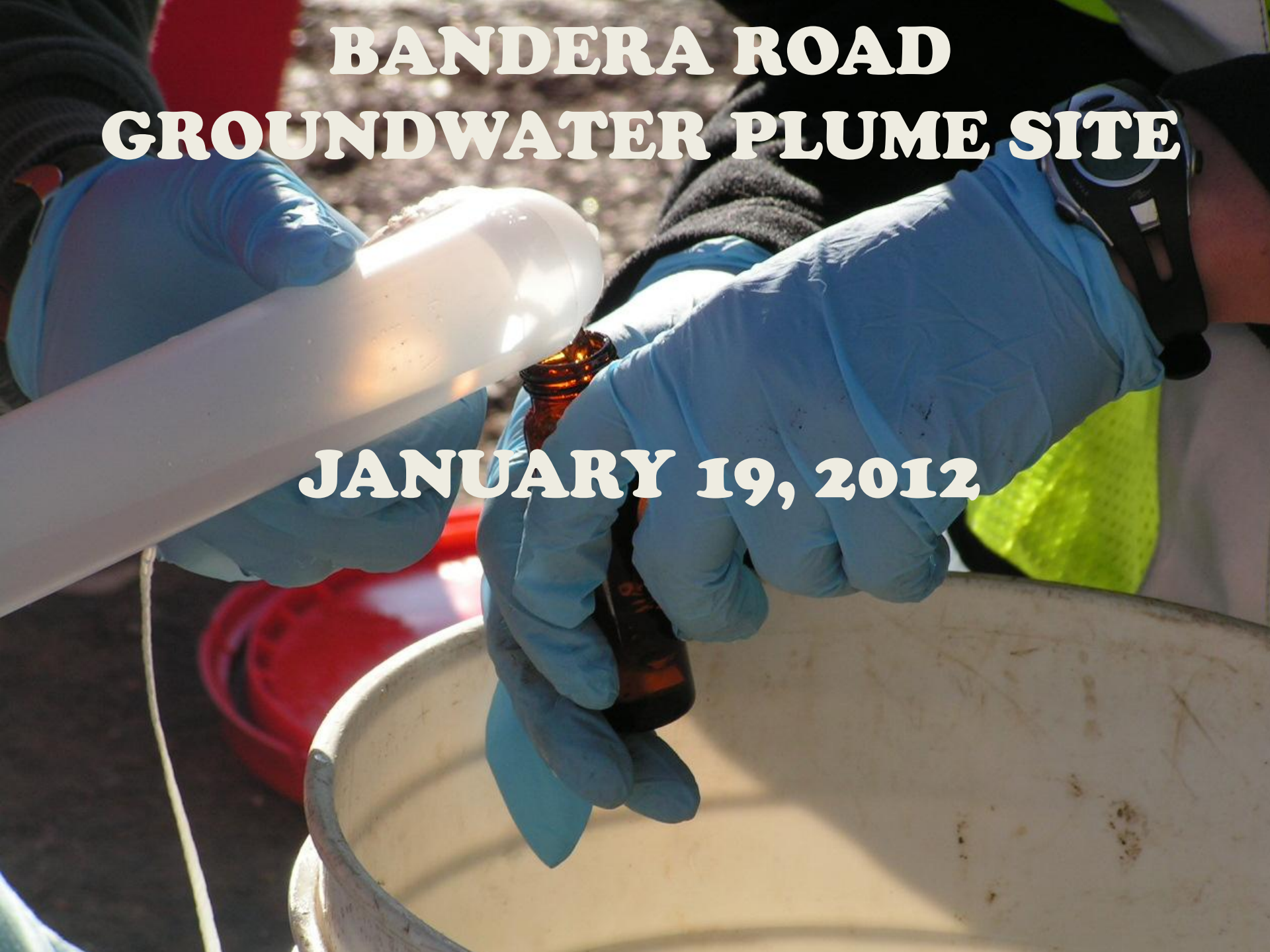


BANDERA ROAD GROUNDWATER PLUME SITE

JANUARY 19, 2012

PRESENTATION OUTLINE

MUNICIPAL WATER WELL SAMPLING

IN-SITU BIOREMEDIATION DW-404 UPDATE

LIMITED ADDITIONAL STUDIES

HISTORICAL WELL SEARCH WITH EDWARDS AQUIFER AUTHORITY

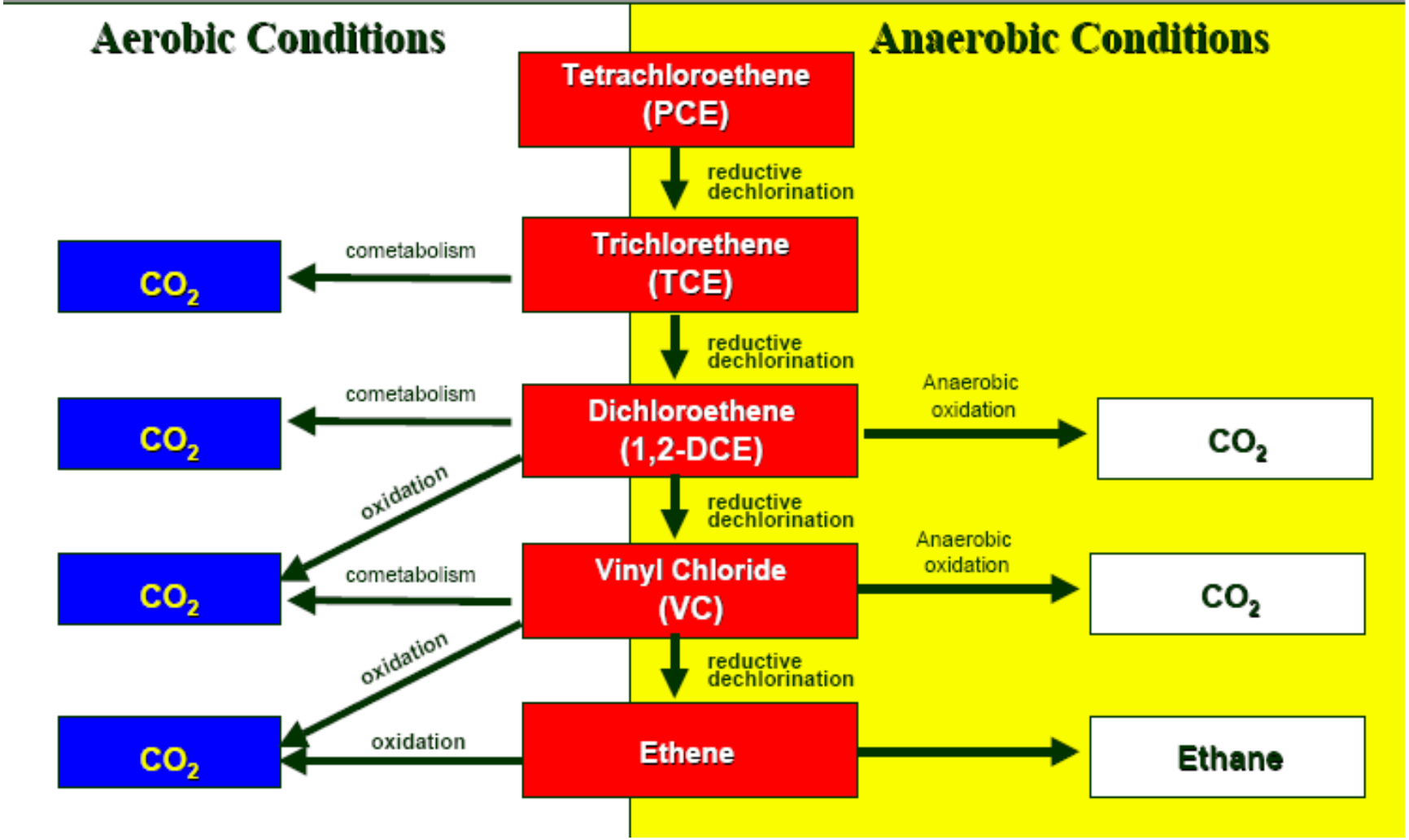
Municipal Well Sampling

- Leon Valley municipal water wells were sampled on Monday, October 17, 2011. No VOCs detected in samples. Laboratory reported estimated PCE concentration of 0.23 parts per billion in duplicate sample from Grass Hill well.
- Wells sampled on January 9, 2012.


