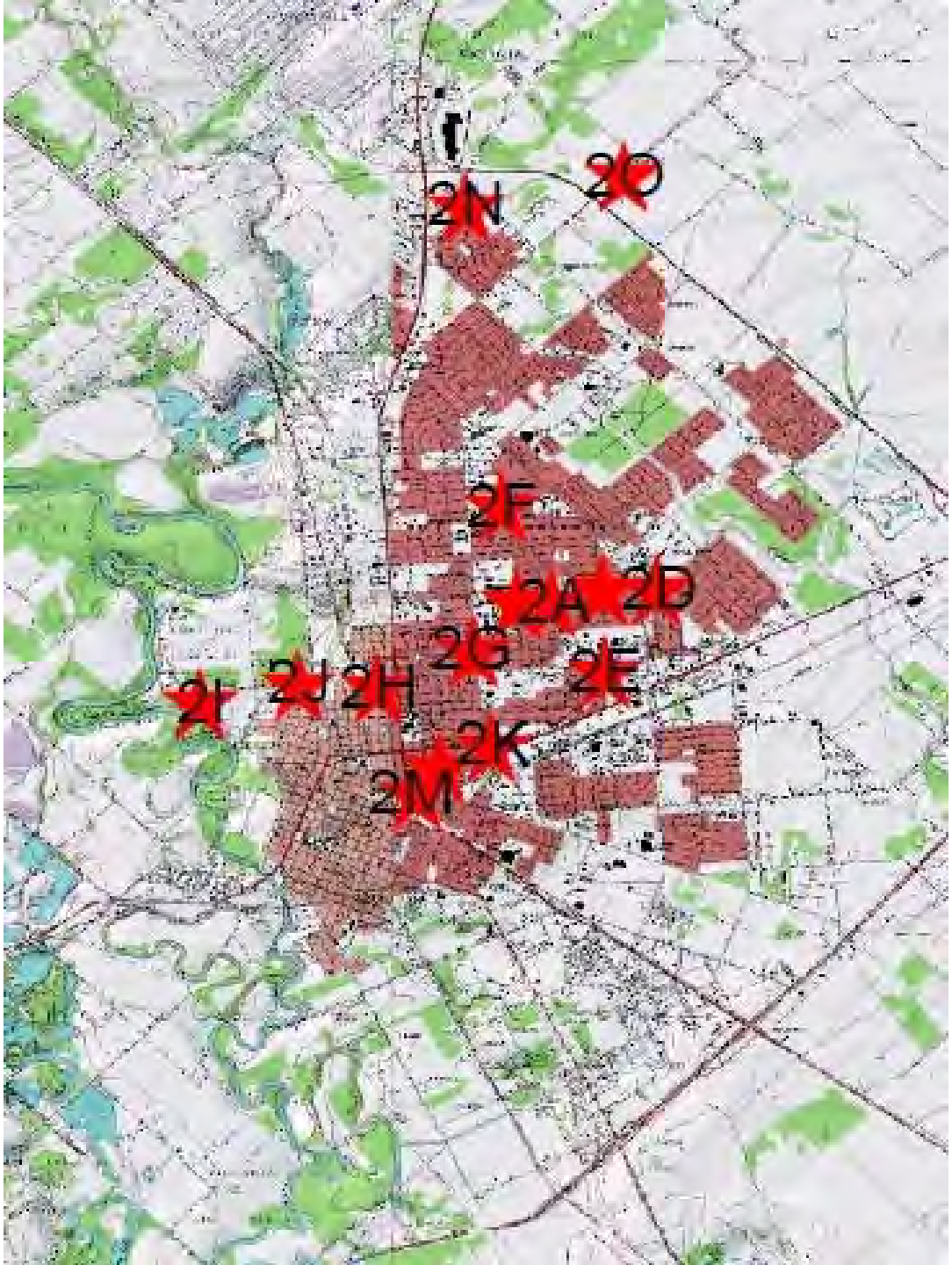
Summary of a Preliminary Drawdown Analysis

for the

City of Victoria Ground Water Supply System

Slide 2



LOCUST AVE
GREENWOOD DR
OLEANDER DR
N BEN JORDAN ST
Well #14
TWDB ID# 8009406

Slide 3

Slide 4

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

REPORT NO. 3339
S.O. 2345-53
PAGE 1 OF 1
FILE NO. 1847
DATE 9/18/53

MATERIAL SETTING

CUSTOMER LOCATION

FOR CITY OF VICTORIA

LOCATION WELL VICTORIA

SURVEY FIELD

COUNTY VICTORIA STATE TEXAS

OTHER LAND MARKS

WELL DATA

NAME WELL SAME WELL NO. 14

ELEVATION DATUM

TYPE WELL GRAVEL-WALL

SURFACE CASING CEMENTED YES NO. SACKS 765

SIZE HOLE UNDERREAMED 30" DEPTH 435-1017'

