RCRA PART B POST-CLOSURE AND CORRECTIVE ACTION PERMIT RENEWAL APPLICATION
PERMIT NO. 058078775-PC

Submitted by:

HOLLYFRONTIER.

HollyFrontier Tulsa Refining LLC
Tulsa West Refinery
Tulsa, Oklahoma

Prepared By:

TRC

TRC
505 East Huntland Drive, Suite 250
Austin, Texas 78752

December 3, 2018

HOLLYFRONTIER

December 3, 2018

Kelly Dixon, Division Director
Oklahoma Department of Environmental Quality
Land Protection Division
707 N. Robinson Avenue
Oklahoma City, OK 73101

RE: Submittal of Resource Conservation and Recovery Act Part B Post-Closure and Corrective Action Permit Renewal Application Oklahoma Hazardous Waste Permit Number OKD058078775-PC HollyFrontier Tulsa Refining LLC, Tulsa West Refinery, Tulsa, Oklahoma

Dear Ms. Dixon:

The HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery), in Tulsa, Oklahoma formally submits an original and electronic copy of its Resource Conservation and Recovery Act (RCRA) Part B Post-Closure and Corrective Action Permit Renewal Application (Renewal Application) to the Oklahoma Department of Environmental Quality (ODEQ, Agency). The current RCRA Part B Post-Closure and Corrective Action Permit (the Permit, Permit Number OKD058078775-PC) is set to expire on June 1, 2019. In accordance with Title 40 Part 270.10(h)(1) of the Code of Federal Regulations (40 CFR 270.10(h)(1)) this Renewal Application is being submitted at least 180 days before the expiration of the current Permit. Note that this Renewal Application also includes Class 1, Class 1*, Class 2, and Class 3 permit modification requests, thereby making the Application both a renewal and modification application.

The Refinery is currently operating under a Post-Closure and Corrective Action Permit issued by ODEQ effective June 1, 2009, and the Land Treatment Units (LTUs) at the Refinery are no longer in active operation. Hence, the Renewal Application follows the applicable requirements of 40 CFR 270.28 (Part B information for post-closure permits), Title 252 Chapter 205 of the Oklahoma Administrative Code (OAC 252:205), and other applicable federal and state regulations for Post-Closure Care Permits.

This Renewal (and modification) Application reflects updates to the Refinery and Refinery operations since the issuance of the Permit in 2009 and includes proposals for the following major modifications:

- Requesting shortening of the post-closure care period contingent on review of sampling results or setting the post-closure care period to align with the duration of the renewed Permit;
- Revising the Arkansas River inspection process;
- Modifying the boundaries of the Central and East Land Treatment Units to exclude areas where waste was not applied;
- Proposing a site-wide risk assessment for groundwater and development of new site-specific risk based screening levels;
- Reducing the groundwater monitoring target analyte list;
- Revising the groundwater monitoring network to reflect the site-wide approach; and,
- Removing notification requirements associated with Solid Waste Management Unit 10.

This Renewal Application is classified as a Tier II application. The Refinery will provide the appropriate public notice in accordance with the state-specific requirements in OAC 252:4-7-13(a) and Title 27A, Part 2-14-301, of the 2014 Oklahoma Statues (27A OK Stat § 27A-2-14-301). Attachment 1 to this transmittal letter contains a copy of the public notification for the application submittal and repository availability that HFTR will provide to the facility mailing list and publish in the local newspaper.

In accordance with OAC 252:205-21-4 (a)(1) and (2) and OAC 252:205 Appendix B, HFTR will submit the required $10,500 in RCRA renewal application fees upon receipt of the invoice from ODEQ.

I encourage you or your staff to contact me directly at 918-594-6000 or Mr. Steve Moyer of my staff at 918-588-1197 with any questions or requests for additional information.

Respectfully,

Skipp Kistler

Skipp Kistler
Vice President and Refinery Manager
Tulsa Refinery

cc: Hillary Young, ODEQ
Mike Holder, HollyFrontier Corporation
Arsin Sahba, HollyFrontier Corporation
Cat Smith, TRC

ATTACHMENT 1

Public Notice of Repository Availability and Permit Renewal Application Submittal

NOTICE OF PERMIT RENEWAL APPLICATION SUBMITTAL AND PUBLIC REPOSITORY AVAILABILITY

On December 3, 2018, the HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery) submitted a Resource Conservation and Recovery Act (RCRA) Part B Post-Closure and Corrective Action Permit Renewal Application (Renewal Application) for its petroleum refinery located in Tulsa, Oklahoma (OK). The Renewal Application also includes Class 1, Class 1*, Class 2, and Class 3 permit modification requests, thereby making the application both a renewal and modification application. In accordance with Title 40 Code of Federal Regulations (CFR) Section 270.42(c), Oklahoma Administrative Code (OAC) Title 252 Chapter 4-7-13(a) and Title 27A, Part 2-14-301, of the 2014 Oklahoma Statutes (27A OK Stat § 27A-2-14-301(A)), the Refinery posts this notice of the Renewal Application submittal and repository availability.

The Refinery, located 1700 South Union Avenue in Tulsa, OK, processes approximately 90,000 barrels a day of crude oil into fuels and more than 400 lubricant products, waxes, and aromatic oils. The Refinery occupies approximately 850 acres and includes petroleum products processing areas, raw and bulk products storage, historical and current waste treatment areas, and other operations and storage areas. The Refinery conducts post-closure care (monitoring and maintenance) for three (3) closed Hazardous Waste Land Treatment Units (LTUs). The closure certificate for these units was accepted by the ODEQ on August 22, 2003. The Refinery also implements site-wide corrective actions to address potential releases of constituents of concern. The Refinery currently conducts post-closure care and corrective action activities in accordance with Permit OKD058078775-PC issued by the Oklahoma Department of Environmental Quality (ODEQ) and effective on June 1, 2009. This Renewal Application is for a renewed RCRA Part B Post-Closure and Corrective Action Permit.

In accordance with 27A OK Stat § 27A-2-14-301(A), interested citizens are invited to review copies of the Renewal Application at the Tulsa Central Library, 400 Civic Center, Tulsa, OK, 74103.

The designated facility contact who will address questions regarding the Renewal Application is:

Steve Moyer
Environmental Manager
HollyFrontier Tulsa Refining LLC
Tulsa West Refinery
1700 South Union Avenue
Tulsa, OK 74107
Telephone: 918-588-1197

Comments should be sent to the following Oklahoma Department of Environmental Quality (ODEQ) contact:

Hillary Young, P.E.
Chief Engineer
Land Protection Division
Oklahoma Department of Environmental Quality
707 N. Robinson, P.O. Box 1677
Oklahoma City, OK 73101-1677
Telephone: (405) 702-5188
Fax: (405) 702-5101

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

AMSL	Above meal sea level
AOC	Area of Concern
Arkansas River	the River
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
CAP	Corrective Action Program
CCR	Current Conditions Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COCs	Constituents of concern
CPT	Cone Penetration Testing
EC	Emergency Coordinator
EHS	Extremely hazardous substance
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Emergency Response Plan
ERTs	Emergency Response Technicians
ft	feet
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
gpm	gallons per minute
HAZWOPER	Hazardous Waste Operations and Emergency Response
HFTR	HollyFrontier Tulsa Refining LLC
Holly	Holly Refining and Marketing
HWMU	Hazardous Waste Management Unit
IC	Incident Commander
ICS	Incident Command System
IGPG Report	Development of Interim Groundwater Protection Goals
LDRs	Land Disposal Restrictions
LEPC	Local Emergency Planning Committee
LNAPL	Liquid non-aqueous phase liquids
LPD	Land Protection Division
LTUs	Land Treatment Units
MTBE	methyl tertiary butyl ether
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
OK	Oklahoma
O&M	Operation and Maintenance
OSC	On-Scene Commander
OSDH	Oklahoma State Department of Health
PCC	Post-closure care

PE	Professional Engineer
PG	Professional Geologist
POC	Point of compliance
POE	Point of exposure
PHC	Principal Hazardous Constituents
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SAP	Sampling and Analysis Plan
RBSLs	risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RQ	Reportable quantities
RSL	Regional screening levels
Sunoco	Sunoco, Inc.
SWMU	Solid Waste Management Unit
The Refinery	Tulsa West Refinery
TZ	Treatment Zone
USACE	Unite States Army Corps of Engineers
USEPA	United State Environmental Protection Agency
WQD	Water Quality Division
WWTS	Wastewater Treatment System

FACILITY CERTIFICATION

RCRA Part B Permit Renewal Application
HollyFrontier Tulsa Refining LLC – Tulsa, Oklahoma

Facility Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Skipp Kistler
Vice President and Refinery Manager

HollyFrontier Tulsa Refining LLC
Tulsa West Refinery

Date: 12-3-2018

Note: This Renewal Application is signed in accordance with 40 CFR 270.11(a)(1) and (d)(1) by the HFTR Vice President and Refinery Manager. The HFTR Vice President and Refinery Manager has signatory authority as a principal corporate official as defined in 40 CFR 270.11(a)(1) and OAC 252:515-9-156.

SEC FILINGS

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2017
OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to ____________

Commission File Number 1-3876

HOLLYFRONTIER CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**75-1056913**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
2828 N. Harwood, Suite 1300 Dallas, Texas	**75201-1507**
(Address of principal executive offices)	**(Zip Code)**

(214) 871-3555
Registrant's telephone number, including area code

Securities registered pursuant to Section 12(b) of the Act:
Common Stock, $0.01 par value registered on the New York Stock Exchange.

Securities registered pursuant to 12(g) of the Act:
None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15 (d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐	Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐						

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

On June 30, 2017, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the Common Stock, par value $0.01 per share, held by non-affiliates of the registrant was approximately $4.5 billion, based upon the closing price on the New York Stock Exchange on such date. (This is not deemed an admission that any person whose shares were not included in the computation of the amount set forth in the preceding sentence necessarily is an "affiliate" of the registrant.)

177,363,228 shares of Common Stock, par value $.01 per share, were outstanding on February 16, 2018.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's proxy statement for its annual meeting of stockholders to be held on May 9, 2018, which proxy statement will be filed with the Securities and Exchange Commission within 120 days after December 31, 2017, are incorporated by reference in Part III.

TABLE OF CONTENTS

PART I

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains certain "forward-looking statements" within the meaning of the federal securities laws. All statements, other than statements of historical fact included in this Form 10-K, including, but not limited to, those under "Business and Properties" in Items 1 and 2, "Risk Factors" in Item 1A, "Legal Proceedings" in Item 3 and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7, are forward-looking statements. Forward-looking statements use words such as "anticipate," "project," "expect," "plan," "goal," "forecast," "intend," "should," "would," "could," "believe," "may," and similar expressions and statements regarding our plans and objectives for future operations. These statements are based on management's beliefs and assumptions using currently available information and expectations as of the date hereof, are not guarantees of future performance and involve certain risks and uncertainties. All statements concerning our expectations for future results of operations are based on forecasts for our existing operations and do not include the potential impact of any future acquisitions. Although we believe that the expectations reflected in these forward-looking statements are reasonable, we cannot assure you that our expectations will prove to be correct. Therefore, actual outcomes and results could materially differ from what is expressed, implied or forecast in these statements. Any differences could be caused by a number of factors including, but not limited to:

- risks and uncertainties with respect to the actions of actual or potential competitive suppliers of refined petroleum products in our markets;
- the demand for and supply of crude oil and refined products;
- the spread between market prices for refined products and market prices for crude oil;
- the possibility of constraints on the transportation of refined products;
- the possibility of inefficiencies, curtailments or shutdowns in refinery operations or pipelines;
- effects of governmental and environmental regulations and policies;
- the availability and cost of our financing;
- the effectiveness of our capital investments and marketing strategies;
- our efficiency in carrying out construction projects;
- our ability to acquire refined product operations or pipeline and terminal operations on acceptable terms and to integrate any existing or future acquired operations;
- the possibility of terrorist attacks and the consequences of any such attacks;
- general economic conditions; and
- other financial, operational and legal risks and uncertainties detailed from time to time in our Securities and Exchange Commission filings.

Cautionary statements identifying important factors that could cause actual results to differ materially from our expectations are set forth in this Form 10-K, including without limitation the forward-looking statements that are referred to above. When considering forward-looking statements, you should keep in mind the risk factors and other cautionary statements set forth in this Form 10-K under "Risk Factors" in Item 1A and in conjunction with the discussion in this Form 10-K in "Management's Discussion and Analysis of Financial Condition and Results of Operations" under the heading "Liquidity and Capital Resources." All forward-looking statements included in this Form 10-K and all subsequent written or oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The forward-looking statements speak only as of the date made and, other than as required by law, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

DEFINITIONS

Within this report, the following terms have these specific meanings:

"Alkylation" means the reaction of propylene or butylene (olefins) with isobutane to form an iso-paraffinic gasoline (inverse of cracking).

"Aromatic oil" is long chain oil that is highly aromatic in nature and is used to manufacture tires and industrial rubber products and in the production of specialty asphalt.

"**BPD**" means the number of barrels per calendar day of crude oil or petroleum products.

"**BPSD**" means the number of barrels per stream day (barrels of capacity in a 24 hour period) of crude oil or petroleum products.

"Base oil" is a lubricant grade oil initially produced from refining crude oil or through chemical synthesis that is used in producing lubricant products such as lubricating greases, motor oil and metal processing fluids.

"Biodiesel" means an alternative fuel produced from renewable biological resources.

"**Black wax crude oil**" is a low sulfur, low gravity crude oil produced in the Uintah Basin in Eastern Utah that has certain characteristics that require specific facilities to transport, store and refine into transportation fuels.

"Catalytic reforming" means a refinery process which uses a precious metal (such as platinum) based catalyst to convert low octane naphtha to high octane gasoline blendstock and hydrogen. The hydrogen produced from the reforming process is used to desulfurize other refinery oils and is a primary source of hydrogen for the refinery.

"**Cracking**" means the process of breaking down larger, heavier and more complex hydrocarbon molecules into simpler and lighter molecules.

"**Crude oil distillation**" means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor slightly above atmospheric pressure turning it back to liquid in order to purify, fractionate or form the desired products.

"**Ethanol**" means a high octane gasoline blend stock that is used to make various grades of gasoline.

"**FCC**," or fluid catalytic cracking, means a refinery process that breaks down large complex hydrocarbon molecules into smaller more useful ones using a circulating bed of catalyst at relatively high temperatures.

"**Gas oil**" is a group of petroleum distillation products having boiling points between kerosene and lubricating oil and is used as fuel in construction and agricultural machinery.

"**Hydrodesulfurization**" means to remove sulfur and nitrogen compounds from oil or gas in the presence of hydrogen and a catalyst at relatively high temperatures.

"**Hydrogen plant**" means a refinery unit that converts natural gas and steam to high purity hydrogen, which is then used in the hydrodesulfurization, hydrocracking and isomerization processes.

"HF alkylation" or hydrofluoric alkylation, means a refinery process which combines isobutane and C3/C4 olefins using HF acid as a catalyst to make high octane gasoline blend stock.

"**Isomerization**" means a refinery process for rearranging the structure of C5/C6 molecules without changing their size or chemical composition and is used to improve the octane of C5/C6 gasoline blendstocks.

"**LPG**" means liquid petroleum gases.

"**Lubricant**" or "**lube**" means a solvent neutral paraffinic product used in commercial heavy duty engine oils, passenger car oils and specialty products for industrial applications such as heat transfer, metalworking, rubber and other general process oil.

“MSAT2” means Control of Hazardous Air Pollutants from Mobile Sources, a rule issued by the U.S. Environmental Protection Agency to reduce hazardous emissions from motor vehicles and motor vehicle fuels.

“MEK” means a lube process that separates waxy oil from non-waxy oils using methyl ethyl ketone as a solvent.

“**MMBTU**” means one million British thermal units.

“Natural gasoline” means a low octane gasoline blend stock that is purchased and used to blend with other high octane stocks produced to make various grades of gasoline.

“Paraffinic oil” is a high paraffinic, high gravity oil produced by extracting aromatic oils and waxes from gas oil and is used in producing high-grade lubricating oils.

“**Rack back**” represents the portion of our Lubricants and Specialty Products business operations that entails the processing of feedstocks into base oils.

“**Rack forward**” represents the portion of our Lubricants and Specialty Products business operations that entails the processing of base oils into finished lubricants and the packaging, distribution and sale to customers.

“**Refinery gross margin**” means the difference between average net sales price and average cost per barrel sold. This does not include the associated depreciation and amortization costs.

“Reforming” means the process of converting gasoline type molecules into aromatic, higher octane gasoline blend stocks while producing hydrogen in the process.

“RINs” means renewable identification numbers and refers to serial numbers assigned to credits generated from renewable fuel production under the Environmental Protection Agency’s Renewable Fuel Standard (“RFS”) regulations, which require blending renewable fuels into the nation's fuel supply. In lieu of blending, refiners may purchase these transferable credits in order to comply with the regulations.

“Roofing flux” is produced from the bottom cut of crude oil and is the base oil used to make roofing shingles for the housing industry.

“ROSE,” or **“Solvent deasphalter / residuum oil supercritical extraction,”** means a refinery unit that uses a light hydrocarbon like propane or butane to extract non-asphaltene heavy oils from asphalt or atmospheric reduced crude. These deasphalted oils are then further converted to gasoline and diesel in the FCC process. The remaining asphaltenes are either sold, blended to fuel oil or blended with other asphalt as a hardener.

“Scanfiner” is a refinery unit that removes sulfur from gasoline to produce low sulfur gasoline blendstock.

“**Sour crude oil**” means crude oil containing quantities of sulfur greater than 0.4 percent by weight, while “**sweet crude oil**” means crude oil containing quantities of sulfur equal to or less than 0.4 percent by weight.

“**Vacuum distillation**” means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor below atmospheric pressure turning it back to a liquid in order to purify, fractionate or form the desired products.

“White oil” is an extremely pure, highly-refined petroleum product that has a wide variety of applications ranging from pharmaceutical to cosmetic products.

“WTI” means West Texas Intermediate and is a grade of crude oil used as a common benchmark in oil pricing. WTI is a sweet crude oil and has a relatively low density.

Items 1 and 2. Business and Properties

COMPANY OVERVIEW

References herein to HollyFrontier Corporation ("HollyFrontier") include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission's ("SEC") "Plain English" guidelines, this Annual Report on Form 10-K has been written in the first person. In this document, the words "we," "our," "ours" and "us" refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person, with certain exceptions. Generally, the words "we," "our," "ours" and "us" include Holly Energy Partners, L.P. ("HEP") and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, "HEP" refers to HEP and its consolidated subsidiaries.

We are principally an independent petroleum refiner that produces high-value light products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We were incorporated in Delaware in 1947 and maintain our principal corporate offices at 2828 N. Harwood, Suite 1300, Dallas, Texas 75201-1507. Our telephone number is 214-871-3555 and our internet website address is www.hollyfrontier.com. The information contained on our website does not constitute part of this Annual Report on Form 10-K. A print copy of this Annual Report on Form 10-K will be provided without charge upon written request to the Director, Investor Relations at the above address. A direct link to our SEC filings is available on our website under the Investor Relations tab. Also available on our website are copies of our Corporate Governance Guidelines, Audit Committee Charter, Compensation Committee Charter, Nominating / Corporate Governance Committee Charter, Environmental, Health, Safety, and Public Policy Committee Charter and Code of Business Conduct and Ethics, all of which will be provided without charge upon written request to the Director, Investor Relations at the above address. Our Code of Business Conduct and Ethics applies to all of our officers, employees and directors, including our principal executive officer, principal financial officer and principal accounting officer. Our common stock is traded on the New York Stock Exchange under the trading symbol "HFC."

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor Energy Inc. ("Suncor") to acquire 100% of the outstanding capital stock of Petro-Canada Lubricants Inc. ("PCLI"). The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars.

PCLI is located in Mississauga, Ontario and is the largest producer of base oils in Canada with a plant having 15,600 BPD of lubricant production capacity, and is the largest manufacturer of high margin Group III base oils in North America. The facility is downstream integrated from base oils to finished lubricants and produces a broad spectrum of specialty lubricants and white oils that are distributed to end customers worldwide. The acquisition brings to HollyFrontier industry-leading product innovation and research and development capabilities, a global sales and distribution network and a strong brand portfolio recognized globally. With this transaction, we have also acquired a perpetual exclusive license to use the Petro-Canada trademark in association with the lubricant products. With the addition of PCLI, we became the fourth largest lubricants producer in North America with a capacity of 28,000 BPD, approximately 10% of North American production.

As of December 31, 2017, we:

- owned and operated a petroleum refinery in El Dorado, Kansas (the "El Dorado Refinery"), two refinery facilities located in Tulsa, Oklahoma (collectively, the "Tulsa Refineries"), a refinery in Artesia, New Mexico that is operated in conjunction with crude oil distillation and vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the "Navajo Refinery"), a refinery located in Cheyenne, Wyoming (the "Cheyenne Refinery") and a refinery in Woods Cross, Utah (the "Woods Cross Refinery");
- owned and operated PCLI located in Mississauga, Ontario, which produces base oils and other specialized lubricant products;
- owned and operated HollyFrontier Asphalt Company ("HFC Asphalt"), which operates various asphalt terminals in Arizona, New Mexico and Oklahoma; and
- owned a 59% limited partner interest and a non-economic general partner interest in HEP.

HEP is a variable interest entity ("VIE") as defined under U.S. generally accepted accounting principles ("GAAP"). Information on HEP's assets and acquisitions completed between 2013 and 2017 can be found under the "Holly Energy Partners, L.P." section provided later in this discussion of Items 1 and 2, "Business and Properties."

Our operations are currently organized into three reportable segments, Refining, Lubricants and Specialty Products and HEP. The Refining segment includes the operations of our El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries and HFC Asphalt. The Lubricants and Specialty Products segment includes the operations of our Petro-Canada Lubricants business in addition to specialty lubricant products produced at our Tulsa Refinery. The HEP segment involves all of the operations of HEP. See Note 20 "Segment Information" in the Notes to Consolidated Financial Statements for additional information on our reportable segments.

REFINERY OPERATIONS

Our refinery operations serve the Mid-Continent, Southwest and Rocky Mountain regions of the United States. We own and operate five complex refineries having a combined crude oil processing capacity of 457,000 barrels per stream day. Each of our refineries has the complexity to convert discounted, heavy and sour crude oils into a high percentage of gasoline, diesel and other high-value refined products.

The tables presented below and elsewhere in this discussion of our refinery operations set forth information, including non-GAAP performance measures, about our refinery operations. The cost of products and refinery gross and net operating margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments and depreciation and amortization. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

During the fourth quarter of 2017, we revised the following refining segment operating data computations: refinery gross margin; net operating margin; and operating expenses to better align with similar measurements provided by other companies in our industry and to facilitate comparison of our refining performance relative to our peers. Effective with this change, these measurements are now inclusive of all refining segment activities including HFC Asphalt operations and revenues and costs related to products purchased for resale and excess crude oil sales. All prior period data has been retrospectively adjusted to reflect our current presentation.

	Years Ended December 31,		
	2017	2016	2015
Consolidated			
Crude charge (BPD) (1)	438,800	423,910	432,560
Refinery throughput (BPD) (2)	472,010	457,480	463,580
Sales of produced refined products (BPD) (3)	452,270	440,640	442,650
Refinery utilization (4)	96.0%	92.8%	97.6%
Average per produced barrel sold (5)			
Refinery gross margin (6)	$ 11.56	$ 8.16	$ 15.88
Refinery operating expenses (7)	6.10	5.64	5.82
Net operating margin	$ 5.46	$ 2.52	$ 10.06
Refinery operating expenses per throughput barrel (8)	$ 5.84	$ 5.43	$ 5.56
Feedstocks:			
Sweet crude oil	48%	48%	51%
Sour crude oil	25%	26%	25%
Heavy sour crude oil	16%	16%	15%
Black wax crude oil	4%	3%	2%
Other feedstocks and blends	7%	7%	7%
Total	100%	100%	100%

(1) Crude charge represents the barrels per day of crude oil processed at our refineries.
(2) Refinery throughput represents the barrels per day of crude and other refinery feedstocks input to the crude units and other conversion units at our refineries.
(3) Represents barrels sold of refined products produced at our refineries (including HFC Asphalt) and does not include volumes of refined products purchased for resale or volumes of excess crude oil sold.
(4) Represents crude charge divided by total crude capacity (BPSD). Effective July 1, 2016, our consolidated crude capacity increased from 443,000 BPSD to 457,000 BPSD upon completion of our Woods Cross Refinery expansion project.

(5) Represents average amount per produced barrel sold, which is a non-GAAP measure. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.
(6) Excludes lower of cost or market inventory valuation adjustments that increased refinery gross margin by $108.7 million and $291.9 million for the years ended December 31, 2017 and 2016, respectively, and decreased refinery gross margin by $227.0 million for the year ended December 31, 2015.
(7) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by sales volumes of refined products produced at our refineries.
(8) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by refinery throughput.

Products and Customers
Set forth below is information regarding refined product sales:

	Years Ended December 31,		
	2017	**2016**	**2015**
Consolidated			
Sales of refined products:			
Gasolines	52%	52%	52%
Diesel fuels	34%	34%	35%
Jet fuels	4%	4%	4%
Fuel oil	2%	2%	1%
Asphalt	4%	3%	3%
Base oils	2%	3%	2%
LPG and other	2%	2%	3%
Total	100%	100%	100%

Light products are shipped to customers via product pipelines or are available for loading at our refinery truck facilities and terminals. Light products are also made available to customers at various other locations via exchange with other parties.

Our principal customers for gasoline include other refiners, convenience store chains, independent marketers and retailers. Diesel fuel is sold to other refiners, truck stop chains, wholesalers and railroads. Jet fuel is sold for commercial airline use. Specialty lubricant products are sold in both commercial and specialty markets. LPG's are sold to LPG wholesalers and LPG retailers. We produce and purchase asphalt products that are sold to governmental entities, paving contractors or manufacturers. Asphalt is also blended into fuel oil and is either sold locally or is shipped to the Gulf Coast. See Note 21 "Significant Customers" in the Notes to Consolidated Financial Statements for additional information on our significant customers.