DW-404
In Situ
Bioremediation
Pilot Study
Sock with baking soda added to well to increase pH

DW-404 In Situ Bioremediation Pilot Study

PCE/TCE Degradation Pathways



BIODEGRADATION PRODUCTS	JUNE 2010 (ug/L)	JANUARY 2011 (ug/L)	JANUARY 2012 (ug/L)
METHANE	0.45	1.1	7720
ETHANE	0.65	3.41	0.32 U
ETHENE	1.3	6.17	24.3

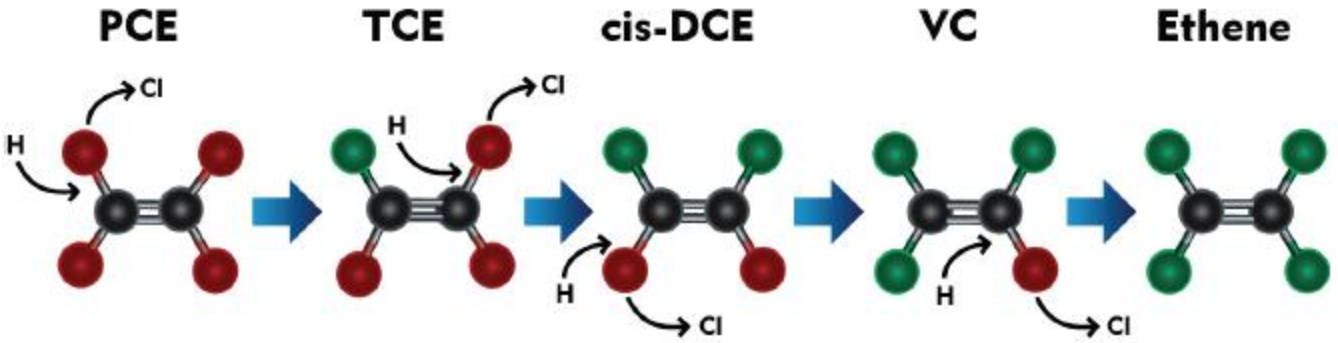
Report of Analysis

Client Sample ID:	DW-404		
Lab Sample ID:	F89374-1	**Date Sampled:**	01/11/12
Matrix:	AQ - Ground Water	**Date Received:**	01/12/12
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Bandera Rd Ground Water Plume Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY053660.D	1	01/13/12	SH	n/a	n/a	GXY2297
Run #2	XY053672.D	10	01/13/12	SH	n/a	n/a	GXY2297

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	7720 [a]	5.0	1.6	ug/l	
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	24.3	1.0	0.43	ug/l	

(a) Result is from Run# 2



Methane concentrations greater than 1 mg/L are indicative of conditions conducive for reductive dechlorination of chlorinated solvents. Results from last weeks sampling found methane concentrations greater than 7 mg/L.

Bio-Trap Samplers

Status	*Dehalococcoides spp.*	*Observations*
	$\geq 10^4$ (cells/mL)	A concentration of 1.0 E+4 DHC cells/mL identify sites where reductive dechlorination will yield a generally useful biodegradation rate. Ethene production was observed in samples obtained from across US with DHC greater or equal to 1.0 E+4.
	10^1 to $< 10^4$ (cells/mL)	When DHC is less than the 1.0 E+4 cells/mL, project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination.
	$< 10^1$ (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions.

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Dechlorinating Bacteria

Dehalococcoides spp.	*DHC*	**2.69E+07**

Functional Genes

tceA Reductase	TCE	**6.21E+07**
bvcA Reductase	BVC	**1.07E+02**
Vinyl Chloride Reductase	VCR	**4.39E+07**