GRAVEL TYPE FILTER NO. CU. YDS. 150

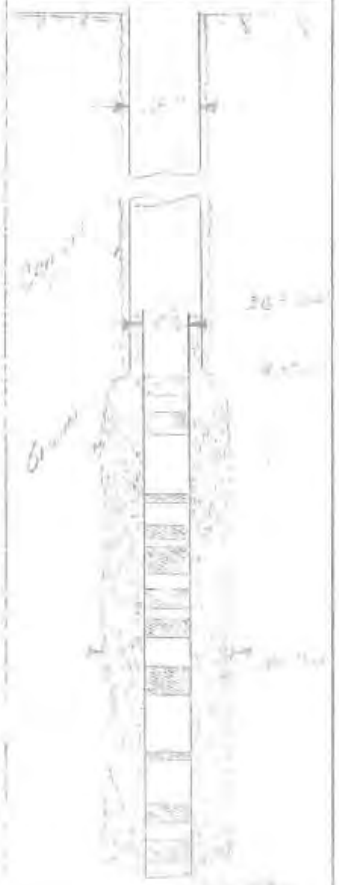
TYPE SCREEN S.S. W.W. GAGE .050

DRILLER O. GUYZMANN RIG NO. 2-SPEC.

OTHER

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
0 / 1.0'		18"OD CASING EXTENDS 1' ABOVE SURFACE
0		SURFACE
368.44'		TOP OF 10-3/4"OD LAPS 66.56' INTO 18" O.D.
435.00'	436.00'	18" O.D. SURFACE CASING
442.49'	74.05'	10-3/4" O.D. BLANK PIPE
464.49'	22.00'	10-3/4"OD S.S. W.W. SCREEN .050 GA.
483.64'	19.15'	10-3/4" O.D. BLANK PIPE
509.65'	26.01'	10-3/4" O.D. SCREEN
578.87'	69.22'	10-3/4" O.D. BLANK PIPE
589.72'	10.85'	10-3/4" O.D. SCREEN
613.95'	24.23'	10-3/4" O.D. BLANK PIPE
629.85'	15.90'	10-3/4" O.D. SCREEN
639.02'	9.17'	10-3/4" O.D. BLANK PIPE
669.92'	30.90'	10-3/4" O.D. SCREEN
687.20'	17.28'	10-3/4" O.D. BLANK PIPE
709.95'	22.75'	10-3/4" O.D. SCREEN
722.63'	12.68'	10-3/4" O.D. BLANK PIPE
745.00'	22.37'	10-3/4" O.D. SCREEN
779.12'	34.12'	10-3/4" O.D. BLANK PIPE
810.32'	31.20'	10-3/4" O.D. SCREEN
874.55'	64.23'	10-3/4" O.D. BLANK PIPE
884.55'	10.00'	10-3/4" O.D. SCREEN
933.55'	49.00'	10-3/4" O.D. BLANK PIPE
955.55'	22.00'	10-3/4" O.D. SCREEN
974.83'	19.28'	10-3/4" O.D. BLANK PIPE
1000.00'	25.17'	10-3/4" O.D. SCREEN
1015.00'	15.00'	10-3/4" O.D. BLANK PIPE
1017.00'	2.00'	10-3/4" O.D. SET NIPPLE, B.P. VALVE & W.W. PLUG