Mid-Continent Region (El Dorado and Tulsa Refineries)

Facilities
The El Dorado Refinery is a high-complexity coking refinery with a 135,000 barrels per stream day processing capacity and the ability to process significant volumes of heavy and sour crudes. The integrated refining processes at the Tulsa West and East refinery facilities provide us with a highly complex refining operation having a combined crude processing rate of approximately 125,000 barrels per stream day.

The following table sets forth information about our Mid-Continent region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2017	2016	2015
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Crude charge (BPD) (1)	261,380	262,170	263,340
Refinery throughput (BPD) (2)	277,940	280,920	277,260
Sales of produced refined products (BPD) (3)	260,800	262,300	259,290
Refinery utilization (4)	100.5%	100.8%	101.3%
Average per produced barrel sold (5)			
Refinery gross margin (6)	$ 9.91	$ 7.44	$ 15.02
Refinery operating expenses (7)	5.15	4.73	5.00
Net operating margin	$ 4.76	$ 2.71	$ 10.02
Refinery operating expenses per throughput barrel (8)	$ 4.83	$ 4.42	$ 4.68

	Years Ended December 31,		
	2017	2016	2015
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Feedstocks:			
Sweet crude oil	61%	58%	59%
Sour crude oil	17%	18%	21%
Heavy sour crude oil	16%	17%	15%
Other feedstocks and blends	6%	7%	5%
Total	100%	100%	100%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The El Dorado Refinery is located on 1,100 acres south of El Dorado, Kansas and is a fully integrated refinery. The principal processing units at the El Dorado Refinery consist of crude and vacuum distillation; hydrodesulfurization of naphtha, kerosene, diesel, and gas oil streams; isomerization; catalytic reforming; aromatics recovery; catalytic cracking; alkylation; delayed coking; hydrogen production; and sulfur recovery. Refining operations began at the site in 1917 and the operating units now present include both newly constructed units and older units that have been upgraded over the years.

The Tulsa West facility is located on a 750-acre site in Tulsa, Oklahoma situated along the Arkansas River. The principal processing units at the Tulsa West facility consist of crude and vacuum distillation (with light ends recovery), naphtha hydrodesulfurization, propane de-asphalting, lubes extraction, MEK dewaxing, delayed coker and butane splitter units. Most of the operating units at the facility currently in service were built in the late 1950s and early 1960s. The refinery was reconfigured to emphasize specialty lubricant production in the early 1990s.

The Tulsa East facility is located on a 466-acre site also in Tulsa, Oklahoma situated along the Arkansas River. The principal process units at the Tulsa East facility consist of crude and vacuum distillation, naphtha hydrodesulfurization, FCC, isomerization, catalytic reforming, alkylation, scanfiner, diesel hydrodesulfurization and sulfur units.

Markets and Competition

The primary markets for the El Dorado Refinery's refined products are Colorado and the Plains States, which include the Kansas City metropolitan area. The gasoline, diesel and jet fuel produced by the El Dorado Refinery are primarily shipped via pipeline to terminals for distribution by truck or rail. We ship product via the NuStar Pipeline Operating Partnership L.P. Pipeline to the northern Plains States, via the Magellan Pipeline Company, L.P. ("Magellan") mountain pipeline to Denver, Colorado, and on the Magellan mid-continent pipeline to the Plains States. Additionally, HEP's on-site truck and rail racks facilitate access to local refined product markets.

The El Dorado Refinery faces competition from other Plains States and Mid-Continent refiners, but the principal competitors for the El Dorado Refinery are Gulf Coast refiners. Our Gulf Coast competitors typically have lower production costs due to greater economies of scale; however, they incur higher refined product transportation costs, which allows the El Dorado Refinery to compete effectively in the Plains States and Rocky Mountain region with Gulf Coast refineries.

The Tulsa Refineries serve the Mid-Continent region of the United States. Distillates and gasolines are primarily delivered from the Tulsa Refineries to market via pipelines owned and operated by Magellan. These pipelines connect the refinery to distribution channels throughout Colorado, Oklahoma, Kansas, Missouri, Illinois, Iowa, Minnesota, Nebraska and Arkansas. Additionally, HEP's on-site truck and rail racks facilitate access to local refined product markets.

We have an offtake agreement through November 2019 with an affiliate of Sinclair whereby Sinclair purchases 45,000 to 50,000 BPD of gasoline and distillate products at market prices from us to supply its branded and unbranded marketing network throughout the Midwest. Upon expiration, the offtake agreement can be renewed by Sinclair for an additional five-year term. For the year ended December 31, 2017, sales to Sinclair represented approximately 21% of the Tulsa Refineries' total sales and 8% of our total consolidated sales.

The Tulsa Refineries' principal customers for conventional gasoline include Sinclair, other refiners, convenience store chains, independent marketers and retailers. Sinclair, truck stop operators and railroads are the primary diesel customers. Jet fuel is sold primarily for commercial use. The refinery's asphalt and roofing flux products are sold via truck or railcar directly from the refineries or to customers throughout the Mid-Continent region primarily to paving contractors and manufacturers of roofing products.

For the year ended December 31, 2017, sales to Shell Oil represented approximately 12% of our Mid-Continent refineries' total sales and 9% of our total consolidated sales. We have a sales agreement with an affiliate of Shell Oil under which Shell Oil purchases gasoline and diesel production of the El Dorado Refinery and Tulsa Refineries at market prices through October 2018 primarily to support its branded marketing network.

Products

Set forth below is information regarding refined product sales attributable to our Mid-Continent region:

	Years Ended December 31,		
	2017	2016	2015
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Sales of refined products:			
Gasolines	50%	50%	50%
Diesel fuels	33%	33%	33%
Jet fuels	7%	7%	7%
Fuel oil	1%	1%	1%
Asphalt	3%	3%	2%
Base oils	4%	4%	4%
LPG and other	2%	2%	3%
Total	100%	100%	100%

Crude Oil and Feedstock Supplies

Both of our Mid-Continent Refineries are connected via pipeline to Cushing, Oklahoma, a significant crude oil pipeline trading and storage hub. The El Dorado Refinery and the Tulsa Refineries are located approximately 125 miles and 50 miles, respectively, from Cushing, Oklahoma. Local pipelines provide direct access to regional Oklahoma crude production as well as access to United States onshore and Canadian crudes. The proximity of the refineries to the Cushing pipeline and storage hub provides the flexibility to optimize their crude slate with a wide variety of crude oil supply options. Additionally, we have transportation service agreements to transport Canadian crude oil on the Spearhead and Keystone Pipelines, enabling us to transport Canadian crude oil to Cushing for subsequent shipment to either of our Mid-Continent Refineries.

We also purchase isobutane, natural gasoline, butane and other feedstocks for processing at our Mid-Continent Refineries. The El Dorado Refinery is connected to Conway, Kansas, a major gas liquids trading and storage hub, via the Oneok Pipeline. From time to time, other feedstocks such gas oil, naphtha and light cycle oil are purchased from other refiners for use at our refineries.

Southwest Region (Navajo Refinery)

Facilities

The Navajo Refinery has a crude oil processing capacity of 100,000 barrels per stream day and has the ability to process sour crude oils into high-value light products such as gasoline, diesel fuel and jet fuel.

The following table sets forth information about our Southwest region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2017	2016	2015
Southwest Region (Navajo Refinery)			
Crude charge (BPD) [1]	100,040	98,090	100,450
Refinery throughput (BPD) [2]	109,280	107,690	111,840
Sales of produced refined products (BPD) [3]	111,630	111,390	114,790
Refinery utilization [4]	100.0%	98.1%	100.5%
Average per produced barrel sold [5]			
Refinery gross margin [6]	$ 12.40	$ 9.49	$ 16.34
Refinery operating expenses [7]	5.20	5.05	5.24
Net operating margin	$ 7.20	$ 4.44	$ 11.10
Refinery operating expenses per throughput barrel [8]	$ 5.31	$ 5.23	$ 5.38

	Years Ended December 31,		
	2017	2016	2015
Southwest Region (Navajo Refinery)			
Feedstocks:			
Sweet crude oil	25%	28%	36%
Sour crude oil	66%	63%	54%
Other feedstocks and blends	9%	9%	10%
Total	100%	100%	100%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The Navajo Refinery's Artesia, New Mexico facility is located on a 561-acre site and is a fully integrated refinery with crude distillation, vacuum distillation, FCC, ROSE (solvent deasphalter), HF alkylation, catalytic reforming, hydrodesulfurization, mild hydrocracking, isomerization, sulfur recovery and product blending units. The operating units at the Artesia facility include newly constructed units, older units that have been relocated from other facilities and upgraded and re-erected in Artesia, and units that have been operating as part of the Artesia facility (with periodic major maintenance) for many years, in some very limited cases since before 1970.

The Artesia facility is operated in conjunction with a refining facility located in Lovington, New Mexico, approximately 65 miles east of Artesia. The principal equipment at the Lovington facility consists of a crude distillation unit and associated vacuum distillation units that were constructed after 1970. The Lovington facility processes crude oil into intermediate products that are transported to Artesia by means of three intermediate pipelines owned by HEP. These products are then upgraded into finished products at the Artesia facility. The combined crude oil capacity of the Navajo Refinery facilities is 100,000 BPSD and it typically processes or blends an additional 10,000 BPSD of natural gasoline, butane, gas oil and naphtha.

Markets and Competition

The Navajo Refinery primarily serves the southwestern United States market, including the metropolitan areas of El Paso, Texas; Albuquerque, Moriarty and Bloomfield, New Mexico; Phoenix and Tucson, Arizona; and portions of northern Mexico. Our products are shipped through HEP's pipelines from Artesia, New Mexico to El Paso, Texas and from El Paso to Albuquerque and to Mexico via products pipeline systems owned by Magellan and from El Paso to Tucson and Phoenix via a products pipeline system owned by Kinder Morgan's subsidiary, SFPP, L.P. (“SFPP”). In addition, petroleum products from the Navajo Refinery are transported to markets in northwest New Mexico, to Moriarty, New Mexico, near Albuquerque, via HEP's pipelines running from Artesia to San Juan County, New Mexico, and to Bloomfield, New Mexico. We have refined product storage through our pipelines and terminals agreement with HEP at terminals in Tucson, Arizona, and Artesia and Moriarty, New Mexico.

El Paso Market
The El Paso market for refined products is currently supplied by a number of area and Gulf Coast refiners and pipelines. Area refiners include Navajo, WRB Refining, LLC (“WRB”) (a joint venture between Phillips 66 and Cenovus Energy), Valero, Delek and Andeavor. Pipelines serving this market are owned by Magellan, NuStar Energy L.P. and HEP. Refined products from the Gulf Coast are transported via Magellan pipelines.

Arizona Market
The Arizona market for refined products is currently supplied by a number of refiners via pipelines and trucks. Refiners include companies located in west Texas, eastern New Mexico, northern New Mexico, the Gulf Coast and the West Coast. Magellan's pipeline systems deliver refined products from the Texas Gulf Coast to El Paso and, through interconnections with third-party common carrier pipelines, into the Arizona market.

New Mexico Markets
The Artesia, Albuquerque, Moriarty and Bloomfield markets are supplied by a number of refiners via pipelines and trucks. Refiners include Navajo, Valero, Andeavor, Delek and WRB.

We use a common carrier pipeline out of El Paso to serve the Albuquerque market. In addition, HEP leases from Mid-America Pipeline Company, L.L.C., a pipeline between White Lakes, New Mexico and the Albuquerque vicinity and Bloomfield, New Mexico. The lease agreement currently runs through 2026, and HEP has options to renew for one additional ten-year period. HEP owns and operates a 12-inch pipeline from the Navajo Refinery to the leased pipeline as well as terminalling facilities in Moriarty, which is 40 miles east of Albuquerque. This facility permits us to ship light products to the Albuquerque and Santa Fe, New Mexico areas. In addition, we serve southern Colorado and northern Arizona primarily out of a terminal in Bloomfield, New Mexico, which is owned by Andeavor.

Products
Set forth below is information regarding refined product sales attributable to our Southwest region:

	Years Ended December 31,		
	2017	2016	2015
Southwest Region (Navajo Refinery)			
Sales of refined products:			
Gasolines	51%	52%	53%
Diesel fuels	39%	39%	38%
Fuel oil	3%	3%	2%
Asphalt	4%	3%	4%
LPG and other	3%	3%	3%
Total	100%	100%	100%

Crude Oil and Feedstock Supplies
The Navajo Refinery is situated near the Permian Basin, an area that has historically, and continues to have, abundant supplies of crude oil available both for regional users and for export to other areas. We purchase crude oil from independent producers in southeastern New Mexico and west Texas as well as from major oil companies. The crude oil is gathered through HEP's pipelines and through third-party tank trucks and crude oil pipeline systems for delivery to the Navajo Refinery.

We also purchase volumes of isobutane, natural gasoline and other feedstocks to supply the Navajo Refinery from sources in Texas and the Mid-Continent area that are delivered to our region on a common carrier pipeline owned by Enterprise Products, L.P. Ultimately all volumes of these products are shipped to the Artesia refining facilities on HEP's intermediate pipelines running from Lovington to Artesia. From time to time, we purchase gas oil, naphtha and light cycle oil from other refiners for use as feedstock.

Rocky Mountain Region (Cheyenne and Woods Cross Refineries)

Facilities
The Cheyenne and the Woods Cross Refineries have crude oil processing capacities of 52,000 and 45,000 barrels per stream day, respectively. The Cheyenne Refinery processes heavy Canadian crudes as well as local sweet crudes such as that produced from the Bakken shale and similar resources. The Woods Cross Refinery processes regional sweet and black wax crude as well as Canadian sour crude oils into high-value light products.

The following table sets forth information about our Rocky Mountain region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2017	2016	2015
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)			
Crude charge (BPD) [(1)]	77,380	63,650	68,770
Refinery throughput (BPD) [(2)]	84,790	68,870	74,480
Sales of produced refined products (BPD) [(3)]	79,840	66,950	68,570
Refinery utilization [(4)]	79.8%	65.6%	82.9%
Average per produced barrel sold [(5)]			
Refinery gross margin [(6)]	$ 15.78	$ 8.80	$ 18.43
Refinery operating expenses [(7)]	10.46	10.17	9.90
Net operating margin	$ 5.32	$ (1.37)	$ 8.53
Refinery operating expenses per throughput barrel [(8)]	$ 9.85	$ 9.89	$ 9.12

	Years Ended December 31,		
	2017	2016	2015
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)			
Feedstocks:			
Sweet crude oil	34%	39%	42%
Heavy sour crude oil	35%	35%	37%
Black wax crude oil	22%	18%	13%
Other feedstocks and blends	9%	8%	8%
Total	100%	100%	100%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The Cheyenne Refinery facility is located on a 255-acre site and is a fully integrated refinery with crude distillation, vacuum distillation, coking, FCC, HF alkylation, catalytic reforming, hydrodesulfurization of naphtha and distillates, butane isomerization, hydrogen production, sulfur recovery and product blending units. The operating units at the Cheyenne Refinery include both newly constructed units and older units that have been upgraded over the years.

The Woods Cross Refinery facility is located on a 200-acre site and is a fully integrated refinery with crude distillation, solvent deasphalter, FCC, HF alkylation, catalytic reforming, hydrodesulfurization, isomerization, sulfur recovery and product blending units. The operating units at the Woods Cross Refinery include newly constructed units, older units that have been relocated from other facilities, upgraded and re-erected in Woods Cross, and units that have been operating as part of the Woods Cross facility (with periodic major maintenance) for many years, in some very limited cases since before 1950. The facility typically processes or blends an additional 2,000 BPSD of natural gasoline, butane and gas oil over its 45,000 BPSD capacity.

We own and operate 4 miles of hydrogen pipeline that connects the Woods Cross Refinery to a hydrogen plant located on the property of Chevron's Salt Lake City Refinery. Additionally, HEP owns and operates 12 miles of crude oil and refined products pipelines that allows us to connect our Woods Cross Refinery to common carrier pipeline systems.

Markets and Competition

The Cheyenne Refinery primarily markets its products in eastern Colorado, including metropolitan Denver, eastern Wyoming and western Nebraska. Because of the location of the Cheyenne Refinery, we are able to sell a significant portion of its diesel directly from the truck rack at the refinery, therefore, eliminating transportation costs. The Cheyenne Refinery ships refined products via the Magellan pipeline serving Denver and Colorado Springs, Colorado.

Denver Market

The most competitive market for the Cheyenne Refinery is the Denver metropolitan area. Three other refineries supply the Denver market: Wyoming refineries near Rawlins and in Casper owned by Sinclair and a refinery in Denver owned by Suncor. Five product pipelines also supply Denver, including three from outside the region.

Utah Market
The Woods Cross Refinery's primary market is Utah, which is currently supplied by a number of local refiners and the Pioneer Pipeline. In addition to our Woods Cross Refinery, local area refiners include Chevron, Andeavor, Big West and Silver Eagle. Other refiners that ship into the Woods Cross market via the Pioneer Pipeline include Sinclair, ExxonMobil, CHS and Phillips 66. We estimate the four local refineries that compete with our Woods Cross Refinery have a combined capacity to process approximately 165,000 BPD of crude oil. The five Utah refineries collectively supply an estimated 70% of the gasoline and distillate products consumed in the states of Utah and Idaho, with the remainder imported from refineries in Wyoming and Montana via the Pioneer Pipeline owned jointly by Sinclair and Phillips 66. Approximately 40% - 45% of the gasoline and diesel fuel produced by our Woods Cross Refinery is sold through a network of Phillips 66 branded marketers under a long-term supply agreement.

Idaho, Wyoming, Eastern Washington and Nevada Markets
We supply a small percentage of the refined products consumed in the combined Idaho, Wyoming, eastern Washington and Nevada markets. Our Woods Cross Refinery ships refined products over a common carrier pipeline system owned by Andeavor Logistics Northwest Pipelines LLC ("Andeavor Logistics") to numerous terminals, including HEP's terminal at Spokane, Washington and to terminals at Pocatello and Boise, Idaho and Pasco, Washington that are owned by Andeavor Logistics. We sell to branded and unbranded customers in these markets. In 2012, we began shipping refined products to Cedar City, Utah and Las Vegas, Nevada via the UNEV Pipeline. The majority of the Las Vegas, Nevada market for refined products is supplied by various West Coast refiners and suppliers via Kinder Morgan's CalNev common carrier pipeline system.

Products
Set forth below is information regarding refined product sales attributable to our Rocky Mountain region:

	Years Ended December 31,		
	2017	**2016**	**2015**
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)			
Sales of refined products:			
Gasolines	58%	59%	57%
Diesel fuels	32%	32%	35%
Fuel oil	3%	2%	3%
Asphalt	4%	4%	3%
LPG and other	3%	3%	2%
Total	100%	100%	100%

Crude Oil and Feedstock Supplies
Crude oil is transported to the Cheyenne Refinery from suppliers in Canada, Colorado, Nebraska, North Dakota and Montana via common carrier pipelines owned by Spectra, Plains, HEP and Suncor Energy, as well as by truck. The Woods Cross Refinery currently obtains crude oil from suppliers in Canada, Wyoming, Utah and Colorado as delivered via common carrier pipelines, including the SLC Pipeline and Frontier Pipeline owned by HEP. Supplies of black wax crude oil are shipped via truck.

HollyFrontier Asphalt Company

We manufacture commodity and modified asphalt products at our manufacturing facilities located in Glendale, Arizona; Albuquerque, New Mexico; Artesia, New Mexico and Catoosa, Oklahoma. Our Albuquerque and Artesia facilities manufacture modified hot asphalt products and commodity and modified asphalt emulsions from base asphalt materials provided by our refineries and third-party suppliers. Our Glendale facility manufactures modified hot asphalt products from base asphalt materials provided by our refineries and third-party suppliers. Our Catoosa facility manufactures specialty modified asphalt and commodity asphalt products. We market these asphalt products in Arizona, Colorado, New Mexico, Oklahoma, Kansas, Missouri, Texas, Arkansas and northern Mexico. Our products are shipped via third-party trucking companies to commercial customers that provide asphalt based materials for commercial and government projects.

LUBRICANTS AND SPECIALTY PRODUCTS OPERATIONS

Our lubricants and specialty products operations consist of our Petro-Canada Lubricants and Tulsa rack forward businesses.

Our Petro-Canada Lubricants business produces automotive, industrial and food grade lubricants and greases, base and process oils and specialty fluids and is the largest manufacturer of high margin Group III base oils in North America and is the world's largest producer of pharmaceutical white oils. Products are marketed in 80 countries worldwide to a diverse customer base through a global sales force and distributor network.

Our Tulsa Refinery produces high quality base oils, process oils, waxes, horticultural oils and asphalt performance products. Products are marketed worldwide through strategically located terminals in the United States and selected distributors internationally.

The following table sets forth information about our lubricants and specialty products operations and includes our Petro-Canada Lubricants business for the period February 1, 2017 (date of acquisition) through December 31, 2017.

	Years Ended December 31,		
Lubricants and Specialty Products	**2017**	**2016**	**2015**
Throughput (BPD)	21,710	—	—
Sales of produced refined products (BPD)	31,480	12,030	11,140
Sales of produced refined products:			
Finished products	45%	50%	52%
Base oils	31%	50%	48%
Other	24%	—%	—%
Total	100%	100%	100%

PCLI owns and operates a refinery located in Mississauga, Ontario having lubricant production capacity of 15,600 barrels per stream day and has the flexibility to match unique lubricant product formulations. The primary operating units include a hydrogen plant and hydrotreating, solvent dewaxing, hydrodentrification, catalytic dewaxing and hydrobon/platformer units. The Mississauga plant also includes packaging facilities and has extensive distribution capabilities with marine, truck and rail access.

HOLLY ENERGY PARTNERS, L.P.

HEP is a Delaware limited partnership that trades on the New York Stock Exchange under the trading symbol “HEP.” HEP owns and operates logistic assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and refinery processing units that principally support our refining and marketing operations in the Mid-Continent, Southwest and Rocky Mountain regions of the United States and Delek's refinery in Big Spring, Texas. Additionally, HEP owns a 75% interest in UNEV Pipeline, LLC (“UNEV”), the owner of a pipeline running from Woods Cross, Utah to Las Vegas, Nevada (the “UNEV Pipeline”) and associated product terminals; a 50% interest in Osage Pipe Line Company, LLC, the owner of a pipeline running from Cushing, Oklahoma to El Dorado, Kansas (the “Osage Pipeline”); and a 50% interest in Cheyenne Pipeline, LLC, the owner of a pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming (the “Cheyenne Pipeline”).

HEP generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, by leasing certain pipeline capacity to Delek, by charging fees for terminalling and storing refined products and other hydrocarbons and providing other services at its storage tanks, terminals and refinery processing units. HEP does not take ownership of products that it transports, terminals, stores or refines; therefore, it is not directly exposed to changes in commodity prices.

HEP's recent acquisitions (2015 through present) are summarized below:

SLC Pipeline and Frontier Aspen
On October 31, 2017, HEP acquired the remaining 75% interest in SLC Pipeline LLC, the owner of a pipeline that serves refineries in the Salt Lake City, Utah area (the “SLC Pipeline”), and the remaining 50% interest in Frontier Aspen LLC, the owner of a pipeline running from Wyoming to Frontier Station, Utah (the “Frontier Pipeline”), from subsidiaries of Plains All American Pipeline, L.P. (“Plains”) for total cash consideration of $250.0 million.

Woods Cross Assets
On October 3, 2016, HEP acquired from us all the membership interests of Woods Cross Operating LLC, which owns the crude unit, FCCU and polymerization unit of the first phase of our Woods Cross Refinery expansion project that was completed in the second quarter of 2016, for cash consideration of approximately $278.0 million.

Cheyenne Pipeline
On June 3, 2016, HEP acquired a 50% interest in Cheyenne Pipeline LLC, owner of the Cheyenne Pipeline, in exchange for a contribution of $42.6 million in cash to Cheyenne Pipeline LLC. The 87-mile crude oil pipeline runs from Fort Laramie, Wyoming to Cheyenne, Wyoming and has an 80,000 BPD capacity.

Tulsa Tanks
On March 31, 2016, HEP acquired crude oil tanks located at our Tulsa Refineries from Plains for $39.5 million.

Magellan Asset Exchange
On February 22, 2016, we obtained a 50% membership interest in Osage Pipe Line Company, LLC (“Osage”) in exchange for a 20-year terminalling services agreement, whereby, a subsidiary of Magellan Midstream Partners (“Magellan Midstream”) will provide terminalling services for all of our products originating in Artesia, New Mexico that require terminalling in or through El Paso, Texas. Osage is the owner of the Osage pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery in Kansas and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas. The Osage pipeline is the primary pipeline that supplies our El Dorado Refinery with crude oil. Also on February 22, 2016, we contributed the 50% membership interest in Osage to HEP, and in exchange received HEP's El Paso terminal. Pursuant to this exchange, HEP agreed to build two connections to Magellan Midstream's El Paso terminal. In addition, HEP agreed to become operator of the Osage Pipeline.

El Dorado Asset Transaction
On November 1, 2015, HEP acquired from us newly constructed naphtha fractionation and hydrogen generation units at our El Dorado Refinery for cash consideration of $62.0 million.

Frontier Pipeline Transaction
On August 31, 2015, HEP purchased a 50% interest in Frontier Aspen LLC (previously known as Frontier Pipeline Company), owner of the Frontier Pipeline, from an affiliate of Enbridge, Inc. for $55.0 million. The 289-mile crude oil pipeline runs from Casper, Wyoming to Frontier Station, Utah, has a 72,000 BPD capacity and supplies Canadian and Rocky Mountain crudes to Salt Lake City area refiners through a connection to the SLC Pipeline. As noted above, HEP acquired the remaining 50% interest on October 31, 2017.

Crude Tank Farm Asset Transaction
On March 6, 2015, HEP purchased an existing crude tank farm adjacent to our El Dorado Refinery from an unrelated third-party for $27.5 million in cash. We are the main customer of this crude tank farm.

