Form EC-1 (Page 1)
Application for Certification of Emission Credits
(Title 30 Texas Administrative Code § 101.300 - § 101.311)

I. Company Identifying Information 41042S		
A. Company Name: Hilcorp Energy Company		
Mailing Address: 1201 Louisiana, Suite 1400		
City: Houston	State: Texas	Zip Code: 77002
Telephone: (713) 289-2951		Fax: (713) 289-2750
B. TCEQ Customer Number (CN): CN600125991		
C. Site Name: Poole Tank Battery		
Street Address: (if no street address, give driving directions to site) From Baytown go E on I10 on Trinity River Bridge, go left on CR 118, follow lease rd to site		
Nearest City: Baytown	Zip Code: 77511	County: Liberty
D. TCEQ Regulated Entity Number (RN): RN102711736 P0341		LH 0271 J
E. Primary SIC: 1311		Air Permit Number: 50648

II. Technical Contact Identifying Information		
A. Technical Contact Name: (_X_Mr. __Mrs. __Ms. __Dr.) Kyle Brzymialkiewicz		
Technical Contact Title: Client Guardian		
Mailing Address: 12727 Featherwood Drive, Suite 210		
City: Houston	State: Texas	Zip Code: 77034
Telephone: (281) 610 - 0164	Fax: (281) 484 - 6201	E-mail: kyle@sageenvironmental.com

III. Contact for Sale of Certificate		
A. Business Contact Name: (_X_Mr. __Mrs. __Ms. __Dr.) Brady Dodson		
Business Contact Title: Environmental Compliance		
Mailing Address: 1201 Louisiana, Suite 1400		
City: Houston	State: Texas	Zip Code: 77002
Telephone: (713) 289 - 2706	Fax: (713) 289-2750	E-mail: bdodson@hilcorp.com

IV. Generation Activity

☒ Shutdown ☐ Additional Control ☐ Other:
Describe reduction activity:

Date of Shutdown: 12 / 22 / 2015 Date of Reduction: __ / __ / __

Has production shifted from the shutdown facility to another facility in the same site? ☐ Yes ☒ No

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Table A.1: Form EC-1 Emissions Rate Data Table

V. Emissions Rate Data

Attach documentation which demonstrates the basis for each value represented in this table.

EPN	FIN	Pollutant	Year	Calculation of ERCs													Creditable ERCs
				Baseline Activity			Allowable Emissions		BE Baseline Emissions		Strategy Activity		SIP EI				
				Activity	BER	RER	ER	Tons	Tons	Avg	Activity	SER	Year	Tons	Activity	ER	
FUG001	FUG001	VOC	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.63	2.0	1.631 ~~2.0~~	Shutdown	0	2006	1.631 1.6	8760 hrs/yr	API O&G Factors	1.6
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.63	~~2.0~~								
TANK1	TANK1	VOC	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.41	1.3	1.3	Shutdown	0	2006	1.4 ~~1.4~~ 1.3	8.98 bbl/day	Tanks 4.09D	~~1.3~~ 1.2
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.41	1.2								
LOAD1	LOAD1	VOC	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.40	0.2	0.2	Shutdown	0	2006	0.397 ~~0.4~~ 0.18	3221 bbl/yr	AP-42	0.2
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.40	0.2								

Notes:

(1) Allowable Emissions were obtained from the Poole Tank Battery Permit-by-Rule Registration No. 50648.

Form EC-1 (Page 3)
Application for Certification of Emission Credits
(Title 30 Texas Administrative Code § 101.300 - § 101.311)

VI. Most Stringent Emission Rate

Describe basis for most stringent emission rate: ☒ Permit PBR 50648 ☐ RACT _____ ☐ Other:
Notes:

VII. Protocol

Protocol used to calculate ERC:

AP-42 for FIN: LOAD1. Tanks 4.09D & Vasquez-Beggs for FIN: TANK1. API O&G Factors for FIN: FUG001.

Note: Please attach complete calculations used in the generation of ERCs

VIII. Certification by Responsible Official

I, Matt Vicenik, hereby certify that the emission reductions claimed on this notice meet the requirements of 30 TAC Chapter 101, Subchapter H, Division 1 and are not based on an emission strategy prohibited in 30 TAC Chapter 101, Subchapter H, Division 1 to the best of my knowledge and belief and that the information entered in this application is correct to the best of my knowledge and belief.

Signature _____ Signature Date 12-22-15

Title Environmental Manager

Mail application to:
Texas Commission on Environmental Quality
Emission Banking and Trading Program MC 206
PO BOX 13087
AUSTIN, TX 78711-3087

SAGE
ENVIRONMENTAL CONSULTING

410425

HAND DELIVERY

December 29, 2015

Emission Banking and Trading Program
TCEQ MC – 206
P.O. Box 13087
Austin, Texas 78711-3087

Re: Application for Certification of Emission Reduction Credits
Poole Tank Battery
Hilcorp Energy Company
TCEQ Account No.: LH0271J
RN: RN102711736 CN: 600125991

To Whom It May Concern:

On behalf of our client, Hilcorp Energy Company (Hilcorp), Sage Environmental Consulting, L.P. (SAGE) is submitting this application for certification of emission reduction credits (ERCs) for the permanent shut down of subject facilities located at the Poole Tank Battery (Poole) located in Liberty County, Texas which is within the Houston-Galveston-Brazoria (HGB) nonattainment area.

Hilcorp is applying for VOC ERCs of 3.1 tons per year (tpy). Hilcorp is applying for these ERCs based on the complete and permanent shutdown of all oil and gas production equipment at the site. The shutdown of the oil and gas production equipment was completed on December 22, 2015.

If you have any questions or comments on this submittal, please contact Kyle Brzymialkiewicz at 281-610-0164 or kyle@sageenvironmental.com.

Sincerely,

Kyle Brzymialkiewicz
Client Guardian
Sage Environmental Consulting, LP

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12727 FEATHERWOOD DR., SUITE 210 • HOUSTON, TX • 77034 • 281/484-6200 • FAX 281/484-6201

SAGE
ENVIRONMENTAL CONSULTING

Hilcorp Energy Company

Emission Reduction Credit Application

Poole Tank Battery

Baytown, Texas

December 2015

12727 FEATHERWOOD DR., SUITE 210 • HOUSTON, TX • 77034 • 281/484-6200 • FAX 281/484-6201

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SECTION 1
EXECUTIVE SUMMARY

Sage Environmental Consulting, LP (Sage) on behalf of our client Hilcorp Energy Company. (Hilcorp) is submitting an application to bank Volatile Organic Compound (VOC) Emission Reduction Credits (ERCs) at the Poole Tank Battery (Poole) located within the Houston/Galveston/Brazoria (HGB) nonattainment area. Hilcorp (CN600125991) currently owns Poole (RN102711736) and has implemented an emission reduction strategy via the permanent shutdown of all oil and gas production equipment located at the site on December 22, 2015.

All of the information required to bank the emission reductions is contained in this report, which has identified a total of 3.1 ton per year (tpy) of VOCs that are eligible for banking as ERCs. The following sections of this report provide a detailed summary of the application:

- Section 2 Description of Reduction Activity
- Section 3 Emission Rate Data
- Section 4 Actual Date of Reduction
- Section 5 Most Stringent Emission Rate
- Section 6 Emission Methodology Protocol

In addition, the following Appendices provide the complete details of the calculations used to determine the total amount of ERC's:

- Appendix A TCEQ Form EC-1 - Site Emission Information
- Appendix B Speciated VOC Emission Information
- Appendix C Sample Calculations

Additional Appendices contain relevant materials pertaining to the site's air authorization and back-up materials for the emission reduction calculations.

The facilities and emission points at the site are authorized under (PBR) 30 TAC 106.352 – Oil and Gas Production Facilities, 30 TAC 106.512 – Engines and Turbines, and in accordance with emission limits specified in 30 TAC 106.4 – Requirements for Permitting by Rule. These authorizations are registered as PBR No. 50648; additional documentation can be found in Appendix D.

Baseline Emissions in Form EC-1 are based on data obtained from the 2005 and 2006 Emission Inventory submittals. FIN specific VOC ERC calculations have been based on the lowest values found in:

1) The 2006 Emissions Inventory, or
2) The site's baseline emissions profile for operating years 2005 and 2006, or

3) The most stringent emission rates applicable for the site, as found in PBR Registration No. 50648.

As more fully described in Section 3, there are minor differences in emission calculations for individual facilities with respect to the emissions obtained from the 2005 and 2006 Emission Inventory Questionnaires (EIQs), when compared to the emissions calculated in this application. However, the site's overall emission profiles reported in the 2005 and 2006 Emission Inventory (EI) are in good agreement with the site's overall emission profile found in this application. Form EC-1 contains the actual ERC calculations based on Texas Railroad Commission (RRC) oil and gas activity records.

No NOX ERCs are being applied for with this application; therefore no MECT allowances will need to be surrendered.

This application does not claim VOC ERCs from other equipment that:

1) had been previously located at the site, but which had already ceased operation or had been removed prior to the implementation of the emission reduction strategy, or
2) did not have emissions represented in the 2006 EI.

Excluded equipment includes:

- compressor engines and
- natural gas driven pneumatic pumps

SECTION 2
DESCRIPTION OF REDUCTION ACTIVITY

Hilcorp has executed its permanent shutdown strategy by disconnecting and de-inventorying all production equipment as of December 22, 2015. Poole consists of several components, including one 500 bbl oil storage tank, and associated emissions from truckloading and fugitive components.

All oil and gas production equipment subject to this application has been disconnected, de-inventoried and is in the process of being shipped offsite. Hilcorp is requesting that TCEQ void the site's air authorizations, including the registered PBR 50648, and is simultaneously submitting a TCEQ Form APD-CERT with this ERC application, creating and certifying a federally enforceable emission rate of zero for the subject equipment.

The VOC ERCs are based on generating emissions reductions from the permanent shutdown of the following individual pieces of equipment:

• FIN: FUG001	Site-Wide Fugitives	1.6 tpy VOC
• FIN: TANK1	500 bbl Oil Storage Tank	1.3 tpy VOC
• FIN: LOAD1	Truckloading	0.2 tpy VOC

The emission reductions are based on calculation methodologies described in Section 6.The ERCs identified in this application meet all the acceptance criteria found in Rule 30 TAC 101.302(c) as briefly outlined below:

- Real - the emissions are actual emissions based on activity levels of the facility,
- Surplus - the actual emissions are below or limited by the most stringent local, state, or federal requirements; in this case, actual emissions are below levels authorized by the PBR limits found in 30 TAC Chapter 106 including those registered in PBR 50648.
- Permanent - the subject equipment has been permanently disconnected, de-inventoried and is in the process of being shipped offsite.
- Quantifiable - the actual emissions are calculated using approved protocols and emission methodology for the natural gas processing and compression industry.

SECTION 3
EMISSION RATE DATA

Actual emissions from Calendar Years 2005 and 2006 were used to represent the baseline emissions associated with the calculated reductions. Baseline activity represented in this application is derived from the following equipment specific information recorded during the baseline period:

- Oil Production Rates,
- Fugitve Component Counts, and
- Equipment Specifications.

Approved emission factors and standard emission methodologies were used to calculate VOC emissions from each individual piece of equipment and associated FIN during the baseline period. The 2005 and 2006 Poole EIQs are included in this application in Appendix F.

As stated in Section 6 and outlined in Appendix C - Sample Calculations, the facility's Calendar Year 2005 and 2006 emissions found in this application were calculated based on actual historical site activity levels obtained from the Texas RRC records for the site. There are minor differences in emission rates found in the 2005 and 2006 EIQs, when compared to the actual emissions calculated in this application.

Form EC-1, contained in Appendix A, presents the required information on the site's baseline activity level, baseline emission rate, allowable emission rate, and strategic emission rate for the baseline period as well as future operations.

Table A-1, as part of the EC-1 form, contains the lower of the emission rates that were either:

1) reported in the Emissions Inventory and used in the latest revision of the 2006 HGB Attainment Demonstration SIP, or
2) recalculated as annual emissions in Appendix C, or
3) allowable emissions as discussed in Section 5.

All calculations have been performed and reported on an individual FIN basis.

SECTION 4
DATE OF REDUCTION

Hilcorp has implimented the emission reduction strategy of a total site shutdown effective December 22, 2015 by:

1) disconnecting and de-inventoring all equipment at the site and is in the process of shipping all equipment offsite;
2) requesting TCEQ void this site's PBR authorization; and
3) establishing a federally enforceable zero emission rate for all equipment via TCEQ Form APD-CERT.

SECTION 5
MOST STRINGENT EMISSION RATE

Storage Tanks (FIN: TANK1)

Storage tank breathing, working and flash emissions are subject to 30 TAC §115.111 for the Storage of Volatile Organic Compounds. However, Table II(a) referenced in 30 TAC §115.112(a)(1) identifies that a submerged fill pipe can suffice as a control requirement for tanks storing crude oil with a vapor pressure between 1.5 psia and 11 psia and storage capacity between 1,000 gal and 40,000 gal.

The storage tank has a capacity of 500 bbls (21,000 gallons), and in addition contained only crude oil with vapor pressure estimated as 3.9 psia. The fixed roof storage tank was equipped with a submerged fill pipe, satisfying the §115.112(a)(1) requirement.

NSPS OOOO contains a potentially applicable citation for owners/operators of storage vessels, §60.5365(e). However, the construction date of the storage vessel was prior to the August 23, 2011 NSPS OOOO effective date and the storage vessel has not been reconstructed nor modified since their original construction. Therefore, NSPS OOOO is not applicable to this facility.

There are no other applicable citations listed in local, state or federal regulations for storage tanks that provide any additional most stringent emission rate.

Fugitives (FIN: FUG001)

The fugitive emissions at the site are not subject to any state or federal emissions standard. Therefore, the emissions calculation method reported in the emissions inventory will serve as the most stringent emission rate for each year.

Truckloading (FIN: LOAD1)

Truck loading emissions are potentially subject to 30 TAC §115.212 for the Loading and Unloading of Volatile Organic Compounds. However, §115.217(a)(2)(A) states that loading operations at any plant, as defined by its air quality account number, excluding gasoline bulk plants, which loads less than 20,000 gallons of VOC into transport vessels per day (averaged over each consecutive 30-day period) with a true vapor pressure greater than or equal to 0.5 psia under actual storage conditions are exempt from the requirements of this division, except for waste control (§115.212(a)(2)), inspection (§115.214(a)(1)(A)(i) and §115.214(a)(1)(B)), testing (§115.215(4)), monitoring (§115.216(2)), and recordkeeping (§115.216(3)(B) and §115.216(3)(D)) requirements of this title. The maximum amount of oil loaded in 2005 was 11,861

gal/month, and 11,273 gal/month for 2006, and when averaged over a 30 day period, are below the 20,000 gal/day limit stated in §115.217(a)(2)(A).

There are no other applicable citations listed in 30 TAC 115 for VOC loading activities that provide any additional most stringent emission rate, therefore, the emissions calculation method reported in the emissions inventory will serve as the most stringent emission rate for each year.

SECTION 6
EMISSION METHODOLOGY PROTOCOL

Operational logs from the Texas RRC showing monthly crude oil production rates during the 2005 and 2006 baseline periods were used to establish the baseline activity levels. All operational logs are included in Appendix E.

The protocol and calculation methodology used for each EPN/FIN for which emission reductions will be banked are described below. The detailed calculations and additional data are found in the referenced tables, which are contained in Appendix C.

Storage Tank (FINs: TANK1)

The working losses and the breathing losses for the oil storage tanks were calculated using TANKS 4.0.9D. The flashing losses were estimated using the Vasquez-Beggs Correlation with the majority of factors being obtained from the PBR 50648 original permit application. Activity level or the monthly net throughput was based on the total annual oil production rate obtained from the Texas RRC records.

There are minor discrepancies between (a) historical emissions that were reported to the point source emissions inventory and (b) the site's actual emissions calculated with this application using accepted emission calculation methodologies.

Fugitives (FIN: FUG001)

The fugitive emissions at the site are not subject to any state or federal emissions standard. Therefore, the emissions calculation method reported in the emissions inventory will serve as the most stringent emission rate for each year.

There are minor discrepancies between (a) historical emissions that were reported to the point source emissions inventory and (b) the site's actual emissions calculated with this application using accepted emission calculation methodologies.

Truckloading (FIN: LOAD1)

Truck loading emissions from the oil loading were calculated using current AP-42 emission factors and equations form Petroleum Liquid Loading Loses (Chapter 5.2). Emissions were based on the data collected from the disposition rates supplied by the Texas RRC.

There are minor discrepancies between (a) historical emissions that were reported to the point source emissions inventory and (b) the site's actual emissions calculated with this application using accepted emission calculation methodologies.