SKETCH



12/14/2000	1.303	0	0	1.174	0.331	1.269	0.356	0	0	1.445	0.741	0	1.445	0.547	0.519
12/15/2000	1.138	1.136	0	0.987	0.32	1.05	0.329	0	0	1.112	0.6	0	0.516	0.455	0.463
12/16/2000	0	1.092	0	0.957	0.532	1.027	0.256	0	0	1.062	0.547	0	1.053	0.532	0.545
12/17/2000	0	1.551	0	1.107	0.425	.2	0.282	0	0	1.217	0.552	0	1.037	0.363	0.316
12/18/2000	0	0.986	0	1.001	0.632	1.091	0.502	0	0	1.185	0.46	0	0.866	0.51	0.524
12/19/2000	0	1.514	0	1.237	0.248	1.361	0.524	0	0	1.52	0.399	0	0.781	0.504	0.505
12/20/2000	0	1.389	0	1.165	0.658	1.267	0.18	0	0	1.274	0.348	0	0.652	0.371	0.344
12/21/2000	0	1.079	0	1.042	0.283	0.952	0.34	0	0	1.185	0.497	0	0.961	0.62	0.638
12/22/2000	0	1.436	0	1.192	0.216	1.291	0.519	0	0	1.365	0.45	0	0.86	0.473	0.46
12/23/2000	0	1.331	0	1.116	0.403	1.212	0.264	0	0	1.295	0.382	0	0.727	0.579	0.548
12/24/2000	0	1.556	0	1.275	0.34	1.382	0.346	0	0	1.442	0.398	0	0.758	0.458	0.433
12/25/2000	0	1.258	0	1.051	0.412	1.147	0.261	0	0	1.356	0.387	0	0.738	0.414	0.406
12/26/2000	0	1.407	0	1.163	0.17	1.259	0.517	0	0	1.29	0.385	0	0.732	0.363	0.356
12/27/2000	0	1.212	0	1.137	0.378	1.089	0.323	0	0	1.383	0.423	0	0.803	0.558	0.563
12/28/2000	0	1.264	0	1.045	0.452	1.132	0.283	0	0	1.149	0.491	0	0.934	0.418	0.391
12/29/2000	0	1.35	0	1.107	0.393	1.184	0.265	0	0	1.154	0.425	0	0.783	0.387	0.381
12/30/2000	0	1.167	0	0.965	0.322	1.033	0.553	0	0	1.101	0.469	0	0.912	0.376	0.373
12/31/2000	0	1.322	0	1.087	0.434	1.174	0.248	0	0	1.277	0.439	0	0.83	0.444	0.437
Total MG	268,839	377,454	437,915	93,021	216,369	202,960	208,220	108,638	411,627	458,903	117,200	202,560	226,530	252,982	253,897

Yr 2000

Well #	14	15	16	17	19	20	21	23	25	26	12	18	22	24	27
Max MGD	2.123	3.136	3.124	1.466	2.709	2.513	2.74	2.057	3.272	2.641	2	1.7	1.494	1.847	1.796
Acre/Ft	825.04	1,158.36	1,343.91	285.47	664.01	622.88	639.00	333.40	1,263.85	1,408.32	359.67	621.69	695.20	776.37	779.18