Transportation Agreements

Agreements with HEP
HEP serves our refineries under long-term pipeline, terminal and tankage throughput agreements and refinery processing tolling agreements expiring from 2020 through 2036. Under these agreements, we pay HEP fees to transport, store and process throughput volumes of refined products, crude oil and feedstocks on HEP's pipelines, terminals, tankage, loading rack facilities and refinery processing units that result in minimum annual payments to HEP, including UNEV (a consolidated subsidiary of HEP). Under these agreements, the agreed upon tariff rates are subject to annual tariff rate adjustments on July 1 at a rate based upon the percentage change in Producer Price Index (“PPI”) or Federal Energy Regulatory Commission index. As of December 31, 2017, these agreements result in minimum annualized payments to HEP of $324.5 million.

Our transactions with HEP including the transactions discussed above and fees paid under our transportation agreements with HEP and UNEV are eliminated and have no impact on our consolidated financial statements.

Agreement with Delek
HEP has a 15-year pipelines and terminals agreement with Delek expiring in 2020, under which Delek has agreed to transport on HEP's pipelines and throughput through its terminals, volumes of refined products that results in a minimum level of annual revenue. The agreed upon tariff rates are increased or decreased annually at a rate equal to the percentage change in PPI, but will not decrease below the initial tariff rate. Also, HEP has a capacity lease agreement with Delek under which Delek leases space on HEP's Orla to El Paso pipeline for the shipment of up to 15,000 barrels of refined product per day. The terms under this agreement expire in 2018 through 2022.

As of December 31, 2017, HEP's assets included:

Pipelines
- approximately 810 miles of refined product pipelines, including 340 miles of leased pipelines, that transport gasoline, diesel and jet fuel principally from our Navajo Refinery in New Mexico to our customers in the metropolitan and rural areas of Texas, New Mexico, Arizona, Colorado, Utah and northern Mexico;
- approximately 510 miles of refined product pipelines that transport refined products from Delek's Big Spring refinery in Texas to its customers in Texas and Oklahoma;
- two 65-mile pipelines that transport intermediate feedstocks and crude oil from our Navajo Refinery crude oil distillation and vacuum facilities in Lovington, New Mexico to our petroleum refinery facilities in Artesia, New Mexico;
- one 65-mile intermediate pipeline that is used for the shipment of crude oil from the gathering systems in Barnsdall and Beeson, New Mexico to our Navajo Refinery;
- the SLC Pipeline, a 95-mile intrastate crude oil pipeline system that transports crude oil into the Salt Lake City, Utah area from the Utah terminus of the Frontier Pipeline, as well as crude oil flowing from Wyoming and Utah via Plains Rocky Mountain Pipeline;
- the Frontier Pipeline, a 289-mile crude oil pipeline running from Casper, Wyoming to Frontier Station, Utah through a connection to the SLC Pipeline;
- approximately 940 miles of crude oil trunk, gathering and connection pipelines located in west Texas, New Mexico and Oklahoma that primarily deliver crude oil to our Navajo Refinery;
- approximately 8 miles of refined product pipelines that support our Woods Cross Refinery located near Salt Lake City, Utah;
- gasoline and diesel connecting pipelines that support our Tulsa East facility;
- five intermediate product and gas pipelines between our Tulsa East and Tulsa West facilities;
- crude receiving assets located at our Cheyenne Refinery;
- a 75% interest in the UNEV Pipeline, a 427-mile, 12-inch refined products pipeline running from Woods Cross, Utah to Las Vegas, Nevada;
- a 50% interest in the Osage Pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas; and
- a 50% interest in the Cheyenne Pipeline, an 87-mile crude oil pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming.

Refined Product Terminals and Refinery Tankage
- three refined product terminals located in Moriarty and Bloomfield, New Mexico; and Tucson, Arizona, with an aggregate capacity of approximately 600,000 barrels, that are integrated with HEP's refined product pipeline system that serves our Navajo Refinery;
- one refined product terminal located in Spokane, Washington, with a capacity of approximately 400,000 barrels, that serves third-party common carrier pipelines;
- one refined product terminal near Mountain Home, Idaho, with a capacity of 120,000 barrels, that serves a nearby United States Air Force Base;
- two refined product terminals, located in Wichita Falls and Abilene, Texas, and one tank farm in Orla, Texas with aggregate capacity of approximately 500,000 barrels, that are integrated with HEP's refined product pipelines that serve Delek's Big Spring, Texas refinery;
- a refined product loading rack facility at each of our El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries, heavy product / asphalt loading rack facilities at our Tulsa East facility, Navajo Refinery Lovington facility and Cheyenne Refinery, LPG loading rack facilities at our El Dorado Refinery, Tulsa West facility and Cheyenne Refinery, lube oil loading racks at our Tulsa West facility and crude oil Leased Automatic Custody Transfer units located at our Cheyenne Refinery;
- on-site crude oil tankage at our Tulsa, El Dorado, Navajo, Cheyenne and Woods Cross Refineries having an aggregate storage capacity of approximately 1,350,000 barrels;

- on-site refined and intermediate product tankage at our El Dorado, Tulsa and Cheyenne Refineries having an aggregate storage capacity of approximately 8,800,000 barrels;
- eleven crude oil tanks adjacent to our El Dorado Refinery with a capacity of approximately 1,200,000 barrels that primarily serve our El Dorado Refinery;
- Frontier Pipeline's tankage with an aggregate capacity of approximately 72,000 barrels; and
- a 75% interest in UNEV Pipeline's product terminals near Cedar City, Utah and Las Vegas, Nevada with an aggregate capacity of approximately 615,000 barrels.

Refinery Processing Units
- a naphtha fractionation tower at our El Dorado Refinery, with a capacity of 50,000 BPD of desulfurized naphtha;
- a hydrogen generation unit at our El Dorado Refinery, with a capacity of 6.1 million standard cubic feet per day of natural gas.
- a crude unit, which is primarily an atmospheric distillation tower, a desalter and heat exchangers, at our Woods Cross Refinery, with a feedstock capacity of 15,000 BPD of crude oil;
- a FCC unit at our Woods Cross Refinery, which converts crude oil to high-value refined products such as gasoline, diesel and liquefied petroleum gases, with a capacity of 8,000 BPD; and
- a polymerization unit at our Woods Cross Refinery, that uses the output of the fluid cracking unit and converts them into gasoline blendstock, with a capacity of 2,500 BPD.

ADDITIONAL OPERATIONS AND OTHER INFORMATION

Corporate Offices
We lease approximately 92,000 square feet for our principal corporate offices in Dallas, Texas. The lease for our principal corporate offices expires in 2023. Functions performed in the Dallas office include overall corporate management, refinery and HEP management, planning and strategy, corporate finance, crude acquisition, logistics, contract administration, marketing, investor relations, governmental affairs, accounting, tax, treasury, information technology, legal and human resources support functions.

Employees and Labor Relations
As of December 31, 2017, we had 3,522 employees, of which 1,139 are currently covered by collective bargaining agreements having various expiration dates between 2018 and 2020. We consider our employee relations to be good.

Environmental Regulation
We are subject to numerous federal, state, provincial and local laws regulating worker health and safety, the discharge of substances into the environment, or otherwise relating to the protection of the environment and natural resources. Permits or other authorizations are required under these laws for the operation of our refineries, pipelines and related facilities, which can result in the imposition of costly reporting, installation of pollution control equipment and maintenance obligations. Moreover, these permits and authorizations are subject to revocation, modification and renewal, as well as challenges from third parties.

Failure to comply with these laws and regulations may result in the assessment of sanctions, including administrative, civil and criminal penalties; the imposition of investigatory, remedial or corrective action obligations or the incurrence of capital expenditures; the occurrence of delays in the permitting, development or expansion of projects; and the issuance of injunctive relief limiting or prohibiting certain operations. Compliance with applicable environmental laws, regulations and permits will continue to have an impact on our operations, the results of our operations and our capital expenditures.

Clean Air Act - Our operations are subject to certain requirements of the Federal Clean Air Act ("CAA") as well as related state and local laws and regulations. Certain CAA regulatory programs applicable to our refineries require capital expenditures for the installation of certain air pollution control devices, operational procedures to minimize emissions, and monitoring and reporting of emissions. Additionally, the Environmental Protection Agency ("EPA") has the authority under the CAA to modify the formulation of the refined transportation fuel products we manufacture in order to limit the emissions associated with their final use. Also, in October 2015, the EPA lowered the National Ambient Air Quality Standard ("NAAQS") for ozone from 75 to 70 parts per billion, and state implementation of the revised NAAQS could result in stricter permitting requirements, delay or the inability to obtain such permits, and increased expenditures for pollution control equipment, the costs of which could be significant. Moreover, in February 2016, a new EPA rule became effective that requires, among other things, benzene monitoring at the refinery fence line beginning in January 2018 and submittal of fence line monitoring data to the EPA on a quarterly basis; upgraded storage tank controls requirements, including new applicability thresholds; enhanced performance requirements for flares, continuous monitoring of flares and pressure release devices, and analysis and remedy of flare release events; compliance with emissions standards for delayed coking units; and requirements related to air emissions resulting from startup, shutdown and maintenance events. These new rules, as well as subsequent rulemaking under the CAA or similar laws, or new agency interpretations of existing laws and regulations, may necessitate additional expenditures in future years and result in increased costs on our operations.

Fuel Quality Regulation - Also, we are subject to the EPA's Control of Hazardous Air Pollutants from Mobile Sources ("MSAT2") regulations that impose reductions in the benzene content of our produced gasoline. Our refineries currently purchase benzene credits to meet these requirements. If economically justified or otherwise determined to be beneficial, we could implement additional benzene reduction projects to eliminate the need to purchase benzene credits.

Pursuant to the Energy Independence and Security Act of 2007 ("EISA"), and the EPA's corresponding Renewable Fuel Standard ("RFS") regulations, most refiners are required to blend increasing amounts of biofuels with refined products through 2022 or purchase Renewable Identification Numbers ("RINs") in lieu of blending. Under the RFS, the percentage of renewable fuels that refineries are obligated to blend into their finished petroleum products is adjusted annually. In November 2017, the EPA finalized the RFS targets for 2018, which maintained the volume required for conventional (i.e., corn ethanol) renewable fuel, increased the volume required for advanced biofuels, and reduced the volume required for cellulosic biofuel compared to the 2017 RFS requirements. The EPA also maintained the biomass-based diesel volume for 2019 compared to 2018. Because the EISA requires specified volumes of biofuels, if the demand for motor fuels decreases in future years, even higher percentages of biofuels may be required.

The EPA has historically used its waiver authority to establish volumes lower than the statutory volumes required by EISA, but the EPA's interpretation of its waiver authority, as well as its implementation of the RFS, has been subject to numerous court challenges. Additional lawsuits have been filed by refiners attempting to move the point of compliance for the RFS from refiners to importers and blenders of fuels. We cannot predict the outcome of these matters or whether they may result in increased RFS compliance costs. There also continues to be a shortage of advanced biofuel production resulting in increased difficulties meeting RFS mandates. As a result, we may be unable to blend sufficient quantities of ethanol and biodiesel to meet our requirements and, therefore, may have to purchase an increasing number of RINs. It is not possible at this time to predict with certainty what those volumes or costs may be, but given the potential increase in volumes and the volatile price of RINs, increases in renewable volume requirements could have an adverse impact on our results of operations.

Finally, while there is no current regulatory standard that authenticates RINs that may be purchased on the open market from third parties, we believe that the RINs we purchase are from reputable sources, are valid and serve to demonstrate compliance with applicable RFS requirements. However, if any of the RINs purchased by us on the open market are subsequently found by the EPA to be invalid, we could secure significant costs, penalties, or other liabilities in connection with replacing any invalid RINs and resolving any enforcement action brought by the EPA.

In April 2014, the EPA promulgated the Tier 3 Motor Vehicle Emission and Fuel Standards, which requires a reduction in annual average gasoline sulfur content from 30 ppm to 10 ppm. These new requirements, other CAA requirements, and other presently existing or future environmental regulations may cause us to make substantial capital expenditures and purchase sulfur credits at significant cost to enable our refineries to produce products that meet applicable requirements.

Climate Change - In recent years, various legislative and regulatory measures to address climate change and greenhouse gas ("GHG") emissions (including carbon dioxide, methane and nitrous oxides) have been discussed or implemented. They include proposed and enacted federal regulation and state actions to develop statewide, regional or nationwide programs designed to control and reduce GHG emissions from fixed sources, such as our refineries, as well as power plants, mobile transportation sources and fuels. Measures to date have included cap and trade programs, carbon taxes, vehicle efficiency standards and low carbon fuel standards. Although it is not possible to predict the requirements of any GHG legislation that may be enacted, any laws or regulations that may be adopted to restrict or reduce GHG emissions will likely require us to incur increased operating and capital costs. In August 2015, the EPA finalized the "Clean Power Plan" requiring states to reduce carbon dioxide emissions from coal fired power plants that will likely result in a combination of plant closures, switching to renewable energy and natural gas, and demand reduction. However, the Clean Power Plan is currently being litigated in various courts, and the U.S. Supreme Court has stayed implementation of the rule pending the outcome of those judicial challenges. In October 2017, the EPA proposed to repeal the Clean Power Plan, and on December 18, 2017, the EPA issued a notice seeking comments on whether to promulgate a replacement rule. If upheld, this rule would not directly affect our operations, but, to the extent it or a similar rule is fully implemented, it could result in increased power costs for our refineries in future years.

EPA rules require us to report GHG emissions from our refinery operations and consumer use of fuel products produced at our refineries on an annual basis. While the cost of compliance with the reporting rule is not material, data gathered under the rule may be used in the future to support additional regulation of GHG. Moreover, the EPA directly regulates GHG emissions from refineries and other major sources through the Prevention of Significant Deterioration ("PSD") and Federal Operating Permit programs and may require Best Available Control Technology ("BACT") for GHG emissions above a certain threshold if emissions of other pollutants would otherwise require PSD permitting. While this does not impose any limits or controls on GHG emissions from current operations, future projects or operational changes that increase GHG emissions, such as capacity increases, may be subject to emission limits or technological requirements pertaining to GHG emissions, such as BACT.

Severe limitations on GHG emissions could also adversely affect demand for the gasoline that we produce. Recently, activists concerned about the potential effects of climate change have directed their attention at sources of funding for fossil-fuel energy companies, which has resulted in certain financial institutions, funds and other sources of capital restricting or eliminating their investment in oil and natural gas activities. Ultimately, this could make it more difficult to secure funding for exploration and production activities and result in decreased production of oil, which indirectly could have an adverse impact on our operations. Notwithstanding potential risks related to climate change, the International Energy Agency estimates that global energy demand will continue to rise and will not peak until after 2040 and that oil and natural gas will continue to represent a substantial percentage of global energy use over that time. Finally, it should be noted that some scientists have concluded that increasing concentrations of GHGs in the Earth's atmosphere may produce climate changes that have significant physical effects, such as increased frequency and severity of storms, floods and other extreme weather events; if any such effects were to occur, they could have an adverse effect on our operations.

Water Discharges - Our operations are also subject to the Federal Clean Water Act ("CWA"), the Federal Safe Drinking Water Act ("SDWA") and comparable state and local requirements. The CWA, the SDWA and analogous laws prohibit any discharge into surface waters, ground waters, injection wells and publicly-owned treatment works except in conformance with legal authorization, such as pre-treatment permits and National Pollutant Discharge Elimination System ("NPDES") permits, issued by federal, state and local governmental agencies. The EPA commenced a study from 2015-2017 related to the discharges of metals and dioxin from petroleum refining operations and wastewater discharges from refineries in connection with the consideration of new effluent limitation guidelines that would be incorporated into refinery sector NPDES permits. To date, the EPA has not proposed any new effluent limitation guidelines applicable to our operations, but future rulemakings related to this issue could require us to incur increased costs related to the treatment of wastewater resulting from our operations.

The CWA also regulates filling or discharges to wetlands and other "Waters of the U.S." In 2015, the EPA, in conjunction with the U.S. Army Corps of Engineers (the "Corps"), issued a final rule regarding the definition of "Waters of the U.S.," which expanded the regulatory reach of the existing CWA regulations. The final rule is currently stayed pending litigation in various courts, and the EPA has expressed its intent to repeal and potentially replace the rule. If the rule or any replacement rule expands the scope of the CWA's jurisdiction, we could face increased costs and delays with respect to obtaining permits for discharges resulting from our operations.

Hazardous Substances and Wastes - We generate wastes that may be subject to the Resource Conservation and Recovery Act and comparable state and local requirements. The EPA and various state agencies have limited the approved methods of disposal for certain hazardous and non-hazardous wastes. Although the EPA is currently working on several rulemakings that could impact how our refineries manage various waste streams, it does not appear that these rules will significantly impact our refineries.

The Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), also known as "Superfund," imposes strict, and under certain circumstances, joint and several liability on certain classes of persons who are considered to be responsible for the cost of cleaning up hazardous substances that have been released into the environment and for damages to natural resources. These persons include current and former owners or operators of property where a release has occurred, and any persons who disposed of, or arranged for the transport or disposal of, hazardous substances at the property. In the course of our historical operations, as well as in our current operations, we have generated waste, some of which falls within the statutory definition of a "hazardous substance" and some of which may have been disposed of at sites that may be subject to cleanup and cost recovery actions under CERCLA in the future. Similarly, locations now owned or operated by us, where third parties have disposed such hazardous substances in the past, may also be subject to cleanup and cost recovery actions under CERCLA. Some states have enacted laws similar to CERCLA which impose similar responsibilities and liabilities on responsible parties. It is also not uncommon for neighboring landowners and other third parties to file claims under state law for personal injury and property damage allegedly caused by hazardous substances or other pollutants released into the environment.

Oil Pollution Act - The Oil Pollution Act of 1990 ("OPA") and regulations thereunder generally subject owners and operators of facilities to strict, joint and several liability for all containment and cleanup costs, natural resource damages, and potential governmental oversight costs arising from oil spills into the waters of the U.S. The OPA also imposes ongoing requirements on a responsible party, including the preparation of oil spill response plans and proof of financial responsibility to cover environmental cleanup and restoration costs that could be incurred in connection with an oil spill.

Our Canadian assets and operations are also required to comply with various Canadian federal, provincial and municipal regulations. The regulations are in many cases conceptually similar to those described above for our U.S. operations. The principal legislation affecting our Canadian operations is the Canadian Environmental Protection Act and its regulations at a federal level and various provincial statutes and regulations such as the Ontario Environmental Protection Act, the Ontario Occupational Health and Safety Act and the Ontario Water Resources Act. All these laws contain broad prohibitions against causing harm to air, land, water, people or any other living organism and in many cases contain detailed prescriptive rules governing many aspects of our operations.

As is the case with all companies engaged in industries similar to ours, we face potential exposure to future claims and lawsuits involving environmental matters. These matters include soil and water contamination, air pollution, GHG emissions, personal injury and property damage allegedly caused by substances that we manufactured, handled, used, released or disposed. We currently have environmental remediation projects that relate to recovery, treatment and monitoring activities resulting from past releases of refined product and crude oil into the environment. As of December 31, 2017, we had an accrual of $103.7 million related to such environmental liabilities.

We are and have been the subject of various local, state, provincial, federal and private proceedings and inquiries relating to compliance with environmental regulations and conditions, including those discussed above. Compliance with current and future environmental regulations is expected to require additional expenditures, including expenditures for investigation and remediation, which may be significant, at our refineries and at pipeline transportation facilities. To the extent that future expenditures for these purposes are material and can be reasonably determined, these costs are disclosed and accrued, if applicable.

Occupational Health and Safety **-** Our operations are subject to various laws and regulations relating to occupational health and safety, including the Occupational Safety and Health Act ("OSHA") and comparable state statutes. We maintain a comprehensive safety program, including mechanical integrity and safety-related maintenance programs and training, to ensure compliance with all applicable laws and regulations to protect the safety of our workers and the public. Our operations are also subject to OSHA Process Safety Management ("PSM") regulations and EPA Risk Management Plan ("RMP") regulations, both of which are designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals. In January 2017, the EPA revised the RMP requirements for incident investigation and accident history reporting, emergency preparedness, and the performance process hazard analyses and third party compliance audits. In June 2017, the EPA issued a stay of the revised RMP requirements until 2019, which was immediately challenged by environmental groups, and a final decision remains pending. However, many of the revised requirements do not become effective until 2021. Also in January 2017, OSHA announced changes to its National Emphasis Program, which specifically identified oil refineries as facilities for increased inspections and instructed inspectors to use data gathered from EPA RMP inspections to identify refiners for additional PSM inspections. Compliance with applicable state and federal occupational health and safety laws and regulations, as well as environmental regulations, has required, and continues to require, substantial expenditures.

Occupational health and environmental legislation, regulations and regulatory programs change frequently. We cannot predict what additional occupational health and environmental legislation or regulations will be enacted or become effective in the future or how existing or future laws or regulations will be administered or interpreted with respect to our operations. Compliance with more stringent laws or regulations or adverse changes in the interpretation of existing laws or regulations by government agencies could have an adverse effect on our financial position and the results of our operations and could require substantial expenditures for the installation and operation of systems and equipment that we do not currently possess.

Insurance

Our operations are subject to hazards of operations, including fire, explosion and weather-related perils. We maintain various insurance coverages, including business interruption insurance, subject to certain deductibles. We are not fully insured against certain risks because such risks are not fully insurable, coverage is unavailable, or premium costs, in our judgment, do not justify such expenditures.

We have a risk management oversight committee consisting of members from our senior management. This committee oversees our risk enterprise program, monitors our risk environment and provides direction for activities to mitigate identified risks that may adversely affect the achievement of our goals.

Item 1A. Risk Factors

Investing in us involves a degree of risk, including the risks described below. Our operating results have been, and will continue to be, affected by a wide variety of risk factors, many of which are beyond our control, that could have adverse effects on profitability during any particular period. You should carefully consider the following risk factors together with all of the other information included in this Annual Report on Form 10-K, including the financial statements and related notes, when deciding to invest in us. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially and adversely affect our business operations. If any of the following risks were to actually occur, our business, financial condition or results of operations could be materially and adversely affected.

The headings provided in this Item 1A. are for convenience and reference purposes only and shall not affect or limit the extent or interpretation of the risk factors.

The availability and cost of renewable identification numbers and other required credits could have an adverse effect on our financial condition and results of operations.

Pursuant to the 2007 Energy Independence and Security Act, the EPA promulgated the RFS regulations reflecting the increased volume of renewable fuels mandated to be blended into the nation's fuel supply. The regulations, in part, require refiners to add annually increasing amounts of “renewable fuels” to their petroleum products or purchase credits, known as RINs, in lieu of such blending. We currently purchase RINs for some fuel categories on the open market in order to comply with the quantity of renewable fuels we are required to blend under the RFS regulations. Recently, due in part to the nation's fuel supply approaching the “blend wall” (the 10% ethanol limit prescribed by most automobile warranties), the price of RINs has been extremely volatile with the price dramatically increasing in recognition of the decrease in RINs availability. While we cannot predict the future prices of RINs, the costs to obtain the necessary number of RINs could be material. If we are unable to pass the costs of compliance with the RFS regulations on to our customers, if sufficient RINs are unavailable for purchase, if we have to pay a significantly higher price for RINs or if we are otherwise unable to meet the RFS mandates, our financial condition and results of operations could be adversely affected.

In addition, the RFS regulations are highly complex and evolving, requiring us to periodically update our compliance systems. The RFS regulations require the EPA to determine and publish the applicable annual volume and percentage standards for each compliance year by November 30 for the forthcoming year, and such blending percentages could be higher or lower than amounts estimated and accrued for in our consolidated financial statements. The future cost of RINs is difficult to estimate until such time as the EPA finalizes the applicable standards for the forthcoming compliance year. Moreover, in addition to increased price volatility in the RIN market, there have been multiple instances of RINs fraud occurring in the marketplace over the past several years. The EPA has initiated several enforcement actions against refiners who purchase fraudulent RINs, resulting in substantial costs to the refiner. We cannot predict with certainty our exposure to increased RINs costs in the future, nor can we predict the extent by which costs associated with RFS regulations will impact our future results of operations.

The prices of crude oil and refined products materially affect our profitability, and are dependent upon many factors that are beyond our control, including general market demand and economic conditions, seasonal and weather-related factors, regional and grade differentials and governmental regulations and policies.

Among these factors is the demand for crude oil and refined products, which is largely driven by the conditions of local and worldwide economies as well as by weather patterns and the taxation of these products relative to other energy sources. Governmental regulations and policies, particularly in the areas of taxation, energy and the environment, also have a significant impact on our activities. Operating results can be affected by these industry factors, product and crude pipeline capacities, crude oil differentials (including regional and grade differentials), changes in transportation costs, accidents or interruptions in transportation, competition in the particular geographic areas that we serve, and factors that are specific to us, such as the success of particular marketing programs and the efficiency of our refinery operations. The demand for crude oil and refined products can also be reduced due to a local or national recession or other adverse economic condition that results in lower spending by businesses and consumers on gasoline and diesel fuel, higher gasoline prices due to higher crude oil prices, a shift by consumers to more fuel-efficient vehicles or alternative fuel vehicles (such as ethanol or wider adoption of gas/electric hybrid vehicles), or an increase in vehicle fuel economy, whether as a result of technological advances by manufacturers, legislation mandating or encouraging higher fuel economy or the use of alternative fuel.