APPENDIX A
TCEQ FORM EC-1

Appendix A contains the completed Form EC-1 including:

- Administrative Information Page
- Table A.1 – Form EC1 Emissions Rate Data Table
- Responsible Official Signature Page
- Checklist for ERC Certification

Attachment A - Checklist for ERC Certification Please check the appropriate box.	Applicant
Administrative Information - This information is provided, but not required to be submitted to the TCEQ.	
Is the Form EC-1 being submitted within 180 days from the end of the generation period?	**Yes**
Have you provided verification as to whether production shifted from the facility receiving credit to another facility on the same site?	**Shutdown**
Emission reduction strategy emission rate (unless credit will be generated from a shutdown)	**Shutdown**
Is information showing the enforceable mechanism for each EPN/FIN included?	**Section 5**
Is a list of all applicable Permit and Permit by Rule numbers for each EPN/FIN included?	**Section 1**
Is a copy of the Emissions Inventory from the most recent year of emissions inventory used for SIP determinations for each EPN/FIN included?	**Appendix F**
Is a copy of the Emissions Inventory for the two consecutive calendar years used for the baseline period for each EPN/FIN included?	**Appendix F**
Is a complete description of the calculation protocols used to determine the amount of credit requested included?	**Section 6**
Is a statement containing an explanation of how the credit is real, surplus, and quantifiable included?	**Section 2**
Is a list all rule citations for any applicable local, state or federal requirements included? a tank may have a state and a federal requirement. Therefore, listing the TCEQ Chapter 115 rule citation that applies along with the EPA NSPS K, Ka, or Kb should all be listed. This should be done for each EPN/FIN.	**Section 5**
State whether or not each EPN/FIN is subject to the Mass Emissions Cap and Trade program or any other cap and trade program. If yes, have you taken a permanent reduction in your allowances?	**Section 1**
Technical Review Requirements	
Is the reduction strategy or shutdown description included?	**Section 2**
If VOC reduction, is a speciated VOC and HAP list and amounts included?	**Appendix B**
Is the baseline emission activity (ex. fuel usage records, production, use, throughput, and hours of operation) included?	**Appendix C**
Is the baseline emission rate (ex. emission rate from CEMS or PEMS, guaranteed by vendor, NSR calculation protocol, AP-42) included?	**Appendix C**
The most stringent emission rate or standard applicable to each EPN/FIN considering all local, state and federal requirements (ex. RACT, ESAD, NSPS, NESHAPS, MACT, etc.)	**Section 5**
Is the backup documentation for the two consecutive calendar years of baseline activity such as production records, or use records, operating logs, or heat input included?	**Appendix E**
Are calculations for each EPN/FIN to show how each credit generation amount was determined using the equation in §101.303(b)(1) included?	**N/A**
Is backup documentation for the baseline emission rate or factor such as CEMS, PEMS, stack test data, or vendor guarantee included?	**Appendix C**
Is NSPS applicable? If yes, note the part(s)?	**Section 5**
Is NESHAPS applicable? If yes, what part(s)?	**Section 5**
Is there a MACT standard for these facilities? If yes, what part(s)?	**Section 5**
Does RACT apply? If yes, what part(s)?	**Section 5**

APPENDIX B
VOC SPECIATED REDUCTIONS

Appendix B contains the Table B.1 which speciates the total VOC emissions into individual constituents.

- Table B.1 - Speciated VOC ERC Table

Table B.1: Speciated VOC ERC

Emissions Rate Data

Attach documentation which demonstrates the basis for each value represented in this table.

EPN	FIN	Pollutant	Year	Calculation of ERCs														Creditable ERCs
				Baseline Activity			Allowable Emissions*		BE Baseline Emissions		Strategy Activity		SIP EI					
				Activity	BER	RER	ER	Tons	Tons	Avg	Activity	SER	Year	Tons	Activity	ER	
FUG001	FUG001	Methane	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.00	1.00	1.00	Shutdown	0	2006	1.00	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.00	1.00								
FUG001	FUG001	NMHC	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.63	0.63	0.63	Shutdown	0	2006	0.63	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.63	0.63								
FUG001	FUG001	Unspeciated VOC	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.48	0.48	0.48	Shutdown	0	2006	0.48	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.48	0.48								
FUG001	FUG001	C6+	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.04	0.04	0.04	Shutdown	0	2006	0.04	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.04	0.04								
FUG001	FUG001	Benzene	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.0004	0.0004	0.0004	Shutdown	0	2006	0.00	8760 hrs/yr	API O&G Factors	1.63
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.0004	0.0004								
FUG001	FUG001	Toluene	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.001	0.001	0.001	Shutdown	0	2006	0.00	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.001	0.001								
FUG001	FUG001	Ethylbenzene	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.0003	0.0003	0.0003	Shutdown	0	2006	0.00	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.0003	0.0003								
FUG001	FUG001	Xylene	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.001	0.001	0.001	Shutdown	0	2006	0.00	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	0.001	0.001								
FUG001	FUG001	VOC - Total	2005	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.63	1.63	1.63	Shutdown	0	2006	1.63	8760 hrs/yr	API O&G Factors	
			2006	8760 hrs/yr	API O&G Factors	API O&G Factors	API O&G Factors	1.63	1.63								
TANK1	TANK1	Ethane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.57	0.12	0.12	Shutdown	0	2006	0.13	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.57	0.12								
TANK1	TANK1	Propane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.59	0.33	0.33	Shutdown	0	2006	0.36	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.59	0.32								
TANK1	TANK1	i-Butane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.44	0.09	0.09	Shutdown	0	2006	0.10	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.44	0.09								
TANK1	TANK1	i-Butane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.24	0.26	0.25	Shutdown	0	2006	0.28	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	1.24	0.25								
TANK1	TANK1	2-Methylpentane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.11	0.02	0.02	Shutdown	0	2006	0.03	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.11	0.02								
TANK1	TANK1	n-Pentane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.45	0.09	0.09	Shutdown	0	2006	0.10	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.45	0.09								
TANK1	TANK1	3-Methylpentane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.06	0.01	0.01	Shutdown	0	2006	0.01	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.06	0.01								

Table B.1: Speciated VOC ERC

Emissions Rate Data

Attach documentation which demonstrates the basis for each value represented in this table.

EPN	FIN	Pollutant	Year	Calculation of ERCs													Creditable ERCs
				Baseline Activity			Allowable Emissions*		BE Baseline Emissions		Strategy Activity		SIP EI				
				Activity	BER	RER	ER	Tons	Tons	Avg	Activity	SER	Year	Tons	Activity	ER	
TANK1	TANK1	Hexane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.14	0.03	0.03	Shutdown	0	2006	0.03	8.98 bbl/day	Tanks 4.09D	1.26
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.14	0.03								
TANK1	TANK1	Benzene	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.002	0.002	Shutdown	0	2006	0.002	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.001								
TANK1	TANK1	Cyclohexane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.001	0.001	Shutdown	0	2006	0.001	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.001								
TANK1	TANK1	Heptane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.07	0.01	0.01	Shutdown	0	2006	0.02	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.07	0.01								
TANK1	TANK1	2,2,4-TMC5	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.03	0.01	0.01	Shutdown	0	2006	0.01	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.03	0.01								
TANK1	TANK1	Cyclopentane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.03	0.01	0.01	Shutdown	0	2006	0.01	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.03	0.01								
TANK1	TANK1	Toluene	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.003	0.003	Shutdown	0	2006	0.003	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.003								
TANK1	TANK1	2-ME Propane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.44	0.09	0.09	Shutdown	0	2006	0.10	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.44	0.09								
TANK1	TANK1	Octanes	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.04	0.01	0.01	Shutdown	0	2006	0.01	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.04	0.01								
TANK1	TANK1	Ethylbenzene	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.00	0.001	Shutdown	0	2006	0.001	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.01	0.00								
TANK1	TANK1	Xylene	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.04	0.01	0.01	Shutdown	0	2006	0.01	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.04	0.01								
TANK1	TANK1	2-ME Butane	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.39	0.08	0.08	Shutdown	0	2006	0.09	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.39	0.08								
TANK1	TANK1	Other	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.93	0.19	0.19	Shutdown	0	2006	0.21	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	0.93	0.19								
TANK1	TANK1	VOC - Total	2005	9.4 bbls/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	6.17	1.28	1.26	Shutdown	0	2006	1.41	8.98 bbl/day	Tanks 4.09D	
			2006	8.98 bbl/day	Tanks 4.09D	Tanks 4.09D	Tanks 4.09D	6.17	1.24								

Table B.1: Speciated VOC ERC

Emissions Rate Data

Attach documentation which demonstrates the basis for each value represented in this table.

EPN	FIN	Pollutant	Year	Calculation of ERCs													Creditable ERCs
				Baseline Activity			Allowable Emissions*		BE Baseline Emissions		Strategy Activity		SIP EI				
				Activity	BER	RER	ER	Tons	Tons	Avg	Activity	SER	Year	Tons	Activity	ER	
LOAD1	LOAD1	Ethane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.04	0.02	0.018	Shutdown	0	2006	0.04	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.04	0.02								
LOAD1	LOAD1	Propane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.10	0.05	0.049	Shutdown	0	2006	0.10	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.10	0.05								
LOAD1	LOAD1	i-Butane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01	0.014	Shutdown	0	2006	0.03	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01								
LOAD1	LOAD1	i-Butane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.08	0.04	0.038	Shutdown	0	2006	0.08	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.08	0.04								
LOAD1	LOAD1	2-Methylpentane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.007	0.004	0.003	Shutdown	0	2006	0.01	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.007	0.003								
LOAD1	LOAD1	n-Pentane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01	0.014	Shutdown	0	2006	0.03	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01								
LOAD1	LOAD1	3-Methylpentane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.004	0.002	0.002	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.004	0.002								
LOAD1	LOAD1	Hexane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.009	0.004	0.004	Shutdown	0	2006	0.01	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.009	0.004								
LOAD1	LOAD1	Benzene	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.0005	0.0002	0.000	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.0005	0.0002								
LOAD1	LOAD1	Cyclohexane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.0004	0.0002	0.000	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.0004	0.0002								
LOAD1	LOAD1	Heptane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.004	0.002	0.002	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	0.19
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.004	0.002								
LOAD1	LOAD1	2,2,4-TMC5	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001	0.001	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001								
LOAD1	LOAD1	Cyclopentane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001	0.001	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001								
LOAD1	LOAD1	Toluene	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.0009	0.0005	0.000	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.0009	0.0004								
LOAD1	LOAD1	2-ME Propane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01	0.014	Shutdown	0	2006	0.03	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.03	0.01								
LOAD1	LOAD1	Octanes	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.003	0.00	0.001	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.003	0.001								

Table B.1: Speciated VOC ERC

Emissions Rate Data

Attach documentation which demonstrates the basis for each value represented in this table.

EPN	FIN	Pollutant	Year	Calculation of ERCs													Creditable ERCs
				Baseline Activity			Allowable Emissions*		BE Baseline Emissions		Strategy Activity		SIP EI				
				Activity	BER	RER	ER	Tons	Tons	Avg	Activity	SER	Year	Tons	Activity	ER	
LOAD1	LOAD1	Ethylbenzene	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.0004	0.0002	0.000	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.0004	0.0002								
LOAD1	LOAD1	Xylene	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001	0.001	Shutdown	0	2006	0.00	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.002	0.001								
LOAD1	LOAD1	2-ME Butane	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.02	0.01	0.012	Shutdown	0	2006	0.02	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.02	0.01								
LOAD1	LOAD1	Other	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.06	0.03	0.029	Shutdown	0	2006	0.06	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.06	0.03								
LOAD1	LOAD1	Condensate	2005	3389 bbl/yr	AP-42	AP-42	AP-42	0.40	0.20	0.191	Shutdown	0	2006	0.40	3221 bbl/yr	AP-42	
			2006	3221 bbl/yr	AP-42	AP-42	AP-42	0.40	0.18								

Notes:

(1) Allowable Emissions were obtained from the Poole Tank Battery Permit-by-Rule Registration No. 50648.

(2) Speciated VOC Allowable Emissions are based on Table 1(a) from Permit By Registration No. 50648.

APPENDIX C
SAMPLE CALCULATIONS

Appendix C contains sample calculations following approved emission calculation protocols.

Hilcorp Energy Company
Poole Tank Battery
Site-Wide Fugitve Emission Calculations

Year: 2005 & 2006
Year Type: Baseline Year 1 & Baseline Year 2
EPN: EPN6
FIN: FUG001
Equipment Description: Site-Wide Fugitives
Pollutants: VOC
Calculation Basis: API O&G Factors

Emission Calculation Equation: E = C x EF X CE x % VOC

where:

E = Emissions (tons/year)
C = Fugitive Component Count
EF = Emission Factor (lb/hr/component)
CF = Percent Control Efficiency
VOC = Percent VOC of Vapors

Table C.1 2005 & 2006 Site-Wide Fugitive Emission Calculations

Component	Count	Emission Factors	Control Efficiency	VOC	VOC Annual Emissions
		(lb/hr/component)	(%)	(%)	(tons/year)
Valves					
Gas/Vapor	25	0.00992	0	29.20%	0.3172
Light Liquid	35	0.0055	0	100.00%	0.8432
Pumps					
Gas/Vapor	3	0.00529	0	29.20%	0.0203
Flanges					
Gas/Vapor	20	0.00086	0	29.20%	0.0220
Light Liquid	30	0.000243	0	100.00%	0.0319
Other					
Gas/Vapor	30	0.0194	0	29.20%	0.7444
Light Liquid	40	0.0000683	0	100.00%	0.0120
Sampling Connectors					
Gas/Vapor	25	0.00044	0	29.20%	0.0141
Light Liquid	35	0.000463	0	100.00%	0.0710
Totals					**2.005**

Notes:

(1) Emission factors are from the EPA document EPA-453/R-95-017; November, 1995; pp. 2-15.
(2) Light oil is defined as having API gravity greater than or equal to 20° API.
(3) There are no control efficiencies in place for this facility.

Sample Calculations:

Annual Emissions for Valves in Gas/Vapor Service (tons/year)
= [((25 # Gas/Vapor Valves) x (0.00992 lb/hr/comp) x (29.2% VOC) x (8760 hours/year)) / (2000 lbs/ton)] x (1 - 0) =

Hilcorp Energy Company
Poole Tank Battery
Truckloading Emission Calculations

Year: 2005
Year Type: Baseline Year 1
EPN: LOAD1
FIN: LOAD1
Equipment Description: Truckloading
Pollutants: VOC
Calculation Basis: AP-42

Emission Calculation Equation: $E = 12.46 \times VOC \times (S \times P \times M)/T$

where:

E = Emissions (lb/1000 gal)
VOC = Percent VOC of Vapors
S = Saturation Factor
P = True Vapor Pressure of Liquid Loaded (psia)
M = Molecular Weight of Vapors (lb/lb-mol)
T = Temperature of Bulk Liquid (R)

Table C.2.1: 2005 Truck Loading Emission Calculations

Year	Pollutant	% VOC	EPA S Factor	RVP	A	B	Mol. Wt of Vapors	Month	Tax = Daily Maximum Ambient Temperature	Tan = Daily Minimum Ambient Temperature	Taa = Daily Average Ambient Temperature	T of Liquid	Disposition Volume	True VP of Liquid	VOC Emissions	
				(psia)			(lb/lb-mol)		(R)	(R)	(R)	(R)	(bbl/month)	(psia)	(lb/1000 gal)	(tons/month)
Baseline Year 1 (2005)	VOC	90.72%	0.6	5.00	11.263	5303.923	50.00	January	534.03	522.39	528	531.3	185	3.60	2.53	0.009
								February	537.76	523.76	531	533.8	188	3.77	2.64	0.009
								March	543.38	526.9	535	538.2	564	4.09	2.84	0.031
								April	549.03	530.65	540	542.9	193	4.46	3.07	0.011
								May	554.46	533.78	544	547.2	368	4.81	3.29	0.023
								June	558.19	536.23	547	550.3	192	5.08	3.45	0.013
								July	557.52	537.03	547	550.4	196	5.08	3.45	0.013
								August	556.56	536.97	547	549.8	566	5.04	3.43	0.037
								September	553.01	535.2	544	547.2	0	4.81	3.28	0.000
								October	547.83	531.83	540	542.9	556	4.45	3.07	0.032
								November	540.46	527.68	534	537.2	189	4.01	2.79	0.010
								December	535.16	524.02	530	532.7	192	3.69	2.59	0.009
															Total (tons/year):	0.20

Notes:

(1) The calculation methodology and emission factors are from EPA AP-42 Volume 1, Fifth Edition - January 1995, Table 5.2-1, Saturation (S) Factors for Calculating Petroleum Liquid Loading Loses.
(2) Percent VOC of Stock Tank Gas was obtained from the Tank Vapor Analysis.
(3) RVP was obtained from the calculation methodology in Permit No. 50648.
(4) Molecular Weight of Vapors was obtained from the PBR No. 50648.
(5) Bulk Temperatures of the Liquid were obtained from EPA Tanks 4.0.9d Galveston, Texas defaults.
(6) The Disposition Volume was obtained from Texas Railroad Commission records.

Hilcorp Energy Company
Poole Tank Battery
Truckloading Emission Calculations

Year: 2006
Year Type: Baseline Year 2
EPN: LOAD1
FIN: LOAD1
Equipment Description: Truckloading
Pollutants: VOC
Calculation Basis: AP-42

Emission Calculation Equation: $E = 12.46 \times VOC \times (S \times P \times M)/T$

where:

E = Emissions (lb/1000 gal)
VOC = Percent VOC of Vapors
S = Saturation Factor
P = True Vapor Pressure of Liquid Loaded (psia)
M = Molecular Weight of Vapors (lb/lb-mol)
T = Temperature of Bulk Liquid (R)

Table C.2.2: 2006 Truck Loading Emission Calculations

Year	Pollutant	% VOC	EPA S Factor	RVP	A	B	Mol. Wt of Vapors	Month	Tax = Daily Maximum Ambient Temperature	Tan = Daily Minimum Ambient Temperature	Taa = Daily Average Ambient Temperature	T of Liquid	Disposition Volume	True VP of Liquid	VOC Emissions	
				(psia)			(lb/lb-mol)		(R)	(R)	(R)	(R)	(bbl/month)	(psia)	(lb/1000 gal)	(tons/month)
Baseline Year 2 (2006)	VOC	90.72%	0.6	5.00	11.26335	5303.923	50.00	January	534.03	522.39	528	531.3	353	3.60	2.53	0.017
								February	537.76	523.76	531	533.8	192	3.77	2.64	0.010
								March	543.38	526.9	535	538.2	359	4.09	2.84	0.019
								April	549.03	530.65	540	542.9	179	4.46	3.07	0.010
								May	554.46	533.78	544	547.2	328	4.81	3.29	0.021
								June	558.19	536.23	547	550.3	178	5.08	3.45	0.012
								July	557.52	537.03	547	550.4	0	5.08	3.45	0.000
								August	556.56	536.97	547	549.8	532	5.04	3.43	0.035
								September	553.01	535.2	544	547.2	187	4.81	3.28	0.012
								October	547.83	531.83	540	542.9	363	4.45	3.07	0.021
								November	540.46	527.68	534	537.2	358	4.01	2.79	0.019
								December	535.16	524.02	530	532.7	192	3.69	2.59	0.009
															Total (tons/year):	**0.18**

Notes:

(1) The calculation methodology and emission factors are from EPA AP-42 Volume 1, Fifth Edition - January 1995, Table 5.2-1, Saturation (S) Factors for Calculating Petroleum Liquid Loading Loses.
(2) Percent VOC of Stock Tank Gas was obtained from the Tank Vapor Analysis.
(3) RVP was obtained from the calculation methodology in Permit No. 50648.
(4) Molecular Weight of Vapors was obtained from the PBR No. 50648.
(5) Bulk Temperatures of the Liquid were obtained from EPA Tanks 4.0.9d Galveston, Texas defaults.
(6) The Disposition Volume was obtained from Texas Railroad Commission records.