Total Acre/Ft 11,776.34

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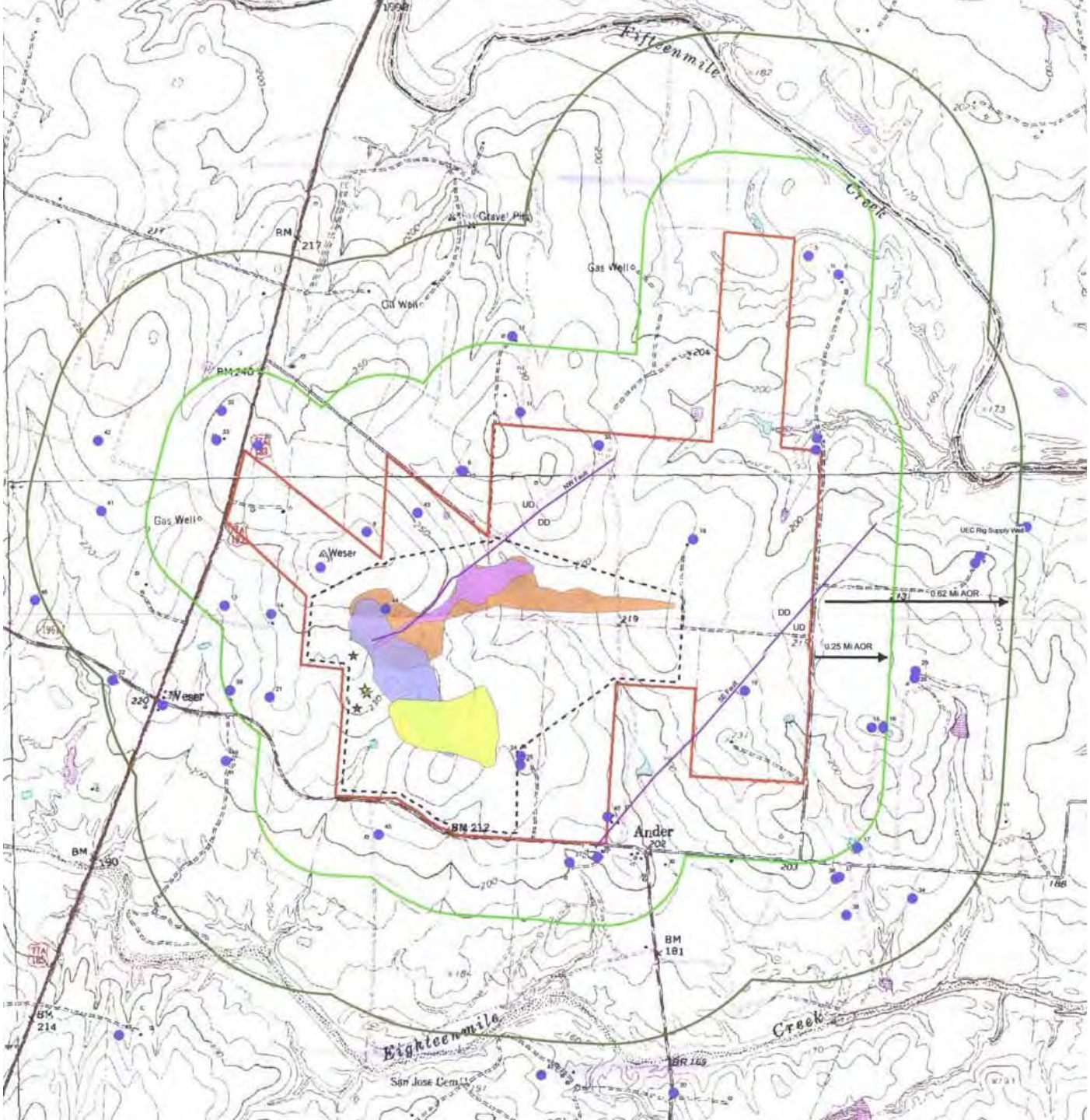
Slide 6


Fifteenmile
Creek
Gravel Pits
Gas Wells
Oil Well
BM 217
BM 240
Gas Wells
Weser
Weser
UD
DD
DD
UD
0.62 Mi AOR
0.25 Mi AOR
UEC Rig Supply Well
BM 212
Ander
BM 181
BM 90
BM 214
Eighteenmile
Creek
San Jose Cem

Well Name	Map ID	Ground Level (ft) Above SL	Total Depth (ft)	Total Depth (ft) Above SL	Fluid Level (ft) From Surface	Fluid Level (ft) Above SL
J. Jacob 1	1	203	80	123	53.87	149.13
J. Jacob - ORW*	7	170	?		220.00	-50.00
C. Duderstadt 1	9	238	?		49.93	188.07
O. Bluntzer 1	15	230	128	102	80.00	150.00
K. Gray 1	17	185	?		36.04	148.96
T. Anklam 1	20	243	300	-57	86.60	156.40
A. Bade 1	22	204	86	118	31.00	173.00
A. Bade 2	23	218	?		49.05	168.95
M. Braquet 1	24	231	?		67.74	163.26
C. Tolbert 1	28	210	?		58.31	151.69
P. Breeden 3	38	178	460	-282	43.32	134.68
L. Schrade 1	40	212	?		68.57	143.43
H. Becker 1	47	177	?		21.18	155.82