We do not produce crude oil and must purchase all our crude oil, the price of which fluctuates based upon worldwide and local market conditions. Our profitability depends largely on the spread between market prices for refined petroleum products and crude oil prices. This margin is continually changing and may fluctuate significantly from time to time. Crude oil and refined products are commodities whose price levels are determined by market forces beyond our control. For example, the reversal of certain existing pipelines or the construction of certain new pipelines transporting additional crude oil or refined products to markets that serve competing refineries could affect the market dynamic that has allowed us to take advantage of favorable pricing. Also, in December 2015, the U.S. Congress lifted the ban on the ability of producers to export domestic crude oil. This could potentially impact crack spreads and price differentials between domestic and foreign crude oils. A deterioration of crack spreads or price differentials between domestic and foreign crude oils could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Additionally, due to the seasonality of refined products markets and refinery maintenance schedules, results of operations for any particular quarter of a fiscal year are not necessarily indicative of results for the full year and can vary year to year in the event of unseasonably cool weather in the summer months and / or unseasonably warm weather in the winter months in the markets in which we sell our petroleum products. In general, prices for refined products are influenced by the price of crude oil. Although an increase or decrease in the price for crude oil may result in a similar increase or decrease in prices for refined products, there may be a time lag in the realization of the similar increase or decrease in prices for refined products. The effect of changes in crude oil prices on operating results, therefore, depends in part on how quickly refined product prices adjust to reflect these changes. A substantial or prolonged increase in crude oil prices without a corresponding increase in refined product prices, a substantial or prolonged decrease in refined product prices without a corresponding decrease in crude oil prices, or a substantial or prolonged decrease in demand for refined products could have a significant negative effect on our earnings and cash flow. Also, crude oil supply contracts are generally short-term contracts with market-responsive pricing provisions. We purchase our refinery feedstocks weeks before manufacturing and selling the refined products. Price level changes during the period between purchasing feedstocks and selling the manufactured refined products from these feedstocks could have a significant effect on our financial condition and results of operations. Also, our crude oil and refined products inventories are valued at the lower of cost or market under the last-in, first-out (“LIFO”) inventory valuation methodology. If the market value of our inventory were to decline to an amount less than our LIFO cost, we would record a write-down of inventory and a non-cash charge to cost of products sold even when there is no underlying economic impact at that point in time. Continued volatility in crude oil and refined products prices could result in lower of cost or market inventory charges in the future, or in reversals reducing cost of products sold in subsequent periods should prices recover. For example, we recorded a non-cash decrease to cost of products sold in the amount of $108.7 million and $291.9 million for the years ended December 31, 2017 and 2016, respectively.

A material decrease in the supply of crude oil or other raw materials available to our refineries could significantly reduce our production levels and negatively affect our operations.

To maintain or increase production levels at our refineries, we must continually contract for crude oil supplies from third parties. A material decrease in crude oil production from the fields that supply our refineries, as a result of depressed commodity prices, lack of drilling activity, natural production declines or otherwise, could result in a decline in the volume of crude oil available to our refineries. In addition, any prolonged disruption of a significant pipeline that is used in supplying crude oil to our refineries or the potential operation of a new, converted or expanded crude oil pipeline that transports crude oil to other markets could result in a decline in the volume of crude oil available to our refineries. Such an event could result in an overall decline in volumes of refined products processed at our refineries and therefore a corresponding reduction in our cash flow. In addition, the future growth of our operations will depend in part upon whether we can contract for additional supplies of crude oil at a greater rate than the rate of natural decline in our currently connected supplies. If we are unable to secure additional crude oil supplies of sufficient quality or crude pipeline expansion to our refineries, we will be unable to take full advantage of current and future expansion of our refineries' production capacities.

For certain raw materials and utilities used by our refineries, there are a limited number of suppliers and, in some cases, the supplies are specific to the particular geographic region in which a facility is located. It is also common in the refining industry for a facility to have a sole, dedicated source for its utilities, such as steam, electricity, water and gas. Having a sole or limited number of suppliers may limit our negotiating power, particularly in the case of rising raw material costs. Any new supply agreements we enter into may not have terms as favorable as those contained in our current supply agreements.

Additionally, there is growing concern over the reliability of water sources. The decreased availability or less favorable pricing for water as a result of population growth, drought or regulation could negatively impact our operations.

If our raw material, utility or water supplies were disrupted, our businesses may incur increased costs to procure alternative supplies or incur excessive downtime, which would have a direct negative impact on our operations.

We may not be able to successfully execute our business strategies to grow our business. Further, if we are unable to complete capital projects at their expected costs or in a timely manner, if we are unsuccessful in integrating the operations of assets we acquire, or if the market conditions assumed in our project economics deteriorate, our financial condition, results of operations, or cash flows could be materially and adversely affected.

One of the ways we may grow our business is through the construction of new refinery processing units (or the purchase and refurbishment of used units from another refinery) and the expansion of existing ones. Projects are generally initiated to increase the yields of higher-value products, increase the amount of lower cost crude oils that can be processed, increase refinery production capacity, meet new governmental requirements, or maintain the operations of our existing assets. Additionally, our growth strategy includes projects that permit access to new and/or more profitable markets. The construction process involves numerous regulatory, environmental, political, and legal uncertainties, most of which are not fully within our control, including:

- third party challenges to, denials, or delays with respect to the issuance of requisite regulatory approvals and/or obtaining or renewing permits, licenses, registrations and other authorizations;
- societal and political pressures and other forms of opposition;
- compliance with or liability under environmental regulations;
- unplanned increases in the cost of construction materials or labor;
- disruptions in transportation of modular components and/or construction materials;
- severe adverse weather conditions, natural disasters, or other events (such as equipment malfunctions, explosions, fires, spills) affecting our facilities, or those of vendors and suppliers;
- shortages of sufficiently skilled labor, or labor disagreements resulting in unplanned work stoppages;
- market-related increases in a project's debt or equity financing costs; and/or
- nonperformance or force majeure by, or disputes with, vendors, suppliers, contractors, or sub-contractors involved with a project.

If we are unable to complete capital projects at their expected costs or in a timely manner our financial condition, results of operations, or cash flows could be materially and adversely affected. Delays in making required changes or upgrades to our facilities could subject us to fines or penalties as well as affect our ability to supply certain products we make. In addition, our revenues may not increase immediately upon the expenditure of funds on a particular project. For instance, if we build a new refinery processing unit, the construction will occur over an extended period of time and we will not receive any material increases in revenues until after completion of the project. Moreover, we may construct facilities to capture anticipated future growth in demand for refined products in a region in which such growth does not materialize. As a result, new capital investments may not achieve our expected investment return, which could adversely affect our financial condition or results of operations.

Our forecasted internal rates of return are also based upon our projections of future market fundamentals which are not within our control, including changes in general economic conditions, available alternative supply and customer demand.

An additional component of our growth strategy is to selectively acquire complementary assets or businesses for our refining operations in order to increase earnings and cash flow. Our ability to do so will be dependent upon a number of factors, including our ability to identify attractive acquisition candidates, consummate acquisitions on favorable terms, successfully integrate acquired assets and obtain financing to fund acquisitions and to support our growth, and other factors beyond our control. Risks associated with acquisitions include those relating to:

- diversion of management time and attention from our existing business;
- challenges in managing the increased scope, geographic diversity and complexity of operations and inefficiencies that may result therefrom;
- difficulties in integrating the financial, technological and management standards, processes, procedures and controls of an acquired business with those of our existing operations;
- liability for known or unknown environmental conditions or other contingent liabilities not covered by indemnification or insurance;
- greater than anticipated expenditures required for compliance with environmental or other regulatory standards or for investments to improve operating results;
- difficulties or delays in achieving anticipated operational improvements or benefits;
- incurrence of additional indebtedness to finance acquisitions or capital expenditures relating to acquired assets; and
- issuance of additional equity, which could result in further dilution of the ownership interest of existing stockholders.

Any acquisitions that we do consummate may have adverse effects on our business and operating results.

Currency fluctuations or devaluations may impact our operating results.

Fluctuations or devaluations in foreign currencies relative to the U.S. dollar can impact our revenue and our costs of doing business. Most of our products and services are sold through contracts denominated in U.S. dollars; however, some of our revenue, local expenses and manufacturing costs are incurred in local currencies and, therefore, changes in the exchange rates between the U.S. dollar and foreign currencies can increase or decrease our revenue and expenses reported in U.S. dollars and may impact our results of operations. Any significant change in the value of the currencies of the countries in which we do business against the U.S. dollar could affect our competitiveness and control of our cost structure, which could have a material adverse effect on our business, financial condition and results of operations.

We are exposed to fluctuations in foreign currency exchange rates, particularly with respect to the Canadian dollar, the euro and the Chinese renminbi. We recognize foreign currency transaction gains and losses arising from our operations in the period incurred. As a result, currency fluctuations between the U.S. dollar and the currencies in which we do business have caused and will continue to cause foreign currency transaction and translation gains and losses, which could be material. We cannot predict the effects of exchange rate fluctuations upon our future operating results because of the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates

Our business is subject to the risks of international operations.

We derive a portion of our revenue and earnings from international operations. Compliance with applicable U.S. and foreign laws and regulations, such as import and export requirements, anti-corruption laws, foreign exchange controls and cash repatriation restrictions, data privacy requirements, environmental laws, labor laws and anti-competition regulations, increases the cost of doing business in foreign jurisdictions. Although we have implemented policies and procedures to comply with these laws and regulations, a violation by any of our employees, contractors or agents could nevertheless occur. In some cases, compliance with the laws and regulations of one country could violate the laws and regulations of another country. Violations of these laws and regulations could materially adversely affect our company's brand, international growth efforts and business.

We may incur significant costs to comply with new or changing environmental, energy, health and safety laws and regulations, and face potential exposure for environmental matters.

Our refinery and pipeline operations are subject to federal, state and local laws regulating, among other things, the generation, storage, handling, use, transportation and distribution of petroleum and hazardous substances by pipeline, truck, rail and barge, the emission and discharge of materials into the environment, waste management, and characteristics and composition of gasoline and diesel fuels, and other matters otherwise relating to the protection of the environment. In addition, as a result of our recent acquisition of PCLI, we have manufacturing and distribution operations in Canada that are subject to Canadian national and provincial environmental laws and regulations and similar laws in other foreign countries. Permits or other authorizations are required under these laws for the operation of our refineries, pipelines and related operations, and these permits and authorizations are subject to revocation, modification and renewal or may require operational changes, which may involve significant costs. Furthermore, a violation of permit conditions or other legal or regulatory requirements could result in substantial fines, criminal sanctions, permit revocations, injunctions, and/or refinery shutdowns. In addition, major modifications of our operations due to changes in the law could require changes to our existing permits or expensive upgrades to our existing pollution control equipment, which could have a material adverse effect on our business, financial condition, or results of operations. For example, in October 2015, the EPA lowered the NAAQS for ozone from 75 to 70 parts per billion for both the 8-hour primary and secondary standards. The EPA published a final rule in November 2017 that issued area designations with respect to ground level ozone for approximately 85% of the U.S. counties as either “attainment/unclassifiable” or “unclassifiable.” In December 2017, the EPA responded to states' preliminary non-attainment designations, and expects to issue final non-attainment designations during the first half of 2018. State implementation of the revised NAAQS could result in stricter permitting requirements, delay or prohibit our ability to obtain such permits, and result in increased expenditures for pollution control equipment, the costs of which could be significant. Also, in February 2016, a new EPA rule became effective that amends three refinery standards already in effect, imposing additional or, in some cases, new emission control requirements on subject refineries. The final rule requires, among other things, benzene monitoring at the refinery fence line and submittal of fence line monitoring data to the EPA on a quarterly basis; upgraded storage tank controls requirements, including new applicability thresholds; enhanced performance requirements for flares, continuous monitoring of flares and pressure release devices and analysis and remedy of flare release events; and compliance with emissions standards for delayed coking units. Refineries have up to three years from the effective date of the final rule to come into compliance with certain requirements of the rule, such as the performance requirements for flares, while other aspects of the rule require compliance to be achieved at a sooner date. For example, the rule's fence line monitoring requirements became effective January 31, 2018. In July 2016, the EPA issued a finale rule providing refiners an additional 18 months to comply with a small subset of the rules related to air emissions resulting from startup, shutdown and maintenance events. In December 2016, the EPA granted petitions for reconsideration from industry and environmental organizations on aspects of the rule related to work practice standards for certain process units and equipment, as well as fence line monitoring requirements. To date, EPA has not published revised rules. These new rules, as well as subsequent rulemaking under the CAA or similar laws, or new agency interpretations of existing laws and regulations, may necessitate additional expenditures in future years and result in increased costs on our operations. Compliance with applicable environmental laws, regulations and permits will continue to have an impact on our operations, results of our operations and capital requirements.

As is the case with all companies engaged in industries similar to ours, we face potential exposure to future claims and lawsuits involving environmental matters. The matters include, but are not limited to, soil, groundwater and waterway contamination, air pollution, personal injury and property damage allegedly caused by substances which we manufactured, handled, used, released or disposed.

We are and have been the subject of various local, state, provincial, federal and private proceedings relating to environmental regulations, conditions and inquiries. Current and future environmental regulations are expected to require additional expenditures, including expenditures for investigation and remediation, which may be significant, at our facilities. To the extent that future expenditures for these purposes are material and can be reasonably determined, these costs are disclosed and accrued.

Our operations are also subject to various laws and regulations relating to occupational health and safety. We maintain safety, training and maintenance programs as part of our ongoing efforts to ensure compliance with applicable laws and regulations but cannot guarantee that these efforts will always be successful. Compliance with applicable health and safety laws and regulations has required and continues to require substantial expenditures. Failure to appropriately manage occupational health and safety risks associated with our business could also adversely impact our employees, communities, stakeholders, reputation and results of operations.

The costs of environmental and safety regulations are already significant and compliance with more stringent laws or regulations or adverse changes in the interpretation of existing regulations by government agencies could have an adverse effect on the financial position and the results of our operations and could require substantial expenditures for the installation and operation of systems and equipment that we do not currently possess.

From time to time, new federal energy policy legislation is enacted by the U.S. Congress or the Federal or Provincial Governments of Canada. For example, in December 2007, the U.S. Congress passed the Energy Independence and Security Act, which, among other provisions, mandates annually increasing levels for the use of renewable fuels such as ethanol, commencing in 2008 and escalating for 15 years, as well as increasing energy efficiency goals, including higher fuel economy standards for motor vehicles, among other steps. In Canada, fuel content legislation also exists at the federal and provincial level. These statutory mandates may have the impact over time of offsetting projected increases in the demand for refined petroleum products in certain markets, particularly gasoline. In the near term, the new renewable fuel standard presents ethanol production and logistics challenges for both the ethanol and refining industries and may require additional capital expenditures or expenses by us to accommodate increased ethanol use. Other legislative changes may similarly alter the expected demand and supply projections for refined petroleum products in ways that cannot be predicted.

For additional information on regulations and related liabilities or potential liabilities affecting our business, see “Regulation” under Items 1 and 2, “Business and Properties,” and Item 3, “Legal Proceedings.”

The adoption of climate change legislation or regulations could result in increased operating costs and reduced demand for the refined products we produce.

The EPA has determined that emissions of carbon dioxide, methane and other greenhouse gas emissions, or “GHGs,” present an endangerment to public health and the environment because emissions of such gases are, according to the EPA, contributing to warming of the earth's atmosphere and other climatic changes. Based on these findings, the EPA has begun adopting and implementing regulations to restrict emissions of GHGs under existing provisions of the federal CAA. For example, the EPA adopted rules that require certain large stationary sources to obtain permits to authorize emissions of GHGs. The EPA has also adopted rules requiring the reporting of GHG emissions from specified large GHG emission sources in the United States, including petroleum refineries, on an annual basis. Both the EPA and Environment and Climate Change Canada have adopted regulations that limit GHG emissions from automobiles and light-duty trucks, which may result in a reduction in demand for the refined products that we produce.

Although the U.S. Congress has previously considered legislation to reduce GHG emissions, federal legislative action appears unlikely at this time. Meanwhile, many states have pursued or are considering their own initiatives designed to reduce GHG emissions, such as cap and trade programs, carbon taxes, low carbon fuel standards, and vehicle efficiency standards. Similar measures are being pursued in Canada at the federal and provincial level, and the provinces of Quebec, Ontario, and Alberta have all implemented either cap and trade programs or levied carbon taxes.

The adoption of legislation or regulatory programs to reduce emissions of GHGs could require us to incur increased operating costs, such as costs to purchase and operate emissions control systems, to acquire emissions allowances or comply with new regulatory or reporting requirements. Any such legislation or regulatory programs could also increase the cost of consuming, and thereby reduce demand for, the refined products that we produce. Consequently, legislation and regulatory programs to reduce emissions of GHGs could have an adverse effect on our business, financial condition and results of operations.

Our operations are subject to catastrophic losses, operational hazards and unforeseen interruptions for which we may not be adequately insured.

Our operations are subject to catastrophic losses, operational hazards and unforeseen interruptions such as natural disasters, adverse weather, accidents, maritime disasters (including those involving marine vessels/terminals), fires, explosions, hazardous materials releases, cyber-attacks, power failures, mechanical failures and other events beyond our control. These events could result in an injury, loss of life, property damage or destruction, as well as a curtailment or an interruption in our operations and may affect our ability to meet marketing commitments.

We may not be able to maintain or obtain insurance of the type and amount we desire at reasonable rates and exclusions from coverage may limit our ability to recover the amount of the full loss in all situations. As a result of market conditions, premiums and deductibles for certain of our insurance policies could increase. In some instances, certain insurance could become unavailable or available only for reduced amounts of coverage. We are not fully insured against all risks incident to our business and therefore, we self-insure certain risks. If any refinery were to experience an interruption in operations, earnings from the refinery could be materially adversely affected (to the extent not recoverable through insurance) because of lost production and repair costs.

The energy industry is highly capital intensive, and the entire or partial loss of individual facilities can result in significant costs to both industry companies, such as us, and their insurance carriers. In recent years, several large energy industry claims have resulted in significant increases in the level of premium costs and deductible periods for participants in the energy industry. As a result of large energy industry claims, insurance companies that have historically participated in underwriting energy-related facilities may discontinue that practice or demand significantly higher premiums or deductible periods to cover these facilities. If significant changes in the number or financial solvency of insurance underwriters for the energy industry occur, or if other adverse conditions over which we have no control prevail in the insurance market, we may be unable to obtain and maintain adequate insurance at reasonable cost. In addition, we cannot assure you that our insurers will renew our insurance coverage on acceptable terms, if at all, or that we will be able to arrange for adequate alternative coverage in the event of non-renewal. Further, our underwriters could have credit issues that affect their ability to pay claims. If a significant accident or event occurs that is self-insured or not fully insured, it could have a material adverse effect on our business, financial condition and results of operations.

An impairment of our long-lived assets or goodwill could reduce our earnings or negatively impact our financial condition and results of operations.

An impairment of our long-lived assets or goodwill could reduce our earnings or negatively impact our results of operations and financial condition. We continually monitor our business, the business environment and the performance of our operations to determine if an event has occurred that indicates that a long-lived asset or goodwill may be impaired. If a triggering event occurs, which is a determination that involves judgment, we may be required to utilize cash flow projections to assess our ability to recover the carrying value based on the ability to generate future cash flows. We may also conduct impairment testing based on both the guideline public company and guideline transaction methods. Our long-lived assets and goodwill impairment analyses are sensitive to changes in key assumptions used in our analysis, estimates of future crack spreads, forecasted production levels, operating costs and capital expenditures. If the assumptions used in our analysis are not realized, it is possible a material impairment charge may need to be recorded in the future. We cannot accurately predict the amount and timing of any additional impairments of long-lived assets or goodwill in the future.

As market prices for refined products and market prices for crude oil continue to fluctuate, we will need to continue to evaluate the carrying value of our refinery reporting units. During the year ended December 31, 2016, we recorded goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million, respectively, on the carrying value of our Cheyenne Refinery. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit at some point in the future. Any additional impairment charges that we may take in the future could be material to our results of operations and financial condition.

Competition in the refining and marketing industry is intense, and an increase in competition in the markets in which we sell our products could adversely affect our earnings and profitability.

We compete with a broad range of refining and marketing companies, including certain multinational oil companies. Because of their geographic diversity, larger and more complex refineries, integrated operations and greater resources, some of our competitors may be better able to withstand volatile market conditions, to obtain crude oil in times of shortage and to bear the economic risks inherent in all areas of the refining industry.

We are not engaged in petroleum exploration and production activities and do not produce any of the crude oil feedstocks used at our refineries. We do not have a retail business and therefore are dependent upon others for outlets for our refined products. Certain of our competitors, however, obtain a portion of their feedstocks from company-owned production and have retail outlets. Competitors that have their own production or extensive retail outlets, with brand-name recognition, are at times able to offset losses from refining operations with profits from producing or retailing operations, and may be better positioned to withstand periods of depressed refining margins or feedstock shortages.

In recent years there have been several refining and marketing consolidations or acquisitions between entities competing in our geographic market. These transactions could increase the future competitive pressures on us.

The markets in which we compete may be impacted by competitors' plans for expansion projects and refinery improvements that could increase the production of refined products in our areas of operation and significantly affect our profitability.

Also, the potential operation of new or expanded refined product transportation pipelines, or the conversion of existing pipelines into refined product transportation pipelines, could impact the supply of refined products to our existing markets and negatively affect our profitability.

In addition, we compete with other industries that provide alternative means to satisfy the energy and fuel requirements of our industrial, commercial and individual consumers. The more successful these alternatives become as a result of governmental regulations, technological advances, consumer demand, improved pricing or otherwise, the greater the impact on pricing and demand for our products and our profitability. There are presently significant governmental and consumer pressures to increase the use of alternative fuels in the United States.

A disruption to or proration of the refined product distribution systems we utilize could negatively impact our profitability.

We utilize various common carrier or other third party pipeline systems to deliver our products to market. The key systems utilized by the Cheyenne, El Dorado, Navajo, Woods Cross, and Tulsa Refineries are Rocky Mountain, NuStar Energy, SFPP and Plains, Chevron, and Magellan, respectively. All five refineries also utilize systems owned by HEP. If these key pipelines or their associated tanks and terminals become inoperative or decrease the capacity available to us, we may not be able to sell our product, or we may be required to hold our product in inventory or supply products to our customers through an alternative pipeline or by rail or additional tanker trucks from the refinery, all of which could increase our costs and result in a decline in profitability.

We may be subject to information technology system failures, network disruptions and breaches in data security.

Information technology system failures, network disruptions (whether intentional by a third party or due to natural disaster), breaches of network or data security, or disruption or failure of the network system used to monitor and control pipeline operations could disrupt our operations by impeding our processing of transactions, our ability to protect customer or company information and our financial reporting. Our computer systems, including our back-up systems, could be damaged or interrupted by power outages, computer and telecommunications failures, computer viruses, internal or external security breaches, events such as fires, earthquakes, floods, tornadoes and hurricanes, and/or errors by our employees. There can be no assurance that a system failure or data security breach will not have a material adverse effect on our financial condition and results of operations.

We may not be able to obtain funding on acceptable terms or at all because of volatility and uncertainty in the credit and capital markets. This may hinder or prevent us from meeting our future capital needs.

The domestic and global financial markets and economic conditions are disrupted and volatile from time to time due to a variety of factors, including low consumer confidence, high unemployment, geoeconomic and geopolitical issues, weak economic conditions and uncertainty in the financial services sector. In addition, the fixed-income markets have experienced periods of extreme volatility, which negatively impacted market liquidity conditions. Recently, the equity and debt markets for many energy industry companies have been adversely affected by low oil prices. As a result, the cost of raising money in the debt and equity capital markets has increased substantially at times while the availability of funds from these markets diminished significantly. In particular, as a result of concerns about the stability of financial markets generally and the solvency of lending counterparties specifically, the cost of obtaining money from the credit markets may increase as many lenders and institutional investors increase interest rates, enact tighter lending standards, refuse to refinance existing debt on similar terms or at all and reduce, or in some cases cease to provide, funding to borrowers. In addition, lending counterparties under any existing revolving credit facility and other debt instruments may be unwilling or unable to meet their funding obligations, or we may experience a decrease in our capacity to issue debt or obtain commercial credit or a deterioration in our credit profile, including a rating agency lowering or withdrawing of our credit ratings if, in its judgment, the circumstances warrant. Due to these factors, we cannot be certain that new debt or equity financing will be available on acceptable terms. If funding is not available when needed, or is available only on unfavorable terms, we may be unable to meet our obligations as they come due or we may be required to sell assets. Moreover, without adequate funding, we may be unable to execute our growth strategy, complete future acquisitions or construction projects, take advantage of other business opportunities or respond to competitive pressures, comply with regulatory requirements, or meet our short-term or long-term working capital requirements, any of which could have a material adverse effect on our revenues and results of operations. Failure to comply with regulatory requirements in a timely manner or meet our short-term or long-term working capital requirements could subject us to regulatory action.

We depend upon HEP for a substantial portion of the crude supply and distribution network that serve our refineries, and we own a significant equity interest in HEP.

At December 31, 2017, we owned a 59% limited partner interest and a non-economic general partner interest in HEP. HEP operates a system of crude oil and petroleum product pipelines; distribution terminals and refinery tankage in Arizona, Idaho, Kansas, Nevada, New Mexico, Oklahoma, Texas, Utah, Washington and Wyoming and refinery units in Kansas and Utah. HEP generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, leasing certain pipeline capacity to Delek, charging fees for terminalling refined products and other hydrocarbons and storing and providing other services at its terminals. HEP serves the Cheyenne, El Dorado, Navajo, Woods Cross and Tulsa Refineries under several long-term pipeline and terminal, tankage and throughput agreements expiring in 2020 through 2036, serves the El Dorado Refinery under long-term tolling agreements expiring in 2030 and serves the Woods Cross Refinery under long-term tolling agreements expiring in 2031. Furthermore, our financial statements include the consolidated results of HEP. HEP is subject to its own operating and regulatory risks, including, but not limited to:

- its reliance on its significant customers, including us;
- competition from other pipelines;
- environmental regulations affecting pipeline operations;
- operational hazards and risks;
- pipeline tariff regulations affecting the rates HEP can charge;
- limitations on additional borrowings and other restrictions due to HEP's debt covenants; and
- other financial, operational and legal risks.

The occurrence of any of these risks could directly or indirectly affect HEP's as well as our financial condition, results of operations and cash flows as HEP is a consolidated VIE. Additionally, these risks could affect HEP's ability to continue operations which could affect their ability to serve our supply and distribution network needs.

For additional information about HEP, see “Holly Energy Partners, L.P.” under Items 1 and 2, “Business and Properties.” For risks related to HEP's business, see Item 1A of HEP's Annual Report on Form 10-K for the fiscal year ended December 31, 2017.

We are exposed to the credit risks, and certain other risks, of our key customers and vendors.

We are subject to risks of loss resulting from nonpayment or nonperformance by our customers. We derive a significant portion of our revenues from contracts with key customers.

