

**Electronic Correspondence** 

January 17, 2013

Mr. Mike Bratcher State of New Mexico Oil Conservation Division 811 S. 1st Street Artesia, NM 88210 mike.bratcher@state.nm.us

MAil NMOCD ARTES

Re: Corrective Action Plan LINN Energy, HE West B 2 Battery API No.: 30-015-28537 Legal: Unit D, Sec 9, T17S, R31E, 1309 FNL, 1310 FWL, Eddy Co., NM GPS: N32.85466, W103.87986

Dear Mike:

Etech Environmental & Safety Solutions, Inc. (Etech) is pleased to submit the following corrective action plan on the aforementioned site for your review and approval.

## Scope of Work

The scope of this project is for the remediation of a produced water/hydrocarbon impact. Completion of remediation will involve the following actions:

- 1. Placement of a one-call for utility location.
- 2. Excavation of impacted soils as far as practicable or until the chloride levels are less than 1,000 mg/kg and/or hydrocarbon levels of less than 5,000 mg/kg are reached. Preliminary assessment data indicated the chlorides exceeded regulatory threshold levels to a depth of 10 feet where refusal was encountered. A copy of the assessment map and the screening data are attached. Please note: The delineation data was collected from the lowest point in the impacted area where it was evident liquids had pooled. The assessment map includes the delineation data and the sampling points (SP's) that will be used to determine that the excavation has reached remediation objectives.
- 3. During the course of excavation soil samples will be screened on site to determine the progress of the remediation. Screening is achieved using a YSI chloride meter with a tolerance of +/- 6% which is the same tolerance as laboratory titration methods.
- 4. Once the screening determines the remediation objectives have been reached, confirmation samples will be collected from the bottom of the excavation to confirm that remediation goals have been reached. If the excavation depth is greater than 2 feet vertical, side wall samples will be collected as well.
- 5. If the results of analysis determine that the chloride levels are above regulatory threshold levels, additional excavation will be performed until the remediation objectives are met.

It should be noted that due to the depth of the impact from the delineation, there may be circumstance that arise where additional excavation is not practical. This includes reaching the limits of excavation with chlorides that are close to objective levels, safety issues such as the close proximity of equipment, or other site specific issues. In this event, it will be likely to install a liner or a layer of gypsum at the bottom of the excavation before backfilling.

- 6. Backfilling of the excavated area(s) will be achieved by placing clean fill similar to the existing material from the site to within 2 foot of the surface. The last two feet will be backfilled with top soil of similar configuration to the surrounding area and contoured to match the existing grade.
- 7. Where pad areas or interior areas of tank batteries are excavated, they will be backfilled to within 6 inches of surface then backfilled to grade with compacted caliche. Any firewalls or containment berms removed during remediation will be reinstalled.
- 8. The site will be seeded with a 50/50 mixture of BLM #2 and #4 seed. Seeding will take place when the seasonal conditions are conducive to maximizing the potential for seed germination. Actual seeding will be accomplished by broadcast or drilling; whichever is the most practical for the site.