Phylogenetic Group

Total Eubacteria	EBAC	**2.08E+07**

DW-404 SAMPLE RESULTS

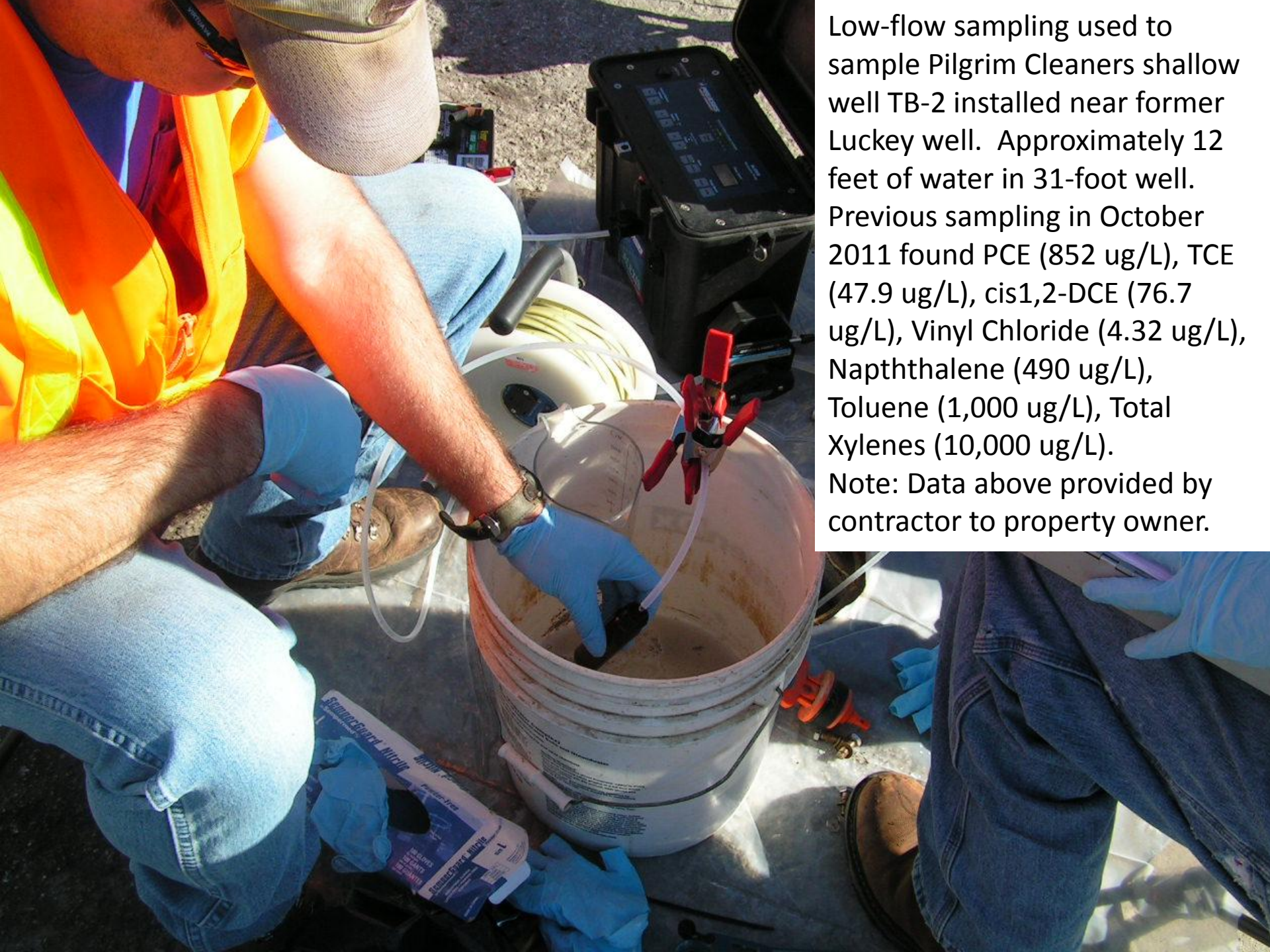
Target Compound	January 2001 (µg/L)	February 2011 (µg/L)	March 2011 (µg/L)	July 2011 (µg/L)
Tetrachloroethene	1,570	428	259	43
Trichloroethene	37.9	U	U	U
Cis-1,2-Dichloroethene	49.4	U	52.5 J	1100

Note

U Not Detected (Reporting Limit 25 ug/L)

J Estimated value

January 11, 2012
EA Engineering sampling new 32-foot Pilgrim Cleaners monitoring well (TB-1). Bailer used – approximately 1.0 foot of water present in well.