Hilcorp Energy Company
Poole Tank Battery
Storage Tank Emission Calculations

Year: 2005
Year Type: Baseline Year 1
EPN: TANK1
FIN: TANK1
Equipment Description: 1 - 500 bbl Crude Oil Storage Tanks
Pollutants: VOC
Calculation Basis: Tanks 4.09d & Flash Emission Calculations (Vasquez-Beggs Equation), per tank

Table C.3.1 2005 TANK1 Inputs

INPUTS		
API Gravity (°API)	56	**API**
Separator Pressure (psig)	15.00	**P**
Separator Temperature (°F)	120	**T_1**
Separator Gas Gravity	0.890	**SG_1**
Oil Production Rate (bbl/day)	9.40	**Q**
Stock Tank Gas Molecular Weight (lb/lb-mol)	50	**MW**
Percent VOC of Stock Tank Gas	35.29%	**Percent VOC**
Atmospheric Pressure (psia)	14.70	**P_{atm}**

Constants	API Gravity < 30	API Gravity ≥ 30
C_1 =	0.0362	0.0178
C_2 =	1.0937	1.1870
C_3 =	25.7240	23.9310

Poole Tank Battery	
C_1 =	0.0178
C_2 =	1.1870
C_3 =	23.9310

Notes:

(1) API Gravity of the Liquid Hydrocarbon was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(2) Separator Pressure was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(3) Separator Temperature was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(4) Separator Gas Gravity of the inlet gas was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(5) Oil Production rate was obtained from Texas Railroad Commission records.
(6) Stock Tank Gas Molecular Weight was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(7) Percent VOC of Stock Tank Gas was obtained from the Tank Vapor Gas Analysis.
(8) Atmospheric Pressure was obtained from EPA Tanks 4.09d Galveston, Texas default.

Vasquez-Beggs Equation

$$R_s = (C_1 * SG_s * P_1^{C_2}) \exp((C_3 * API) / (T_1 + 460))$$

Where:

R_s = Gas/Oil Ratio of Liquid Hydrocarbon (scf/bbl)
P_1 = Pressure at Initial Conditions (psia)
API = API Gravity of Liquid Hydrocarbon (°API)
T_1 = Temperature at Initial Conditions (°F)
SG_s = Dissolved Gas Gravity at 100 psig
= $SG_1 [1.0+0.00005912*API*T_1*LOG(P_1/100+P_{atm})]$
SG_1 = Gas Gravity at Initial Conditions

SG_s = 0.69

R_s = 6.94 scf/bbl

THC = R_s * Q * MW * 1/385 scf/lb-mole * 365 days/year * 1 ton/2000 lb

Where:

THC = Total Hydrocarbon Emissions (tons/year)
R_s = Gas/Oil Ratio of Liquid Hydrocarbon (scf/bbl)
Q = Oil Production Rate (bbl/day)
MW = Stock Tank Gas Molecular Weight (lb/lb-mol)
385 = Volume of 1 lb-mol of gas at 14.7 psia and 68 F (WAQS&R Standard Conditions)

THC = 1.55 tons/year per tank

VOC = THC * Percent VOC

Where:

VOC = Total VOC Emissions (tons/year)
THC = Total Hydrocarbon Emissions (tons/year)
Percent VOC = Percent VOC of Stock Tank Gas

VOC = 0.55 tons/year per tank

Table C.3.2 2005 TANK1 Emission Calculations

Year	Pollutant	FIN	Working Losses	Breathing Losses	Flash Losses	Destruction Efficiency	VOC Annual Emissions
			(lb/yr)	(lb/yr)	(lb/yr)	(%)	(tons/year)
Baseline Year 1 (2005)	VOC	TANK1	502.67	957.72	1,091.74	0%	1.28
						Total:	***1.28***

Notes:

(1) The correlated flashing loss was calculated using the Vasquez-Beggs Correlation Equation.

(2) Breathing and working losses were obtained from Tanks 4.09d, actual reports are included in this application.

Sample Calculation:

Annual VOC Emissions for Baseline Year 1 (tons/year)

= ((502.67 lb/yr + 957.72 lb/yr + 1091.74 lb/yr) / (2000 lb/ton)) x (1 - 0 %) = 1.28 tons VOC/year

Hilcorp Energy Company
Poole Tank Battery
Storage Tank Emission Calculations

Year: 2006
Year Type: Baseline Year 2
EPN: TANK1
FIN: TANK1
Equipment Description: 1 - 500 bbl Crude Oil Storage Tanks
Pollutants: VOC
Calculation Basis: Tanks 4.09d & Flash Emission Calculations (Vasquez-Beggs Equation), per tank

Table C.3.3: 2006 TANK1 Inputs

INPUTS		
API Gravity (°API)	56	API
Separator Pressure (psig)	15	P
Separator Temperature (°F)	120	T_i
Separator Gas Gravity	0.890	SG_i
Oil Production Rate (bbl/day)	8.98	Q
Stock Tank Gas Molecular Weight (lb/lb-mol)	50	MW
Percent VOC of Stock Tank Gas	35.29%	Percent VOC
Atmospheric Pressure (psia)	14.70	P_{atm}

Constants	API Gravity < 30	API Gravity ≥ 30
C_1 =	0.0362	0.0178
C_2 =	1.0937	1.1870
C_3 =	25.7240	23.9310

Poole Tank Battery	
C_1 =	0.0178
C_2 =	1.1870
C_3 =	23.9310

Notes:

(1) API Gravity of the Liquid Hydrocarbon was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(2) Separator Pressure was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(3) Separator Temperature was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(4) Separator Gas Gravity of the inlet gas was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(5) Oil Production rate was obtained from Texas Railroad Commission records.
(6) Stock Tank Gas Molecular Weight was obtained from the Permit-by-Rule Registration No. 50648 - April 2002.
(7) Percent VOC of Stock Tank Gas was obtained from the Tank Vapor Gas Analysis.
(8) Atmospheric Pressure was obtained from EPA Tanks 4.09d Galveston, Texas default.

Vasquez-Beggs Equation

$$R_s = (C_1 * SG_s * P_i^{C_2}) \exp((C_3 * API) / (T_i + 460))$$

Where:

R_s = Gas/Oil Ratio of Liquid Hydrocarbon (scf/bbl)
P_i = Pressure at Initial Conditions (psia)
API = API Gravity of Liquid Hydrocarbon (°API)
T_i = Temperature at Initial Conditions (°F)
SG_s = Dissolved Gas Gravity at 100 psig
= $SG_i [1.0+0.00005912*API*T_i*LOG(P_i/100+P_{atm})]$
SG_i = Gas Gravity at Initial Conditions

SG_s = 0.69

R_s = 6.94 scf/bbl

THC = R_s * Q * MW * 1/385 scf/lb-mole * 365 days/year * 1 ton/2000 lb

Where:

THC = Total Hydrocarbon Emissions (tons/year)
R_s = Gas/Oil Ratio of Liquid Hydrocarbon (scf/bbl)
Q = Oil Production Rate (bbl/day)
MW = Stock Tank Gas Molecular Weight (lb/lb-mol)
385 = Volume of 1 lb-mol of gas at 14.7 psia and 68 F (WAQS&R Standard Conditions)

THC = 1.48 tons/year per tank

VOC = THC * Percent VOC

Where:

VOC = Total VOC Emissions (tons/year)
THC = Total Hydrocarbon Emissions (tons/year)
Percent VOC = Percent VOC of Stock Tank Gas

VOC = 0.52 tons/year per tank

Table C.3.4 2006 TANK1 Emission Calculations

Year	Pollutant	FIN	Working Losses	Breathing Losses	Flash Losses	Destruction Efficiency	VOC Annual Emissions
			(lb/yr)	(lb/yr)	(lb/yr)	(%)	(tons/year)
Baseline Year 2 (2006)	VOC	TANK1	479.82	957.72	1,042.11	0%	1.24
						Total:	***1.24***

Notes:

(1) The correlated flashing loss was calculated using the Vasquez-Beggs Correlation Equation.

(2) Breathing and working losses were obtained from Tanks 4.09d, actual reports are included in this application.

Sample Calculation:

Annual VOC Emissions for Baseline Year 2 (tons/year)

= ((479.82 lb/yr + 957.72 lb/yr − 1042.11 lb/yr) / (2000 lb/ton)) x (1 - 0 %) = 1.24 tons VOC/year

Table C.3.5:

2005 Tanks 4.09d Emission Report

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Poole TANK1 (2005)
City:	Baytown
State:	Texas
Company:	Hilcorp Energy Company
Type of Tank:	Vertical Fixed Roof Tank
Description:	1 - 500 bbl oil storage tank

Tank Dimensions

Shell Height (ft):	24.00
Diameter (ft):	12.00
Liquid Height (ft) :	23.00
Avg. Liquid Height (ft):	12.00
Volume (gallons):	20,304.71
Turnovers:	6.78
Net Throughput(gal/yr):	144,144.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Aluminum/Diffuse
Shell Condition	Good
Roof Color/Shade:	Aluminum/Diffuse
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Poole TANK1 (2005) - Vertical Fixed Roof Tank
Baytown, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude oil (RVP 5)	All	76.03	66.29	85.77	70.51	3.9057	3.2515	4.6609	50.0000			207.00	Option 4: RVP=5

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Poole TANK1 (2005) - Vertical Fixed Roof Tank
Baytown, Texas

Annual Emission Calcaulations	
Standing Losses (lb):	957.7208
Vapor Space Volume (cu ft):	1,371.3052
Vapor Density (lb/cu ft):	0.0340
Vapor Space Expansion Factor:	0.1977
Vented Vapor Saturation Factor:	0.2849
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,371.3052
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	12.1250
Tank Shell Height (ft):	24.0000
Average Liquid Height (ft):	12.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0340
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Daily Avg. Liquid Surface Temp. (deg. R):	535.7006
Daily Average Ambient Temp. (deg. F):	67.9125
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	530.1825
Tank Paint Solar Absorptance (Shell):	0.6000
Tank Paint Solar Absorptance (Roof):	0.6000
Daily Total Solar Insulation Factor (Btu/sqft day):	1,405.5061
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1977
Daily Vapor Temperature Range (deg. R):	38.9545
Daily Vapor Pressure Range (psia):	1.4094
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.2515
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.6609
Daily Avg. Liquid Surface Temp. (deg R):	535.7006
Daily Min. Liquid Surface Temp. (deg R):	525.9620
Daily Max. Liquid Surface Temp. (deg R):	545.4392
Daily Ambient Temp. Range (deg. R):	21.3083
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.2849
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	3.9057
Vapor Space Outage (ft):	12.1250

Working Losses (lb):	502.6658
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Annual Net Throughput (gal/yr.):	144,144.0000
Annual Turnovers:	6.7764
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	20,304.7110
Maximum Liquid Height (ft):	23.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	0.7500
Total Losses (lb):	1,460.3866

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Poole TANK1 (2005) - Vertical Fixed Roof Tank
Baytown, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude oil (RVP 5)	502.67	957.72	1,460.39

Table C.3.6:

2006 Tanks 4.09d Emission Report

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Poole TANK1 (2006)
City:	Baytown
State:	Texas
Company:	Hilcorp Energy Company
Type of Tank:	Vertical Fixed Roof Tank
Description:	1 - 500 bbl oil storage tank

Tank Dimensions

Shell Height (ft):	24.00
Diameter (ft):	12.00
Liquid Height (ft) :	23.00
Avg. Liquid Height (ft):	12.00
Volume (gallons):	20,304.71
Turnovers:	6.78
Net Throughput(gal/yr):	137,592.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Aluminum/Diffuse
Shell Condition	Good
Roof Color/Shade:	Aluminum/Diffuse
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Poole TANK1 (2006) - Vertical Fixed Roof Tank
Baytown, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude oil (RVP 5)	All	76.03	66.29	85.77	70.51	3.9057	3.2515	4.6609	50.0000			207.00	Option 4: RVP=5

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Poole TANK1 (2006) - Vertical Fixed Roof Tank
Baytown, Texas

Annual Emission Calcaulations	
Standing Losses (lb):	957.7208
Vapor Space Volume (cu ft):	1,371.3052
Vapor Density (lb/cu ft):	0.0340
Vapor Space Expansion Factor:	0.1977
Vented Vapor Saturation Factor:	0.2849
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,371.3052
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	12.1250
Tank Shell Height (ft):	24.0000
Average Liquid Height (ft):	12.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0340
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Daily Avg. Liquid Surface Temp. (deg. R):	535.7006
Daily Average Ambient Temp. (deg. F):	67.9125
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	530.1825
Tank Paint Solar Absorptance (Shell):	0.6000
Tank Paint Solar Absorptance (Roof):	0.6000
Daily Total Solar Insulation Factor (Btu/sqft day):	1,405.5061
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1977
Daily Vapor Temperature Range (deg. R):	38.9545
Daily Vapor Pressure Range (psia):	1.4094
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.2515
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.6609
Daily Avg. Liquid Surface Temp. (deg R):	535.7006
Daily Min. Liquid Surface Temp. (deg R):	525.9620
Daily Max. Liquid Surface Temp. (deg R):	545.4392
Daily Ambient Temp. Range (deg. R):	21.3083
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.2849
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	3.9057
Vapor Space Outage (ft):	12.1250
Working Losses (lb):	479.8174
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9057
Annual Net Throughput (gal/yr.):	137,592.0000
Annual Turnovers:	6.7764
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	20,304.7110
Maximum Liquid Height (ft):	23.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	0.7500
Total Losses (lb):	1,437.5382

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Poole TANK1 (2006) - Vertical Fixed Roof Tank
Baytown, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude oil (RVP 5)	479.82	957.72	1,437.54

Table C.4.1:

Fugitive Gas Analysis

Fugitive Emission VOC Speciation Worksheet

Com pound	Weight Fraction	Gas Weight (lb/hr)	(lb/hr)	tons/year
METHANE	0.61300	1.27542825	0.78184	3.42459
NMHC	0.38700	1.27542825	0.49359	2.16202
VOC	0.29200	1.27542825	0.37243	1.63129
C6+	0.02430	1.27542825	0.03099	0.13575
BENZENE	0.00027	1.27542825	0.00034	0.00151
TOLUENE	0.00075	1.27542825	0.00096	0.00419
ETHYL BENZENE	0.00017	1.27542825	0.00022	0.00095
XYLENE	0.00036	1.27542825	0.00046	0.00201

TOTALS:	10

Total Gas Weight: 1.27542825

Table C.4.2:

Loading Gas Analysis

Loading VOC Emission Speciation Calculation Worksheet

Compound	Weight %	Weight of Gas (lb/hr)	Speciated lb/hr	Speciated tons/year
NITROGEN		33.897	0	0
CARBON DIOXIDE		33.897	0	0
HYDROGEN SULFIDE		33.897	0	0
METHANE		33.897	0	0
ETHANE	0.0928	33.897	3.145629	0.038272
PROPANE	0.2584	33.897	8.75895	0.106567
I-BUTANE	0.0714	33.897	2.420236	0.029446
n-BUTANE	0.2003	33.897	6.789542	0.082606
2 METHYL PENTANE	0.018	33.897	0.610144	0.007423
N-PENTANE	0.073	33.897	2.474471	0.030106
3 METHYL PENTANE	0.0103	33.897	0.349138	0.004248
n-HEXANE	0.022	33.897	0.745731	0.009073
BENZENE	0.0012	33.897	0.040676	0.000495
CYCLOHEXANE	0.0009	33.897	0.030507	0.000371
HEPTANE	0.0112	33.897	0.379645	0.004619
2,2,4-TMC5	0.0056	33.897	0.189822	0.00231
CYCLOPENTANE	0.0051	33.897	0.172874	0.002103
TOLUENE	0.0023	33.897	0.077963	0.000949
2 ME PROPANE	0.0714	33.897	2.420236	0.029446
OCTANES	0.007	33.897	0.237278	0.002887
ETHYL BENZENE	0.0009	33.897	0.030507	0.000371
XYLENE	0.0057	33.897	0.193212	0.002351
2 ME BUTANE	0.0629	33.897	2.132113	0.025941
OTHER	0.1501	33.897	5.087919	0.061903

TOTALS:	1.0705

* Emission Speciation based on EPA AP-42 Profile No. 1208 (for crude oil gathering tanks)

Total Methane Emissions	0	lb/hr	0	tpy
Total Ethane Emissions	3.1456289	lb/hr	0.038272	tpy
Total NM/NE Emissions	33.140964	lb/hr	0.403215	tpy

Table C.4.3:

Tank Gas Analysis

Tank VOC Emission Speciation Calculation Worksheet

Compound	Weight %	Weight of Gas (lb/hr)	Speciated lb/hr	Speciated tons/year
NITROGEN		1.441	0	0
CARBON DIOXIDE		1.441	0	0
HYDROGEN SULFIDE		1.441	0	0
METHANE		1.441	0	0
ETHANE	0.0928	1.441	0.133725	0.585739
PROPANE	0.2584	1.441	0.372354	1.630979
I-BUTANE	0.0714	1.441	0.102887	0.450665
N-BUTANE	0.2003	1.441	0.288632	1.264261
2M ETHYLPENTANE	0.018	1.441	0.025938	0.113613
N-PENTANE	0.073	1.441	0.105193	0.460764
3 METHYL PENTANE	0.0103	1.441	0.014842	0.065012
HEXANE	0.022	1.441	0.031702	0.13886
BENZENE	0.0012	1.441	0.001729	0.007574
CYCLOHEXANE	0.0009	1.441	0.001297	0.005681
HEPTANE	0.0112	1.441	0.016139	0.070693
2,2,4-TMC5	0.0056	1.441	0.00807	0.035346
CYCLOPENTANE	0.0051	1.441	0.007349	0.03219
TOLUENE	0.0023	1.441	0.003314	0.014517
2 ME PROPANE	0.0714	1.441	0.102887	0.450665
OCTANES	0.007	1.441	0.010087	0.044183
ETHYLBENZENE	0.0009	1.441	0.001297	0.005681
XYLENE	0.0057	1.441	0.008214	0.035977
2ME BUTANE	0.0629	1.441	0.090639	0.397015
OTHER	0.1501	1.441	0.216294	0.947407

TOTALS:	1.0705

* Emission Speciation based on EPA AP-42 Profile No. 1208 (for crude oil gathering tanks)

Total Methane Emissions	0	lb/hr	0	tpy
Total Ethane Emissions	0.1337248	lb/hr	0.585739	tpy
Total NM/NE Emissions	1.4088657	lb/hr	6.171085	tpy

APPENDIX D
PBR 50648 DOCUMENTS AND CORRESPONDENCE

Appendix D contains documents downloaded from TCEQ's Novell Groupwise Web Publisher regarding PBR 50648.