If any of our key customers default on their obligations to us, our financial results could be adversely affected. Furthermore, some of our customers may be highly leveraged and subject to their own operating and regulatory risks. In addition, nonperformance by vendors who have committed to provide us with products or services could result in higher costs or interfere with our ability to successfully conduct our business.

Any substantial increase in the nonpayment and/or nonperformance by our customers or vendors could have a material adverse effect on our results of operations and cash flows.

Terrorist attacks (including cyber-attacks), and the threat of terrorist attacks or domestic vandalism, have resulted in increased costs to our business. Continued global hostilities or other sustained military campaigns may adversely impact our results of operations.

The long-term impacts of terrorist attacks and the threat of future terrorist attacks (including cyber-attacks) on the energy transportation industry in general, and on us in particular, are unknown. Increased security measures taken by us as a precaution against possible terrorist attacks or vandalism have resulted in increased costs to our business. Uncertainty surrounding continued global hostilities or other sustained military campaigns, and the possibility that infrastructure facilities could be direct targets of, or indirect casualties of, an act of terror, may affect our operations in unpredictable ways, including disruptions of crude oil supplies and markets for refined products. In addition, disruption or significant increases in energy prices could result in government-imposed price controls. Any one of, or a combination of, these occurrences could have a material adverse effect on our business, financial condition and results of operations.

Changes in the insurance markets attributable to terrorist attacks could make certain types of insurance more difficult for us to obtain. Moreover, the insurance that may be available to us may be significantly more expensive than our existing insurance coverage. Instability in the financial markets as a result of terrorism or war could also affect our ability to raise capital including our ability to repay or refinance debt.

Increases in required fuel economy and regulation of CO_2 emissions from motor vehicles may reduce demand for transportation fuels.

In 2010, the EPA and the National Highway Traffic Safety Administration (“NHTSA”) finalized new standards, raising the required Corporate Average Fuel Economy (“CAFE”) of the nation's passenger fleet by 40% to approximately 35 miles per gallon (“m.p.g.”) by 2016 and imposing the first-ever federal GHG emissions standards on cars and light trucks. In September 2011, the EPA and the Department of Transportation finalized first-time standards for fuel economy of medium and heavy duty trucks. On August 28, 2012, the EPA and NHTSA adopted standards through model year 2025 in two phases. The first phase establishes final standards for 2017-2021 model year vehicles that are projected to require 40.3 - 41.0 m.p.g. in model year 2021 on an average industry fleet-wide basis. The second phase of the CAFE program represents non-final “augural” standards for 2022-2025 model year vehicles that are projected to require 48.7 - 49.7 m.p.g. in model year 2025, on an average industry fleet-wide basis. In 2017, the EPA and NHTSA announced that the agencies were reconsidering the second phase CAFE standards, which could result in maintaining the first phase standards for the 2022-2025 model years. A final decision is expected during the first half of 2018. Any increases in fuel economy standards, along with mandated increases in use of renewable fuels discussed above, could result in decreasing demand for petroleum fuels. Decreasing demand for petroleum fuels could have a material effect on our financial condition and results of operation.

To successfully operate our petroleum refining facilities, we are required to expend significant amounts for capital outlays and operating expenditures.

The refining business is characterized by high fixed costs resulting from the significant capital outlays associated with refineries, terminals, pipelines and related facilities. We are dependent on the production and sale of quantities of refined products at refined product margins sufficient to cover operating costs, including any increases in costs resulting from future inflationary pressures or market conditions and increases in costs of fuel and power necessary in operating our facilities. Furthermore, future major capital investment, various environmental compliance related projects, regulatory requirements or competitive pressures could result in additional capital expenditures, which may not produce a return on investment. Such capital expenditures may require significant financial resources that may be contingent on our access to capital markets and commercial bank loans. Additionally, other matters, such as regulatory requirements or legal actions, may restrict our access to funds for capital expenditures.

Our refineries consist of many processing units, a number of which have been in operation for many years. One or more of the units may require unscheduled downtime for unanticipated maintenance or repairs that are more frequent than our scheduled turnaround for such units. Scheduled and unscheduled maintenance could reduce our revenues during the period of time that the units are not operating. We have taken significant measures to expand and upgrade units in our refineries by installing new equipment and redesigning older equipment to improve refinery capacity. The installation and redesign of key equipment at our refineries involves significant uncertainties, including the following: our upgraded equipment may not perform at expected throughput levels; operating costs of the upgraded equipment may be higher than expected; the yield and product quality of new equipment may differ from design and/or specifications and redesign, modification or replacement of the equipment may be required to correct equipment that does not perform as expected, which could require facility shutdowns until the equipment has been redesigned or modified. Any of these risks associated with new equipment, redesigned older equipment, or repaired equipment could lead to lower revenues or higher costs or otherwise have a negative impact on our future financial condition and results of operations.

In addition, we expect to execute turnarounds at our refineries, which involve numerous risks and uncertainties. These risks include delays and incurrence of additional and unforeseen costs. The turnarounds allow us to perform maintenance, upgrades, overhaul and repair of process equipment and materials, during which time all or a portion of the refinery will be under scheduled downtime.

We may be unable to pay future dividends.

We will only be able to pay dividends from our available cash on hand, cash from operations or borrowings under our credit agreement. The declaration of future dividends on our common stock will be at the discretion of our board of directors and will depend upon many factors, including our results of operations, financial condition, earnings, capital requirements, and restrictions in our debt agreements and legal requirements. We cannot assure you that any dividends will be paid or the frequency or amounts of such payments.

Product liability claims and litigation could adversely affect our business and results of operations.

A significant portion of our operating responsibility on refined product pipelines is to insure the quality and purity of the products loaded at our loading racks. If our quality control measures were to fail, we may have contaminated or off-specification commingled pipelines and storage tanks or off-specification product could be sent to public gasoline stations. These types of incidents could result in product liability claims from our customers.

Product liability is a significant commercial risk. Substantial damage awards have been made in certain jurisdictions against manufacturers and resellers based upon claims for injuries caused by the use of or exposure to various products. There can be no assurance that product liability claims against us would not have a material adverse effect on our business or results of operations or our ability to maintain existing customers or retain new customers.

Our hedging transactions may limit our gains and expose us to other risks.

We periodically enter into derivative transactions as it relates to inventory levels and/or future production to manage the risks from changes in the prices of crude oil, refined products and other feedstocks. These transactions limit our potential gains if commodity prices move above or below the certain price levels established by our hedging instruments. We hedge price risk on inventories above our target levels to minimize the impact these price fluctuations have on our earnings and cash flows. Consequently, our hedging results may fluctuate significantly from one reporting period to the next depending on commodity price fluctuations and our relative physical inventory positions. These transactions may also expose us to risks of financial losses; for example, if our production is less than we anticipated at the time we entered into a hedge agreement or if a counterparty to our hedge agreements fails to perform its obligations under the agreements.

Changes in our credit profile, or a significant increase in the price of crude oil, may affect our relationship with our suppliers, which could have a material adverse effect on our liquidity and limit our ability to purchase sufficient quantities of crude oil to operate our refineries at desired capacity.

An unfavorable credit profile, or a significant increase in the price of crude oil, could affect the way crude oil suppliers view our ability to make payments and induce them to shorten the payment terms of their invoices with us or require credit enhancement. Due to the large dollar amounts and volume of our crude oil and other feedstock purchases, any imposition by our suppliers of more burdensome payment terms or credit enhancement requirements on us may have a material adverse effect on our liquidity and our ability to make payments to our suppliers. This in turn could cause us to be unable to operate our refineries at desired capacity. A failure to operate our refineries at desired capacity could adversely affect our profitability and cash flow.

Our credit facility contains certain covenants and restrictions that may constrain our business and financing activities.

The operating and financial restrictions and covenants in our credit facility and any future financing agreements could adversely affect our ability to finance future operations or capital needs or to engage, expand or pursue our business activities. For example, our revolving credit facility imposes usual and customary requirements for this type of credit facility, including: (i) limitations on liens and indebtedness; (ii) a prohibition on changes in control and (iii) restrictions on engaging in mergers and consolidations. If we fail to satisfy the covenants set forth in the credit facility or another event of default occurs under the credit facility, the maturity of the loan could be accelerated or we could be prohibited from borrowing for our future working capital needs and issuing letters of credit. We might not have, or be able to obtain, sufficient funds to make these immediate payments. If we desire to undertake a transaction that is prohibited by the covenants in our credit facility, we will need to obtain consent under our credit facility. Such refinancing may not be possible or may not be available on commercially acceptable terms.

Our business may suffer due to a departure of any of our key senior executives or other key employees. Furthermore, a shortage of skilled labor or disruptions in our labor force may make it difficult for us to maintain labor productivity.

Our future performance depends to a significant degree upon the continued contributions of our senior management team and key technical personnel. We do not currently maintain key man life insurance, non-compete agreements, or employment agreements with respect to any member of our senior management team. The loss or unavailability to us of any member of our senior management team or a key technical employee could significantly harm us. We face competition for these professionals from our competitors, our customers and other companies operating in our industry. To the extent that the services of members of our senior management team and key technical personnel would be unavailable to us for any reason, we may be required to hire other personnel to manage and operate our company. We may not be able to locate or employ such qualified personnel on acceptable terms, or at all.

Furthermore, our operations require skilled and experienced laborers with proficiency in multiple tasks. A shortage of trained workers due to retirements or otherwise could have an adverse impact on our labor productivity and costs and our ability to expand production in the event there is an increase in the demand for our products and services, which could adversely affect our operations.

As of December 31, 2017, approximately 33% of our employees were represented by labor unions under collective bargaining agreements with various expiration dates. We may not be able to renegotiate our collective bargaining agreements when they expire on satisfactory terms or at all. A failure to do so may increase our costs. In addition, our existing labor agreements may not prevent a strike or work stoppage at any of our facilities in the future, and any work stoppage could negatively affect our results of operations and financial condition.

The market price of our common stock may fluctuate significantly, and the value of a stockholder's investment could be impacted.

The market price of our common stock may be influenced by many factors, some of which are beyond our control, including:

- our quarterly or annual earnings or those of other companies in our industry;
- changes in accounting standards, policies, guidance, interpretations or principles;
- general economic, industry and stock market conditions;
- the failure of securities analysts to cover our common stock or changes in financial estimates by analysts;
- future sales of our common stock;
- announcements by us or our competitors of significant contracts or acquisitions;
- sales of common stock by us, our senior officers or our affiliates; and/or
- the other factors described in these Risk Factors.

In recent years, the stock market has experienced extreme price and volume fluctuations. This volatility has had a significant impact on the market price of securities issued by many companies, including companies in our industry. The price of our common stock could fluctuate based upon factors that have little or nothing to do with our company, and these fluctuations could materially reduce our stock price.

Item 1B. Unresolved Staff Comments

We do not have any unresolved staff comments.

Item 3. Legal Proceedings

Commitment and Contingency Reserves

We periodically establish reserves for certain legal proceedings. The establishment of a reserve involves an estimation process that includes the advice of legal counsel and subjective judgment of management. While management believes these reserves to be adequate, future changes in the facts and circumstances could result in the actual liability exceeding the estimated ranges of loss and amounts accrued.

While the outcome and impact on us cannot be predicted with certainty, based on advice of counsel, management believes that the resolution of these proceedings through settlement or adverse judgment will not either individually or in the aggregate have a materially adverse effect on our financial condition, results of operations or cash flows.

Environmental Matters

We are reporting the following proceedings to comply with SEC regulations which require us to disclose proceedings arising under federal, state, provincial or local provisions regulating the discharge of materials into the environment or protecting the environment if we reasonably believe that such proceedings may result in monetary sanctions of $100,000 or more. Our respective subsidiaries have or will develop corrective action plans regarding these disclosures that will be implemented in consultation with the respective federal and state agencies. It is not possible to predict the ultimate outcome of these proceedings, although none are currently expected to have a material effect on our financial condition, results of operations or cash flows.

Cheyenne

HollyFrontier Cheyenne Refining LLC ("HFCR") has been engaged in discussions with the Wyoming Department of Environmental Quality ("WDEQ") relating to a Notice of Violation issued in late 2016 for possible violations of air quality standards related to operation of certain refinery units at the Cheyenne Refinery in 2016 and 2017. HFCR and the WDEQ are working towards a settlement of this matter.

El Dorado

The El Dorado Refinery is engaged in discussions with, and has responded to document requests from, the EPA and the U.S. Department of Justice ("DOJ") regarding potential Clean Air Act violations relating to flaring devices and other equipment at the refinery. Topics of the discussions include (a) three information requests for activities occurring January 1, 2009 through May 31, 2014 and a September 2017 incident, (b) Risk Management Program compliance issues relating to a November 2014 inspection and (c) a Notice of Violation issued by the EPA in August 2017. We will continue to work with the EPA and DOJ to resolve these matters.

Tulsa

HollyFrontier Tulsa Refining LLC ("HFTR") manufactures paraffin and hydrocarbon waxes at its Tulsa West facility. On March 11, 2014, the EPA issued a notice to HFTR of possible violations of certain provisions of the federal Toxic Substances Control Act in connection with the manufacture of certain of these products. HFTR and the EPA met and are working productively towards a settlement of this matter.

HFTR operates under two Consent Decrees with the EPA and the Oklahoma Department of Environmental Quality ("ODEQ"). On December 13, 2017, during a meeting between the parties, ODEQ proposed stipulated penalties related to violations of the two Consent Decrees. The violations relate to Clean Air Act regulated fuel gas and flare operations. HFTR is currently negotiating with the ODEQ and the EPA.

Other

We are a party to various other litigation and proceedings that we believe, based on advice of counsel, will not either individually or in the aggregate have a materially adverse impact on our financial condition, results of operations or cash flows.

Item 4. Mine Safety Disclosures

Not Applicable.

PART II

Item 5. Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is traded on the New York Stock Exchange under the trading symbol "HFC." The following table sets forth the range of the daily high and low sales prices per share of common stock, dividends declared per share and the trading volume of common stock for the periods indicated:

Years Ended December 31,	High	Low	Dividends	Trading Volume
2017				
Fourth quarter	$ 52.00	$ 34.47	$ 0.33	152,263,000
Third quarter	$ 36.46	$ 25.97	$ 0.33	180,192,400
Second quarter	$ 29.14	$ 23.46	$ 0.33	171,701,200
First quarter	$ 34.78	$ 26.23	$ 0.33	188,138,300
2016				
Fourth quarter	$ 34.13	$ 22.63	$ 0.33	227,228,500
Third quarter	$ 27.98	$ 22.07	$ 0.33	263,014,600
Second quarter	$ 37.98	$ 22.53	$ 0.33	201,750,800
First quarter	$ 41.29	$ 29.00	$ 0.33	197,404,600

In May 2015, our Board of Directors approved a $1 billion share repurchase program authorizing us to repurchase common stock in the open market or through privately negotiated transactions based on market conditions, securities law limitations and other relevant considerations. The following table includes repurchases made under this program during the fourth quarter of 2017.

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet Be Purchased under the Plans or Programs
October 2017	—	$ —	—	$ 178,811,213
November 2017	—	$ —	—	$ 178,811,213
December 2017	—	$ —	—	$ 178,811,213
Total for October to December 2017	—		—	

As of February 13, 2018, we had approximately 91,488 stockholders, including beneficial owners holding shares in street name.

We intend to consider the declaration of a dividend on a quarterly basis, although there is no assurance as to future dividends since they are dependent upon future earnings, capital requirements, our financial condition and other factors.

Item 6. Selected Financial Data

The following table shows our selected financial information as of the dates or for the periods indicated. This table should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes thereto included elsewhere in this Annual Report on Form 10-K.

	Years Ended December 31,				
	2017	2016	2015	2014	2013
	(In thousands, except per share data)				
FINANCIAL DATA					
For the period					
Sales and other revenues	$ 14,251,299	$ 10,535,700	$ 13,237,920	$ 19,764,327	$ 20,160,560
Income (loss) before income taxes (1,2)	868,863	(171,534)	1,208,568	467,500	1,159,399
Income tax expense (benefit)	(12,379)	19,411	406,060	141,172	391,576
Net income (loss)	881,242	(190,945)	802,508	326,328	767,823
Less net income attributable to noncontrolling interest	75,847	69,508	62,407	45,036	31,981
Net income (loss) attributable to HollyFrontier stockholders	$ 805,395	$ (260,453)	$ 740,101	$ 281,292	$ 735,842
Earnings (loss) per share attributable to HollyFrontier stockholders - basic	$ 4.54	$ (1.48)	$ 3.91	$ 1.42	$ 3.66
Earnings (loss) per share attributable to HollyFrontier stockholders - diluted	$ 4.52	$ (1.48)	$ 3.90	$ 1.42	$ 3.64
Cash dividends declared per common share	$ 1.32	$ 1.32	$ 1.31	$ 3.26	$ 3.20
Average number of common shares outstanding:					
Basic	176,174	176,101	188,731	197,243	200,419
Diluted	177,196	176,101	188,940	197,428	201,234
Net cash provided by operating activities	$ 951,390	$ 606,948	$ 985,868	$ 758,596	$ 869,174
Net cash used for investing activities	$ (959,670)	$ (801,597)	$ (381,748)	$ (292,322)	$ (526,735)
Net cash provided by (used for) financing activities	$ (72,630)	$ 838,695	$ (1,105,572)	$ (838,392)	$ (1,160,035)
At end of period					
Cash, cash equivalents and investments in marketable securities	$ 630,757	$ 1,134,727	$ 210,552	$ 1,042,095	$ 1,665,263
Working capital	$ 1,640,118	$ 1,767,780	$ 587,450	$ 1,549,004	$ 2,445,953
Total assets	$ 10,692,154	$ 9,435,661	$ 8,388,299	$ 9,230,047	$ 10,055,763
Total debt	$ 2,498,993	$ 2,235,137	$ 1,040,040	$ 1,054,297	$ 996,543
Total equity	$ 5,896,940	$ 5,301,985	$ 5,809,773	$ 6,100,719	$ 6,609,398

(1) Reflects non-cash lower of cost or market inventory valuation adjustments that increased pre-tax earnings by $108.7 million and $291.9 million for the years ended December 31, 2017 and 2016 and decreased pre-tax earnings by $227.0 million and $397.5 million for the years ended December 31, 2015 and 2014, respectively.

(2) Includes a long-lived asset impairment charge of $19.2 million that relate to our Woods Cross Refinery for the year ended December 31, 2017 and goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million, respectively, that relate to our Cheyenne Refinery, for the year ended December 31, 2016.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

This Item 7 contains “forward-looking” statements. See “Forward-Looking Statements” at the beginning of this Annual Report on Form 10-K. In this document, the words “we,” “our,” “ours” and “us” refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person with certain exceptions. Generally, the words “we,” “our,” “ours” and “us” include HEP and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, “HEP” refers to HEP and its consolidated subsidiaries.

Overview

We are principally an independent petroleum refiner that produces high-value refined products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate refineries having a combined nameplate crude oil processing capacity of 457,000 barrels per day that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. Our refineries are located in El Dorado, Kansas (the El Dorado Refinery), Tulsa, Oklahoma (the Tulsa Refineries), which comprise two production facilities, the Tulsa West and East facilities, Artesia, New Mexico, which operates in conjunction with crude, vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the Navajo Refinery), Cheyenne, Wyoming (the Cheyenne Refinery) and Woods Cross, Utah (the Woods Cross Refinery).

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of PCLI. The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars.

PCLI is a Canadian-based producer of base oils with a plant having 15,600 BPD of lubricant production capacity that is located in Mississauga, Ontario. The facility is downstream integrated from base oils to finished lubricants and produces a broad spectrum of specialty lubricants and white oils that are distributed to end customers worldwide through a global sales network with locations in Canada, the United States, Europe and China.

For the year ended December 31, 2017, net income attributable to HollyFrontier stockholders was $805.4 million compared to a net loss of $260.5 million and net income $740.1 million for the years ended December 31, 2016, and 2015, respectively. Overall gross refining margins per barrel sold for 2017 increased 42% over the year ended December 31, 2016, which was due principally to higher crack spreads throughout 2017. Included in our financial results for the current year was a long-lived asset impairment charge, offset by an inventory reserve adjustment.

Pursuant to the 2007 Energy Independence and Security Act, the EPA promulgated the RFS regulations, which increased the volume of renewable fuels mandated to be blended into the nation's fuel supply. The regulations, in part, require refiners to add annually increasing amounts of “renewable fuels” to their petroleum products or purchase credits, known as RINs, in lieu of such blending. Compliance with RFS regulations significantly increases our cost of products sold, with RINs costs totaling $288.4 million for the year ended December 31, 2017, which is net of the $57.7 million cost reduction resulting from reinstatement of 2016 RINs as described in Note 8 “Inventories” in the Notes to Consolidated Financial Statements.

OUTLOOK

The profitability of our refining business is largely driven by our operational reliability and crack spreads (the price difference between refined products and inputs such as crude oil), which are driven by the supply and demand of refined product markets. In 2017, crack spreads showed material improvement over 2016 as global and North American refined product market supply and demand tightened. Going into 2018, we are anticipating continued demand growth for refined products and are optimistic about margins. Additionally, we expect to benefit from widening crude differentials on some of our key inputs in the Refining segment: Cushing-based crude oils and Canadian heavy crude oils.

Our lubricants business is driven by secular demand for higher quality lubricants and greases, cyclical macroeconomic factors and our own operational reliability. In 2017, we acquired and integrated the Petro-Canada Lubricants business into our business and going into 2018, we anticipate strong earnings growth based on continued economic growth as well as the execution of our organic growth strategy.

HEP's business is largely driven by the operational reliability of our refineries and contractual tariff increases. Based on our volume forecasts, we expect HEP to be able to grow its limited partner distribution approximately 4% with a distribution coverage ratio of roughly 1.0x.

A more detailed discussion of our financial and operating results for the years ended December 31, 2017, 2016 and 2015 is presented in the following sections.

Results Of Operations

Financial Data

	Years Ended December 31,		
	2017	2016	2015
	(In thousands, except per share data)		
Sales and other revenues	$ 14,251,299	$ 10,535,700	$ 13,237,920
Operating costs and expenses:			
Cost of products sold (exclusive of depreciation and amortization):			
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	11,467,799	8,765,927	10,239,218
Lower of cost or market inventory valuation adjustment	(108,685)	(291,938)	226,979
	11,359,114	8,473,989	10,466,197
Operating expenses (exclusive of depreciation and amortization)	1,294,234	1,018,839	1,060,373
Selling, general and administrative expenses (exclusive of depreciation and amortization)	264,874	125,648	120,846
Depreciation and amortization	409,937	363,027	346,151
Goodwill and asset impairment	19,247	654,084	—
Total operating costs and expenses	13,347,406	10,635,587	11,993,567
Income (loss) from operations	903,893	(99,887)	1,244,353
Other income (expense):			
Earnings (loss) of equity method investments	12,510	14,213	(3,738)
Interest income	3,736	2,491	3,391
Interest expense	(117,597)	(72,192)	(43,470)
Loss on early extinguishment of debt	(12,225)	(8,718)	(1,370)
Gain (loss) on foreign currency swap	24,545	(6,520)	—
Gain on foreign currency transactions	16,921	—	—
Remeasurement gain on HEP pipeline interest acquisitions	36,254	—	—
Other, net	826	(921)	9,402
	(35,030)	(71,647)	(35,785)
Income (loss) before income taxes	868,863	(171,534)	1,208,568
Income tax expense (benefit)	(12,379)	19,411	406,060
Net income (loss)	881,242	(190,945)	802,508
Less net income attributable to noncontrolling interest	75,847	69,508	62,407
Net income (loss) attributable to HollyFrontier stockholders	$ 805,395	$ (260,453)	$ 740,101
Earnings (loss) per share attributable to HollyFrontier stockholders:			
Basic	$ 4.54	$ (1.48)	$ 3.91
Diluted	$ 4.52	$ (1.48)	$ 3.90
Cash dividends declared per common share	$ 1.32	$ 1.32	$ 1.31
Average number of common shares outstanding:			
Basic	176,174	176,101	188,731
Diluted	177,196	176,101	188,940

Other Financial Data

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Net cash provided by operating activities	$ 951,390	$ 606,948	$ 985,868
Net cash used for investing activities	$ (959,670)	$ (801,597)	$ (381,748)
Net cash provided by (used for) financing activities	$ (72,630)	$ 838,695	$ (1,105,572)
Capital expenditures	$ 272,259	$ 479,790	$ 676,155
EBITDA [(1)]	$ 1,329,039	$ 200,404	$ 1,533,761

(1) Earnings before interest, taxes, depreciation and amortization, which we refer to as "EBITDA," is calculated as net income (loss) attributable to HollyFrontier stockholders plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization. EBITDA is not a calculation provided for under GAAP; however, the amounts included in the EBITDA calculation are derived from amounts included in our consolidated financial statements. EBITDA should not be considered as an alternative to net income or operating income as an indication of our operating performance or as an alternative to operating cash flow as a measure of liquidity. EBITDA is not necessarily comparable to similarly titled measures of other companies. EBITDA is presented here because it is a widely used financial indicator used by investors and analysts to measure performance. EBITDA is also used by our management for internal analysis and as a basis for financial covenants. EBITDA presented above is reconciled to net income under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

Supplemental Segment Operating Data

Effective in the fourth quarter of 2017, we revised our reportable segments to align with certain changes in how our chief operating decision maker manages and allocates resources to our business. Accordingly, our Tulsa Refineries lubricants operations, previously reported in the Refining segment, are now combined with the operations of our Petro-Canada Lubricants business and reported in the Lubricants and Specialty Products segment. Our prior period segment information has been retrospectively adjusted to reflect our current segment presentation.

Our operations are organized into three reportable segments, Refining, Lubricants and Specialty Products and HEP. See Note 20 "Segment Information" in the Notes to Consolidated Financial Statements for additional information on our reportable segments.