Low-flow sampling used to sample Pilgrim Cleaners shallow well TB-2 installed near former Luckey well. Approximately 12 feet of water in 31-foot well. Previous sampling in October 2011 found PCE (852 ug/L), TCE (47.9 ug/L), cis1,2-DCE (76.7 ug/L), Vinyl Chloride (4.32 ug/L), Napththalene (490 ug/L), Toluene (1,000 ug/L), Total Xylenes (10,000 ug/L).
Note: Data above provided by contractor to property owner.

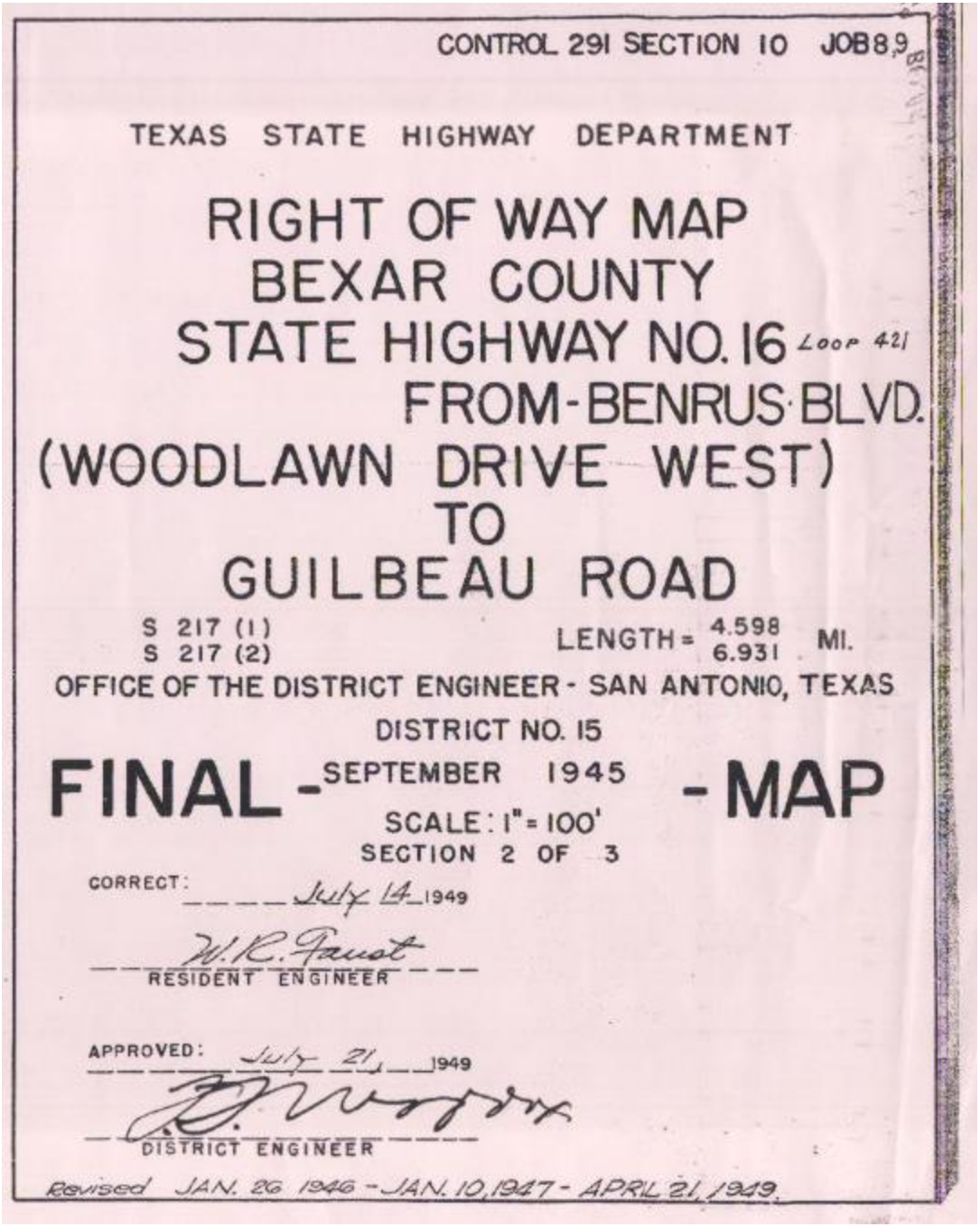
January 10 – 13, 2012. Installation of two soil vapor extraction pilot test borings. Borings cased to 30 feet, open hole from 30 to 50 feet.