- PBR 50648 Technical Review Document dated March 18, 2002
- PBR 50648 TCEQ Response Letter dated April 23, 2002

AIR PERMIT BY RULE REVIEW

Registration No.50648 Record No. 87628 Account. No. LH-0271-JDate Rec'd 03/18/2002

Company Hillcorp Energy Company County Liberty

Contact Name Mr. John Connolly Tel. .(225) 383-8656

General Rules Check:

* Project Emissions Acceptable? Yes _X_No _

* PSD/Non-attainment Netting Req'd? Yes __No _x_Does the site net Yes _ No _

* Sitewide PBR Emissions Acceptable? Yes X_No ____

* Limits on use of PBRs at this site? Yes __No _X_ Are they met? Yes __No _

* NSPS/NESHAPS/MACT Standards Apply? Yes __No _X_Are they met? Yes __No _

* Compliance with all other applicable rules and regulations? Yes _X_No _

Overall Site / Unit Description

This is an oil and gas facility. Facility is described as the Redmond Creek Field - Poole Tank Battery. It is located in Baytown. Site description is presented as: *"From Baytown, Texas, travel east on I- 10 crossing over Trinity River Bridge. Gurn left on to FM 563 and travel to FM 770. Turn right on FM 770 and follow to Bennie Rusk Road (FM 1180). Continue on FM 1180 crossing over CR 118. Stay to the left and follow lease road to location of site."*

Project Sources / Facilities, PBRs Claimed, Applicable Standards, Emissions and Control Summary:

Applicant is requesting authorization for its oil and gas operations under Permits by Rule 352 and 512

Emissions sources at this site are described as a 145 horsepower Caterpillar compressor engine, 25 horsepower saltwater pump engine, 550 bbl Oil tank, loading, and fugitives at the Poole Tank Battery facility in the Redmond Creek Field.

Hydrocarbons are produced from natural reservoirs through deep wells. The oil, gas, and water are transported to the facility via flow lines, where they are separated. While the oil and water are stored in fixed roof tanks prior to transport by a tank truck, the gas is compressed and metered prior to sales to a pipe line.

Emissions from the 145 hp Caterpillar engine is presented by the applicant as

17.487 tons per year (tpy) of nitrogen oxides, 17.487 tpy of carbon monoxide, 0.003 ton per year of sulfur dioxide and 3.218 tpy of volatile organic compounds. Fugitive emissions are estimated as 1.631 tons per year of volatile organic compounds. Emissions from the stock tank, estimated using Tank 4.0, are estimated as 6.171 tpy of VOCs. The Saltwater pump engine emissions adds another 0.074 tpy of CO, 0.086 tpy of NOx and 0.001 tpy of VOCs. Loading accounts for additional 0.403 tpy of VOC. This translates to an estimated site wide emissions in the amount of 17.573 tons per year of nitrogen oxides, 17.561 tons per year of carbon monoxide and 11.424 tons per year of volatile organic compounds. All engine emissions estimation were based on manufacturer's data.

Engine is powered by sweet natural gas. Gas analysis reveals that the percent by weight of sulphur compound is zero.

NAAQs NO2 requirements is based on distance. Applicant represents that the 145 hp Caterpillar engine is at least 100 feet from the nearest offsite receptor. Based on distance of 100 feet, the theoretical emission limit for nitrogen oxide is 31.25 tpy (0.3125 x 100). Evidently, the actual emissions of 17.56 tpy is less than the allowable limit of 31.25 tpy.

A comparison of the emissions estimates discerned from using manufactures' data with the emissions values generated from AP -42 factors reveals that there are no emissions reductions associated with this project.

Company appears to meet the requirements of the permit by rule requested. It is my recommendation that the applicant's request be granted.

Does this registration require a 30 TAC Chapter 60 Compliance History review? Yes_____ No _X_

If yes, should the PBR claim be denied on the basis of the compliance history review results? Yes __ No __

Site Review required? Yes __No _x_ Date Approved/Disapproved:

Public Notice Required? Yes __No _x_ Date Completed Satisfactorily:

Emissions Savings / Reductions due to rule compliance:

NO_x tpy CO tpy VOC tpy PM SO_2

Are all general and specific applicable rule conditions satisfied? Yes _X_ No _

Emmanuel Ndame 4/18/2002 Emmanuel Ukandu 4/18/2002

Reviewer / Date Team Leader/Section Manager/Backup Date

566fcd90.ntv

Mr. Michael Schoch

Environmental Regulatory and

Safety Manager

Hilcorp Energy Company

1200 Smith Street

Suite 1800

Houston, Texas 77002

Re: Permit by Rule

Registration Number: 50648

Redmond Creek Field - Poole Tank Battery

Baytown, Liberty County

Account Number: LH-0271-J

Dear Mr. Schoch:

This is in response to your permit by rule, Form PI-7, concerning your request to register your oil and gas facility near Baytown, Liberty County. We understand that the emission sources at this facility include: a 145-horsepower Caterpillar compressor engine, a 25-horsepower saltwater pump engine, a 550 bbl oil tank, loading, and fugitives. We also understand that your site wide emissions are 17.573 tons per year (tpy) of nitrogen oxides, 17.561 tpy of carbon monoxide, and 11.424 tpy of volatile organic compounds.

After an evaluation of the information which you have furnished, we have determined that your proposed operation is authorized under Title 30 Texas Administrative Code (30 TAC) Sections 106.352 and 106.512 if constructed and operated as described in your registration request. These permits by rule were authorized by the Texas Natural Resource Conservation Commission (TNRCC) pursuant to 30 TAC Chapter 106.

Copies of the permits by rule in effect at the time of this registration are enclosed. You must construct, install, or modify facility in accordance with the version of the permits by rule in effect when construction, installation, or modification actually begins (see 30 TAC § 106.4[a][5]). After the completion of construction, installation, or modification, the facility shall be operated in compliance with all the applicable conditions of the claimed permits by rule and 30 TAC § 106.4.

Re: Permit by Rule Registration Number: 50648

You are reminded that regardless of whether a permit is required, this facility must be in compliance with all rules and regulations of the TNRCC and of the U.S. Environmental Protection Agency at all times. Please note that Title 40 Code of Federal Regulations Part 63 (40 CFR Part 63), Subpart HH, National Emission Standard of Hazardous Air Pollutants from Oil and Natural Gas Production Facilities, is now in effect. It is the responsibility of the owner or operator to ensure the applicability of 40 CFR Part 63, Subpart HH, is properly determined, both initially and whenever changes are made to a unit. The owner or operator may choose to complete and retain a PI-8 certification under 30 TAC § 106.6 demonstrating that the emissions levels at the unit are below applicability limits for 40 CFR Part 63, Subpart HH.

Your cooperation in this matter is appreciated. If you have any questions concerning these permits by rule, please call Mr. Emmanuel Ndame at (713) 767-3553 or write to the Texas Natural Resource Conservation Commission, Office of Permitting, Remediation and Registration, Air Permits Division (MC-162), P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

Dana Poppa Vermillion, P.E., Acting Manager

Permits by Rule/General Operating Permits

Air Permits Division

Texas Natural Resource Conservation Commission

DPV/ECN/bvg

Enclosures

cc: Mr. Arturo Blanco, Air Program Manager, Region 12 - Houston

Record Number: 87628

AIR PERMITS DIVISION MC-162

MR MICHAEL SCHOCH

ENV REGULATORY & SAFETY MGR

HILCORP ENERGY COMPANY

STE 1800

1200 SMITH ST

HOUSTON TX 77002

APPENDIX E
BACKUP DATA - RAILROAD COMMISSION OF TEXAS PRODUCTION LOGS FOR WELL

Appendix E contains the oil and gas production logs reported to the Texas RRC for the Poole Tank Battery for years 2005 and 2006.

- 2005 – Poole Tank Battery Oil and Gas Production Log
- 2006 – Poole Tank Battery Oil and Gas Production Log

ONLINE SYSTEM

Oil & Gas Production Data Query

Production Data FAQs PDQ Help

General Production Query **Specific Lease Query**

API # 29132158

Specific Lease Query Results

Query Path: Search Criteria > District 03, Lease: POOLE, V.

Date Range: Jan 2005 to Dec 2005 Submit

Related Links

O&G Directory

O&G Proration Schedule

Offshore County Map

View by: **Production and Total Disposition** Disposition Details County Production

Lease Name: POOLE, V., Lease No: 24346
District 03
Lease Production and Disposition
Jan 2005 - Dec 2005

Date	OIL (BBL)		Casinghead(MCF)		Operator Name	Operator No.	Field Name	Field No.
	Production	Disposition	Production	Disposition				
Jan 2005	342	185	813	813	HILCORP ENERGY COMPANY	386310	REDMOND CREEK (YEGUA)	75470490
Feb 2005	277	188	1,425	1,425				
Mar 2005	318	564	400	400				
Apr 2005	320	193	669	669				
May 2005	350	368	1,047	1,047				
Jun 2005	95	192	700	700				
Jul 2005	334	196	320	320				
Aug 2005	423	566	1,024	1,024				
Sep 2005	236	0	652	652				
Oct 2005	289	556	1,004	1,004				
Nov 2005	250	189	2,230	2,230				
Dec 2005	198	192	732	732				
Total	3,432	3,389	11,016	11,016				

ONLINE SYSTEM

Oil & Gas Production Data Query

Production Data FAQs PDQ Help

General Production Query **Specific Lease Query**

Specific Lease Query Results

Query Path: Search Criteria > District 03, Lease: POOLE, V.

Date Range: Jan 2006 to Dec 2006 Submit

Related Links

O&G Directory

O&G Proration Schedule

Offshore County Map

View by: **Production and Total Disposition** Disposition Details County Production

Lease Name: POOLE, V., Lease No: 24346
District 03
Lease Production and Disposition
Jan 2006 - Dec 2006

Date	OIL (BBL)		Casinghead(MCF)		Operator Name	Operator No.	Field Name	Field No.
	Production	Disposition	Production	Disposition				
Jan 2006	325	353	1,004	1,004	HILCORP ENERGY COMPANY	386310	REDMOND CREEK (YEGUA)	75470490
Feb 2006	217	192	193	193				
Mar 2006	285	359	740	740				
Apr 2006	327	179	228	228				
May 2006	199	328	923	923				
Jun 2006	164	178	460	460				
Jul 2006	286	0	2,625	2,625				
Aug 2006	273	532	2,570	2,570				
Sep 2006	314	187	3,254	3,254				
Oct 2006	286	363	2,944	2,944				
Nov 2006	367	358	2,068	2,068				
Dec 2006	233	192	2,055	2,055				
Total	3,276	3,221	19,064	19,064				

SAGE
ENVIRONMENTAL CONSULTING

HAND DELIVERY

December 29, 2015

Texas Commission on Environmental Quality
Air Permits Initial Review Team (MC-161)
Air Permit Division
P.O. Box 13087
Austin, Texas 78711-3087

Re: Poole Tank Battery PBR 50648 Voidance Request
Hilcorp Energy Company
TCEQ Account No.: LH0271J
RN: RN102711736 CN: CN600125991

To Whom It May Concern:

Sage Environmental Consulting, LP (Sage), on behalf of our client Hilcorp Energy Company. (Hilcorp) requests the voidance of PBR 50648 and all of the associated EPNs. Attached is the completed NSR Air Permit/Registration Void Request Worksheet.

If additional information is required, please feel free to contact me at (281) 610-0164 or kyle@sageenvironmental.com.

Sincerely,

Kyle Brzymialkiewicz
Client Guardian
Sage Environmental Consulting, LP

cc:

Certified Mail: 7014 0150 0001 4235 6948
Return Receipt Requested
TCEQ Regional Office
5425 Polk St., Ste. H
Houston, TX 77023-1452

Certified Mail: 7014 0150 0001 4235 6924
Return Receipt Requested
TCEQ EBT Program (MC-206)
P.O. Box 13087
Austin, Texas 78711-3087

Texas Commission on Environmental Quality
Air Permits Division
Air Permitting Authorization Void Request Form

Received
JAN 05 2016
Air Quality Division

I. Applicant Information		
Current Owner: Hilcorp Energy Company		
Company Contact Name: Matt Vicenik		Title: Environmental Manager
Company Contact Mailing Address: 1201 Louisiana St., Suite 1400		
City: Houston	State: TX	ZIP Code: 77002
Phone: 713-289-2951	Fax: 713-289-2750	
E-mail: mvicenik@hilcorp.com		
TCEQ Regulated Entity Number: RN102711736		
Effective Date of Voidance: December 22, 2015		

II. Air Authorizations To Void (*list each registration/permit number*)	
PBR 50648	

III. Reason For Void

☐ Consolidation ☐ Time Expired ☒ Plant Dismantled

☒ Other: Emissions Banking and Trading

IV. Authorization Signature

I, Matt Vicenik, certify that I am the responsible official for this application and that, based on information and belief formed after reasonable inquiry, the statements and information on this form are true, accurate, and complete. I further understand that any permits voided at my request will not be eligible for reactivation.

Signature:	Date: 12-22-15
Title: Environmental Manager	

SAGE
ENVIRONMENTAL CONSULTING

HAND DELIVERY

December 29, 2015

Texas Commission on Environmental Quality
Rule Registrations Section (MC-163)
Air Permit Division
P.O. Box 13087
Austin, Texas 78711-3087

Re: Application for Certification of Emission Limits
Poole Tank Battery
Hilcorp Energy Company
TCEQ Account No.: LH0271J
RN: RN102711736 CN: CN600125991

To Whom It May Concern:

Hilcorp Energy Company (Hilcorp) is submitting this application for certification of emission limits for the permanent shut down of oil and gas production equipment at the Poole Tank Battery (Poole) located in Liberty County, Texas. Poole operated under Permit-By-Rule (PBR) No. 50648 from April 23, 2002 to December 22, 2015.

Hilcorp has executed its permanent shutdown strategy by disconnecting and de-inventorying all production equipment at Poole on December 22, 2015. In addition to this application for certification of emission limits, Hilcorp is simultaneously requesting the Texas Commission on Environmental Quality (TCEQ) to permanently void PBR No. 50648.

If you have any questions or comments on this submittal, please contact Kyle Brzymialkiewicz at 281-610-0164 or kyle@sageenvironmental.com. Please provide notification of the approval of the certification of the emission limits to Kyle Brzymialkiewicz via email as soon as possible, as this action is associated with a pending Emission Reduction Credit Application currently in review with the Emissions Banking and Trading Group.

Sincerely,

Kyle Brzymialkiewicz
Client Guardian
Sage Environmental Consulting, LP

12727 FEATHERWOOD DR., SUITE 210 • HOUSTON, TX • 77034 • 281/484-6200 • FAX 281/484-6201

cc:

Certified Mail: 7012 2920 0000 6987 1613
Return Receipt Requested
TCEQ Regional Office
5425 Polk St., Ste. H
Houston, TX 77023-1452

Certified Mail: 7012 2920 0000 6987 1606
Return Receipt Requested
TCEQ EBT Program (MC-206)
P.O. Box 13087
Austin, Texas 78711-3087

Hilcorp Energy Company

Certification of Emission Limits Application

Poole Tank Battery

Liberty, Texas

December 2015

TABLE OF CONTENTS

SECTION 1
INTRODUCTION

Sage Environmental Consulting, LP (Sage), on behalf of our client Hilcorp Energy Company (Hilcorp), has prepared an application to certify the emission limits for the permanent shutdown of the following emission generating equipment at the Poole Tank Battery (Poole), FINs: FUG001, TANK1, and LOAD1, located within the Houston-Galveston-Brazoria (HGB) nonattainment area.

Sage is submitting the following information as required by TCEQ Form APD-CERT:

- List of Each Source
- Process Descriptions
- Summary of the Certified Emission Rates
- Form APD-CERT
- Supporting Documentation

SECTION 2
DESCRIPTION

General Notes

On December 22, 2015, Hilcorp (CN600125991) permanently ceased all oil and gas production activity located at Poole (RN102711736). The shutdown of Poole includes the permanent shutdown of one 500 bbl oil storage tank (TANK1), truck loading emissions (LOAD1), and the associated site-wide fugitive components (FUG001).

This APD-CERT certifies a federally enforceable zero emissions rate for the above listed equipment and is being submitted as a condition of an Emission Reduction Credit (ERC) application to the Texas Commission on Environmental Quality (TCEQ). Hilcorp is applying for the Volatile Organic Compound (VOC) ERCs generated from the permanent shutdown of this equipment at the site.

A letter voiding out the PBR registration for the site is being submitted in conjunction with this Form APD-CERT. Below is a list of the subject equipment and associated air emissions specific contaminants:

• FIN: FUG001	Site-Wide Fugitives	VOC
• FIN: TANK1	500 bbl Oil Storage Tank	VOC
• FIN: LOAD1	Truck-loading Emissions	VOC

Process Descriptions

Poole was a typical oil and gas production facility located in Liberty County designed to produce hydrocarbons from natural reservoirs through deep wells. The facility consisted of a compressor engine, saltwater pump engine, stock tank, loading, and fugitives. The oil, gas, and water were transported to the facility via flow lines, where they were separated. The oil and water were stored in the fixed roof tank prior to transport by a tank truck and the gas was metered prior to sales to a pipeline.

The facility has been owned and operated by Hilcorp. The facility was registered under in accordance with the conditions of the general rule, 30 TAC 106.4, 106.352, 106.512 and all applicable conditions of the exemption.

Below is the emission calculation methodology for the equipment in this facility.

Fugitives (FIN: FUGAREA)

Fugitive emissions were calculated based on actual fugitive equipment counts and TCEQ "Equipment Leak Fugitives" guidance document, as taken from the section "Emission Factors for Oil and Gas Production Operations".