## **Notifications and Special Conditions**

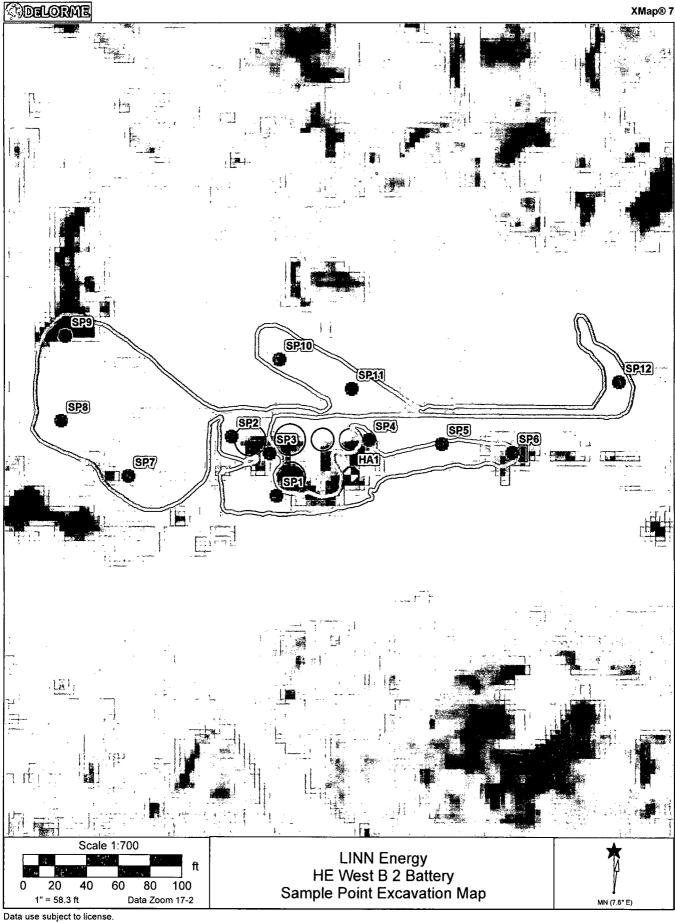
- 1. The OCD and BLM will be notified prior to the commencement of on-site operations.
- 2. The OCD and BLM will be notified prior to each sampling event to allow the opportunity to witness the sampling events. Splits will be made available if requested.
- 3. The OCD and BLM (if applicable) will be notified when the site is closed for final inspection prior to seeding.
- 4. A final report documenting the closure of the site will be submitted along with a final C-141.

Thank you for your assistance on this matter. Should you have any questions, require additional information, or have any additional stipulations for this site, please contact Mr. Gary Wink at (575) 738-1739 (Office) or via email at <u>gawink@linnenergy.com</u> or myself at (432) 563-2200 (office) or via email at <u>kit@etechenv.com</u>.

Respectfully:

Kit Prichard Environmental Professional

cc: Terry Gregston, BLM Carlsbad District Office



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December 13, 2012

FRED HOLMES

ETECH Environmental & Safety Solutions, Inc.

P. O. BOX 8469

MIDLAND, TX 79708

RE: H. E. WEST B #2

Enclosed are the results of analyses for samples received by the laboratory on 12/06/12 15:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celez D. Keine

Celey D. Keene Lab Director/Quality Manager



ETECH Environmental & Safety Solutions, Inc. FRED HOLMES P. O. BOX 8469 MIDLAND TX, 79708 Fax To: (432) 563-2213

Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186-000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

## Sample ID: SURFACE (H202937-01)

BTEX 8021B	mg,	mg/kg		d By: AP				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	0.062	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	0.533	0.050	12/11/2012	ND	1.82	90.8	2.00	13.4	
Total Xylenes*	1.32	0.150	12/11/2012	ND	5.52	91.9	6.00	12.7	
Total BTEX	1.92	0.300	12/11/2012	ND					

Surrogate: 4-Bromofluorobenzene (PIL 198 % 89.4-126

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3560	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<200	200	12/09/2012	ND	188	93.9	200	7.91	
DRO >C10-C28	31900	200	12/09/2012	ND	203	102	200	9.34	
Surrogate: 1-Chlorooctane	114 9	% 65.2-14	0			· · · · · ·			
Surrogate: 1-Chlorooctadecane	1350	% 63.6-15	4						

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\*=Accredited Analyte

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Celez Di Kune

Celey D. Keene, Lab Director/Quality Manager



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Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186-000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

## Sample ID: HA 2 - 3' (H202937-02)

BTEX 8021B	mg	mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	<0.050	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	<0.050	0.050	12/11/2012	ND	1.82	90.8	2.00	13.4	
Total Xylenes*	<0.150	0.150	12/11/2012	ND	5.52	91.9	6.00	12.7	
Total BTEX	<0.300	0.300	12/11/2012	ND					

Surrogate: 4-Bromofluorobenzene (PIL 120 % 89.4-126

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPÐ	Qualifier
Chloride	1880	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	PH 8015M mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	12/09/2012	ND	188	93.9	200	7.91	
DRO >C10-C28	614	50.0	12/09/2012	ND	203	102	200	9.34	
Surrogate: 1-Chlorooctane	83.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110	% 63.6-15	4						