SVE Pilot Test

36 Hour Test (started Monday at noon).
Vacuums from 50 to 150 inches of water.
PID readings after 6-8 hours were greater than 1700 ppm.
Concentrations have been decreasing over duration of test. Last night concentrations were in the 100 - 120 ppm range. This morning they were in the 80 – 90 ppm range
Radius of influence 21.5 feet.

HISTORICAL WELL SEARCH

Maps provided by
Barbara Fryer



CONTROL 291 SECTION 10 JOB 89

TEXAS STATE HIGHWAY DEPARTMENT

RIGHT OF WAY MAP
BEXAR COUNTY
STATE HIGHWAY NO. 16 Loop 421
FROM-BENRUS BLVD.
(WOODLAWN DRIVE WEST)
TO
GUILBEAU ROAD

S 217 (1)
S 217 (2)
LENGTH = 4.598 / 6.931 MI.

OFFICE OF THE DISTRICT ENGINEER - SAN ANTONIO, TEXAS

DISTRICT NO. 15

FINAL - SEPTEMBER 1945 - MAP

SCALE: 1" = 100'

SECTION 2 OF 3

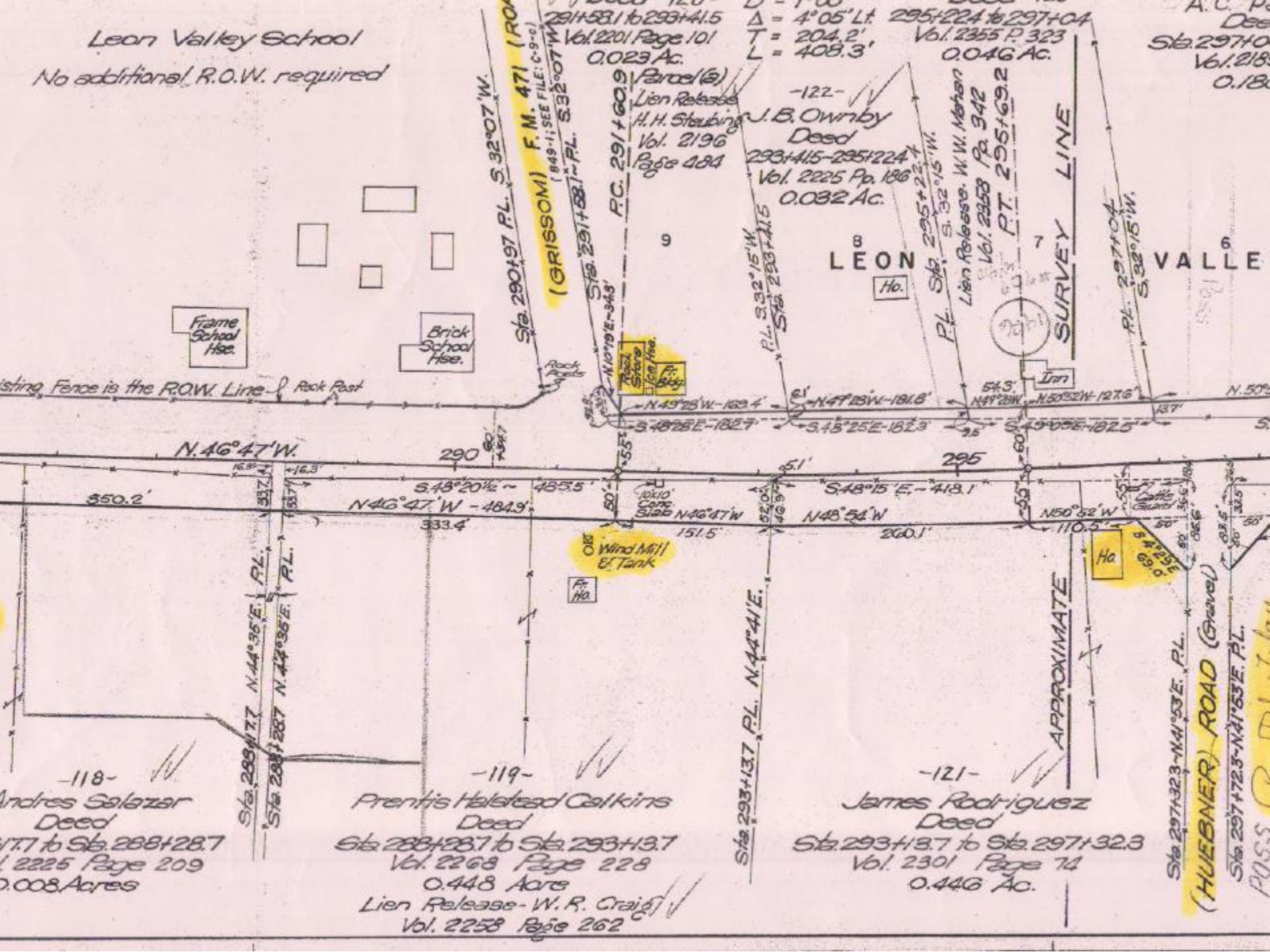
CORRECT: July 14 1949

W. R. Faust
RESIDENT ENGINEER

APPROVED: July 21, 1949

DISTRICT ENGINEER

Revised JAN. 26 1946 - JAN. 10, 1947 - APRIL 21, 1949.


Leon Valley School
No additional R.O.W. required
(GRISSOM) F.M. 471 (ROAD)
Sta. 290+97 P.I.
S.32°07'W.
Sta. 291+58.1
P.C. 291+60.9
Parcel (6)
Lien Release
H.H. Stebbins
Vol. 2196
Page 484
291+58.1 to 293+41.5
Vol. 2201 Page 101
0.023 Ac.
Δ = 4°05' Lt.
T = 204.2'
L = 408.3'
295+22.4 to 297+04
Vol. 2355 P. 323
0.046 Ac.
-122-
J.B. Ownby
Deed
293+41.5-295+22.4
Vol. 2225 Pg. 186
0.032 Ac.
Lien Release W.W. Nelson
Vol. 2358 Pg. 342
P.T. 295+69.2
SURVEY LINE
LEON
VALLE
Frame School Hse.