Storage Tanks (FIN: TANK1)

The working losses and the breathing losses for the oil storage tank battery were calculated using TANKS 4.0.9D; flashing losses were estimated using the Vasquez-Beggs Correlation. Activity level was based on the total annual oil production rate obtained from the Texas RRC records.

Loading (LOAD1)

The loading emissions were calculated based on the AP-42 calculations. The annual net throughput was obtained from the Texas RRC records.

Emission Rates

The oil and gas well associated with Poole will be permanently shut down and therefore, the oil and gas production equipment listed above will be no longer operating as of December 22, 2015. Hilcorp is requesting that new certified emission limits of "zero" to be established for each facility associated with the FIN listed above.

APPENDIX A
TCEQ FORM APD-CERT

Appendix A contains the completed Form APD-CERT.

Texas Commission on Environmental Quality
Form APD – CERT
Certification of Emission Limits
(Page 1)

I. Company and Site Information		
A. Company Name: Hilcorp Energy Company		
B. Responsible Official Name: Matt Vicenik		
Responsible Official's Title: Environmental Manager		
Mailing Address: 1201 Louisiana St., Suite 1400		
City: Houston	County: Harris	
State: TX	ZIP Code: 77002	
Telephone: 713-289-2951	Fax: 713-289-2750	
E-mail Address: mvicenik@hilcorp.com		
C. Site Name: Poole Tank Battery		
Street Address: *(if different from above)*		
If "NO," street address describe physical location with driving directions:		
From Baytown go E on 110 on Trinity River Bridge go left on FM563 to FM 770 go right on FM770 go to CR1180 crossing over CR118 follow lease rd to site, Baytown, Liberty Country.		
City or nearest city: Baytown	County: Liberty	ZIP Code: 77520
D. TCEQ Account Identification Number *(leave blank if unknown)*: LH0271J		
E. TCEQ Customer Reference Number *(leave blank if unknown)*: CN600125991		
TCEQ Regulated Entity Number *(leave blank if unknown)*: RN102711736		
F. Does the site have a Title V Permit?		☐ YES ☒ NO
G. Title V Permit Number:		
H. Is this a small business?		☐ YES ☒ NO
II. Attach the Following Documentations		
A. Copies of a previously completed Form PI-7 and all supporting documentation.		
B. A list of each source of air emissions at the site.		
C. A summary of the certified emission rates.		
D. A process description.		
III. Maintain Records On Site to Demonstrate Continuing Compliance and Make the Records Available on Request		

IV. Purpose of this Certification *(choose and complete all that are appropriate)*

This certification is intended to establish emission rates below state and federal rule thresholds and triggers for:

☐ 30 TAC § 106.4 for Permits by Rule	☒ Permit by Rule Number: 50648
☐ HR VOC Emissions Cap and Trade Program	☒ Emissions Banking and Trading Program (other than HRVOC)
☐ 30 TAC § 115 for Volatile Organic Compounds	☐ 30 TAC § 117 for Nitrogen Oxides
☐ 40 CFR Part 60, Subpart	☐ 40 CFR Part 61, Subpart
☐ 40 CFR Part 63, Subpart	☐ Title V Permit Major Source Applicability
☐ Standard Permit:	☐ Other:

V. Requests Associated with this Certification

A. Are you requesting to withdraw your Title V operating permit application?	☐ YES ☒ NO
If "YES," submit the original of this certification, directly to the assigned Title V permit reviewer and send a copy to the locations indicated in the Mailing Instruction below.	
B. Are you requesting to void an issued Title V operating permit or authorization to operate under a general operating permit?	☐ YES ☒ NO
If "YES," submit this certification to the locations indicated in the Mailing Instructions page 9	
C. For issued Title V permits, are you subject to Title V permitting requirements, but are submitting this certification to demonstrate that you are not subject to MACT requirements?	☐ YES ☒ NO
If "YES," submit this certification to the locations indicated in the Mailing Instructions page 9	
D. For pending Title V permits, are you subject to Title V permitting requirements, but are submitting this certification to demonstrate that you are not subject to MACT requirements?	☐ YES ☒ NO
*If "YES," submit the **original** of this certification directly to the assigned Title V permit reviewer and send a copy to the locations indicated in the Mailing Instructions page 9.*	

VI. Certification by Responsible Official

All representations in this certification of emissions are conditions upon which the stationary source shall operate. This certification reflects the maximum emission rates for the operation of this facility. The facility will operate in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. It shall be unlawful for any person to vary from such representation unless the certification is first revised. The signature below indicates that, based on information and belief formed after reasonable inquiry, the statements, and information contained in the attached documents are true, accurate, and complete.

NAME and TITLE: Matt Vicenik – Environmental Manager

SIGNATURE: _____ **Date:** 12-22-15

ORIGINAL SIGNATURE REQUIRED

Reminder: The original of this certification must be sent to the TCEQ in Austin and copies sent to the appropriate TCEQ Regional office and any local air pollution control programs with jurisdiction. A copy must also be maintained on site or, for sites that normally operate unattended, at an office within Texas having day-to-day operational control of the site

Texas Commission on Environmental Quality
Form APD-CERT
Certification of Emission Limits
Attach additional pages if needed if needed.
(Page 3)

Emission Rate Data

FIN	Facility Name	EPN	Point Name	Authorization Type	Authorization Date	Permit or Registration Number (If applicable)	Air Contaminant Name	Maximum Certified Emission Rates	
								Pounds/Hour	Tons/Year
FUG001	Site-Wide Fugitives	FUG001	Site-Wide Fugitives	PBR	4/23/2002	50648	VOC	0.00	0.00
TANK1	400 bbl Oil Storage Tank	TANK1	400 bbl Oil Storage Tank	PBR	4/23/2002	50648	VOC	0.00	0.00
LOAD1	Truckloading Fugitives	LOAD1	Truckloading Fugitives	PBR	4/23/2002	50648	VOC	0.00	0.00
Emissions Totals:								0.00	0.00

APPENDIX B
PBR 50648 DOCUMENTS AND CORRESPONDANCE

Appendix B contains documents downloaded from the TCEQ's Novell Groupwise Web Publisher regarding PBR 50648.

- PBR 50648 Technical Review Document dated 03-18-2002
- PBR 50648 TCEQ Registration Response Letter dated 04-23-2002

AIR PERMIT BY RULE REVIEW

Registration No.50648 Record No. 87628 Account. No. LH-0271-JDate Rec'd 03/18/2002

Company Hillcorp Energy Company County Liberty

Contact Name Mr. John Connolly Tel. .(225) 383-8656

General Rules Check:

* Project Emissions Acceptable? Yes _X_ No _

* PSD/Non-attainment Netting Req'd? Yes __No _x_Does the site net Yes __ No __

* Sitewide PBR Emissions Acceptable? Yes X No ____

* Limits on use of PBRs at this site? Yes __No _X_ Are they met? Yes __No __

* NSPS/NESHAPS/MACT Standards Apply? Yes __No _X_Are they met? Yes __No __

* Compliance with all other applicable rules and regulations? Yes _X_No _

Overall Site / Unit Description

This is an oil and gas facility. Facility is described as the Redmond Creek Field - Poole Tank Battery. It is located in Baytown. Site description is presented as: *"From Baytown, Texas, travel east on I- 10 crossing over Trinity River Bridge. Gurn left on to FM 563 and travel to FM 770. Turn right on FM 770 and follow to Bennie Rusk Road (FM 1180). Continue on FM 1180 crossing over CR 118. Stay to the left and follow lease road to location of site."*

Project Sources / Facilities, PBRs Claimed, Applicable Standards, Emissions and Control Summary:

Applicant is requesting authorization for its oil and gas operations under Permits by Rule 352 and 512

Emissions sources at this site are described as a 145 horsepower Caterpillar compressor engine, 25 horsepower saltwater pump engine, 550 bbl Oil tank, loading, and fugitives at the Poole Tank Battery facility in the Redmond Creek Field.

Hydrocarbons are produced from natural reservoirs through deep wells. The oil, gas, and water are transported to the facility via flow lines, where they are separated. While the oil and water are stored in fixed roof tanks prior to transport by a tank truck, the gas is compressed and metered prior to sales to a pipe line.

Emissions from the 145 hp Caterpillar engine is presented by the applicant as

17.487 tons per year (tpy) of nitrogen oxides, 17.487 tpy of carbon monoxide, 0.003 ton per year of sulfur dioxide and 3.218 tpy of volatile organic compounds. Fugitive emissions are estimated as 1.631 tons per year of volatile organic compounds. Emissions from the stock tank, estimated using Tank 4.0, are estimated as 6.171 tpy of VOCs. The Saltwater pump engine emissions adds another 0.074 tpy of CO, 0.086 tpy of NOx and 0.001 tpy of VOCs. Loading accounts for additional 0.403 tpy of VOC. This translates to an estimated site wide emissions in the amount of 17.573 tons per year of nitrogen oxides, 17.561 tons per year of carbon monoxide and 11.424 tons per year of volatile organic compounds. All engine emissions estimation were based on manufacturer's data.

Engine is powered by sweet natural gas. Gas analysis reveals that the percent by weight of sulphur compound is zero.

NAAQs NO2 requirements is based on distance. Applicant represents that the 145 hp Caterpillar engine is at least 100 feet from the nearest offsite receptor. Based on distance of 100 feet, the theoretical emission limit for nitrogen oxide is 31.25 tpy (0.3125 x 100). Evidently, the actual emissions of 17.56 tpy is less than the allowable limit of 31.25 tpy.

A comparison of the emissions estimates discerned from using manufactures' data with the emissions values generated from AP -42 factors reveals that there are no emissions reductions associated with this project.

Company appears to meet the requirements of the permit by rule requested. It is my recommendation that the applicant's request be granted.

Does this registration require a 30 TAC Chapter 60 Compliance History review? Yes_____ No _X_

If yes, should the PBR claim be denied on the basis of the compliance history review results? Yes __ No __

Site Review required? Yes __No _x_ Date Approved/Disapproved:

Public Notice Required? Yes __No _x_ Date Completed Satisfactorily:

Emissions Savings / Reductions due to rule compliance:

NO_x tpy CO tpy VOC tpy PM SO_2

Are all general and specific applicable rule conditions satisfied? Yes _X_ No _

Emmanuel Ndame 4/18/2002 Emmanuel Ukandu 4/18/2002

Reviewer / Date Team Leader/Section Manager/Backup Date

567434fb.ntv

Mr. Michael Schoch

Environmental Regulatory and

Safety Manager

Hilcorp Energy Company

1200 Smith Street

Suite 1800

Houston, Texas 77002

Re: Permit by Rule

Registration Number: 50648

Redmond Creek Field - Poole Tank Battery

Baytown, Liberty County

Account Number: LH-0271-J

Dear Mr. Schoch:

This is in response to your permit by rule, Form PI-7, concerning your request to register your oil and gas facility near Baytown, Liberty County. We understand that the emission sources at this facility include: a 145-horsepower Caterpillar compressor engine, a 25-horsepower saltwater pump engine, a 550 bbl oil tank, loading, and fugitives. We also understand that your site wide emissions are 17.573 tons per year (tpy) of nitrogen oxides, 17.561 tpy of carbon monoxide, and 11.424 tpy of volatile organic compounds.

After an evaluation of the information which you have furnished, we have determined that your proposed operation is authorized under Title 30 Texas Administrative Code (30 TAC) Sections 106.352 and 106.512 if constructed and operated as described in your registration request. These permits by rule were authorized by the Texas Natural Resource Conservation Commission (TNRCC) pursuant to 30 TAC Chapter 106.

Copies of the permits by rule in effect at the time of this registration are enclosed. You must construct, install, or modify facility in accordance with the version of the permits by rule in effect when construction, installation, or modification actually begins (see 30 TAC § 106.4[a][5]). After the completion of construction, installation, or modification, the facility shall be operated in compliance with all the applicable conditions of the claimed permits by rule and 30 TAC § 106.4.

Re: Permit by Rule Registration Number: 50648

You are reminded that regardless of whether a permit is required, this facility must be in compliance with all rules and regulations of the TNRCC and of the U.S. Environmental Protection Agency at all times. Please note that Title 40 Code of Federal Regulations Part 63 (40 CFR Part 63), Subpart HH, National Emission Standard of Hazardous Air Pollutants from Oil and Natural Gas Production Facilities, is now in effect. It is the responsibility of the owner or operator to ensure the applicability of 40 CFR Part 63, Subpart HH, is properly determined, both initially and whenever changes are made to a unit. The owner or operator may choose to complete and retain a PI-8 certification under 30 TAC § 106.6 demonstrating that the emissions levels at the unit are below applicability limits for 40 CFR Part 63, Subpart HH.

Your cooperation in this matter is appreciated. If you have any questions concerning these permits by rule, please call Mr. Emmanuel Ndame at (713) 767-3553 or write to the Texas Natural Resource Conservation Commission, Office of Permitting, Remediation and Registration, Air Permits Division (MC-162), P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

Dana Poppa Vermillion, P.E., Acting Manager

Permits by Rule/General Operating Permits

Air Permits Division

Texas Natural Resource Conservation Commission

DPV/ECN/bvg

Enclosures

cc: Mr. Arturo Blanco, Air Program Manager, Region 12 - Houston

Record Number: 87628

AIR PERMITS DIVISION MC-162

MR MICHAEL SCHOCH

ENV REGULATORY & SAFETY MGR

HILCORP ENERGY COMPANY

STE 1800

1200 SMITH ST

HOUSTON TX 77002

APPENDIX C
PBR 50648 VOIDANCE REQUEST

Appendix C contains Hilcorp letter requesting voidance of PBR 50648 and the NSR Air Permit/Registration Void Request Worksheet.

- Cancellation letter from Hilcorp to TCEQ
- NSR Air Permit/Registration Void Request Worksheet

SAGE
ENVIRONMENTAL CONSULTING

HAND DELIVERY

December 29, 2015

Texas Commission on Environmental Quality
Air Permits Initial Review Team (MC-161)
Air Permit Division
P.O. Box 13087
Austin, Texas 78711-3087

Re: Poole Tank Battery PBR 50648 Voidance Request
Hilcorp Energy Company
TCEQ Account No.: LH0271J
RN: RN102711736 CN: CN600125991

To Whom It May Concern:

Sage Environmental Consulting, LP (Sage), on behalf of our client Hilcorp Energy Company. (Hilcorp) requests the voidance of PBR 50648 and all of the associated EPNs. Attached is the completed NSR Air Permit/Registration Void Request Worksheet.

If additional information is required, please feel free to contact me at (281) 610-0164 or kyle@sageenvironmental.com.

Sincerely,

Kyle Brzymialkiewicz

Kyle Brzymialkiewicz
Client Guardian
Sage Environmental Consulting, LP

cc:

Certified Mail: 7014 0150 0001 4235 6948
Return Receipt Requested
TCEQ Regional Office
5425 Polk St., Ste. H
Houston, TX 77023-1452

Certified Mail: 7014 0150 0001 4235 6924
Return Receipt Requested
TCEQ EBT Program (MC-206)
P.O. Box 13087
Austin, Texas 78711-3087

Texas Commission on Environmental Quality
Air Permits Division
Air Permitting Authorization Void Request Form

I. Applicant Information		
Current Owner: Hilcorp Energy Company		
Company Contact Name: Matt Vicenik		Title: Environmental Manager
Company Contact Mailing Address: 1201 Louisiana St., Suite 1400		
City: Houston	State: TX	ZIP Code: 77002
Phone: 713-289-2951	Fax: 713-289-2750	
E-mail: mvicenik@hilcorp.com		
TCEQ Regulated Entity Number: RN102711736		
Effective Date of Voidance: December 22, 2015		

**II. Air Authorizations To Void (*list each registration/permit number)*	
PBR 50648	

III. Reason For Void

☐ Consolidation ☐ Time Expired ☒ Plant Dismantled

☒ Other: Emissions Banking and Trading

IV. Authorization Signature

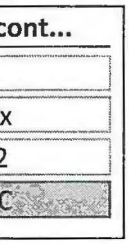
I, Matt Vicenik, certify that I am the responsible official for this application and that, based on information and belief formed after reasonable inquiry, the statements and information on this form are true, accurate, and complete. I further understand that any permits voided at my request will not be eligible for reactivation.