* Old Rig Well

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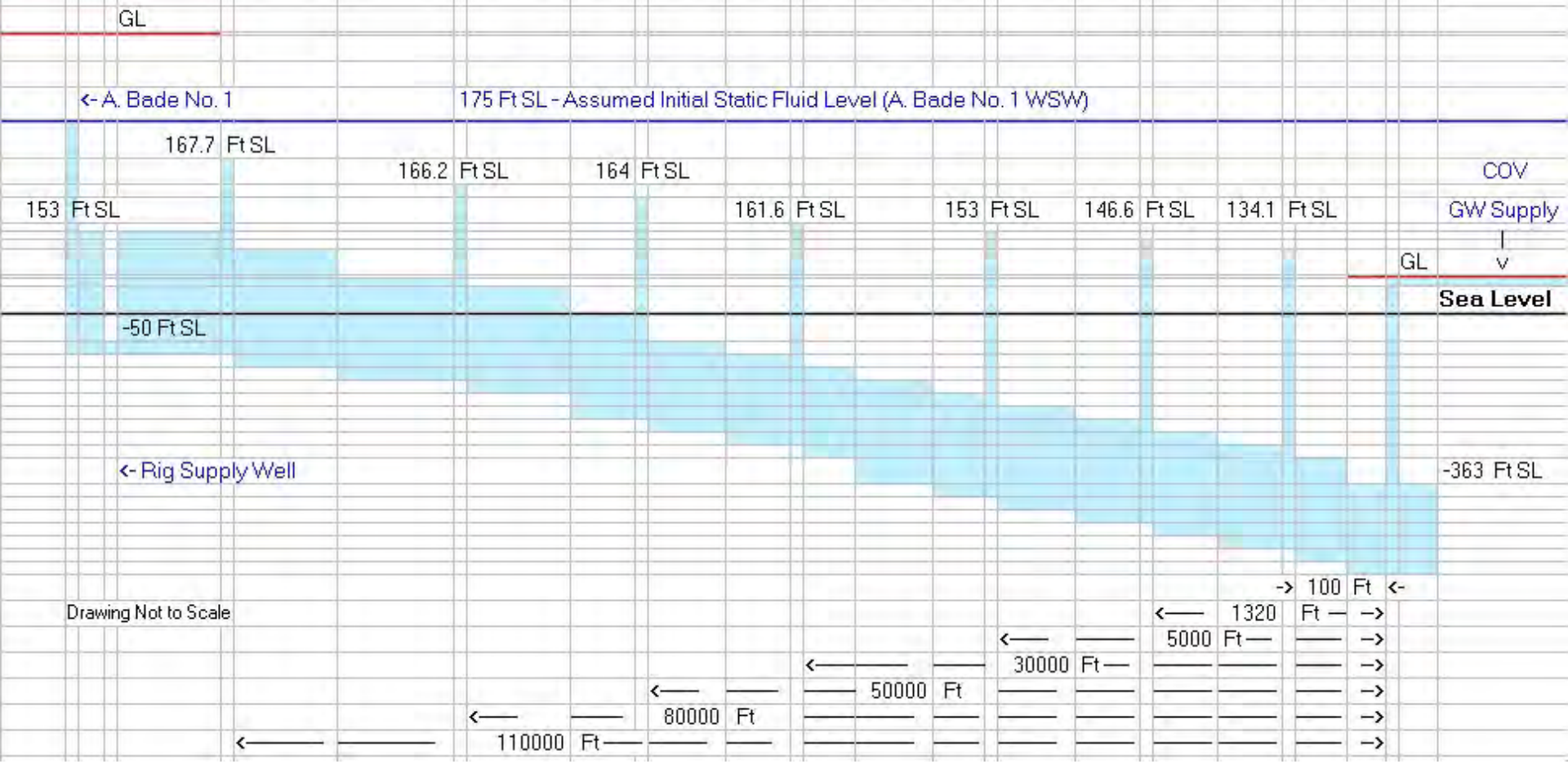
Preliminary Aquifer Drawdown Analysis for City of Victoria (COV) Ground Water Supply System

Model Results For 50 Years of Operation at 1000 Ac-Ft/Yr Water Production Rate



Slide 9

Summary of Preliminary Aquifer Drawdown Analysis for the City of Victoria Ground Water Supply Wells