Brick School Hse.
Rock Fence
Rock Post
Existing Fence is the R.O.W. Line
Rock Store & Tea Hse.
Ft. Bldg.
Ho.
Inn
N.46°47'W.
290
295
N.45°28'W.-169.4'
N.47°18'W.-181.6'
S.48°28'E.-182.7'
S.48°25'E.-182.3'
S.48°05'E.-182.5'
N.50°52'W.-127.6'
S.48°20½'E.-485.5'
S.48°15'E.-418.1'
350.2'
N.46°47'W.-484.9'
333.4'
N.48°54'W.
260.1'
151.5'
110.5'
10'x10' Conc. Slab
Old Wind Mill & Tank
Ft. Ho.
Ho.
Cattle Guard
S.41°25'E. 69.0'
APPROXIMATE
N.44°36'E. P.L.
N.42°36'E. P.L.
N.44°41'E. P.L.
N.41°53'E. P.L.
N.41°53'E. P.L.
-118-
Andres Salazar
Deed
Sta. 288+17.7 to Sta. 288+28.7
Vol. 2225 Page 209
0.008 Acres
-119-
Prentis Halstead Calkins
Deed
Sta. 288+28.7 to Sta. 293+13.7
Vol. 2268 Page 228
0.448 Acre
Lien Release - W.R. Craig
Vol. 2258 Page 262
-121-
James Rodriguez
Deed
Sta. 293+13.7 to Sta. 297+32.3
Vol. 2301 Page 74
0.446 Ac.
(HUEBNER) ROAD (Gravel)
Sta. 297+72.3-N.41°53'E. P.L.
Sta. 297+72.3-N.41°53'E. P.L.

Historical Wells Search

- Identify well locations from old right-of-way maps/historical photos.
- EAA procure surveying contractor.
- Obtain access to properties and mark potential locations.
- EAA will use surface geophysics contractor to search for buried well casings.
- EAA will coordinate with EPA, landowners, and utility companies and perform excavations to expose well casings.
- EAA will discuss well plugging costs with EPA to define funding mechanisms.


Arby's
SHROOM & SWISS
FREE WiFi

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