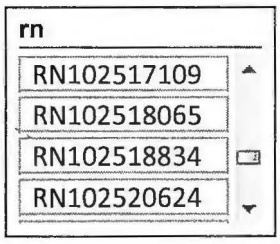
Signature:	Date: 12-22-15
Title: Environmental Manager	

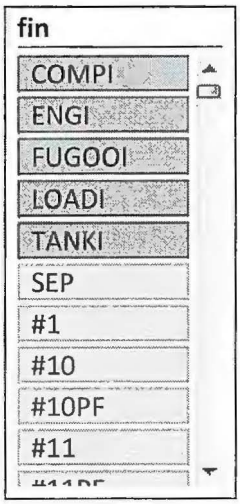
ACC	CON	SITE	COU	YR_CAL	FIN	FIN NAME	EPN	EPN NAME	CON	CON	TONS PE	CREA	CHAN
LH	HIL	PO	LIB	2005	COMPI	COMPRESSOR ENGINE	COMPI	COMPRESSOR E	59	VO	3.218	####	####
LH	HIL	PO	LIB	2005	ENGI	SALT WATER PUMP ENGINE	ENGI	SALTWATER PU	59	VO	0.001	####	####
LH	HIL	PO	LIB	2005	FUGOOI	FUGITIVES	FUGOOI	FUGITIVES	59	VO	1.631	####	####
LH	HIL	PO	LIB	2005	LOADI	TRUCK LOADING	LOADI	TRUCK LOADING	59	VO	0.403	####	####
LH	HIL	PO	LIB	2005	TANKI	500 BBL. OIL TANK	TANKI	500 BBL. OIL TA	59	VO	6.171	####	####

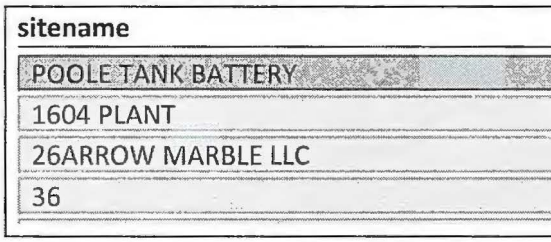
N	ACC	COMP	SITE	COU	YR_CAL	FIN	FIN NAME	EPN	EPN NAME	CO	CO	TONS PE	CREA	CHA
	LH	HILC	PO	LIB	2006	COMPI	COMPRESSOR ENGINE	COMPI	COMPRESSOR E	59	VO	3.218	####	####
	LH	HILC	PO	LIB	2006	ENGI	SALT WATER PUMP ENGIN	ENGI	SALTWATER PU	59	VO	0.001	####	####
	LH	HILC	PO	LIB	2006	FUGOOI	FUGITIVES	FUGOOI	FUGITIVES	59	VO	1.631	####	####
	LH	HILC	PO	LIB	2006	LOADI	TRUCK LOADING	LOADI	TRUCK LOADING	59	VO	0.397	####	####
	LH	HILC	PO	LIB	2006	TANKI	500 BBL. OIL TANK	TANKI	500 BBL. OIL TA	59	VO	1.409	####	####

MPD Sources









ls	rn	fin	epn	sitename	owner	Sum of annual_tpy	Sum of ee_tpy	Sum of smss_tpy
	RN102711736	COMPI	**COMPI**	POOLE TANK BATTERY	HILCORP ENERGY CO.	3.22	0	0
		ENGI	**ENGI**	POOLE TANK BATTERY	HILCORP ENERGY CO.	0	0	0
		FUGOOI	**FUGOOI**	POOLE TANK BATTERY	HILCORP ENERGY CO.	1.63	0	0
		LOADI	**LOADI**	POOLE TANK BATTERY	HILCORP ENERGY CO.	0.4	0	0
		TANKI	**TANKI**	POOLE TANK BATTERY	HILCORP ENERGY CO.	1.41	0	0
	RN102711736 Total					**6.66**	**0**	**0**
tal						6.66	0	0

AIR PERMIT BY RULE REVIEW

Registration No.50648 Record No. 87628 Account. No. LH-0271-JDate Rec'd 03/18/2002
Company Hillcorp Energy Company County Liberty
Contact Name Mr. John Connolly Tel. .(225) 383-8656

General Rules Check:

* Project Emissions Acceptable? Yes _X_ No ___
* PSD/Non-attainment Netting Req'd? Yes ___ No _x_ Does the site net Yes ___ No ___
* Sitewide PBR Emissions Acceptable? Yes _X_ No ____
* Limits on use of PBRs at this site? Yes ___ No _X_ Are they met? Yes ___ No ___
* NSPS/NESHAPS/MACT Standards Apply? Yes ___ No _X_ Are they met? Yes ___ No ___
* Compliance with all other applicable rules and regulations? Yes _X_ No __

Overall Site / Unit Description

This is an oil and gas facility. Facility is described as the Redmond Creek Field - Poole Tank Battery. It is located in Baytown. Site description is presented as: *"From Baytown, Texas, travel east on I- 10 crossing over Trinity River Bridge. Gurn left on to FM 563 and travel to FM 770. Turn right on FM 770 and follow to Bennie Rusk Road (FM 1180). Continue on FM 1180 crossing over CR 118. Stay to the left and follow lease road to location of site."*

Project Sources / Facilities, PBRs Claimed, Applicable Standards, Emissions and Control Summary:

Applicant is requesting authorization for its oil and gas operations under Permits by Rule 352 and 512

Emissions sources at this site are described as a 145 horsepower Caterpillar compressor engine, 25 horsepower saltwater pump engine, 550 bbl Oil tank, loading, and fugitives at the Poole Tank Battery facility in the Redmond Creek Field.

Hydrocarbons are produced from natural reservoirs through deep wells. The oil, gas, and water are transported to the facility via flow lines, where they are separated. While the oil and water are stored in fixed roof tanks prior to transport by a tank truck, the gas is compressed and metered prior to sales to a pipe line.

Emissions from the 145 hp Caterpillar engine is presented by the applicant as 17.487 tons per year (tpy) of nitrogen oxides, 17.487 tpy of carbon monoxide, 0.003 ton per year of sulfur dioxide and 3.218 tpy of volatile organic compounds. Fugitive emissions are estimated as 1.631 tons per year of volatile organic compounds. Emissions from the stock tank, estimated using Tank 4.0, are estimated as 6.171 tpy of VOCs. The Saltwater pump engine emissions adds another 0.074 tpy of CO, 0.086 tpy of NOx and 0.001 tpy of VOCs. Loading accounts for additional 0.403 tpy of VOC. This translates to an estimated site wide emissions in the amount of 17.573 tons per year of nitrogen oxides, 17.561 tons per year of carbon monoxide and 11.424 tons per year of volatile organic compounds. All engine emissions estimation were based on manufacturer's data.

Engine is powered by sweet natural gas. Gas analysis reveals that the percent by weight of sulphur compound is zero.

NAAQs NO2 requirements is based on distance. Applicant represents that the 145 hp Caterpillar engine is at least 100 feet from the nearest offsite receptor. Based on distance of 100 feet, the theoretical emission limit for nitrogen oxide is 31.25 tpy (0.3125 x 100). Evidently, the actual emissions of 17.56 tpy is less than the allowable limit of 31.25 tpy.

A comparison of the emissions estimates discerned from using manufactures' data with the emissions values generated from AP -42 factors reveals that there are no emissions reductions associated with this project.

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	50648	*Company Name:*	Hilcorp Energy Company	*APD Reviewer:*	Ms. Brittany Bowman
Project No.:	145576	*Unit Name:*	Poole Tank Battery	*PBR No(s).:*	106.352, 106.512

GENERAL INFORMATION			
Regulated Entity No.:	RN102711736	**Project Type:**	Permit by Rule Application
Customer Reference No.:	CN600125991	**Date Received by TCEQ:**	March 26, 2009
Account No.:	LH-0271-J	**Date Received by Reviewer:**	March 27, 2009
City/County:	Baytown, Liberty County	**Physical Location:**	From Baytown go east on I10 over Trinity river bridge go left on FM563 to FM770 go right on FM770 & go CR1180 stay on CR1180 crossing CR118 follow lease rd to site

CONTACT INFORMATION					
Responsible Official/ Primary Contact Name and Title:	Mr. Mike Schoch Director of Env Reg Safety	**Phone No.:** **Fax No.:**	(713) 209-2416 (713) 209-2420	**Email:**	MSCHOCH@HILCORP.COM
Technical Contact/ Consultant Name and Title:	Mr. John Connolly Environmental Consultant	**Phone No.:** **Fax No.:**	(225) 753-4723 (225) 753-4661	**Email:**	ERSSES@COX.NET

GENERAL RULES CHECK	YES	NO	COMMENTS
Is confidential information included in the application?		X	No confidential information submitted.
Are there affected NSR or Title V permits for the project?		X	This is an existing site with no previously issued NSR or Title V permits.
Is each PBR > 25/250 tpy?		X	
Are PBR sitewide emissions > 25/250 tpy?		X	
Are there permit limits on using PBRs at the site?		X	
Is PSD or Nonattainment netting required?		X	This site is located in a nonattainment county but emissions are below the major source thresholds, therefore PSD and nonattainment review are not required.
Do NSPS, NESHAP, or MACT standards apply to this registration?		X	None of the standards apply.
Does NOx Cap and Trade apply to this registration?		X	This site is located in the Houston/Galveston area but NOx emissions are not subject to NOx Cap and Trade.
Is the facility in compliance with all other applicable rules and regulations?	X		The applicant represents they are in compliance with all applicable rules and regulations.

DESCRIBE OVERALL PROCESS AT THE SITE

Hilcorp Energy Company operates the Poole Tank Battery in Liberty County.

DESCRIBE PROJECT AND INVOLVED PROCESS

Hilcorp Energy Company has submitted a PI-7 and supporting documentation to register the addition of a 202-hp Caterpillar G3306TA engine and removal of a 145-hp Caterpillar engine.

The facility consists of a compressor engine, saltwater pump engine, stock tank, loading, and fugitives. The facility is a typical oil and gas production facility designed to produce hydrocarbons from natural reservoirs through deep wells. The oil, gas, and water are transported to the facility via flow lines, where they are separated. The oil and water are stored in fixed roof tanks prior to truck loading. The gas is metered prior to sales to a pipeline. No planned MSS emissions have been represented or reviewed for this registration.

TECHNICAL SUMMARY - DESCRIBE HOW THE PROJECT MEETS THE RULES

§106.352 Oil and Gas Production Facilities

(1) The engine meets the requirements of §106.512. There are no flares at this site.

(2) Total emissions from all facilities, including fugitives and loading emissions are less than 25 tpy for SO_2 and VOC and less than 250tpy for CO and NOx.

(3) NA, this is a sweet site.

(4) NA, this is a sweet site.

(5) A Form PI-7 was submitted.

§106.512 Stationary Engines and Turbines

(1) A Form PI-7 and Table 29 has been submitted.

(2) The Caterpillar G3306TA compressor engine is rated 202-hp, therefore must comply with sections (5)-(6).

(3) NA, there are no turbines at this site.

(4) NA, the engine is not used for temporary replacement purposes

(5) Natural gas will be used.

Joe Thomas

From:	Joe Thomas
Sent:	Wednesday, February 24, 2016 4:38 PM
To:	'kyle@sageenvironmental.com'; Randy Parmley- Sage (randy@sageenvironmental.com); 'Brady Dodson'
Cc:	Lindley Anderson; Deric Patton; Jacob Morrison; Marie Mercado; Joseph Musa
Subject:	Initial questions for ERC Application for Poole Tank site
Importance:	High

Kyle, Randy, and Brady,

I have looked over this application and have the following initial questions and concerns:

1) The discussion on emission rate indicates that applicability of 30 TAC Chapter 115 and 40 CFR Part 60 Subpart OOOO were considered for the facilities, but I do not see discussion about 40 CFR Part 63 Subpart HH. In analyzing the applicability of that subpart, it appears that you may be claiming the exemption for black oil (as defined in 40 CFR §63.761) based on the API specific gravity and GOR value shown. However, this does not appear consistent with the amount of natural gas produced along with the crude in 2005 and 2006, so additional explanation will be needed.

2) For the speciated list of VOCs, two sets of tables are provided. The first appears to show default values from TANKS 4.09d, and the second appears to show values based on an AP-42 profile. However, neither of these appear to be based on an analysis of the oil and gas that was produced. Is there an analysis for this site's oil and gas?

3) The oil tank was represented as 550 bbl capacity for registration 50648 but is shown as 500 bbl in the ERC application. Which is correct? 483 bbl is used as the volume in the TANKS calculations.

4) Although the API gravity was 56, the Vasquez-Beggs equation was used to determine flash losses from the tank, which is not an accepted calculation method.

Please provide the information above at your earliest convenience.

Thanks
Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

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Sign up to receive e-mail updates on emissions banking and trading programs. Select *Emissions Banking and Trading (EBT) Programs* under the *Air Quality* heading

Joe Thomas

From:	Charles Parmley <charles.parmley@sageenvironmental.com>
Sent:	Monday, April 04, 2016 3:43 PM
To:	Joe Thomas
Cc:	'Brady Dodson'; Subra Namasivayam; Randy Parmley, P.E.
Subject:	ERC Generation Projects 410425, 410424, & 410421 (Poole, Smart, & Trust)
Attachments:	Trust - TCEQ Response.pdf; Poole - TCEQ Response.pdf; Smart - TCEQ Response.pdf

Good afternoon Joe,

Attached are the memos addressing the questions about the Poole, Smart, and Trust ERC generation projects. Please let me know if you have any additional questions regarding these applications.

Thank you,
Charles

Charles Parmley EBT, Air Permitting, Emissions Calculations
SAGE ENVIRONMENTAL CONSULTING, L.P.
Friendly Service, No Surprises ®
Houston office
12727 Featherwood Drive, Suite 210
Houston, TX 77034
O: 281-484-6200;1428
C: 512-815-7555
SAGEENVIRONMENTAL.COM

p.s. Ask your Sage customer guardian about heater tune ups, acoustic monitoring surveys and flare compliance.

MEMORANDUM

DATE: April 4, 2016

TO: Joe Thomas, TCEQ – Emissions Banking and Trading

FROM: Charles Parmley, Sage Environmental Consulting, L.P.

RE: Hilcorp Energy Company – Poole Tank Battery

An email sent from Mr. Joe Thomas of the Texas Commission on Environmental Quality (TCEQ) to Mr. Kyle Brzymialkiewicz of Sage Environmental Consulting, L.P. (Sage) on February 24, 2016 requested additional information about the Emission Reduction Credit (ERC) generation application submitted by Sage for the Hilcorp Energy Company (Hilcorp) Poole Tank Battery (Poole).

Please note that I have now taken over Sage's responsibility for this project from Mr. Brzymialkiewicz; therefore, please direct any further comments about this project to my attention.

The ERC generation application for the Poole Tank Battery was submitted to the TCEQ on December 30, 2015 and was assigned to Mr. Joe Thomas of the TCEQ for preliminary review.

Sage has prepared this memo to address questions raised by Mr. Thomas in his e-mail, in which potential deficiencies in the application were noted. Sage believes that our responses to these questions, as found in this memo, will help expedite the TCEQ's ERC application review process.

Question #1 – The discussion on emission rate indicates that applicability of 30 TAC Chapter 115 and 40 CFR Part 60 Subpart OOOO were considered for the facilities, but I do not see discussion about 40 CFR Part 63 Subpart HH. In analyzing the applicability of that subpart, it appears that you may be claiming the exemption for black oil (as defined in 40 CFR § 63.761) based on the API specific gravity and GOR value shown. However, this does not appear consistent with the amount of natural gas produced along with crude in 2005 and 2006, so additional explanation will be needed.

Response #1 – With respect to 40 CFR 63 Subpart HH, this regulation is not applicable to the storage tanks located at Poole for three reasons:

(1) Poole is not a major source of hazardous air pollutants (HAP). This site does not emit or have the potential to emit 10 tons per year or more of any hazardous air pollutants or 25 tons per year or more of any combination of hazardous air pollutants (as defined in § 63.2); and

Vasquez-Beggs model was used to calculate emissions for 27 sites and an analysis on the effectiveness of the Vasquez-Beggs model was performed by comparing the results with VOC emissions obtained via direct measurement. Based on this study, Vasquez-Beggs underestimated VOC emissions for 85% of the sites. Any overestimations predicted by the Vasquez-Beggs model could be attributed to the fact that the model has the propensity to be sensitive to separator pressure and API gravity. However, it must be noted that the degree of overestimations predicted by the Vasquez-Beggs model were minor relative to the direct measurements.

When lacking the data to calculate emissions using other methodologies and considering the fact that Vasquez-Beggs is a conservative methodology for emission calculations, Sage believes that Vasquez-Beggs may serve as an appropriate method to determine flash emissions from the tanks.

Please feel free to contact Charles Parmley at charles.parmley@sageenvironmental.com or by cell phone (512) 815-7555 if you have any questions or wish to discuss this memo, or any other issues pertaining to the application for banking ERCs from the Poole Tank Battery.

United States
Environmental Protection
Agency

Office of Air Quality
Planning And Standards
Research Triangle Park, NC 27711

EPA-450/2-90-001a
January 1990

AIR

EPA

Air Emissions Species Manual

Volume I
Volatile Organic Compound Species Profiles

Second Edition

Joe Thomas

From: Joe Thomas
Sent: Wednesday, May 04, 2016 11:38 AM
To: 'Charles Parmley'
Cc: 'Brady Dodson'; Subra Namasivayam; Randy Parmley, P.E.
Subject: RE: ERC Generation Projects 410425, 410424, & 410421 (Poole, Smart, & Trust)

Charles,

For the Poole Tank Battery site, please provide the following information:

1) Is a Gas Oil Ratio analysis available to quantify the flash emissions from the tanks for 2005 and 2006? The Vasquez-Beggs equation is no longer an acceptable calculation method for flash emissions for oil with an API specific gravity of 56°. I have been told that the GOR is required by the Railroad Commission (for setting the amount of oil and gas that can be produced, I think), but I am not certain that this is the same as what is used for flash emissions. Since the emissions calculated with V-B are lower than what was reported to Emissions Inventory for 2006, the use of GOR here might be beneficial to Hilcorp Energy Company.

2) 30 TAC §101.303(d)(3)(C) requires a list of the specific VOCs reduced. The application provided default values from TANKs and you have provided a default EPA profile (i.e., non-specific information) because testing on this specific well was not conducted. Are there any other wells in the same field that can provide more specific data?

Please provide this information by 5/19/2016 or let me know by that date how long will be needed.

Thank you

Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

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From: Charles Parmley [mailto:charles.parmley@sageenvironmental.com]
Sent: Monday, April 04, 2016 3:43 PM
To: Joe Thomas <joe.thomas@tceq.texas.gov>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>
Subject: ERC Generation Projects 410425, 410424, & 410421 (Poole, Smart, & Trust)

Good afternoon Joe,

Attached are the memos addressing the questions about the Poole, Smart, and Trust ERC generation projects. Please let me know if you have any additional questions regarding these applications.

Thank you,

Joe Thomas

From:	Charles Parmley <charles.parmley@sageenvironmental.com>
Sent:	Monday, May 16, 2016 2:59 PM
To:	Joe Thomas
Cc:	'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject:	ERC Generation Projects 410424 & 410425 (Smart & Poole)
Attachments:	Poole - TCEQ Response 2016 0513.pdf; Smart - TCEQ Response 2016 0513.pdf

Good afternoon Joe,

Attached are the memos addressing the questions about the Smart and Poole ERC generation projects. Please let me know if you have any additional questions regarding these applications.

Thank you,
Charles

Charles Parmley EBT, Air Permitting, Emissions Calculations
SAGE ATC ENVIRONMENTAL CONSULTING, L.P.
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12727 Featherwood Drive, Suite 210
Houston, TX 77034
O: 281-484-6200;1428
C: 512-815-7555
SAGEENVIRONMENTAL.COM

p.s. Ask your Sage customer guardian about heater tune ups, acoustic monitoring surveys and flare compliance.

MEMORANDUM

DATE: May 13, 2016

TO: Joe Thomas, TCEQ – Emissions Banking and Trading

FROM: Charles Parmley, Sage ATC Environmental Consulting, L.P.