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Celey D. Keene, Lab Director/Quality Manager



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Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186-000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

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## Sample ID: HA 4 - 5' (H202937-03)

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BTEX 8021B	mg,	/kg	Analyze	Analyzed By: AP		<u> </u>			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	<0.050	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	<0.050	0.050	12/11/2012	ND	1.82	90.8	2.00	13.4	
Total Xylenes*	<0.150	0.150	12/11/2012	ND	5.52	91.9	6.00	12.7	
Total BTEX	<0.300	0.300	12/11/2012	ND					

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Surrogate: 4-Bromofluorobenzene (PIC 118 % 89.4-126

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/09/2012	ND	188	93.9	200	7.91	
DRO >C10-C28	13.3	10.0	12/09/2012	ND	203	102	200	9.34	
Surrogate: 1-Chlorooctane	88.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	103	% 63.6-15	4						

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Celey D. Keene, Lab Director/Quality Manager



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Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186-000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

### Sample ID: HA 6 - 7' (H202937-04)

BTEX 8021B	mg	mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	<0.050	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	<0.050	0.050	12/11/2012	ND	1.82	90.8	2.00	13,4	
Total Xylenes*	<0.150	0.150	12/11/2012	ND	5.52	91.9	6.00	12,7	
Total BTEX	<0.300	0.300	12/11/2012	ND					

89.4-126 Surrogate: 4-Bromofluorobenzene (PIL 114 %

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3680	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/10/2012	ND	183	91.4	200	3.20	
DRO >C10-C28	<10.0	10.0	12/10/2012	ND	19 <del>9</del>	99.3	200	5.48	
Surrogate: 1-Chlorooctane	87.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	99.4	% 63.6-15	4						

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Celey D. Keene, Lab Director/Quality Manager



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Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186-000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

## Sample ID: HA 8 - 9' (H202937-05)

BTEX 8021B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	<0.050	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	<0.050	0.050	12/11/2012	ND	1.82	90.8	2.00	13.4	
Total Xylenes*	<0.150	0.150	12/11/2012	ND	5.52	91.9	6.00	12.7	
Total BTEX	<0.300	0.300	12/11/2012	ND					
Surrogate: 4-Bromofluorobenzene (PIL	112 9	% 89.4-120	5						
Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	RS	% Recovery	True Value OC	RPD	Qualifier

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7000	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/10/2012	ND	183	91.4	200	3.20	
DRO >C10-C28	10.8	10.0	12/10/2012	ND	199	99.3	200	5.48	
Surrogate: 1-Chlorooctane	79.3	% 65.2-14	0	<u>, ,</u>					

Surrogate: 1-Chlorooctadecane 86.8 % 63.6-154

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Celey Di Keene

Celey D. Keene, Lab Director/Quality Manager



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## Analytical Results For:

ETECH Environmental & Safety Solutions, Inc. FRED HOLMES P. O. BOX 8469 MIDLAND TX, 79708 Fax To: (432) 563-2213

Received:	12/06/2012	Sampling Date:	12/06/2012
Reported:	12/13/2012	Sampling Type:	Soil
Project Name:	H. E. WEST B #2	Sampling Condition:	Cool & Intact
Project Number:	253-3186 <b>-</b> 000	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

## Sample ID: HA 9 - 10' (H202937-06)

BTEX 8021B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/11/2012	ND	1.72	85.8	2.00	14.1	
Toluene*	<0.050	0.050	12/11/2012	ND	1.88	93.9	2.00	13.8	
Ethylbenzene*	<0.050	0.050	12/11/2012	ND	1.82	90.8	2.00	13.4	
Total Xylenes*	<0.150	0.150	12/11/2012	ND	5.52	91.9	6.00	12.7	
Total BTEX	<0.300	0.300	12/11/2012	ND					
Surrogate: 4-Bromofluorobenzene (PIL	114 %	6 89.4-12	6						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP		_				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10100	16.0	12/11/2012	ND	416	104	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/10/2012	ND	183	91.4	200	3.20	
DRO >C10-C28	28,3	10.0	12/10/2012	ND	199	99.3	200	5.48	
Surrogate: 1-Chlorooctane	80.3 9	65.2-14	0						-
Surrogate: 1-Chlorooctadecane	90.4 9	63.6-15	4						