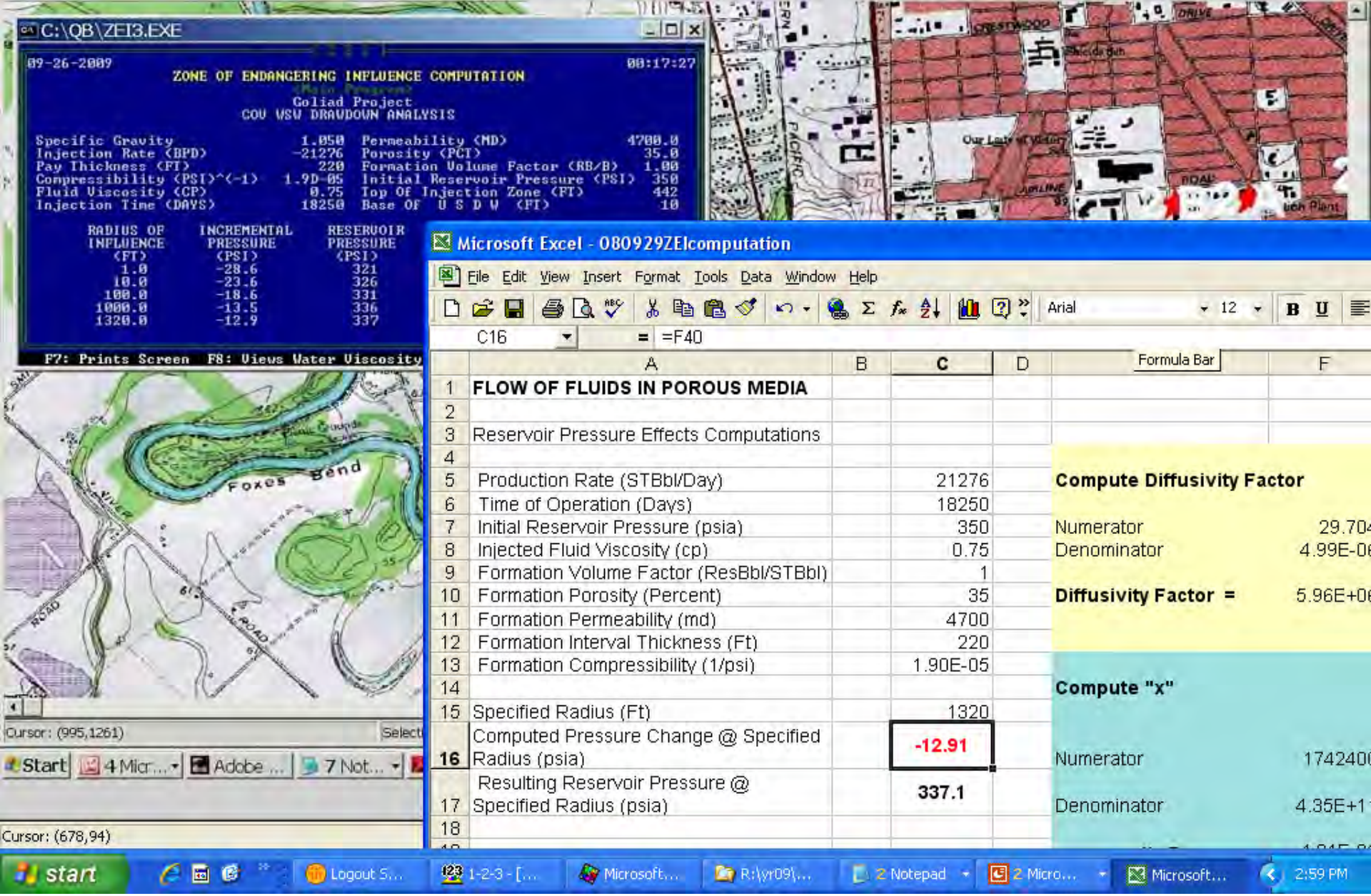
Basic Input Data

City's Population:	65,000		Datum:	Sea Level	Porosity (%)	35.0		
Number of Water Wel	15		Initial Reservoir Press. PSI	350.0	Permeability (md)	4,700	Compressibility (1/PSI)	1.90E-005
GW Production. Rate	1,000	Ac-Ft/Yr	Viscosity (cp)	0.75	Thickness (Ft)	220		
	21,276	Bbl/Day	Form. Vol. Fctr.	1.0				