RE: Hilcorp Energy Company – Poole Tank Battery

An email sent from Mr. Joe Thomas of the Texas Commission on Environmental Quality (TCEQ) to Mr. Charles Parmley of Sage ATC Environmental Consulting, L.P. (Sage) on May 4, 2016 requested additional information about the Emission Reduction Credit (ERC) generation application submitted by Sage for the Hilcorp Energy Company (Hilcorp) Poole Tank Battery (Poole).

The ERC generation application for the Poole Tank Battery was submitted to the TCEQ on December 30, 2015 and was assigned to Mr. Joe Thomas of the TCEQ for preliminary review.

Sage has prepared this memo to address questions raised by Mr. Thomas in his e-mail, in which potential deficiencies in the application were noted. Sage believes that our responses to these questions, as found in this memo, will help expedite the TCEQ's ERC application review process.

Question #1 – Is a Gas Oil Ratio analysis available to quantify the flash emissions from the tank for 2005 and 2006? The Vasquez-Beggs equation is no longer an acceptable calculation method for flash emissions for oil with an API specific gravity of 56°. I have been told that the GOR is required by the Railroad Commission (for setting the amount of oil and gas that can be produced, I think), but I am not certain that this is the same as what is used for flash emissions. Since the emissions calculated with V-B are lower than what was reported to Emissions Inventory for 2006, the use of GOR here might be beneficial to Hilcorp Energy Company.

Response #1 – No Gas Oil Ratio analysis is available to quantify flash emissions from the tank for Poole during the time period of 2005 and 2006. Railroad Commission GORs are based on overall production and only used to classify the well as either an oil well or a gas well. Therefore, this value is not applicable for calculating flash emissions from tanks. Furthermore, as Poole has already been shut down, there is no possibility of performing a GOR analysis at the site.

Question #2 – 30 TAC§101.303(d)(3)(C) requires a list of the specific VOCs reduced. The application provided default values from TANKs and you have provided a default EPA profile

Joe Thomas

From: Joe Thomas
Sent: Tuesday, May 24, 2016 6:12 PM
To: 'Charles Parmley'
Cc: 'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Charles,

I have some additional questions on the Poole Tank Battery application:

1) For the fugitive emissions, you show a component count showing gas/vapor and light liquid service. Please explain why no components are in heavy liquid service for this oil production site.

2) For the gas/vapor service components, you show 29.2% VOC for all components. Please explain why the natural gas and vapors from oil at the site have the same proportion of VOCs or why there are only components used for natural gas or vapors. Please also document specifically how the 29.2% VOC concentration was determined.

3) On the fugitive emissions VOC Speciation Worksheet, methane is shown as present but not ethane. On the Loading and Tank VOC Emission Speciation Calculation Worksheets, ethane is shown, but not methane. Please explain why both compounds are not present in each of these sources. There is also no indication of other non-VOCs common in natural gas being present (nitrogen, carbon dioxide, etc.). Please explain why.

4) For the light liquids service components, you show 100% VOCs, but the loading and tank worksheets noted in item 3 show ethane was present, which is not a VOC. Please explain why and how the 100% VOC concentration was determined.

Please provide this information by 6/8/2016 or let me know by that date how long will be needed.

Thank you
Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

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From: Charles Parmley [mailto:charles.parmley@sageenvironmental.com]
Sent: Monday, May 16, 2016 2:59 PM
To: Joe Thomas <joe.thomas@tceq.texas.gov>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>
Subject: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Good afternoon Joe,

Joe Thomas

From: Charles Parmley <charles.parmley@sageenvironmental.com>
Sent: Thursday, June 16, 2016 4:36 PM
To: Joe Thomas
Cc: 'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)
Attachments: Poole - TCEQ Response 2016 0615.pdf

Good afternoon Joe,

Attached is the memo addressing the questions about Poole ERC generation project. Please let me know if you have any additional questions regarding these applications.

Thank you,
Charles

Charles Parmley EBT, Air Permitting, Emissions Calculations
SAGE ATC ENVIRONMENTAL CONSULTING LLC
Friendly Service, No Surprises ®
Houston office
12727 Featherwood Drive, Suite 210
Houston, TX 77034
O: 281-484-6200;1428
C: 512-815-7555
SAGEENVIRONMENTAL.COM

From: Joe Thomas [mailto:joe.thomas@tceq.texas.gov]
Sent: Tuesday, May 24, 2016 6:12 PM
To: Charles Parmley <charles.parmley@sageenvironmental.com>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Charles,

I have some additional questions on the Poole Tank Battery application:

1) For the fugitive emissions, you show a component count showing gas/vapor and light liquid service. Please explain why no components are in heavy liquid service for this oil production site.

2) For the gas/vapor service components, you show 29.2% VOC for all components. Please explain why the natural gas and vapors from oil at the site have the same proportion of VOCs or why there are only components used for natural gas or vapors. Please also document specifically how the 29.2% VOC concentration was determined.

3) On the fugitive emissions VOC Speciation Worksheet, methane is shown as present but not ethane. On the Loading and Tank VOC Emission Speciation Calculation Worksheets, ethane is shown, but not methane. Please explain why both compounds are not present in each of these sources. There is also no indication of other non-VOCs common in natural gas being present (nitrogen, carbon dioxide, etc.). Please explain why.

`MEMORANDUM

DATE: June 15, 2016

TO: Joe Thomas, TCEQ – Emissions Banking and Trading

FROM: Charles Parmley, Sage ATC Environmental Consulting, LLC.

RE: Hilcorp Energy Company – Poole Tank Battery

An email sent from Mr. Joe Thomas of the Texas Commission on Environmental Quality (TCEQ) to Mr. Charles Parmley of Sage ATC Environmental Consulting, LLC. (Sage) on May 24, 2016 requested additional information about the Emission Reduction Credit (ERC) generation application submitted by Sage for the Hilcorp Energy Company (Hilcorp) Poole Tank Battery (Poole).

The ERC generation application for the Poole Tank Battery was submitted to the TCEQ on December 30, 2015 and was assigned to Mr. Joe Thomas of the TCEQ for preliminary review.

Sage has prepared this memo to address questions raised by Mr. Thomas in his e-mail, in which potential deficiencies in the application were noted. Sage believes that our responses to these questions, as found in this memo, will help expedite the TCEQ's ERC application review process.

Question #1 - For the fugitive emissions, you show a component count showing gas/vapor and light liquid service. Please explain why no components are in heavy liquid service for this oil production site.

Response #1 - Upon reviewing the constituent compounds of the fugitive emissions listed in the PBR No. 50648, we obtained the vapor pressures for the aforementioned compounds at 20°C in order to determine their heavy liquid applicability. All compounds that made up the fugitive emissions from Poole had a vapor pressure greater than 0.3 kPa.. Therefore, by TCEQ definition, there are no components in heavy liquid service.

Question #2 - For the gas/vapor service components, you show 29.2% VOC for all components. Please explain why the natural gas and vapors from oil at the site have the same proportion of VOCs or why there are only components used for natural gas or vapors. Please also document specifically how the 29.2% VOC concentration was determined.

Response #2 – No speciated VOC list from GC analysis are available for this site, as there was no requirement for this data at the time for either compliance or operational needs. Emission profiles from API Publication No. 4615 were utilized to calculate the speciation and percentage of VOCs in fugitive emissions at Poole.

Response #4 – The appropriate changes have been made to the application to reflect the presence of ethane in the VOC emissions. The updated fugitive emissions calculations are included in Attachment C for ease of reference. Please note that the reduced fugitive emission levels do not change the amount of ERCs claimed for FUG001.

	Baseline Year Emissions (tpy)		PBR Emission Limits (tpy)	Historical Adjusted Emissions (tpy)	SIP EI – 2006 (tpy)	Baseline Emissions (tpy)	Creditable ERCs (tpy)
	2005	2006					
FUG001	1.84	1.84	1.63	1.63	1.63	1.6	1.6
TANK1	1.28	1.24	6.17	1.26	1.41	1.3	1.3
LOAD1	0.20	0.18	0.40	0.19	0.39	0.2	0.2
TOTAL	3.32	3.26	8.20	3.08	3.43	3.1	3.1

EXECUTIVE SUMMARY

In December 1993, the American Petroleum Institute (API) published API Publication Number 4589, *Fugitive Hydrocarbon Emissions from Oil and Gas Production Operations* (Star Environmental, 1993) which contains correlation equations and emission factors developed from the screening of 184,035 components at 20 sites. In August 1994, the US EPA published new correlation equations for the petroleum industry (see Table ES-3), based in part on the data contained in the API report.

This report contains new emission factors developed from the 1993 API data using the new EPA correlation equations. The new emission factors are generally higher than the 1993 API factors, but they are lower than the SOCMI factors, refinery factors, and gas plant factors published by the EPA in *Protocol for Equipment Leak Emission Estimate* (EPA, 1993). The new emission factors are highly dependent on the EPA pegged source emission factors. This report also contains emission factors for gas plants based on the data contained in the 1993 API report appendices and data collected at four additional gas plants as a part of this study.

Average emission factors, calculated for use with component inventories, are shown in Table ES-1. These factors can be used to predict total hydrocarbon emissions when screening data is not available and only the number of components installed at a site is known.

Table ES-1. Average Emission Factors by Facility Type (lb/component-day)

	Connection	Flange	Open End	Pump	Valve	Others
Light Crude	8.66E-03	4.07E-03	6.38E-02	1.68E-02	7.00E-02	3.97E-01
Heavy Crude	4.22E-04	1.16E-03	8.18E-03	no data	6.86E-04	3.70E-03
Gas Production	1.70E-02	6.23E-03	3.63E-02	1.03E-02	1.39E-01	4.86E-01
Gas Plants	1.45E-02	2.32E-02	5.46E-02	6.09E-01	2.04E-01	2.57E-01
Offshore	5.70E-03	1.04E-02	5.37E-02	1.03E-02	2.72E-02	3.67E-01

"Others" category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.

Emission factors for connections and flanges are typically an order of magnitude lower than valve emission factors. Emission factors for onshore light crude production and onshore gas

Speciated hydrocarbon emission rates can be calculated using total hydrocarbon emission rates obtained from either Table ES-1, ES-2, or ES-3 and the speciation factors contained in Table ES-4.

Table ES-4. Speciated Fugitive Emission Factors
(Weight Fraction of THC emissions in each category)

	Methane	NMHC	VOC	C6+	Benzene	Toluene	Ethyl-Benzene	Xylenes
Onshore Light Crude	0.613	0.387	0.292	0.02430	0.00027	0.00075	0.00017	0.00036
Onshore Heavy Crude	0.942	0.058	0.030	0.00752	0.00935	0.00344	0.00051	0.00372
Onshore Gas Production	0.920	0.080	0.035	0.00338	0.00023	0.00039	0.00002	0.00010
Onshore Gas Plants	0.564	0.436	0.253	0.00923	0.00123	0.00032	0.00001	0.00004
Offshore Oil & Gas	0.791	0.210	0.110	0.00673	0.00133	0.00089	0.00016	0.00027

NOTES: 1. Emission factor = Speciated Emissions/Total Emissions
2. NMHC = Non-methane hydrocarbon
3. VOC = Propane and heavier hydrocarbon

United States
Environmental Protection
Agency

Office of Air Quality
Planning And Standards
Research Triangle Park, NC 27711

EPA-450/2-90-001a
January 1990

AIR

EPA

Air Emissions Species Manual

Volume I
Volatile Organic Compound Species Profiles

Second Edition

Attachment C
Fugitive Emission ERC Calculations
Poole Tank Battery

Joe Thomas

From: Joe Thomas
Sent: Thursday, July 14, 2016 1:29 PM
To: 'Charles Parmley'
Cc: 'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Importance: High

Charles,

If I understand what you are saying in your first response for Poole, you appear to be misinterpreting the definitions of light liquid and heavy liquid. The definitions apply to the vapor pressure of what is inside the pipes and components, not of the fugitives that are emitted. This issue would be compounded by the use of fugitive chemical species listed in a PBR – PBR reviews assess the property-line impacts of hazardous air pollutants rather than the overall air emissions, and less volatile materials are usually left out. Therefore, to document whether the components are in light or heavy liquid service, you need to provide documentation of the vapor pressure of the oil (and condensate if separate) that was present. If this data cannot be provided, I will need to use the emission factors for heavy liquid service for the components when calculating ERCs.

In regards to your second response, I am still looking into whether there is better data than the API publication that was used.

Please reply by 7/29/2016 or let me know by that date how long will be needed.

Thank you
Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

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Sign up to receive e-mail updates on emissions banking and trading programs. Select *Emissions Banking and Trading (EBT) Programs* under the *Air Quality* heading

---

From: Charles Parmley [mailto:charles.parmley@sageenvironmental.com]
Sent: Thursday, June 16, 2016 4:36 PM
To: Joe Thomas <joe.thomas@tceq.texas.gov>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Good afternoon Joe,

Attached is the memo addressing the questions about Poole ERC generation project. Please let me know if you have any additional questions regarding these applications.

Thank you,
Charles

Joe Thomas

From:	Charles Parmley <charles.parmley@sageenvironmental.com>
Sent:	Tuesday, August 09, 2016 11:58 AM
To:	Joe Thomas
Cc:	'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject:	RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)
Attachments:	Poole - TCEQ Response 2016 0809.pdf

Good morning Joe,

Attached is the memo addressing the question about Poole ERC generation project. Please let me know if you have any additional questions regarding this application.

Additionally, we have confirmed that there has only been one Smart Tank Battery (Smart) site that has ever been under the ownership of Hilcorp. We believe the duplicate RN to be the result of an administration error and are currently working with the Air Quality Division to combine the two RNs for Smart to correspond to RN102712171. This is the RN that is represented in EBT Portfolio P0336 containing the site's MECT allowances and in PBR Registration No. 44722. I will keep you updated regarding the progress of combining these RNs but please let me know if you require and updated EC-1 or any additional information regarding Smart.

Thank you,
Charles

Charles Parmley EBT, Air Permitting, Emissions Calculations
SAGE ATC ENVIRONMENTAL CONSULTING LLC
Friendly Service, No Surprises ®
Houston office
12727 Featherwood Drive, Suite 210
Houston, TX 77034
O: 281-484-6200;1428
C: 512-815-7555
SAGEENVIRONMENTAL.COM

Weekly Independent Contractor Highlight

Gordon Frisbie, gordon.frisbie@sagenvironmental.com, has 26+ years' experience in conducting air dispersion modeling analyses, compiling emission inventories & preparing air quality permit applications for numerous air quality projects. He is an expert in preparing PSD/NSR air quality permit applications for a variety of industrial sources including power plants, oil & gas plants, and mining operations. His key areas of expertise are in PSD/NSR Permitting, Air Quality Dispersion Modeling, Meteorological Data Processing, Emission Inventories, Regulatory Review, Due Diligence, Title IV Acid Rain Permits, Title V Operating Permits, PBR, HAZ Air Pollutants, Oil & Gas, and Power Plants.

From: Joe Thomas [mailto:joe.thomas@tceq.texas.gov]
Sent: Thursday, July 14, 2016 1:29 PM
To: Charles Parmley <charles.parmley@sageenvironmental.com>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>

MEMORANDUM

DATE: August 9, 2016

TO: Joseph Tomas, TCEQ – Emissions Banking and Trading

FROM: Charles Parmley, Sage ATC Environmental Consulting, LLC

RE: Hilcorp Energy Company – Poole Tank Battery

An email sent from Mr. Joe Thomas of the Texas Commission on Environmental Quality (TCEQ) to Mr. Charles Parmley of Sage ATC Environmental Consulting, LLC (Sage) on July 14, 2016 requested additional information about the Emission Reduction Credit (ERC) generation application submitted by Sage for the Hilcorp Energy Company (Hilcorp) – Poole Tank Battery (Poole).

The ERC generation application for the Poole site was submitted to the TCEQ on December 29, 2015 and was originally assigned to Mr. Joe Thomas of the TCEQ for preliminary review.

Sage has prepared this memo to address questions raised by Mr. Joe Thomas in his e-mail, in which potential deficiencies in the application were noted. Sage believes that our responses to these questions, as found in this memo, will help expedite the TCEQ's ERC application review process.

Question #1 – There appears to be a misinterpretation of the definitions of light liquid and heavy liquid. The definitions apply to the vapor pressure of what is inside the pipes and components, not of the fugitives that are emitted. This issue would be compounded by the use of fugitive chemical species listed in a PBR – PBR reviews assess the property-line impacts of hazardous air pollutants rather than the overall air emissions, and less volatile materials are usually left out. Therefore, to document whether the components are in light or heavy liquid service, you need to provide documentation of the vapor pressure of the oil (and condensate if separate) that was present. If this data cannot be provided, I will need to use the emission factors for heavy liquid service for the components when calculating ERCs.

Response #1 – Per the "Addendum to RG-306A (Jan 2008) – Emission Factors for Equipment Leak Fugitive Components", a heavy liquid is defined as any liquid with a vapor pressure less than or equal to 0.044 psia at 68°F. In addition, for the use of oil and gas production fugitive emission factors, it offers an alternative classification for heavy oil and light oil. Light oil is defined as any oil with an API greater than 20° while any oil with an API less than 20° is classified as heavy oil. The relevant pages of this document have been included as Attachment A in this response.

ATTACHMENT A
ADDENDUM TO RG-360A:
EMISSION FACTORS FOR EQUIPMENT LEAK FUGITIVE COMPONENTS

Quantifying Emissions from Components Monitored by an Audio/Visual/Olfactory (AVO) Inspection

For odorous or toxic inorganic compounds, an AVO inspection may be required by TCEQ rule, commission order, or permit condition. Generally, an AVO inspection program may only be applied to inorganic compounds that cannot be monitored by instrument. In limited instances, the AVO inspection program may be applied to extremely odorous organic compounds such as mercaptans.

If no monitoring or screening data exist for AVO-monitored components, then average emissions factors with AVO reduction credits applied can be used to determine emissions. To claim credit for this program, you must be able to produce, upon request, documentation that all elements of the program are in place and were followed.

Determining Emissions from Unmonitored Components

Quantifying Emissions Using Average Factors

Average emission factors are divided into four categories:

- SOCMI factors,
- oil and gas production factors,
- refinery factors, and
- factors for petroleum marketing terminals.