Refining Segment Operating Data

Our refinery operations include the El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries. The following tables set forth information, including non-GAAP performance measures, about our consolidated refinery operations. The cost of products and refinery gross and net operating margins do not include the non-cash effects of goodwill and asset impairments charges, lower of cost or market inventory valuation adjustments and depreciation and amortization. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

During the fourth quarter of 2017, we revised the following refining segment operating data computations: refinery gross margin; net operating margin; and operating expenses to better align with similar measurements provided by other companies in our industry and to facilitate comparison of our refining performance relative to our peers. Effective with this change, these measurements are now inclusive of all refining segment activities including HFC asphalt operations and revenues and costs related to products purchased for resale and excess crude oil sales. All prior period data has been retrospectively adjusted to reflect our current presentation.

	Years Ended December 31,		
	2017	2016	2015
Consolidated			
Crude charge (BPD) [(1)]	438,800	423,910	432,560
Refinery throughput (BPD) [(2)]	472,010	457,480	463,580
Sales of produced refined products (BPD) [(3)]	452,270	440,640	442,650
Refinery utilization [(4)]	96.0%	92.8%	97.6%
Average per produced barrel sold [(5)]			
Refinery gross margin [(6)]	$ 11.56	$ 8.16	$ 15.88
Refinery operating expenses [(7)]	6.10	5.64	5.82
Net operating margin	$ 5.46	$ 2.52	$ 10.06
Refinery operating expenses per throughput barrel [(8)]	$ 5.84	$ 5.43	$ 5.56

(1) Crude charge represents the barrels per day of crude oil processed at our refineries.
(2) Refinery throughput represents the barrels per day of crude and other refinery feedstocks input to the crude units and other conversion units at our refineries.
(3) Represents barrels sold of refined products produced at our refineries (including HFC Asphalt) and does not include volumes of refined products purchased for resale or volumes of excess crude oil sold.
(4) Represents crude charge divided by total crude capacity (BPSD). Effective July 1, 2016, our consolidated crude capacity increased from 443,000 BPSD to 457,000 BPSD upon completion of our Woods Cross Refinery expansion project.
(5) Represents average amount per produced barrel sold, which is a non-GAAP measure. Reconciliations to amounts reported under GAAP are provided under “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K.
(6) Excludes lower of cost or market inventory valuation adjustments that increased refinery gross margin by $108.7 million and $291.9 million for the years ended December 31, 2017 and 2016, respectively, and decreased refinery gross margin by $227.0 million for the year ended December 31, 2015.
(7) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by sales volumes of refined products produced at our refineries.
(8) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by refinery throughput.

Lubricants and Specialty Products Segment Operating Data

The following table sets forth information about our lubricants and specialty products operations and includes our Petro-Canada Lubricants business for the period February 1, 2017 (date of acquisition) through December 31, 2017.

	Years Ended December 31,		
Lubricants and Specialty Products	2017	2016	2015
Throughput (BPD)	21,710	—	—
Barrels sold (BPD)	31,480	12,030	11,140

Our Lubricants and Specialty Products segment includes base oil production activities, by-product sales to third parties and intra-segment base oil sales to rack forward referred to as “rack back.” “Rack forward” includes the purchase of base oils and the blending, packaging, marketing and distribution and sales of finished lubricants and specialty products to third parties. Supplemental financial data attributable to our Lubricants and Specialty Products segment is presented below:

	Rack Back [1]	Rack Forward [2]	Eliminations [3]	Total Lubricants and Specialty Products
	(In thousands)			
Year Ended December 31, 2017				
Sales and other revenues	$ 621,153	$ 1,415,842	$ (442,959)	$ 1,594,036
Cost of products sold	504,782	1,032,161	(442,959)	1,093,984
Operating expenses	95,303	127,158	—	222,461
Selling, general and administrative expenses	27,618	77,494	—	105,112
Depreciation and amortization	23,471	8,423	—	31,894
Income (loss) from operations	$ (30,021)	$ 171,812	$ —	$ 141,791
Year Ended December 31, 2016				
Sales and other revenues	$ —	$ 464,359	$ —	$ 464,359
Cost of products sold	—	377,136	—	377,136
Operating expenses	—	13,867	—	13,867
Selling, general and administrative expenses	—	2,899	—	2,899
Depreciation and amortization	—	620	—	620
Income from operations	$ —	$ 73,927	$ —	$ 73,927
Year Ended December 31, 2015				
Sales and other revenues	$ —	$ 493,282	$ —	$ 493,282
Cost of products sold	—	415,796	—	415,796
Operating expenses	—	14,042	—	14,042
Selling, general and administrative expenses	—	2,615	—	2,615
Depreciation and amortization	—	254	—	254
Income from operations	$ —	$ 60,575	$ —	$ 60,575

(1) Rack back consists of our PCLI base oil production activities, by-product sales to third parties and intra-segment base oil sales to rack forward.
(2) Rack forward activities include the purchase of base oils from rack back and the blending, packaging, marketing and distribution and sales of finished lubricants and specialty products to third parties.
(3) Intra-segment sales of rack back produced base oils to rack forward are eliminated under the "Eliminations" column.

Results of Operations – Year Ended December 31, 2017 Compared to Year Ended December 31, 2016

Summary

Net income attributable to HollyFrontier stockholders for the year ended December 31, 2017 was $805.4 million ($4.54 per basic and $4.52 per diluted share), a $1,065.8 million increase compared to a net loss attributable to HollyFrontier stockholders of $260.5 million ($1.48 per basic and diluted share) for the year ended December 31, 2016. Net income increased due principally to an increase in refining segment sales volumes and gross refining margins and the inclusion of earnings attributable to the operations of our recently acquired Petro-Canada Lubricants business. Additionally, we recorded long-lived asset impairment charges totaling $23.2 million for the year ended December 31, 2017 compared to goodwill and long-lived asset impairment charges totaling $654.1 million for the year ended December 31, 2016. For the year ended December 31, 2017, lower of cost or market inventory reserve adjustments increased pre-tax earnings by $108.7 million compared to $291.9 million for the year ended December 31, 2016. Refinery gross margins for the year ended December 31, 2017 increased to $11.56 per barrel sold from $8.16 for the year ended December 31, 2016. During 2017, our Cheyenne Refinery and Woods Cross Refinery were each granted a one-year small refinery exemption from the EPA at which time we recorded a $30.5 million and $27.3 million, respectively, decrease to our cost of products sold, reflecting the reinstatement of RINs previously expensed in 2016. The Tax Cut and Jobs Act was enacted on December 22, 2017, resulting in a tax benefit of $307.1 million for the year ended December 31, 2017.

Sales and Other Revenues
Sales and other revenues increased 35% from $10,535.7 million for the year ended December 31, 2016 to $14,251.3 million for the year ended December 31, 2017 due to a year-over-year increase in sales prices and higher product sales volumes. Sales and other revenues for the years ended December 31, 2017 and 2016 include $77.2 million and $68.9 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties. Additionally, the operations of our Petro-Canada Lubricants business contributed $1,125.3 million in sales and other revenues to our Lubricants and Specialty Products segment for the year ended December 31, 2017.

Cost of Products Sold
Total cost of products sold increased 34% from $8,474.0 million for the year ended December 31, 2016 to $11,359.1 million for the year ended December 31, 2017, due principally to higher crude oil costs and higher sales volumes of products. Additionally, cost of products sold reflects a $108.7 million benefit that is attributable to a decrease in the lower of cost or market reserve for the year ended December 31, 2017, a $183.3 million decrease compared to $291.9 million for the same period of last year. The reserve at December 31, 2017 is based on market conditions and prices at that time. Additionally, we recorded a $30.5 million and $27.3 million RINs cost reduction during 2017 as a result of the reinstatement of previously utilized RINs following our Cheyenne Refinery and Woods Cross Refinery small refinery exemptions, respectively.

Gross Refinery Margins
Gross refinery margin per barrel sold increased 42% from $8.16 for the year ended December 31, 2016 to $11.56 for the year ended December 31, 2017. This was due to the effects of an increase in the average per barrel sold sales price, partially offset by increased crude oil and feedstock prices during the current year. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments, goodwill and asset impairment charges or depreciation and amortization. See “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K for a reconciliation to the income statement of sale prices of products sold and cost of products purchased.

Operating Expenses
Operating expenses, exclusive of depreciation and amortization, increased 27% from $1,018.8 million for the year ended December 31, 2016 to $1,294.2 million for the year ended December 31, 2017 due principally to $208.7 million in costs attributable to the operations of our Petro-Canada Lubricants business and higher purchased fuel costs compared to 2016. For the years ended December 31, 2017 and 2016, operating expenses include $137.6 million and $90.4 million, respectively, in costs attributable to HEP operations.

Selling, General and Administrative Expenses
Selling, general and administrative expenses increased 111% from $125.6 million for the year ended December 31, 2016 to $264.9 million for the year ended December 31, 2017, due principally to $127.7 million in costs attributable to the operations of our Petro-Canada Lubricants business and related acquisition and integration costs. Incremental direct acquisition and integration costs of our Petro-Canada Lubricants business totaled $27.9 million and $13.4 million for the years ended December 31, 2017 and 2016, respectively. For the years ended December 31, 2017 and 2016, selling, general and administrative expenses include $11.9 million and $10.1 million, respectively, in costs attributable to HEP operations.

Depreciation and Amortization Expenses
Depreciation and amortization increased 13% from $363.0 million for the year ended December 31, 2016 to $409.9 million for the year ended December 31, 2017. This increase was due principally to $30.9 million in depreciation and amortization expenses attributable to the operations of our Petro-Canada Lubricants business and capitalized improvement projects and capitalized refinery turnaround costs. For the years ended December 31, 2017 and 2016, depreciation and amortization expenses include $77.7 million and $68.8 million, respectively, in costs attributable to HEP operations.

Goodwill and Asset Impairment
During the year ended December 31, 2017, we recorded a $19.2 million long-lived asset impairment charge resulting from management's plan to cease further expansion of our Woods Cross Refinery to add lubricants production compared to goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million, respectively, for the year ended December 31, 2016 that related to our Cheyenne Refinery. See Note 10 “Goodwill” in the Notes to Consolidated Financial Statements for additional information on these impairments.

Interest Income
Interest income for the year ended December 31, 2017 was $3.7 million compared to $2.5 million for the year ended December 31, 2016. This increase was due to higher interest rates received on cash balances during 2017.

Interest Expense
Interest expense was $117.6 million for the year ended December 31, 2017 compared to $72.2 million for the year ended December 31, 2016. This increase was due to interest attributable to higher debt levels during the current year relative to 2016. For the years ended December 31, 2017 and 2016, interest expense included $58.4 million and $52.6 million, respectively, in interest costs attributable to HEP operations.

Loss on Early Extinguishment of Debt
For the year ended December 31, 2017, a $12.2 million loss was recorded upon HEP's redemption of its $300 million aggregate principal amount of 6.5% senior notes maturing March 2020 at a cost of $309.8 million.

For the year ended December 31, 2016, we recognized an $8.7 million loss on the early retirement of a financing obligation, a component of outstanding debt, upon HEP's purchase of crude oil tanks from an affiliate of Plains. See Note 12 "Debt" in the Notes to Consolidated Financial Statements for additional information on this financing obligation.

Gain (Loss) on Foreign Currency Swap
During the years ended December 31, 2017 and 2016, we recorded a $24.5 million gain and a $6.5 million loss, respectively, on currency swap contracts that effectively fixed the conversion rate on $1.125 billion Canadian dollars (the PCLI purchase price), which were settled on February 1, 2017, in connection with the closing of the PCLI acquisition.

Gain on Foreign Currency Transactions
Remeasurement adjustments resulting from the conversion of the intercompany financing structure on our PCLI acquisition from local currencies to the U.S. dollar resulted in a $16.9 million gain for the year ended December 31, 2017.

Income Taxes
For the year ended December 31, 2017, we recorded a net income tax benefit of $12.4 million compared to an income tax expense of $19.4 million for the year ended December 31, 2016. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were (1.4)% and (11.3)% for the years ended December 31, 2017 and 2016, respectively. During the year ended December 31, 2017, we recorded a tax benefit of $307.1 million as a result of the Tax Cut and Jobs Act which was enacted on December 22, 2017. During the year ended December 31, 2016, we recorded a $309.3 million goodwill impairment charge, a significant driver of our $171.5 million loss before income taxes for the year ended December 31, 2016, that is not deductible for income tax purposes.

Results of Operations – Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Summary
Net loss attributable to HollyFrontier stockholders for the year ended December 31, 2016 was $260.5 million ($1.48 per basic and diluted share), a $1,000.6 million decrease compared to net income attributable to HollyFrontier stockholders of $740.1 million ($3.91 per basic and $3.90 per diluted share) for the year ended December 31, 2015. Net income decreased due principally to non-cash goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million, respectively, and a year-over-year decrease in refining margins and sales volumes, net of the effects of a year-over-year change in lower of cost or market inventory reserve adjustments. For the year ended December 31, 2016, lower of cost or market inventory reserve adjustments increased pre-tax earnings by $291.9 million compared to a pre-tax earnings decrease of $227.0 million for the year ended December 31, 2015. Collectively, the impairment charges, net of the lower of cost or market valuation benefit, reduced 2016 pre-tax income by $362.1 million. Refinery gross margins for the year ended December 31, 2016 decreased to $8.16 per barrel sold from $15.88 for the year ended December 31, 2015.

Sales and Other Revenues
Sales and other revenues decreased 20% from $13,237.9 million for the year ended December 31, 2015 to $10,535.7 million for the year ended December 31, 2016 due to a year-over-year decrease in sales prices and lower product sales volumes. Sales and other revenues for the years ended December 31, 2016 and 2015 include $68.9 million and $66.7 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties.

Cost of Products Sold
Total cost of products sold decreased 19% from $10,466.2 million for the year ended December 31, 2015 to $8,474.0 million for the year ended December 31, 2016, due principally to lower crude oil costs and lower sales volumes of products. Additionally, this decrease reflects a $291.9 million benefit that is attributable to a reduction in the lower of cost or market reserve for the year ended December 31, 2016, a $518.9 million increase compared to a charge of $227.0 million for the year ended December 31, 2015. The reserve at December 31, 2016 is based on market conditions and prices at that time.

Gross Refinery Margins
Gross refinery margin per barrel sold decreased 49% from $15.88 for the year ended December 31, 2015 to $8.16 for the year ended December 31, 2016. This was due to the effects of a decrease in the average per barrel sold sales price, partially offset by decreased crude oil and feedstock prices during the current year. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments, goodwill and asset impairment charges or depreciation and amortization. See “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K for a reconciliation to the income statement of prices of refined products sold and cost of products purchased.

Operating Expenses
Operating expenses, exclusive of depreciation and amortization, decreased 4% from $1,060.4 million for the year ended December 31, 2015 to $1,018.8 million for the year ended December 31, 2016 due principally to lower natural gas fuel and maintenance costs compared to 2015. For the years ended December 31, 2016 and 2015, operating expenses include $90.4 million and $102.3 million, respectively, in costs attributable to HEP operations.

Selling, General and Administrative Expenses
Selling, general and administrative expenses increased 4% from $120.8 million for the year ended December 31, 2015 to $125.6 million for the year ended December 31, 2016, due principally to pre-acquisition costs of PCLI. For the years ended December 31, 2016 and 2015, general and administrative expenses include $10.1 million and $10.2 million, respectively, in costs attributable to HEP operations.

Depreciation and Amortization Expenses
Depreciation and amortization increased 5% from $346.2 million for the year ended December 31, 2015 to $363.0 million for the year ended December 31, 2016. This increase was due principally to depreciation and amortization attributable to capitalized improvement projects and capitalized refinery turnaround costs. For the years ended December 31, 2016 and 2015, depreciation and amortization expenses include $68.8 million and $61.7 million, respectively, in costs attributable to HEP operations.

Goodwill and Asset Impairment
During the year ended December 31, 2016, we recorded goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million, respectively, that relate to our Cheyenne Refinery. See Note 10 “Goodwill” in the Notes to Consolidated Financial Statements for additional information on the Cheyenne impairment.

Interest Income
Interest income for the year ended December 31, 2016 was $2.5 million compared to $3.4 million for the year ended December 31, 2015. This decrease was due to higher investment levels in marketable debt securities during 2015.

Interest Expense
Interest expense was $72.2 million for the year ended December 31, 2016 compared to $43.5 million for the year ended December 31, 2015. This increase was due to interest attributable to higher debt levels during 2016 relative to 2015. For the years ended December 31, 2016 and 2015, interest expense included $52.6 million and $36.9 million, respectively, in interest costs attributable to HEP operations.

Loss on Early Extinguishment of Debt
In March 2016, we recognized an $8.7 million loss on the early retirement of a financing obligation, a component of outstanding debt, upon HEP's purchase of crude oil tanks from an affiliate of Plains. See Note 12 “Debt” in the Notes to Consolidated Financial Statements for additional information on this financing obligation.

In June 2015, we recognized a $1.4 million early extinguishment loss on the redemption of our $150.0 million aggregate principal amount of 6.875% senior notes maturing November 2018.

Income Taxes
For the year ended December 31, 2016, we recorded income tax expense of $19.4 million compared to $406.1 million for the year ended December 31, 2015. This decrease was due principally to a pre-tax loss during the year ended December 31, 2016 compared to pre-tax earnings during the year ended 2015. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were (11.3)% and 33.6% for the years ended December 31, 2016 and 2015, respectively. For the year ended December 31, 2016. the effective tax rate reflects the effects of the $309.3 million goodwill impairment charge, a significant driver of our $171.5 million loss before income taxes for the year ended December 31, 2016, that is not deductible for income tax purposes.

LIQUIDITY AND CAPITAL RESOURCES

HollyFrontier Credit Agreement

We have a $1.35 billion senior unsecured revolving credit facility maturing in February 2022 (the “HollyFrontier Credit Agreement”). The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the year ended December 31, 2017, we received advances totaling $26.0 million and repaid $26.0 million under the HollyFrontier Credit Agreement. At December 31, 2017, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling $2.8 million under the HollyFrontier Credit Agreement.

HEP Credit Agreement

HEP has a $1.4 billion senior secured revolving credit facility maturing in July 2022 (the “HEP Credit Agreement”) and is available to fund capital expenditures, investments, acquisitions, distribution payments, working capital and for general partnership purposes. It is also available to fund letters of credit up to a $50 million sub-limit and has a $300 million accordion. During the year ended December 31, 2017, HEP received advances totaling $969.0 million and repaid $510.0 million under the HEP Credit Agreement. At December 31, 2017, HEP was in compliance with all of its covenants, had outstanding borrowings of $1,012.0 million and no outstanding letters of credit under the HEP Credit Agreement.

HEP Senior Notes

In September 2017, HEP issued an additional $100 million in aggregate principal amount of 6.0% HEP senior notes maturing in August 2024 in a private placement. HEP used the net proceeds of $101.8 million to repay indebtedness under the HEP Credit Agreement.

In January 2017, HEP redeemed its $300 million aggregate principal amount of 6.50% senior notes maturing March 2020 at a redemption cost of $309.8 million, at which time HEP recognized a $12.2 million early extinguishment loss consisting of a $9.8 million debt redemption premium and unamortized discount and financing costs of $2.4 million. HEP funded the redemption with borrowings under the HEP Credit Agreement.

See Note 12 "Debt" in the Notes to Consolidated Financial Statements for additional information on our debt instruments.

HEP Common Unit Continuous Offering Program

On May 10, 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of $200 million. During the year ended December 31, 2017, HEP issued 1,538,452 common units under this program, providing $52.1 million in net proceeds. In connection with this program and to maintain our then economic 2% general partner interest in HEP, we made capital contributions totaling $1.1 million during the year ended December 31, 2017. As of December 31, 2017, HEP has issued 2,241,907 common units with an aggregate gross sales amount of $77.1 million.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP’s credit facility may be reborrowed from time to time.

HEP Private Placement Agreement

On January 25, 2018, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,700,000 HEP common units, representing limited partner interests, at a price of $29.73 per common unit. The private placement closed on February 6, 2018, at which time HEP received proceeds of approximately $110.0 million, which were used to repay indebtedness under the HEP Credit Agreement. After this common unit issuance, our limited partner interest in HEP is 57%.

Liquidity

We believe our current cash and cash equivalents, along with future internally generated cash flow and funds available under our credit facilities will provide sufficient resources to fund currently planned capital projects and our liquidity needs for the foreseeable future. In addition, components of our growth strategy include construction of new refinery processing units and the expansion of existing units at our facilities and selective acquisition of complementary assets for our refining operations intended to increase earnings and cash flow.

As of December 31, 2017, our cash and cash equivalents totaled $630.8 million. We consider all highly-liquid instruments with a maturity of three months or less at the time of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates market value. These primarily consist of investments in conservative, highly-rated instruments issued by financial institutions, government and corporate entities with strong credit standings and money market funds.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of PCLI. The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars.

In May 2015, our Board of Directors approved a $1 billion share repurchase program, which replaced all existing share repurchase programs, authorizing us to repurchase common stock in the open market or through privately negotiated transactions. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by our Board of Directors. As of December 31, 2017, we had remaining authorization to repurchase up to $178.8 million under this stock repurchase program. In addition, we are authorized by our Board of Directors to repurchase shares in an amount sufficient to offset shares issued under our compensation programs.

Cash and cash equivalents decreased $79.8 million for the year ended December 31, 2017. Net cash used for investing and financing activities of $959.7 million and $72.6 million, respectively, exceeded net cash provided by operating activities of $951.4 million. Working capital decreased by $127.7 million during the year ended December 31, 2017.

Cash Flows – Operating Activities

Year Ended December 31, 2017 Compared to Year Ended December 31, 2016

Net cash flows provided by operating activities were $951.4 million for the year ended December 31, 2017 compared to $606.9 million for the year ended December 31, 2016, an increase of $344.4 million. Net income for the year ended December 31, 2017 was $881.2 million, an increase of $1,072.2 million compared to net loss of $190.9 million for the year ended December 31, 2016. Non-cash adjustments to net income consisting of depreciation and amortization, goodwill and asset impairment, lower of cost or market inventory valuation adjustment, earnings of equity method investments, inclusive of distributions, gain on equity company acquisition, gain or loss on sale of assets, loss on extinguishment of debt, deferred income taxes, equity-based compensation expense, fair value changes to derivative instruments and excess tax expense from equity-based compensation totaled $225.5 million for the year ended December 31, 2017 compared to $842.6 million for the same period in 2016. Changes in working capital items decreased cash flows by $6.1 million for the year ended December 31, 2017, and increased cash flows by $74.7 million for the year ended December 31, 2016. For the year ended December 31, 2017, turnaround expenditures increased to $135.1 million from $125.3 million for the same period of 2016.

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Net cash flows provided by operating activities were $606.9 million for the year ended December 31, 2016 compared to $985.9 million for the year ended December 31, 2015, a decrease of $378.9 million. Net loss for the year ended December 31, 2016 was $190.9 million, a decrease of $993.5 million compared to net income of $802.5 million for the year ended December 31, 2015. Non-cash adjustments to net income consisting of depreciation and amortization, goodwill and asset impairment, lower of cost or market inventory valuation adjustment, earnings of equity method investments, inclusive of distributions, gain on sale of assets, gain or loss on extinguishment of debt, deferred income taxes, equity-based compensation expense, fair value changes to derivative instruments and excess tax expense from equity-based compensation totaled $842.6 million for the year ended December 31, 2016 compared to $492.0 million for the same period in 2015. Changes in working capital items increased cash flows by $74.7 million for the year ended December 31, 2016 compared to a decrease of $195.1 million for the year ended December 31, 2015. For the year ended December 31, 2016, turnaround expenditures increased to $125.3 million from $89.4 million for the same period of 2015.

Cash Flows – Investing Activities and Planned Capital Expenditures

Year Ended December 31, 2017 Compared to Year Ended December 31, 2016
Net cash flows used for investing activities were $959.7 million for the year ended December 31, 2017 compared to $801.6 million for the year ended December 31, 2016, an increase of $158.1 million. Current year investing activities reflect a net cash outflow of $870.6 million upon the acquisition of PCLI. Cash expenditures for properties, plants and equipment for 2017 decreased to $272.3 million from $479.8 million for the same period in 2016. These include HEP capital expenditures of $44.8 million and $107.6 million for the years ended December 31, 2017 and 2016, respectively. In addition, in 2017, HEP purchased the remaining interests in SLC Pipeline and Frontier Pipeline for $245.4 million. In 2016, HEP purchased a 50% interest in Cheyenne Pipeline for $42.6 million. We received proceeds of $1.4 million and $0.8 million from the sale of assets during the years ended December 31, 2017 and 2016, respectively. For the years ended December 31, 2017 and 2016, we invested $41.6 million and $546.6 million, respectively, in marketable securities and received proceeds of $465.7 million and $266.6 million, respectively, from the sale or maturity of marketable securities.

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015
Net cash flows used for investing activities were $801.6 million for the year ended December 31, 2016 compared to $381.7 million for the year ended December 31, 2015, an increase of $419.8 million. Cash expenditures for properties, plants and equipment for 2016 decreased to $479.8 million from $676.2 million for the same period in 2015. These include HEP capital expenditures of $107.6 million and $193.1 million for the years ended December 31, 2016 and 2015, respectively. In addition, in 2016, :HEP purchased a 50% interest in Cheyenne Pipeline for $42.6 million, and in 2015, a 50% interest in Frontier Pipeline for $55.0 million. We received proceeds of $0.8 million and $19.3 million from the sale of assets during the years ended December 31, 2016 and 2015, respectively. For the years ended December 31, 2016 and 2015, we invested $546.6 million and $509.3 million, respectively, in marketable securities and received proceeds of $266.6 million and $839.5 million, respectively, from the sale or maturity of marketable securities.

Planned Capital Expenditures

HollyFrontier Corporation
Each year our Board of Directors approves our annual capital budget which includes specific projects that management is authorized to undertake. Additionally, when conditions warrant or as new opportunities arise, additional projects may be approved. The funds appropriated for a particular capital project may be expended over a period of several years, depending on the time required to complete the project. Therefore, our planned capital expenditures for a given year consist of expenditures appropriated in that year's capital budget plus expenditures for projects appropriated in prior years which have not yet been completed. During 2018, we expect to spend approximately $425.0 million to $500.0 million in cash for capital projects and refinery turnarounds appropriated in 2018 and prior years. Refinery turnaround spending is amortized over the useful life of the turnaround. Our expected capital and turnaround cash spending for 2018 is as follows:

	Expected Cash Spending Range			
	(In millions)			
Type:				
Capital	$	225.0	$	280.0
Turnarounds		200.0		220.0
Total	$	425.0	$	500.0

The refining industry is capital intensive and requires on-going investments to sustain our refining operations. This includes replacement of, or rebuilding, refinery units and components that extend the useful life. We also invest in projects that improve operational reliability and profitability via enhancements that improve refinery processing capabilities as well as production yield and flexibility. Our capital expenditures also include projects related to environmental, health and safety compliance and include initiatives as a result of federal and state mandates.