Model Results - Estimated Pressure and Hydrostatic Head Changes

Years of Operation	Drwdown @ 1.0 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 1.0 Ft From No. 14 Well	Drwdown @ 10 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 10 Ft From No. 14 Well	Drwdown @ 100 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 100 Ft From No. 14 Well	Drwdown @ 1000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 1000 Ft From No. 14 Well	Drwdown @ 1320 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 1320 Ft From No. 14 Well
1	-24.3	-53.4	-19.3	-42.5	-14.3	-31.5	-9.3	-20.5	-8.7	-19.1
10	-26.9	-59.2	-21.8	-47.9	-16.8	-37.0	-11.8	-26.0	-11.2	-24.6
20	-27.6	-60.7	-22.6	-49.7	-17.6	-38.7	-12.5	-27.5	-11.9	-26.2
30	-28.1	-61.8	-23.0	-50.6	-18.0	-39.6	-13.0	-28.6	-12.4	-27.3
50	-28.6	-62.9	-23.6	-51.9	-18.6	-40.9	-13.5	-29.7	-12.9	-28.4

Years of Operation	Drwdown @ 5000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 5000 Ft From No. 14 Well	Drwdown @ 30000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 30000 Ft From No. 14 Well	Drwdown @ 50000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 50000 Ft From No. 14 Well	Drwdown @ 80000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 80000 Ft From No. 14 Well	Drwdown @ 110000 Ft From No. 14 Well PSI	Hydr. Head (Ft) Change @ 110000 Ft From No. 14 Well
1	-5.8	-12.8	-1.8	-4.0	-0.7	-1.5	0.0	0.0	0.0	0.0
10	-8.3	-18.3	-4.4	-9.7	-3.2	-7.0	-2.2	-4.8	-1.5	-3.3
20	-9.0	-19.8	-5.1	-11.2	-4.0	-8.8	-3.0	-6.6	-2.3	-5.1
30	-9.5	-20.9	-5.6	-12.3	-4.4	-9.7	-3.4	-7.5	-2.7	-5.9
50	-10.0	-22.0	-6.1	-13.4	-5.0	-11.0	-4.0	-8.8	-3.3	-7.3


C:\QB\ZEI3.EXE
09-26-2009
00:17:27
ZONE OF ENDANGERING INFLUENCE COMPUTATION
Goliad Project
COV WSW DRAWDOWN ANALYSIS
Specific Gravity 1.050
Injection Rate (BPD) -21276
Pay Thickness (FT) 220
Compressibility (PSI)^(-1) 1.9D-05
Fluid Viscosity (CP) 0.75
Injection Time (DAYS) 18250
Permeability (MD) 4700.0
Porosity (PCT) 35.0
Formation Volume Factor (RB/B) 1.00
Initial Reservoir Pressure (PSI) 350
Top Of Injection Zone (FT) 442
Base Of U S D W (FT) 10
RADIUS OF INFLUENCE (FT)
INCREMENTAL PRESSURE (PSI)
RESERVOIR PRESSURE (PSI)
1.0 -28.6 321
10.0 -23.6 326
100.0 -18.6 331
1000.0 -13.5 336
1320.0 -12.9 337
F7: Prints Screen F8: Views Water Viscosity
Foxes Bend
Cursor: (995,1261)
Cursor: (678,94)
Microsoft Excel - 080929ZEIcomputation
File Edit View Insert Format Tools Data Window Help
Arial 12
C16 = =F40
Formula Bar
FLOW OF FLUIDS IN POROUS MEDIA
Reservoir Pressure Effects Computations
Production Rate (STBbl/Day) 21276
Time of Operation (Days) 18250
Initial Reservoir Pressure (psia) 350
Injected Fluid Viscosity (cp) 0.75
Formation Volume Factor (ResBbl/STBbl) 1
Formation Porosity (Percent) 35
Formation Permeability (md) 4700
Formation Interval Thickness (Ft) 220
Formation Compressibility (1/psi) 1.90E-05
Specified Radius (Ft) 1320
Computed Pressure Change @ Specified Radius (psia) -12.91
Resulting Reservoir Pressure @ Specified Radius (psia) 337.1
Compute Diffusivity Factor
Numerator 29.704
Denominator 4.99E-06
Diffusivity Factor = 5.96E+06
Compute "x"
Numerator 1742400
Denominator 4.35E+11
start
Logout S...
1-2-3 - [...
Microsoft...
R:\yr09\...
2 Notepad
2 Micro...
Microsoft...
2:59 PM

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