Within each category, factors vary depending upon specific component type (connectors, valves, pumps, etc.) and material in service (light liquid, heavy liquid, gas-vapor, or water–light liquid). For components in liquid service, you may need to choose between a "heavy liquid" factor and a "light liquid" factor. Use the "heavy liquid" factor if the stream's vapor pressure is less than or equal to 0.044 psia at 68°F. If the stream's vapor pressure is greater than 0.044 psia at 68°F, use the appropriate "light liquid" factor.

Note that the average factors generally determine total hydrocarbon emissions. Therefore, you may need to multiply the calculated emission rates by the stream's weight percentage of VOC compounds to determine total VOC emissions.

The EPA average emissions factors for the industry types described in the following sections can be found in *Protocol for Equipment Leak Emission Estimates* (EPA-453/R-95-017), available at the EPA Web site at <http://www.epa.gov/ttnchie1/publications.html>.

The use of these factors must be accompanied by an AVO program performed monthly. To claim credit for this program, you must be able to produce, upon request, documentation that all elements of the program are in place and were followed. Because the petroleum marketing terminal factors include the appropriate reduction credit for the AVO inspection, no additional reductions may be taken.

If a monthly AVO inspection was not performed, use the refinery factors to determine emissions.

These factors are found in Table 4, "Average Emission Factors – Petroleum Industry."

References

Texas Commission on Environmental Quality. 2000. Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives. TCEQ Air Permits Division draft document. Available online at: <http://www.tceq.state.tx.us/goto/nsr_chemguidance>. Accessed December 18, 2007.

U.S. Environmental Protection Agency. 1996. Preferred and Alternative Methods for Estimating Fugitive Emissions from Equipment Leaks. Vol. 2, Emissions Inventory Improvement Program Document Series, chapter 4. Available online at: <www.epa.gov/ttn/chief/eiip/techreport/volume02/index.html>. Accessed December 18, 2007.

U.S. Environmental Protection Agency. 1995. Protocol for Equipment Leak Emission Estimates. EPA-453/R-95-017. Available online at: <www.epa.gov/ttnchie1/publications.html>. Accessed December 18, 2007.

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10/14/04 11:00 AM

CORP ENERGY CO. (TEXAS)

LAB REPORT NO: 249187

MOND CREEK SALES TO HPL
659-10

SAMPLE DATE: 10-12-2004
EFFECTIVE DATE:
SAMPLE TYPE: SPOT
SAMPLED BY: BT
CYLINDER NO: 7726

°F
) PSIG

MOLE %	GPM @ 14.65 PSIA
1.69	
0.23	
78.15	
11.33	3.010
5.84	1.598
1.06	0.345
0.98	0.308
0.28	0.101
0.17	0.061
0.27	0.118
100.00	5.541

BTU/REAL CUBIC FOOT

PRESSURE BASE (PSIA)	14.65	14.73	15.025
DRY	1236	1242	1267
SATURATED	1215	1221	1246
AS DELIVERED	1235	1242	1266

FIELD GRAVITY
CALCULATED GRAVITY 0.7303
COMPRESSIBILITY FACTOR Z= 0.9964

BTU, GRAVITY, AND GPM ARE CALCULATED USING GPA STANDARDS 2172-96, 2145-03, 2261-99.

C6+
60 °F = 5129.3
Y = 3.2177

ANALYZED BY: *S. FIEDLER*

Joe Thomas

From: Joe Thomas
Sent: Thursday, August 25, 2016 2:09 PM
To: 'Charles Parmley'
Cc: 'Brady Dodson'; Randy Parmley, P.E.; Subra Namasivayam
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Importance: High

Charles,

In the calculation of fugitive emissions, you are showing three pumps in gas service (i.e., compressors), but the MECT reports for this site only show one compressor engine. Please explain the difference. You are also showing 25 sampling connectors in gas service and 35 in oil service, which seems very high for a small production site. Please explain why there are so many.

Please provide this information by 9/2/2016 or let me know by that date how long will be needed.

Thank you
Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

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Sign up to receive e-mail updates on emissions banking and trading programs. Select *Emissions Banking and Trading (EBT) Programs* under the *Air Quality* heading

From: Charles Parmley [mailto:charles.parmley@sageenvironmental.com]
Sent: Tuesday, August 09, 2016 11:58 AM
To: Joe Thomas <joe.thomas@tceq.texas.gov>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Good morning Joe,

Attached is the memo addressing the question about Poole ERC generation project. Please let me know if you have any additional questions regarding this application.

Additionally, we have confirmed that there has only been one Smart Tank Battery (Smart) site that has ever been under the ownership of Hilcorp. We believe the duplicate RN to be the result of an administration error and are currently working with the Air Quality Division to combine the two RNs for Smart to correspond to RN102712171. This is the RN that is represented in EBT Portfolio P0336 containing the site's MECT allowances and in PBR Registration No. 44722. I will keep you updated regarding the progress of combining these RNs but please let me know if you require and updated EC-1 or any additional information regarding Smart.

Thank you,
Charles

Joe Thomas

From: Charles Parmley <charles.parmley@sageenvironmental.com>
Sent: Saturday, September 03, 2016 3:05 PM
To: Joe Thomas
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Good afternoon Joe,

I apologize for not getting you the response regarding Pool yesterday. I will have the information that you requested by Wednesday (9/7/2016).

Thank you and have a great weekend,
Charles

Charles Parmley EBT, Air Permitting, Emissions Calculations
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Weekly Independent Contractor Highlight

Yong Goh, yong.goh@sageenvironmental.com, has 25+ years' experience in both the LDEQ and Consulting. Served as the leader of the Wetland Delineation and USACE permitting group for a major US environmental firm. Holds an EPA watershed management training certificate, a 40-hour HAZWOPER and a Certified Project Manager. His key areas of expertise are in Wetlands Delineation & Section 404/10 COE permit writing, Due Diligence, Haz Waste, Soil, Groundwater and Waste, NEPA, RCRA, Remediation and Field Services, SPCC & SWPPP.

From: Joe Thomas [mailto:joe.thomas@tceq.texas.gov]
Sent: Thursday, August 25, 2016 2:09 PM
To: Charles Parmley <charles.parmley@sageenvironmental.com>
Cc: 'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)
Importance: High

Charles,

In the calculation of fugitive emissions, you are showing three pumps in gas service (i.e., compressors), but the MECT reports for this site only show one compressor engine. Please explain the difference. You are also showing 25 sampling connectors in gas service and 35 in oil service, which seems very high for a small production site. Please explain why there are so many.

FW: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Thu 9/8/2016 8:30 AM

To:Joe Thomas <joe.thomas@tceq.texas.gov>;

Cc:'Brady Dodson' <bdodson@hilcorp.com>; Randy Parmley, P.E. <Randy@sageenvironmental.com>; Subra Namasivayam <subra.namasivayam@sageenvironmental.com>;

1 attachments (62 KB)

Poole - TCEQ Response 2016 0907.pdf;

Good afternoon Joe,

Attached is the memo addressing the questions about Poole ERC generation project. Please let me know if you have any additional questions regarding these applications.

Thank you,
Charles

Charles Parmley **EBT, Air Permitting, Emissions Calculations**
S A G E A T C Environmental Consulting LLC
Friendly Service, No Surprises ®
Houston office
12727 Featherwood Drive, Suite 210
Houston, TX 77034
O: 281-484-6200;1428
C: 512-815-7555
sageenvironmental.com

Weekly Independent Contractor Highlight

Renae Schmidt, renae.schmidt@sageenvironmental.com, has 30+ years' of experience administering all levels of regulatory programs in the food, drug, chemical & petroleum industries. She is experienced in establishing and managing HSE programs both in the US & in Latin America. Her key areas of expertise are in Safety, HSE Professional/Manager, Regulatory Affairs Specialist/Manager, Water Permitting and FDA Bulk Pharmaceutical Compliance.

From: Charles Parmley
Sent: Saturday, September 3, 2016 3:05 PM
To: Joe Thomas <joe.thomas@tceq.texas.gov>
Subject: RE: ERC Generation Projects 410424 & 410425 (Smart & Poole)

Good afternoon Joe,

I apologize for not getting you the response regarding Pool yesterday. I will have the information that you requested by Wednesday (9/7/2016).

MEMORANDUM

DATE: **September 7, 2016**

TO: **Joseph Tomas, TCEQ – Emissions Banking and Trading**

FROM: **Charles Parmley, Sage ATC Environmental Consulting, LLC**

RE: **Hilcorp Energy Company – Poole Tank Battery**

An email sent from Mr. Joe Thomas of the Texas Commission on Environmental Quality (TCEQ) to Mr. Charles Parmley of Sage ATC Environmental Consulting, LLC (Sage) on August 25, 2016 requested additional information about the Emission Reduction Credit (ERC) generation application submitted by Sage for the Hilcorp Energy Company (Hilcorp) – Poole Tank Battery (Poole).

The ERC generation application for the Poole site was submitted to the TCEQ on December 29, 2015 and was originally assigned to Mr. Joe Thomas of the TCEQ for preliminary review.

Sage has prepared this memo to address questions raised by Mr. Joe Thomas in his e-mail, in which potential deficiencies in the application were noted. Sage believes that our responses to these questions, as found in this memo, will help expedite the TCEQ's ERC application review process.

Question #1 – In the calculation of fugitive emissions, you are showing three pumps in gas service (i.e., compressors), but the MECT reports for this site only show one compressor engine. Please explain the difference. You are also showing 25 sampling connectors in gas service and 35 in oil service, which seems very high for a small production site. Please explain why there are so many.

Response #1 – Upon review, there are a few typos in the fugitive emission calculations. The pumps were previously labeled incorrectly as in gas/vapor service. These are pumps in light liquid service, not compressors in gas service, and are not MECT applicable. No compressor engines are being claimed for ERCs in this application. Additionally, the sampling connector count incorrectly included the connector count. The number of sampling connectors was corrected to 2 in light liquid service and 2 in gas/vapor service. The other connectors previously listed as sampling connectors are now included in the flanges/connector component count. Please see Appendix A for revised site-wide fugitive emission calculations.

Attachment A
2005 &2006 Site Wide Fugitive Emissions Calculations

Hilcorp Energy Company
Poole Tank Battery
Site-Wide Fugitve Emission Calculations

Year: 2005 & 2006
Year Type: Baseline Year 1 & Baseline Year 2
EPN: EPN6
FIN: FUG001
Equipment Description: Site-Wide Fugitives
Pollutants: VOC
Calculation Basis: API O&G Factors

Emission Calculation Equation: E = C x EF X CE x % VOC

where:

E = Emissions (tons/year)
C = Fugitive Component Count
EF = Emission Factor (lb/hr/component)
CF = Percent Control Efficiency
VOC = Percent VOC of Vapors

CHANGES BASED ON EPA-453/R-95-017 TABLE 2.4 VALUES.

Table C.1 2005 & 2006 Site-Wide Fugitive Emission Calculations

Component	Count	Emission Factors (lb/hr/component)	Control Efficiency (%)	VOC (%)	VOC Aonual Emissions (tons/year)	
Valves						
Gas/Vapor	25	~~0.00992~~ 0.0099	0	29.20%	0.3172	0.317
Light Liquid	35	0.0055 ✓	0	100.00%	0.8432	0.843
Pumps						
Gas/Vapor	3	~~0.02866~~ 0.0286	0	29.20%	0.1100	0.110
Flanges/Connectors						0.009
Gas/Vapor	43 *	FLANGES ~~0.000086~~ 0.000358 O/V 0.000243 LL ✓ 0.00086	0	29.20%	0.0473	0.032
Light Liquid	63 **	0.000243 CONNECTORS O/V 0.000441 LL 0.000462	0	100.00%	0.0671	0.013 0.067
Other						
Gas/Vapor	30	0.0194 ✓	0	29.20%	0.7444	0.744
Light Liquid	40	~~0.0000683~~ 0.0165	0	100.00%	0.0120	2.891
Sampling Connectors						
Gas/Vapor	2	0.00044 ✓	0	29.20%	0.0011	0.001
Light Liquid	2	0.000463	0	100.00%	0.0041	0.004
Totals					**2.142**	5.03

* PER CHARLES PARKLEY (11/30/2016): 20 FLANGES & 23 CONNECTORS
** " " " " : 30 FLANGES & 33 CONNECTORS.

Notes:
(1) Emission factors are from the EPA document EPA-453/R-95-017; November, 1995; pp. 2-15.
(2) Light oil is defined as having API gravity greater than or equal to 20° API.
(3) There are no control efficiencies in place for this facility.

5.03 x .8165 = 4.107

Sample Calculations:

Annual Emissions for Valves in Gas/Vapor Service (tons/year)

= [((25 Gas/Vapor Valves) x (0.00992 lb/hr/comp) x (29.2% VOC) x (8760 hours/year)) / (2000 lbs/ton)] x (1 - 0) = 0.32 tons VOC/y

Joe Thomas

From: Joe Thomas
Sent: Friday, December 02, 2016 8:11 AM
To: 'Charles Parmley'
Cc: 'Brady Dodson'; Randy Parmley- Sage (randy@sageenvironmental.com); Subra Namasivayam
Subject: Poole Tank Battery: Status of well plugging

Importance: High

Charles,

I am almost done with processing this ERC application but do not have a report on the well plugging. Please let me know the status.

Joseph Thomas
Emission Banking and Trading Program
Air Quality Division
(512) 239-0012

How is our customer service? https://www.tceq.texas.gov/customersurvey

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Plugging Report

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-3
Rev. 12/92

RRC #23146

API NO. (If Available) 42-291-32158	1. RRC District 03
FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING	4. RRC Lease or ID. Number 24346
2. FIELD NAME (as per RRC Records) Redmond Creek (Yegua)	3. Lease Name Poole, V. · 5. Well Number 1 ST
6. OPERATOR Hilcorp Energy Company	6a. Original Form W-1 Field in Name of: 10. County Liberty
7. ADDRESS P.O. Box 61229 Houston, TX 77208-1229	6b. Any Subsequent W-1's Filed in Name of: 11. Date Drilling Permit Issued 11/25/92
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located	692 Feet From N Line and 220 Feet From E Line of the Poole, V. Lease 12. Permit Number 402472
9a. SECTION, BLOCK, AND SURVEY Wm. Harris / A-51	9b. Distance and Direction From Nearest Town in this County 6.25 miles SE of Liberty 13. Date Drilling Commenced 8/27/92
16. Type Well (Oil, Gas, Dry) Oil / Total Depth 12991 TVD	17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s (GAS ID or OIL LEASE # / Oil-O Gas-G / Well #) 14. Date Drilling Completed 1/19/93
18. If Gas, Amt. Of Cond on Hand at time of Plugging	15. Date Well Plugged 01/27/16

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date	01/15/16	01/15/16	01/20/16	01/26/16	01/26/16	01/26/16	01/27/16	01/27/16
20. Size of Hole or Pipe in which Plug Placed (inches)	5 1/2	9 5/8	9 5/8	12 ¼, 13 3/8	13 3/8	13 3/8	13 3/8	13 3/8
21. Depth to Bottom of Tubing or Drill Pipe (ft.) CIBP	@ 12300	9296	9250	3550	2400	2000	1600	13
*22. Sacks of Cement Used (each plug)	3	75	60	115	110	85	85	10
*23. Slurry Volume Pumped (cu. Ft.)	3.18	79.5	63.6	121.9	116.6	90.1	90.1	10.6
*24. Calculated Top of Plug (ft.)	12280	9096	9096	3355	2275	1900	1500	3
25. Measured Top of Plug (if tagged) (ft.)		9250						
*26. Slurry Wt. #/Gal.	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
27. Type Cement	H	H	H	H	H	H	H	H

28. CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT.#/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
13 3/8	61/68	3490	3487	17 1/2
9 5/8	53.5	10020	6470	12 1/4
7	Liner	9681 - 12998	9681 - 12998	
		See Remarks		

29. Was any Non-Drillable Material (Other Than Casing) Left in This Well ☐ Yes ☐ No

29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)

30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM	TO	FROM	TO
12177	12549		

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.
• Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

Signature of Cementer or Authorized Representative

Basic Energy Services — Name of Cementing Company — 02/10/16

CERTIFICATE:
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

REPRESENTATIVE OF COMPANY — Sr. Reg. Tech (TITLE) — 2/12/16 (DATE) — Phone (713) 289-2743 (A/C NUMBER)

SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

31. Was Well filled with Mud-Laden Fluid, According to the regulations of the Railroad Commission ☒ Yes ☐ No	32. How was Mud Applied? Pumped thru tbg.	33. Mud Weight 9.5 LBS/GAL

34 Total Depth	Other Fresh Water Zones by T.D.W.R.		35, Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? ☒ Yes ☐ No
12991 TVD	TOP	BOTTOM	36. If NO, Explain
Depth of Deepest Fresh Water 2350	Surface	1550	
	1950	2350	

37. Name and Address of Cementing or Service company who mixed and pumped cement in this well
Basic Energy Services, P.O. Box 2266, Victoria, TX 77902

Date RRC District Office notified of plugging 01/14/16

38. Name(s) and Address(es) of Surface Owners of Well Site

Nathan Lee Smart
4556 Fm 563 Rd.
Liberty, TX 77575

39. Was Notice Given Before Plugging to the Above?
YES

FILL IN BELOW FOR DRY HOLES ONLY

40. For Dry Holes, this From must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.

☐ Log Attached ☐ Log released to _____ Date _____

Type Logs:

☐ Driller's ☐ Electric ☐ Radioactivity ☐ Acoustical/Sonic

41. Date FORM P-8 (Special Clearance) Filed?

42. Amount of Oil produced prior to Plugging _____ bbls*

* File FORM P-1 (Oil Production Report) for month this oil was produced

RRC USE ONLY

Nearest Field _____

REMARKS Jet cut 2 3/8" tbg @ 12,300' & recovered.
Set 5 1/2" CIBP @ 12,300' -- witnessed by RRC District 03 rep, Ronald -- 01/14/16. Dump bailed 20' of cement on top of CIBP.
Jet cut 9 5/8" csg @ 3550' & recovered.
Cut & capped well 3' below ground level.

28. CASING AND TUBING RECORD AFTER PLUGGING (Cont'd)

SIZE	WT.#/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
5 ½	Liner	9296 – 13109	9296 – 13109	
2 3/8	4.7	12332	32	