A significant portion of our current capital spending is associated with compliance-oriented capital improvements. This spending is required due to existing consent decrees (for projects including FCC unit flue gas scrubbers and tail gas treatment units), federal fuels regulations (particularly, Tier 3 which mandates a reduction in the sulfur content of blended gasoline), refinery waste water treatment improvements and other similar initiatives. Our refinery operations and related emissions are highly regulated at both federal and state levels, and we invest in our facilities as needed to remain in compliance with these standards. Additionally, when faced with new emissions or fuels standards, we seek to execute projects that facilitate compliance and also improve the operating costs and / or yields of associated refining processes.

HEP

Each year the Holly Logistic Services, L.L.C. board of directors approves HEP's annual capital budget, which specifies capital projects that HEP management is authorized to undertake. Additionally, at times when conditions warrant or as new opportunities arise, special projects may be approved. The funds allocated for a particular capital project may be expended over a period in excess of a year, depending on the time required to complete the project. Therefore, HEP's planned capital expenditures for a given year consist of expenditures approved for capital projects included in its current year capital budget as well as, in certain cases, expenditures approved for capital projects in capital budgets for prior years. The 2018 HEP capital budget is comprised of $8.0 million for maintenance capital expenditures and $40.0 million for expansion capital expenditures. HEP expects the majority of the expansion capital budget to be invested in refined product pipeline expansions, crude system enhancements, new storage tanks, and enhanced blending capabilities at our racks.

Cash Flows – Financing Activities

Year Ended December 31, 2017 Compared to Year Ended December 31, 2016

Net cash flows used for financing activities were $72.6 million for the year ended December 31, 2017 compared to cash flows provided by financing activities of $838.7 million for the year ended December 31, 2016, an increase of $911.3 million. During the year ended December 31, 2017, we received $26.0 million and repaid $26.0 million under the HollyFrontier Credit Agreement and paid $235.5 million in dividends. Also during this period, HEP received $969.0 million and repaid $510.0 million under the HEP Credit Agreement, received $101.8 million in net proceeds from issuance of HEP 6.0% senior notes, paid $309.8 million upon the redemption of HEP's 6.5% senior notes, received $52.1 million in net proceeds from the issuance of its common units and paid distributions of $110.4 million to noncontrolling interests. In addition, for the years ended December 31, 2017 and 2016, $15.9 million and $4.7 million, respectively, of vested shares under our stock compensation plans were withheld for tax withholding obligations. During the year ended December 31, 2016, we received $992.6 million in net proceeds upon issuance of our 5.875% senior notes, received $350.0 million and repaid $350.0 million under a term loan, received $315.0 million and repaid $315.0 million under the HollyFrontier Credit Agreement, purchased $133.4 million in common stock and paid $234.0 million in dividends. In addition, we extinguished our financing obligation with Plains for $39.5 million. Also during this period, HEP received $554.0 million and repaid $713.0 million under the HEP Credit Agreement, received $394.0 million in net proceeds from issuance of HEP 6.0% senior notes, received $125.9 million in net proceeds from the issuance of its common units and paid distributions of $92.6 million to noncontrolling interests.

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Net cash flows provided by financing activities were $838.7 million for the year ended December 31, 2016 compared to cash flows used for financing activities of $1,105.6 million for the year ended December 31, 2015, an increase of $1,944.3 million. During the year ended December 31, 2016, we received $992.6 million in net proceeds upon issuance of our 5.875% senior notes, received $350.0 million and repaid $350.0 million under a term loan, received $315.0 million and repaid $315.0 million under the HollyFrontier Credit Agreement, purchased $133.4 million in common stock and paid $234.0 million in dividends. In addition, we extinguished our financing obligation with Plains for $39.5 million. In addition, we withheld shares to pay employee income taxes of $4.7 million for the year ended December 31, 2016, and $6.2 million for the year ended December 31, 2015. Also during this period, HEP received $554.0 million and repaid $713.0 million under the HEP Credit Agreement, received $394.0 million in net proceeds from issuance of HEP 6.0% senior notes, received $125.9 million in net proceeds from the issuance of its common units and paid distributions of $92.6 million to noncontrolling interests. During the year ended December 31, 2015, we purchased $742.8 million in common stock, paid $246.9 million in dividends and paid $155.2 million upon the redemption of our 6.875% senior notes. Also during this period, HEP received $973.9 million and repaid $832.9 million under the HEP Credit Agreement and paid distributions of $83.3 million to noncontrolling interests.

Contractual Obligations and Commitments

The following table presents our long-term contractual obligations as of December 31, 2017 in total and by period due beginning in 2018. The table below does not include our contractual obligations to HEP under our long-term transportation agreements as these related-party transactions are eliminated in the Consolidated Financial Statements. A description of these agreements is provided under "Holly Energy Partners, L.P." under Items 1 and 2, "Business and Properties." Also, the table below does not reflect renewal options on our operating leases that are likely to be exercised.

		Payments Due by Period			
Contractual Obligations and Commitments	**Total**	**Less than 1 Year**	**1-3 Years**	**3-5 Years**	**Over 5 Years**
			(In thousands)		
HollyFrontier Corporation					
Long-term debt - principal	$ 1,000,000	$ —	$ —	$ —	$ 1,000,000
Long-term debt - interest (1)	489,583	58,750	117,500	117,500	195,833
Supply agreements (2)	2,853,780	526,759	744,057	672,713	910,251
Transportation and storage agreements (3)	1,407,602	142,291	239,336	197,434	828,541
Other long-term obligations	29,232	11,593	14,055	1,584	2,000
Operating leases	421,344	80,904	143,832	108,931	87,677
	6,201,541	820,297	1,258,780	1,098,162	3,024,302
Holly Energy Partners					
Long-term debt - principal (4)	1,512,000	—	—	1,012,000	500,000
Long-term debt - interest (5)	370,300	67,800	135,600	119,400	47,500
Pipeline operating leases	61,038	6,425	12,850	12,850	28,913
Operating leases	4,858	1,441	1,809	659	949
Other agreements	7,872	1,652	3,304	2,916	—
	1,956,068	77,318	153,563	1,147,825	577,362
Total	$ 8,157,609	$ 897,615	$ 1,412,343	$ 2,245,987	$ 3,601,664

(1) Interest payments consist of interest on our 5.875% senior notes.

(2) We have long-term supply agreements to secure certain quantities of crude oil, feedstock and other resources used in the production process at market prices. We have estimated future payments under these fixed-quantity agreements expiring between 2018 and 2030 using current market rates. Additionally, commitments include purchases of 20,000 BPD of crude oil under a 10-year agreement to supply our Woods Cross Refinery.

(3) Consists of contractual obligations under agreements with third parties for the transportation of crude oil, natural gas and feedstocks to our refineries and for terminal and storage services under contracts expiring between 2018 and 2030.

(4) HEP's long-term debt consists of the $500.0 million principal balance on the 6% HEP senior notes and $1,012.0 million of outstanding borrowings under the HEP Credit Agreement. The HEP Credit Agreement expires in 2022.

(5) Interest payments consist of interest on the 6% HEP senior notes and interest on long-term debt under the HEP Credit Agreement. Interest on the HEP Credit Agreement debt is based on the weighted average rate of 3.73% at December 31, 2017.

CRITICAL ACCOUNTING POLICIES

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities as of the date of the financial statements. Actual results may differ from these estimates under different assumptions or conditions. We consider the following policies to be the most critical to understanding the judgments that are involved and the uncertainties that could impact our results of operations, financial condition and cash flows. For additional information, see Note 1 "Description of Business and Summary of Significant Accounting Policies" in the Notes to Consolidated Financial Statements.

Inventory Valuation
Inventories related to our refining operations are stated at the lower of cost, using the LIFO method for crude oil and unfinished and finished refined products, or market. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. At December 31, 2017 and 2016, market values had fallen below historical LIFO inventory costs and, as a result, we recorded lower of cost or market inventory valuation reserves of $223.8 million and $332.5 million, respectively.

At December 31, 2017, our lower of cost or market inventory valuation reserve was $223.8 million. This amount, or a portion thereof, is subject to reversal as a reduction to cost of products sold in subsequent periods as inventories giving rise to the reserve are sold, and a new reserve is established. Such a reduction to cost of products sold could be significant if inventory values return to historical cost price levels. Additionally, further decreases in overall inventory values could result in additional charges to cost of products sold should the lower of cost or market inventory valuation reserve be increased.

Goodwill and Long-lived Assets
As of December 31, 2017, our goodwill balance was $2.2 billion, with goodwill assigned to our Refining, Lubricants and Specialty Products and HEP segments of $1.7 billion, $0.2 billion and $0.3 billion, respectively. Goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired and liabilities assumed. Goodwill is not subject to amortization and is tested annually or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. Our goodwill impairment testing first entails a comparison of our reporting unit fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

Our long-lived assets principally consist of our refining assets that are organized as refining asset groups and the assets of our Lubricants and Specialty Products business. The refinery asset groups also constitute our individual refinery reporting units that are used for testing and measuring goodwill impairments. Our long-lived assets are evaluated for impairment by identifying whether indicators of impairment exist and if so, assessing whether the long-lived assets are recoverable from estimated future undiscounted cash flows. The actual amount of impairment loss measured, if any, is equal to the amount by which the asset group's carrying value exceeds its fair value.

We performed our annual goodwill impairment testing at July 1, 2017 and determined that the fair value of our El Dorado reporting unit exceeded its carrying value by approximately 10%. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit at some point in the future and such impairment charges could be material. Additionally, qualitative testing indicated no impairment of goodwill attributable to our other reporting units.

Contingencies
We are subject to proceedings, lawsuits and other claims related to environmental, labor, product and other matters. We are required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of probable losses. A determination of the amount of reserves required, if any, for these contingencies is made after careful analysis of each individual issue. The required reserves may change in the future due to new developments in each matter or changes in approach such as a change in settlement strategy in dealing with these matters.

RISK MANAGEMENT

We use certain strategies to reduce some commodity price and operational risks. We do not attempt to eliminate all market risk exposures when we believe that the exposure relating to such risk would not be significant to our future earnings, financial position, capital resources or liquidity or that the cost of eliminating the exposure would outweigh the benefit.

Commodity Price Risk Management
Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps and futures contracts to mitigate price exposure with respect to:

- our inventory positions;
- natural gas purchases;

- costs of crude oil and related grade differentials;
- prices of refined products; and
- our refining margins.

As of December 31, 2017, we have the following notional contract volumes related to all outstanding derivative contracts used to mitigate commodity price risk:

		Notional Contract Volumes by Year of Maturity				
Contract Description	**Total Outstanding Notional**	**2018**	**2019**	**2020**	**2021**	**Unit of Measure**
Natural gas price swaps - long	7,200,000	1,800,000	1,800,000	1,800,000	1,800,000	MMBTU
NYMEX futures (WTI) - short	1,175,000	1,175,000	—	—	—	Barrels
Forward gasoline and diesel contracts - long	85,000	85,000	—	—	—	Barrels
Forward gasoline and diesel contracts - short	250,000	250,000	—	—	—	Barrels
Forward crude oil contracts - short	276,751	276,751	—	—	—	Barrels

The following sensitivity analysis provides the hypothetical effects of market price fluctuations to the commodity positions hedged under our derivative contracts:

	Estimated Change in Fair Value at December 31,	
Commodity-based Derivative Contracts	**2017**	**2016**
	(In thousands)	
Hypothetical 10% change in underlying commodity prices	$ 5,451	$ 2,272

Interest Rate Risk Management

The market risk inherent in our fixed-rate debt is the potential change arising from increases or decreases in interest rates as discussed below.

For the fixed rate HollyFrontier Senior Notes and HEP Senior Notes, changes in interest rates will generally affect fair value of the debt, but not earnings or cash flows. The outstanding principal, estimated fair value and estimated change in fair value (assuming a hypothetical 10% change in the yield-to-maturity rates) for this debt as of December 31, 2017 is presented below:

	Outstanding Principal	**Estimated Fair Value**	**Estimated Change in Fair Value**
		(In thousands)	
HollyFrontier Senior Notes	$ 1,000,000	$ 1,113,470	$ 31,201
HEP Senior Notes	$ 500,000	$ 525,120	$ 14,603

For the variable rate HEP Credit Agreement, changes in interest rates would affect cash flows, but not the fair value. At December 31, 2017, outstanding borrowings under the HEP Credit Agreement were $1,012.0 million. A hypothetical 10% change in interest rates applicable to the HEP Credit Agreement would not materially affect cash flows.

Our operations are subject to hazards of petroleum processing operations, including fire, explosion and weather-related perils. We maintain various insurance coverages, including business interruption insurance, subject to certain deductibles. We are not fully insured against certain risks because such risks are not fully insurable, coverage is unavailable, or premium costs, in our judgment, do not justify such expenditures.

Financial information is reviewed on the counterparties in order to review and monitor their financial stability and assess their ongoing ability to honor their commitments under the derivative contracts. We have not experienced, nor do we expect to experience, any difficulty in the counterparties honoring their commitments.

We have a risk management oversight committee consisting of members from our senior management. This committee oversees our risk enterprise program, monitors our risk environment and provides direction for activities to mitigate identified risks that may adversely affect the achievement of our goals.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

See “Risk Management” under “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles

Reconciliations of earnings before interest, taxes, depreciation and amortization (“EBITDA”) to amounts reported under generally accepted accounting principles in financial statements.

Earnings before interest, taxes, depreciation and amortization, which we refer to as EBITDA, is calculated as net income (loss) attributable to HollyFrontier stockholders plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization. EBITDA is not a calculation provided for under GAAP; however, the amounts included in the EBITDA calculation is derived from amounts included in our consolidated financial statements. EBITDA should not be considered as an alternative to net income or operating income as an indication of our operating performance or as an alternative to operating cash flow as a measure of liquidity. EBITDA is not necessarily comparable to similarly titled measures of other companies. EBITDA is presented here because it is a widely used financial indicator used by investors and analysts to measure performance. EBITDA is also used by our management for internal analysis and as a basis for financial covenants.

Set forth below is our calculation of EBITDA.

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Net income (loss) attributable to HollyFrontier stockholders	$ 805,395	$ (260,453)	$ 740,101
Add (subtract) income tax provision	(12,379)	19,411	406,060
Add interest expense (1)	129,822	80,910	44,840
Subtract interest income	(3,736)	(2,491)	(3,391)
Add depreciation and amortization	409,937	363,027	346,151
EBITDA	$ 1,329,039	$ 200,404	$ 1,533,761

(1) Includes loss on early extinguishment of debt of $12.2 million, $8.7 million and $1.4 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Reconciliations of refinery operating information (non-GAAP performance measures) to amounts reported under generally accepted accounting principles in financial statements.

Refinery gross margin and net operating margin are non-GAAP performance measures that are used by our management and others to compare our refining performance to that of other companies in our industry. We believe these margin measures are helpful to investors in evaluating our refining performance on a relative and absolute basis. Refinery gross margin per produced barrel sold is total refining segment revenues less total refining segment cost of products sold, exclusive of lower of cost or market inventory valuation adjustments, divided by sales volumes of produced refined products sold. Net operating margin per barrel sold is the difference between refinery gross margin and refinery operating expenses per barrel sold. These two margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments, goodwill and asset impairment charges or depreciation and amortization. Each of these component performance measures can be reconciled directly to our consolidated statements of income. Other companies in our industry may not calculate these performance measures in the same manner.

Below are reconciliations to our consolidated statements of income for refinery net operating and gross margin and operating expenses, in each case averaged per produced barrel sold. Due to rounding of reported numbers, some amounts may not calculate exactly.

Reconciliation of average refining segment net operating margin per produced barrel sold to refinery gross margin to total sales and other revenues

	Years Ended December 31,		
	2017	2016	2015
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Net operating margin per produced barrel sold	$ 5.46	$ 2.52	$ 10.06
Add average refinery operating expenses per produced barrel sold	6.10	5.64	5.82
Refinery gross margin per produced barrel sold	11.56	8.16	15.88
Times produced barrels sold (BPD)	452,270	440,640	442,650
Times number of days in period	365	366	365
Refining segment gross margin	1,908,308	1,315,998	2,565,688
Add rounding	409	1,212	1,156
Total refining segment gross margin	1,908,717	1,317,210	2,566,844
Add refining segment cost of products sold	11,009,345	9,003,505	10,472,268
Refining segment sales and other revenues	12,918,062	10,320,715	13,039,112
Add lubricants and specialty products segment sales and other revenues	1,594,036	464,359	493,282
Add HEP segment sales and other revenues	454,362	402,043	358,875
Subtract corporate, other and eliminations	(715,161)	(651,417)	(653,349)
Sales and other revenues	$ 14,251,299	$ 10,535,700	$ 13,237,920

Reconciliation of average refining segment operating expenses per produced barrel sold to total operating expenses

	Years Ended December 31,		
	2017	2016	2015
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Average refining operating expenses per barrel sold	$ 6.10	$ 5.64	$ 5.82
Times barrels sold (BPD)	452,270	440,640	442,650
Times number of days in period	365	366	365
Refinery operating expenses	1,006,979	909,587	940,321
Add (subtract) rounding	(304)	137	308
Total refining segment operating expenses	1,006,675	909,724	940,629
Add lubricants and specialty products segment operating expenses	222,461	13,867	14,042
Add HEP segment operating expenses	137,605	123,984	105,554
Add (subtract) corporate, other and eliminations	(72,507)	(28,736)	148
Operating expenses (exclusive of depreciation and amortization)	$ 1,294,234	$ 1,018,839	$ 1,060,373

Item 8. Financial Statements and Supplementary Data

MANAGEMENT'S REPORT ON ITS ASSESSMENT OF THE COMPANY'S INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of HollyFrontier Corporation (the “Company”) is responsible for establishing and maintaining adequate internal control over financial reporting.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

On February 1, 2017, we completed the acquisition of Petro-Canada Lubricants Inc. (“PCLI”). We are in the process of integrating operations of PCLI and affiliated entities related to this acquired business (“PCLI business”), including internal controls over financial reporting and, therefore, management's evaluation and conclusion as to the effectiveness of our internal control over financial reporting as of the end of the period covered by this Annual Report on Form 10-K excludes any evaluation of the internal control over financial reporting of the PCLI business. The PCLI business accounted for 12% of the Company's total assets and 8% of total revenues of the Company as of and for the year ended December 31, 2017.

Management assessed the Company's internal control over financial reporting as of December 31, 2017 using the criteria for effective control over financial reporting established in “Internal Control - Integrated Framework” issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this assessment, management concludes that, as of December 31, 2017, the Company maintained effective internal control over financial reporting.

The Company's independent registered public accounting firm has issued an attestation report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2017. That report appears on page 55.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of HollyFrontier Corporation

Opinion on Internal Control over Financial Reporting

We have audited HollyFrontier Corporation's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, HollyFrontier Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on the COSO criteria.

As indicated in the accompanying Management's Report on its Assessment of the Company's Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of the PCLI business acquired on February 1, 2017, which is included in the 2017 consolidated financial statements of the Company and constituted 12% of total assets as of December 31, 2017 and 8% of revenues for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of the PCLI business.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2017 and 2016, the related consolidated statements of income, comprehensive income, cash flows, and equity for each of the three years in the period ended December 31, 2017, and the related notes of the Company and our report dated February 21, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on its Assessment of the Company's Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Dallas, Texas
February 21, 2018

Index to Consolidated Financial Statements

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of HollyFrontier Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of HollyFrontier Corporation (the Company) as of December 31, 2017 and 2016, the related consolidated statements of income, comprehensive income, cash flows, and equity for each of the three years in the period ended December 31, 2017, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 21, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1977.

Dallas, Texas
February 21, 2018

HOLLYFRONTIER CORPORATION
CONSOLIDATED BALANCE SHEETS
(In thousands, except share data)

	December 31, 2017	December 31, 2016
ASSETS		
Current assets:		
Cash and cash equivalents *(HEP: $7,776 and $3,657, respectively)*	$ 630,757	$ 710,579
Marketable securities	—	424,148
Total cash, cash equivalents and short-term marketable securities	630,757	1,134,727
Accounts receivable: Product and transportation *(HEP: $12,803 and $7,846, respectively)*	659,530	449,036
Crude oil resales	61,203	30,163
	720,733	479,199
Inventories: Crude oil and refined products	1,409,538	970,361
Materials, supplies and other *(HEP: $916 and $1,402, respectively)*	220,554	165,315
	1,630,092	1,135,676
Income taxes receivable	44,337	68,371
Prepayments and other *(HEP: $1,395 and $1,486, respectively)*	36,909	33,036
Total current assets	3,062,828	2,851,009
Properties, plants and equipment, at cost *(HEP: $2,011,915 and $1,702,703, respectively)*	6,523,789	5,546,856
Less accumulated depreciation *(HEP: $(408,599) and $(337,135), respectively)*	(1,810,515)	(1,538,408)
	4,713,274	4,008,448
Other assets: Turnaround costs	231,319	217,340
Goodwill *(HEP: $310,610 and $288,991, respectively)*	2,244,744	2,022,463
Intangibles and other *(HEP: $206,167 and $208,975, respectively)*	439,989	336,401
	2,916,052	2,576,204
Total assets	$ 10,692,154	$ 9,435,661
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable *(HEP: $14,637 and $10,518, respectively)*	$ 1,220,795	$ 935,387
Income taxes payable	3,159	—
Accrued liabilities *(HEP: $33,214 and $37,793, respectively)*	198,756	147,842
Total current liabilities	1,422,710	1,083,229
Long-term debt *(HEP: $1,507,308 and $1,243,912, respectively)*	2,498,993	2,235,137
Deferred income taxes *(HEP: $525 and $509, respectively)*	647,785	620,414
Other long-term liabilities *(HEP: $62,590 and $62,971, respectively)*	225,726	194,896
Equity:		
HollyFrontier stockholders' equity:		
Preferred stock, $1.00 par value – 5,000,000 shares authorized; none issued	—	—
Common stock $.01 par value – 320,000,000 shares authorized; 256,015,550 and 255,962,866 shares issued as of December 31, 2017 and December 31, 2016	2,560	2,560
Additional capital	4,132,696	4,026,805
Retained earnings	3,346,615	2,776,728
Accumulated other comprehensive income	29,869	10,612
Common stock held in treasury, at cost – 78,607,928 and 78,617,600 shares as of December 31, 2017 and December 31, 2016, respectively	(2,140,911)	(2,135,311)
Total HollyFrontier stockholders' equity	5,370,829	4,681,394
Noncontrolling interest	526,111	620,591
Total equity	5,896,940	5,301,985
Total liabilities and equity	$ 10,692,154	$ 9,435,661

Parenthetical amounts represent asset and liability balances attributable to Holly Energy Partners, L.P. ("HEP") as of December 31, 2017 and 2016. HEP is a variable interest entity.

