well Completion

Date Started(yyyy/mm/dd): 1995/08/12
Date Completed (yyyy/mm/dd): 1995/08/12

Well Depth: 120 FT
Borehole Diameter: 0 Inches

Casing Type: Plastic
Liner Type:

Size OD: 6 Inches
Size OD: 0 Inches

Wall Thickness: 0.5 Inches
Wall Thickness: 0 Inches

Bottom at: 111 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches

Perforated by:

Seal: Bentonite Chips/Tablets
from: 0 FT to: 111 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT

Screen Type: Stainless Steel
from: 111 FT to: 116 FT
Screen ID: 4 Inches
Slot Size: 0.01 Inches

Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches

Screen Installation Method: Attached To Casing

Fittings
Top: Coupler
Bottom: Plug

Pack: Washed Sand
Grain Size:
Amount: 1750 Pounds

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inches

Comments:
DRILLER REPORTS DISTANCE FROM TOP OF CASING TO GROUND LEVEL: 30 CM.

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER

Water Well Drilling Report

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	1300045
Map Verified:	Not Verified
Date Report Received:	2004/07/28
Measurements:	Imperial

1. Contractor & Well Owner Information

Company Name: GERALD MCGINN DRILLING LTD.		Drilling Company Approval No.: 120047
Mailing Address: 4910 50 AVENUE	City or Town: STONY PLAIN ALBERTA CANADA	Postal Code: T7Z 1S9
WellOwner's Name: LEADY, ROY & JENNIFER	Well Location Identifier:	
P.O. Box Number: 2825	Mailing Address:	Postal Code: T7Z 1Y3
City: STONY PLAIN	Province: AB	Country: CA

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westof M
NE	30	054	01	5

Location in Quarter
FT from N Boundary
FT from E Boundary

Lot D | Block | Plan 4722TR

Well Elev: FT | How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed: | Materials Used: Unknown

Proposed well use: Domestic
Anticipated Water Requirements/day Gallons

Method of Drilling: Rotary

Flowing Well: No | Rate: Gallons
Gas Present: No | Oil Present: No

4. Formation Log

Depth from ground level (feet)	Lithology Description
11	Yellow Clay
19	Sand
25	Yellow Clay
47	Blue Clay
52	Sand
88	Blue Clay
91	Gravel
98	Blue Clay
135	Gray Shale
136	Coal
138	Gray Shale
149	Gray Sandy Shale
160	Gray Shale
171	Gray Sandy Shale
187	Gray Shale
195	Gray Sandy Shale
217	Gray Shale
229	Gray Sandy Shale
237	Brown Shale & Coal
264	Gray Shale
304	Gray Sandy Shale

5. Well Completion

Date Started(yyyy/mm/dd): 2004/07/15 | Date Completed (yyyy/mm/dd): 2004/07/15

Well Depth: 304 FT | Borehole Diameter: 8.5 Inches

Casing Type: Plastic | Liner Type: Plastic

Size OD: 6 Inches | Size OD: 4.5 Inches

Wall Thickness: 0.39 Inches | Wall Thickness: 0.228 Inches

Bottom at: 130 FT | Top: 124 FT Bottom: 304 FT

Perforations from: 131 FT to: 304 FT
from: FT to: FT
from: FT to: FT
Perforations Size: 0.063 Inches x 12 Inches
Inches x Inches
Inches x Inches

Perforated by: Saw

Seal: Formation Seal from: 130 FT to: 131 FT
Seal: Bentonite Chips/Tablets from: 0 FT to: 130 FT
Seal: Unknown from: FT to: FT

Screen Type: Unknown from: FT to: FT | Screen ID: Inches Slot Size: Inches

Screen Type: Unknown from: FT to: FT | Screen ID: Inches Slot Size: Inches

Screen Installation Method: Unknown

Fittings
Top: Unknown | Bottom: Unknown

Pack: Unknown
Grain Size: | Amount: Unknown

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: | Documents Held:

Pitless Adapter Type: SNAP
Drop Pipe Type: POLY
Length: 130 FT | Diameter: 1 Inches

Comments:

6. Well Yield

Test Date (yyyy/mm/dd): 2004/07/16 | Start Time: 1:20 PM
Test Method: Pump

Non pumping static level: 84.974 FT

Rate of water removal: 8 Gallons/Min

Depth of pump intake: 130 FT

Water level at end of pumping: 106.7 FT

Distance from top of casing to ground level: 24 Inches

Depth To water level (feet)	Elapsed Time Drawdown Minutes:	Sec Recovery
90.223	1:00	102.231
93.504	2:00	99.245
97.539	3:00	96.785
96.161	4:00	95.308
97.113	5:00	94.259
97.835	6:00	93.438
98.458	7:00	92.848
98.983	8:00	92.356
99.409	9:00	91.995
99.836	10:00	91.699
101.312	15:00	91.01
102.461	20:00	90.617
103.346	25:00	90.256
103.937	30:00	89.993
104.987	40:00	89.6
105.676	50:00	89.337
106.168	60:00	88.911

Total Drawdown: 21.194 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 8 Gallons/Min

Recommended pump intake: 130 FT

Type Pump Installed
Pump Type: BERKELEY SUB.
Pump Model: 7CS05231
H.P.: 0.5
Any further pumptest information? No

7. Contractor Certification

Driller's Name: DENNIS GOERTZ
Certification No.: AD3483

APPENDIX B

Alberta Environment Water Well Data Base Records

Water Well Chemistry

ALBERTA ENVIRONMENT
CHEMICAL ANALYSIS REPORT

WELL NAME: STROBLE, JOE
LOCATION: LSD NE SEC 25 TWP 054 RG 02 M 5
WELL DEPTH: 140
AQUIFER:
SAMPLING DATE: 9/25/1972 TIME: 0