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



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## **Notes and Definitions**

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celeg Di Kune

Celey D. Keene, Lab Director/Quality Manager





## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name:	Efech		BILL TO	ANALYSIS REQUEST
Project Manager:	Kit Plichard		P.O. #:	
Address:			Company:	
City:	State:	Zip:	Attn:	
Phone #:	Fax #:	·	Address:	
Project #: 25	3-3186-000 Project Owr	ner:	City:	
Project Name:	He west B#Z		State: Zip:	
Project Location	He west B#Z Eddy county Terry 05601 M		Phone #:	
	Terry 05601 *1		Fax #:	
FOR LAB USE CNLY		MATRIX	PRESERV. SAMPLING	
		(C)OMP ERS ATER 'ER'		
Lab I.D.	Sample I.D.	A N N N		
Lub	oumple lib.	NTA C UND TEW	OTHER: ACID/BASE ACID/BASE ACID/BASE ACID/BASE	
17107937		(G)RAB # CONT, GROUN WASTEV SOIL		
1.5 <u>E123</u> E <u>1</u> .6 <u>.</u> 7	SUFFACE		12/6/12	
. 2.	HA2-3,			JJJ
	HA 4-5'			
<u>:</u>	HA 6-7'			
5	HA 8-9'		ar and	
	HA 9-10	- I- K		
···· ··· ,· · ·			• · · · • • • • • • • • • • • • • • • •	
n u mart da er	· · _ · _ · · · · · · · · · · · ·			·····
	I Damages. Continat's liability and client's exclusive remody g those for negligence and any other unuse whatsoever shall			
service. In no event shall Car	rdmal be hable for incidental or consequental damages, inclu- y out of or related to the performance of services hereianter.	ading without Enviration, business interruptio	is, loss of use, or loss of profits incomed by check, life	In subsidianes.
Relinguished By	9ate:/6/12	Received By:	Pho	none Result: 🗆 Yes 🖾 No 🛛 Add'I Phone #:
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	Time	Chelle Mener	REMARKS:	 	
Relinquished By:	Date:	Received By:	1		
· ·	Time:				
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	42	Sample Condition   CHECKED BY: . Cool Intact (Initials), Uses Yes (Initials), . No No No			
† Cardinal cannot accept verbal o	changes. Pleas	e fax written changes to (575) 393-2326			[

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# **Chloride Probe Field Analysis Sheet**

Client:	LINN Energy							
Site:	HE West B #2 B	attery		Pro	ject Number:	253-3186-000		
Technican:	Terry Osborn			(	Contaminant:	Chlorides		
Instrument:	YSI Chloride Probe				Model/SN:	Pro 1030/114100517		
Calibration Che	cks Good:	✓ Y	es 🗌 No	Claibrati	on Standard:	250		
Date	Sample I.D.	Milliliters of Sample Used	Dilution	Reading (mg/kg)	Final Result (mg/kg)	Notations		
12/06/12	Surface	10	5.00	425.00	2,125.00	GPS - N32.85464		
12/06/12	HA 1-2'	10	5.00	436.00	2,180.00	W103.87976		
12/06/12	HA 2-3'	10	5.00	273.00	1,365.00			
12/06/12	HA 3-4'	10	5.00	288.00	1,440.00			
12/06/12	HA 4-5'	10	5.00	322.00	1,610.00			
12/06/12	HA 5-6'	10	5.00	532.00	2,660.00			
12/06/12	HA 6-7'	10	5.00	616.00	3,080.00			
12/06/12	HA 7-8'	10	5.00	829.00	4,145.00			
12/06/12	HA 8-9'	10	5.00	1490.00	7,450.00			
12/06/12	HA 9-10'	10	5.00	1302.00	6,510.00	Refusal		
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