WELL ID No:0444531
SAMPLE No: 7268
WATER LEVEL: 40
LABORATORY: AE
PRINT DATE: 5/8/2008

FIELD:	MG/L	FIELD:	MG/L
BICARBONATE	-9	CARBONATE	-9
CHLORIDE	-9	CONDUCTIVITY	-9
DISSOLVED OXYGEN	-9	EH	-9
IRON	-9	MANGANESE	-9
PH	-9	SULPHATE	-9
S2	-9	TEMPERATURE°C	-9
TOTAL ALKALINITY	-9	TOTAL HARDNESS	-9
LABORATORY: Analysis Date: 10/4/1972			
COD	-9	CONDUCTIVITY	1600
DIC	-9	FLUORIDE	-9
ION BALANCE	-9	PH	7.6
SAR	-9	SIO2	-9
TOTAL ALKALINITY	712	TC	-9
TDS	1215	TN	-9
DOC	-9		
AMMONIUM-N	-9	BICARBONATE	-9
CALCIUM	42.914	CARBONATE	-9
CHLORIDE	2.0022	MAGNESIUM	11.008448
NITRATE-N	-9	NITRITE-N	-9
PHOSPHATE	-9	POTASSIUM	-9
SODIUM	-9	SULPHATE	197.8752
$NO_2 + NO_3$	0.0284	TOTAL HARDNESS	155
ALUMINUM	-9	ARSENIC	-9
BARIUM	-9	BERYLIUM	-9
CADMIUM	-9	CHROMIUM	-9
COBALT	-9	COPPER	-9
IRON	2.3	LEAD	-9
MANGANESE	-9	MERCURY	-9
MOLYBDENUM	-9	NICKEL	-9
SELENIUM	-9	STRONTIUM	-9
VANADIUM	-9	ZINC	-9
HYDROCARBONS	-9	PESTICIDES	-9
PHENOLICS	-9	OTHER 3	0

Remarks:
-9 indicates that no analysis was done for this parameter
*Indicates concentrations less than.
Temperature reported in Degree Centigrade. Conductivity reported in microsiemens/cm, pH in pH units. Alkalinity and Hardness expressed as Calcium Carbonate. FE, VA, PB, AL, AG expressed as extractable. FE in field measurements and all remaining metals expressed as total.

EH - Oxidation-Reduction Potential
DIC - Dissolved Inorganic Carbon
DOC - Dissolved Organic Carbon
TDS - Total Dissolved Solids
SAR - Sodium Adsorption Ratio
COD - Chemical Oxygen Demand
TN - Total Particulate Nitrogen
TC - Total Particulate Carbon

NOTE: This data may not be fully checked.
The Province disclaims all responsibility for its accuracy

ALBERTA ENVIRONMENT
CHEMICAL ANALYSIS REPORT

WELL NAME: SPREEN, ROBERT
LOCATION: LSD SW SEC 30 TWP 054 RG 01 M 5
WELL DEPTH: 115
AQUIFER:
SAMPLING DATE: 10/20/1982 TIME: 0

WELL ID No:0445429
SAMPLE No: 12307
WATER LEVEL: -9
LABORATORY: AA
PRINT DATE: 5/8/2008

FIELD:	MG/L	FIELD:	MG/L
BICARBONATE	-9	CARBONATE	-9
CHLORIDE	-9	CONDUCTIVITY	-9
DISSOLVED OXYGEN	-9	EH	-9
IRON	-9	MANGANESE	-9
PH	-9	SULPHATE	-9
S2	-9	TEMPERATURE°C	-9
TOTAL ALKALINITY	-9	TOTAL HARDNESS	-9

LABORATORY: Analysis Date: 11/5/1982

COD	-9	CONDUCTIVITY	1389
DIC	-9	FLUORIDE	0.17
ION BALANCE	0.9	PH	7.2
SAR	-9	SIO2	15
TOTAL ALKALINITY	561	TC	-9
TDS	858	TN	-9
DOC	-9		
AMMONIUM-N	-9	BICARBONATE	683.7734
CALCIUM	137.724	CARBONATE	-9
CHLORIDE	1.0011*	MAGNESIUM	43.035456
NITRATE-N	-9	NITRITE-N	0.0504*
PHOSPHATE	-9	POTASSIUM	3.7367
SODIUM	94.9992	SULPHATE	239.8512
$NO_2 + NO_3$	0.0144*	TOTAL HARDNESS	521
ALUMINUM	-9	ARSENIC	-9
BARIUM	-9	BERYLIUM	-9
CADMIUM	-9	CHROMIUM	-9
COBALT	-9	COPPER	-9
IRON	6.64	LEAD	-9
MANGANESE	-9	MERCURY	-9
MOLYBDENUM	-9	NICKEL	-9
SELENIUM	-9	STRONTIUM	-9
VANADIUM	-9	ZINC	-9
HYDROCARBONS	-9	PESTICIDES	-9
PHENOLICS	-9	OTHER 3	0

Remarks:
-9 indicates that no analysis was done for this parameter
*Indicates concentrations less than.
Temperature reported in Degree Centigrade. Conductivity reported in microsiemens/cm, pH in pH units. Alkalinity and Hardness expressed as Calcium Carbonate. FE, VA, PB, AL, AG expressed as extractable. FE in field measurements and all remaining metals expressed as total.

EH - Oxidation-Reduction Potential
DIC - Dissolved Inorganic Carbon
DOC - Dissolved Organic Carbon
TDS - Total Dissolved Solids
SAR - Sodium Adsorption Ratio
COD - Chemical Oxygen Demand
TN - Total Particulate Nitrogen
TC - Total Particulate Carbon

NOTE: This data may not be fully checked.
The Province disclaims all responsibility for its accuracy

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