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF INCOME
(In thousands, except per share data)

	Years Ended December 31,		
	2017	**2016**	**2015**
Sales and other revenues	$ 14,251,299	$ 10,535,700	$ 13,237,920
Operating costs and expenses:			
Cost of products sold (exclusive of depreciation and amortization):			
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	11,467,799	8,765,927	10,239,218
Lower of cost or market inventory valuation adjustment	(108,685)	(291,938)	226,979
	11,359,114	8,473,989	10,466,197
Operating expenses (exclusive of depreciation and amortization)	1,294,234	1,018,839	1,060,373
Selling, general and administrative expenses (exclusive of depreciation and amortization)	264,874	125,648	120,846
Depreciation and amortization	409,937	363,027	346,151
Goodwill and asset impairment	19,247	654,084	—
Total operating costs and expenses	13,347,406	10,635,587	11,993,567
Income (loss) from operations	903,893	(99,887)	1,244,353
Other income (expense):			
Earnings (loss) of equity method investments	12,510	14,213	(3,738)
Interest income	3,736	2,491	3,391
Interest expense	(117,597)	(72,192)	(43,470)
Loss on early extinguishment of debt	(12,225)	(8,718)	(1,370)
Gain (loss) on foreign currency swap	24,545	(6,520)	—
Gain on foreign currency transactions	16,921	—	—
Remeasurement gain on HEP pipeline interest acquisitions	36,254	—	—
Other, net	826	(921)	9,402
	(35,030)	(71,647)	(35,785)
Income (loss) before income taxes	868,863	(171,534)	1,208,568
Income tax expense (benefit):			
Current	125,143	(79,181)	552,196
Deferred	(137,522)	98,592	(146,136)
	(12,379)	19,411	406,060
Net income (loss)	881,242	(190,945)	802,508
Less net income attributable to noncontrolling interest	75,847	69,508	62,407
Net income (loss) attributable to HollyFrontier stockholders	$ 805,395	$ (260,453)	$ 740,101
Earnings (loss) per share attributable to HollyFrontier stockholders:			
Basic	$ 4.54	$ (1.48)	$ 3.91
Diluted	$ 4.52	$ (1.48)	$ 3.90
Average number of common shares outstanding:			
Basic	176,174	176,101	188,731
Diluted	177,196	176,101	188,940

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Years Ended December 31,		
	2017	2016	2015
Net income (loss)	$ 881,242	$ (190,945)	$ 802,508
Other comprehensive income (loss):			
Foreign currency translation adjustment	22,151	—	—
Securities available-for-sale:			
Unrealized gain (loss) on marketable securities	(4)	81	29
Reclassification adjustments to net income on sale or maturity of marketable securities	—	23	9
Net unrealized gain (loss) on marketable securities	(4)	104	38
Hedging instruments:			
Change in fair value of cash flow hedging instruments	2,919	(17,625)	(5,847)
Reclassification adjustments to net income on settlement of cash flow hedging instruments	10,448	41,585	(47,492)
Amortization of unrealized loss attributable to discontinued cash flow hedges	1,080	1,080	1,080
Net unrealized gain (loss) on hedging instruments	14,447	25,040	(52,259)
Other post-retirement benefit obligations:			
Actuarial loss on pension plans	(1,162)	—	—
Actuarial gain (loss) on post-retirement healthcare plans	(1,058)	2,363	3,278
Post-retirement healthcare plans gain reclassified to net income	(3,481)	(3,482)	(3,299)
Actuarial gain (loss) on retirement restoration plan	(123)	(9)	80
Retirement restoration plan loss reclassified to net income	17	15	20
Net change in other post-retirement benefit obligations	(5,807)	(1,113)	79
Other comprehensive income (loss) before income taxes	30,787	24,031	(52,142)
Income tax expense (benefit)	11,349	9,322	(20,237)
Other comprehensive income (loss)	19,438	14,709	(31,905)
Total comprehensive income (loss)	900,680	(176,236)	770,603
Less noncontrolling interest in comprehensive income (loss)	75,790	69,450	62,551
Comprehensive income (loss) attributable to HollyFrontier stockholders	$ 824,890	$ (245,686)	$ 708,052

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Years Ended December 31,		
	2017	**2016**	**2015**
Cash flows from operating activities:			
Net income (loss)	$ 881,242	$ (190,945)	$ 802,508
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	409,937	363,027	346,151
Goodwill and asset impairment	19,247	654,084	—
Lower of cost or market inventory valuation adjustment	(108,685)	(291,938)	226,979
Earnings of equity method investments, inclusive of distributions	1,450	961	8,613
Loss (gain) on early extinguishment of debt attributable to unamortized discount / premium	2,475	8,718	(3,788)
Remeasurement gain on pipeline interest acquisitions	(36,254)	—	—
Loss (gain) on sale of assets	508	(72)	(8,677)
Deferred income taxes	(137,522)	98,592	(146,136)
Equity-based compensation expense	42,337	25,561	30,367
Change in fair value – derivative instruments	(4,265)	(12,155)	38,525
Excess tax expense from equity-based compensation	—	(4,209)	—
(Increase) decrease in current assets:			
Accounts receivable	(115,322)	(127,221)	238,392
Inventories	(162,297)	(1,869)	(33,717)
Income taxes receivable	50,601	(68,371)	11,719
Prepayments and other	(6,753)	16,555	13,291
Increase (decrease) in current liabilities:			
Accounts payable	188,975	247,603	(406,339)
Income taxes payable	(18,525)	(8,142)	(11,500)
Accrued liabilities	57,227	16,142	(6,924)
Turnaround expenditures	(135,104)	(125,254)	(89,365)
Other, net	22,118	5,881	(24,231)
Net cash provided by operating activities	951,390	606,948	985,868
Cash flows from investing activities:			
Additions to properties, plants and equipment	(227,449)	(372,195)	(483,034)
Additions to properties, plants and equipment – HEP	(44,810)	(107,595)	(193,121)
Purchase of PCLI, net of cash acquired	(870,627)	—	—
Purchase of pipeline interests - HEP	(245,446)	(42,627)	(55,032)
Proceeds from sale of assets	1,377	849	19,264
Purchases of marketable securities	(41,565)	(546,632)	(509,338)
Sales and maturities of marketable securities	465,716	266,603	839,513
Other, net	3,134	—	—
Net cash used for investing activities	(959,670)	(801,597)	(381,748)
Cash flows from financing activities:			
Borrowings under credit agreements	995,000	869,000	973,900
Repayments under credit agreements	(536,000)	(1,028,000)	(832,900)
Proceeds from issuance of senior notes – HFC	—	992,550	—
Proceeds from issuance of senior notes – HEP	101,750	394,000	—
Proceeds from issuance of term loan - HFC	—	350,000	—
Repayment of term loan - HFC	—	(350,000)	—
Redemption of senior notes - HFC	—	—	(155,156)
Redemption of senior notes - HEP	(309,750)	—	—
Repayment of financing obligation	—	(39,500)	—
Proceeds from issuance of common units - HEP	52,110	125,870	—
Purchase of treasury stock	—	(133,430)	(742,823)
Shares withheld for tax withholding obligations	(15,926)	(4,677)	(6,242)
Dividends	(235,508)	(234,004)	(246,908)
Distributions to noncontrolling interest	(110,351)	(92,607)	(83,268)
Other, net	(13,955)	(10,507)	(12,175)

Net cash provided by (used for) financing activities	(72,630)	838,695	(1,105,572)
Effect of exchange rate on cash flow	1,088	—	—
Cash and cash equivalents:			
Increase (decrease) for the period	(79,822)	644,046	(501,452)
Beginning of period	710,579	66,533	567,985
End of period	$ 630,757	$ 710,579	$ 66,533
Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Interest	$ (124,375)	$ (54,074)	$ (46,442)
Income taxes, net	$ (93,272)	$ (40,236)	$ (586,447)

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF EQUITY
(In thousands)

	HollyFrontier Stockholders' Equity						
	Common Stock	**Additional Capital**	**Retained Earnings**	**Accumulated Other Comprehensive Income (Loss)**	**Treasury Stock**	**Non-controlling Interest**	**Total Equity**
Balance at December 31, 2014	$ 2,560	$ 4,003,628	$ 2,778,577	$ 27,894	$ (1,289,075)	$ 577,135	$ 6,100,719
Net income	—	—	740,101	—	—	62,407	802,508
Dividends	—	—	(247,489)	—	—	—	(247,489)
Distributions to noncontrolling interest holders	—	—	—	—	—	(83,268)	(83,268)
Other comprehensive income (loss), net of tax	—	—	—	(32,049)	—	144	(31,905)
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(14,958)	—	—	14,958	—	—
Equity-based compensation, inclusive of tax expense	—	22,382	—	—	—	3,483	25,865
Purchase of treasury stock	—	—	—	—	(753,114)	—	(753,114)
Purchase of HEP units for restricted grants	—	—	—	—	—	(3,555)	(3,555)
Other	—	—	—	—	—	12	12
Balance at December 31, 2015	$ 2,560	$ 4,011,052	$ 3,271,189	$ (4,155)	$ (2,027,231)	$ 556,358	$ 5,809,773
Net income (loss)	—	—	(260,453)	—	—	69,508	(190,945)
Dividends	—	—	(234,008)	—	—	—	(234,008)
Distributions to noncontrolling interest holders	—	—	—	—	—	(92,607)	(92,607)
Other comprehensive income (loss), net of tax	—	—	—	14,767	—	(58)	14,709
Equity attributable to HEP common unit issuances, net of tax	—	23,110	—	—	—	88,166	111,276
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(25,982)	—	—	25,982	—	—
Equity-based compensation, inclusive of tax expense	—	18,625	—	—	—	2,727	21,352
Purchase of treasury stock	—	—	—	—	(134,062)	—	(134,062)
Purchase of HEP units for restricted grants	—	—	—	—	—	(3,521)	(3,521)
Other	—	—	—	—	—	18	18
Balance at December 31, 2016	$ 2,560	$ 4,026,805	$ 2,776,728	$ 10,612	$ (2,135,311)	$ 620,591	$ 5,301,985
Net income	—	—	805,395	—	—	75,847	881,242
Dividends	—	—	(235,508)	—	—	—	(235,508)
Distributions to noncontrolling interest holders	—	—	—	—	—	(110,351)	(110,351)
Other comprehensive income (loss), net of tax	—	—	—	19,495	—	(57)	19,438
Equity attributable to HEP common unit issuances, net of tax	—	69,802	—	(238)	—	(61,390)	8,174
Equity awards issued in PCLI acquisition	—	6,600	—	—	—	—	6,600
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(10,326)	—	—	10,326	—	—
Equity-based compensation	—	39,815	—	—	—	2,522	42,337
Purchase of treasury stock	—	—	—	—	(15,926)	—	(15,926)
Purchase of HEP units for restricted grants	—	—	—	—	—	(605)	(605)
Other	—	—	—	—	—	(446)	(446)
Balance at December 31, 2017	$ 2,560	$ 4,132,696	$ 3,346,615	$ 29,869	$ (2,140,911)	$ 526,111	$ 5,896,940

See accompanying notes.

NOTE 1: Description of Business and Summary of Significant Accounting Policies

Description of Business: References herein to HollyFrontier Corporation ("HollyFrontier") include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission's ("SEC") "Plain English" guidelines, this Annual Report on Form 10-K has been written in the first person. In these financial statements, the words "we," "our," "ours" and "us" refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person, with certain exceptions. Generally, the words "we," "our," "ours" and "us" include Holly Energy Partners, L.P. ("HEP") and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. These financial statements contain certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, "HEP" refers to HEP and its consolidated subsidiaries.

We are principally an independent petroleum refiner that produces high-value light products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate petroleum refineries that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. In addition, we own and operate a lubricant production facility with retail and wholesale marketing of its products through a global sales network with locations in Canada, United States, Europe and China. As of December 31, 2017, we:

- owned and operated a petroleum refinery in El Dorado, Kansas (the "El Dorado Refinery"), two refinery facilities located in Tulsa, Oklahoma (collectively, the "Tulsa Refineries"), a refinery in Artesia, New Mexico that is operated in conjunction with crude oil distillation and vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the "Navajo Refinery"), a refinery located in Cheyenne, Wyoming (the "Cheyenne Refinery") and a refinery in Woods Cross, Utah (the "Woods Cross Refinery");
- owned and operated Petro-Canada Lubricants Inc. ("PCLI") located in Mississauga, Ontario which produces base oils and other specialized lubricant products;
- owned and operated HollyFrontier Asphalt Company ("HFC Asphalt") which operates various asphalt terminals in Arizona, New Mexico and Oklahoma; and
- owned a 59% limited partner interest and a non-economic general partner interest in HEP, a variable interest entity ("VIE").

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor Energy Inc. ("Suncor") to acquire 100% of the outstanding capital stock of PCLI. The acquisition closed on February 1, 2017. See Note 2 for additional information.

Principles of Consolidation: Our consolidated financial statements include our accounts and the accounts of partnerships and joint ventures that we control through an ownership interest greater than 50% or through a controlling financial interest with respect to variable interest entities. All significant intercompany transactions and balances have been eliminated.

Variable Interest Entities: HEP is a VIE as defined under U.S. generally accepted accounting principles ("GAAP"). A VIE is a legal entity whose equity owners do not have sufficient equity at risk for the entity to finance its activities without additional subordinated financial support or, as a group, the equity holders lack the power, through voting rights, to direct the activities that most significantly impact the entity's financial performance, the obligation to absorb the entity's expected losses or rights to expected residual returns. As the general partner of HEP, we have the sole ability to direct the activities of HEP that most significantly impact HEP's financial performance, and therefore as HEP's primary beneficiary, we consolidate HEP.

Use of Estimates: The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Cash Equivalents: We consider all highly liquid instruments with a maturity of three months or less at the date of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates market value and are primarily invested in highly-rated instruments issued by government or municipal entities with strong credit standings.

Marketable Securities: We consider all marketable debt securities with maturities greater than three months at the date of purchase to be marketable securities. Our marketable securities consist of commercial paper, corporate debt securities and government and municipal debt securities with the maximum maturity or put date of any individual issue generally not more than two years, while the maximum duration of the portfolio of investments is not greater than one year. These instruments are classified as available-for-sale, and as a result, are reported at fair value. Unrealized gains and losses, net of related income taxes, are reported as a component of accumulated other comprehensive income.

Balance Sheet Offsetting: We purchase and sell inventories of crude oil with certain same-parties that are net settled in accordance with contractual net settlement provisions. Our policy is to present such balances on a net basis because it more appropriately presents our economic resources (accounts receivable) and claims against us (accounts payable) and the future cash flows associated with such assets and liabilities.

Accounts Receivable: Our accounts receivable consist of amounts due from customers that are primarily companies in the petroleum industry. Credit is extended based on our evaluation of the customer's financial condition, and in certain circumstances collateral, such as letters of credit or guarantees, is required. We reserve for doubtful accounts based on our historical loss experience as well as specific accounts identified as high risk, which historically have been minimal. Credit losses are charged to the allowance for doubtful accounts when an account is deemed uncollectible. Our allowance for doubtful accounts was $3.6 million and $2.3 million at December 31, 2017 and 2016, respectively.

Accounts receivable attributable to crude oil resales generally represent the sell side of excess crude oil sales to other purchasers and / or users in cases when our crude oil supplies are in excess of our immediate needs as well as certain reciprocal buy / sell exchanges of crude oil. At times we enter into such buy / sell exchanges to facilitate the delivery of quantities to certain locations. In many cases, we enter into net settlement agreements relating to the buy / sell arrangements, which may mitigate credit risk.

Inventories: Inventories related to our refining operations are stated at the lower of cost, using the last-in, first-out (“LIFO”) method for crude oil and unfinished and finished refined products, or market. Cost, consisting of raw material, transportation and conversion costs, is determined using the LIFO inventory valuation methodology and market is determined using current replacement costs. Under the LIFO method, the most recently incurred costs are charged to cost of sales and inventories are valued at the earliest acquisition costs. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. An actual valuation of inventory under the LIFO method is made at the end of each year based on the inventory levels at that time. Accordingly, interim LIFO calculations are based on management's estimates of expected year-end inventory levels and are subject to the final year-end LIFO inventory valuation.

Inventories of our Petro-Canada Lubricants business are stated at the lower of cost, using the first-in, first-out (“FIFO”) method, or net realizable value.

Inventories consisting of process chemicals, materials and maintenance supplies and RINs are stated at the lower of weighted-average cost or net realizable value.

Derivative Instruments: All derivative instruments are recognized as either assets or liabilities in our consolidated balance sheets and are measured at fair value. Changes in the derivative instrument's fair value are recognized in earnings unless specific hedge accounting criteria are met. See Note 13 for additional information.

Properties, plants and equipment: Properties, plants and equipment are stated at cost. Depreciation is provided by the straight-line method over the estimated useful lives of the assets, primarily 15 to 32 years for refining, pipeline and terminal facilities, 10 to 40 years for buildings and improvements, 5 to 30 years for other fixed assets and 5 years for vehicles.

Asset Retirement Obligations: We record legal obligations associated with the retirement of long-lived assets that result from the acquisition, construction, development and / or the normal operation of long-lived assets. The fair value of the estimated cost to retire a tangible long-lived asset is recorded as a liability with the associated retirement costs capitalized as part of the asset's carrying amount in the period in which it is incurred and when a reasonable estimate of the fair value of the liability can be made. If a reasonable estimate cannot be made at the time the liability is incurred, we record the liability when sufficient information is available to estimate the liability's fair value. Certain of our refining assets have no recorded liability for asset retirement obligations since the timing of any retirement and related costs are currently indeterminable.

Our asset retirement obligations were $24.8 million and $22.1 million at December 31, 2017 and 2016, respectively, which are included in “Other long-term liabilities” in our consolidated balance sheets. Accretion expense was insignificant for the years ended December 31, 2017, 2016 and 2015.

Intangibles, Goodwill and long-lived assets: Intangible assets are assets (other than financial assets) that lack physical substance, and goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired and liabilities assumed. Goodwill acquired in a business combination and intangibles with indefinite useful lives are not amortized, whereas intangible assets with finite useful lives are amortized on a straight-line basis. Goodwill and intangible assets not subject to amortization are tested for impairment annually or more frequently if events or changes in circumstances indicate the asset might be impaired. Our goodwill impairment testing first entails a comparison of our reporting unit fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

Our long-lived assets principally consist of our refining assets that are organized as refining asset groups and our lubricants and specialty products business. The refinery asset groups also constitute our individual refinery reporting units that are used for testing and measuring goodwill impairments. Our long-lived assets are evaluated for impairment by identifying whether indicators of impairment exist and if so, assessing whether the long-lived assets are recoverable from estimated future undiscounted cash flows. The actual amount of impairment loss measured, if any, is equal to the amount by which the asset group’s carrying value exceeds its fair value.

See Note 10 for information regarding goodwill and long-lived asset impairment charges recorded during the years ended December 31, 2017 and 2016.

Upon our acquisition of PCLI, we recognized intangibles, including trademarks, patents, technical know-how and customer relationships, totaling $102.1 million that are being amortized on a straight-line basis over periods ranging from 10 to 20 years. At December 31, 2017, the balance of these intangibles was $100.0 million, and is presented net of accumulated amortization of $5.9 million in “Intangibles and other” in our consolidated balance sheets.

Our consolidated HEP assets include intangible assets consisting of third-party transportation agreements and customer relationships. These intangible assets are amortized on a straight-line basis over periods ranging from 10 to 30 years. Amortization expense was $2.6 million and $2.0 million for the years ended December 31, 2017 and 2016, respectively, and expected to approximate $8.0 million annually over the next five years. The balances of these intangible assets were $95.2 million and $36.5 million at December 31, 2017, and 2016, respectively, and are presented net of accumulated amortization of $26.3 million and $23.7 million, respectively, in “Intangibles and other” in our consolidated balance sheets.

Investments in Joint Ventures: We consolidate the financial and operating results of joint ventures in which we have an ownership interest of greater than 50% or a controlling interest with respect to VIE’s, and use the equity method of accounting for investments in which we have a noncontrolling interest, yet have significant influence over the entity. Under the equity method of accounting, we record our pro-rata share of earnings, and contributions to and distributions from joint ventures as adjustments to our investment balance.

HEP has a 50% interest in Osage Pipe Line Company, LLC, the owner of a pipeline running from Cushing, Oklahoma to El Dorado, Kansas (the “Osage Pipeline”) and a 50% interest in Cheyenne Pipeline, LLC, the owner of a pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming (the “Cheyenne Pipeline”), that are accounted for using the equity method of accounting. As of December 31, 2017, HEP's underlying equity and recorded investment balances in the joint ventures are $39.3 million and $85.3 million, respectively. The differences are being amortized as adjustments to HEP's pro-rata share of earnings in the joint ventures.

Revenue Recognition: Refined product sales and related cost of sales are recognized when products are shipped and title has passed to customers. HEP recognizes pipeline transportation revenues as products are shipped through its pipelines. All revenues are reported inclusive of shipping and handling costs billed and exclusive of any taxes billed to customers. Shipping and handling costs incurred are reported in cost of products sold.

Our Petro-Canada Lubricants business has sales agreements with marketers and distributors that provide certain rights of return or provisions for the repurchase of products previously sold to them. Under these agreements with Canadian marketers, revenues and cost of revenues are deferred until the products have been sold to end customers, and for sales to U.S. distributors, revenues are recognized when products are shipped to the distributors, net of allowances for returns that are expected to be repurchased from the distributors. In both cases, repurchased products are subsequently sold directly to end customers.

Cost Classifications: Costs of products sold include the cost of crude oil, other feedstocks, blendstocks and purchased finished products, inclusive of transportation costs. We purchase crude oil that at times exceeds the supply needs of our refineries. Quantities in excess of our needs are sold at market prices to purchasers of crude oil that are recorded on a gross basis with the sales price recorded as revenues and the corresponding acquisition cost as cost of products sold. Additionally, we enter into buy / sell exchanges of crude oil with certain parties to facilitate the delivery of quantities to certain locations that are netted at cost. Operating expenses include direct costs of labor, maintenance materials and services, utilities, marketing expense and other direct operating costs. Selling, general and administrative expenses include compensation, professional services and other support costs.

Deferred Maintenance Costs: Our refinery units require regular major maintenance and repairs which are commonly referred to as “turnarounds.” Catalysts used in certain refinery processes also require regular “change-outs.” The required frequency of the maintenance varies by unit and by catalyst, but generally is every two to five years. Turnaround costs are deferred and amortized over the period until the next scheduled turnaround. Other repairs and maintenance costs are expensed when incurred. Deferred turnaround and catalyst amortization expense was $112.9 million, $110.6 million and $107.8 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Environmental Costs: Environmental costs are charged to operating expenses if they relate to an existing condition caused by past operations and do not contribute to current or future revenue generation. We have ongoing investigations of environmental matters at various locations and routinely assess our recorded environmental obligations, if any, with respect to such matters. Liabilities are recorded when site restoration and environmental remediation, cleanup and other obligations are either known or considered probable and can be reasonably estimated. Such estimates are undiscounted and require judgment with respect to costs, time frame and extent of required remedial and clean-up activities and are subject to periodic adjustments based on currently available information. Recoveries of environmental costs through insurance, indemnification arrangements or other sources are included in other assets to the extent such recoveries are considered probable.

Contingencies: We are subject to proceedings, lawsuits and other claims related to environmental, labor, product and other matters. We are required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of probable losses. A determination of the amount of reserves required, if any, for these contingencies is made after careful analysis of each individual issue. The required reserves may change in the future due to new developments in each matter or changes in approach such as a change in settlement strategy in dealing with these matters.

Foreign Currency Translation: The functional currency of PCLI and its affiliated non-U.S. Petro-Canada Lubricants entities includes the Canadian dollar, the euro and Chinese renminbi. Balance sheet accounts are translated into U.S. dollars using exchange rates in effect as of the balance sheet date. Revenue and expense accounts are translated using the weighted-average exchange rates during the period presented. Foreign currency translation adjustments are recorded as a component of accumulated other comprehensive income.

In connection with our PCLI acquisition on February 1, 2017, we issued intercompany notes to initially fund certain of our foreign businesses. Remeasurement adjustments resulting from the conversion of such intercompany financing amounts to functional currencies are recorded as gains and losses as a component of other income (expense) in the income statement. Such adjustments are not recorded to the Lubricants and Specialty Products segment operations, but to corporate and other. See Note 20 for additional information on our segments.

Income Taxes: Provisions for income taxes include deferred taxes resulting from temporary differences in income for financial and tax purposes, using the liability method of accounting for income taxes. The liability method requires the effect of tax rate changes on deferred income taxes to be reflected in the period in which the rate change was enacted. The liability method also requires that deferred tax assets be reduced by a valuation allowance unless it is more likely than not that the assets will be realized.

Potential interest and penalties related to income tax matters are recognized in income tax expense. We believe we have appropriate support for the income tax positions taken and to be taken on our income tax returns and that our accruals for tax liabilities are adequate for all open years based on an assessment of many factors, including past experience and interpretations of tax law applied to the facts of each matter.

Inventory Repurchase Obligations: We periodically enter into same-party sell / buy transactions, whereby we sell certain refined product inventory and subsequently repurchase the inventory in order to facilitate delivery to certain locations. Such sell / buy transactions are accounted for as inventory repurchase obligations under which proceeds received under the initial sell is recognized as an inventory repurchase obligation that is subsequently reversed when the inventory is repurchased. For the years ended December 31, 2017, 2016 and 2015, we received proceeds of $47.4 million, $57.0 million and $115.4 million and subsequently repaid $49.8 million, $58.0 million and $115.3 million, respectively, under these sell / buy transactions.

New Accounting Pronouncements

Hedge Accounting
In August 2017, Accounting Standard Update ("ASU") 2017-12, "Derivatives and Hedging: Targeted Improvements to Accounting for Hedging Activities," was issued amending hedge accounting recognition and presentation requirements, including elimination of the requirement to separately measure and report hedge ineffectiveness, and eases certain documentation and assessment requirements. This standard has an effective date of January 1, 2019. We do not expect adoption of this standard to have a material impact on our financial condition, results of operations or cash flows.

Post-retirement Benefit Cost
In March 2017, ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-retirement Benefit Cost," was issued amending current GAAP related to the income statement presentation of the components of net periodic post-retirement cost (credit). This standard has an effective date of January 1, 2018. We do not expect adoption of this standard to have a material impact on our financial condition, results of operations or cash flows.

Share-Based Compensation
In March 2016, ASU 2016-09, "Improvements to Employee Share-Based Payment Accounting," was issued which simplifies the accounting for employee share-based payment transactions, including the accounting for income taxes, forfeitures and statutory tax withholding requirements, as well as classification in the statement of cash flows. We adopted this standard effective January 1, 2017 on a prospective basis with the excess tax expense from stock-based compensation recognized as a discrete item in our provision for income taxes. Excess tax expense for the year ended December 31, 2017 totaled $0.7 million. The new standard also requires that employee taxes paid when an employer withholds shares for tax-withholding purposes be reported as financing activities in the statement of cash flows on a retrospective basis. Previously, this activity was included in operating activities. The impact of this change for the years ended December 31, 2017, 2016 and 2015 was $15.9 million, $4.7 million and $6.2 million, respectively. Finally, consistent with our existing policy, we have elected to account for forfeitures on an estimated basis.

Leases
In February 2016, ASU 2016-02, "Leases," was issued requiring leases to be measured and recognized as a lease liability, with a corresponding right-of-use asset on the balance sheet. This standard has an effective date of January 1, 2019, and we are evaluating the impact of this standard. In preparing for adoption, we have identified, reviewed and evaluated contracts containing lease and embedded lease arrangements. Additionally, we have acquired software and are implementing systems to facilitate lease capture and related accounting treatment.

Inventories Measurement
In July 2015, ASU 2015-11, "Inventory - Simplifying the Measurement of Inventory," was issued requiring measurement of inventories, other than inventories accounted for using the LIFO method, to be measured at the lower of cost or net realizable value. Net realizable value is defined as the estimated selling price in the ordinary course of business less reasonable, predictable cost of completion, disposal and transportation. We adopted this standard effective January 1, 2017 for our affected inventories, which is primarily the inventory of our Petro-Canada Lubricants business that is valued on a FIFO basis. Adoption had no material effect on our financial condition, results of operations or cash flows.

Revenue Recognition
In May 2014, ASU 2014-09, "Revenue from Contracts with Customers" was issued requiring revenue to be recognized when promised goods or services are transferred to customers in an amount that reflects the expected consideration for these goods or services. This standard has an effective date of January 1, 2018, and we anticipate using the modified retrospective implementation method, whereby a cumulative effect adjustment is recorded to retained earnings as of the date of initial application. In preparing for adoption, we have evaluated the terms, conditions and performance obligations under our existing contracts with customers. Furthermore, we have implemented policies to comply with this new standard, which we do not anticipate will have a material impact on our financial condition, results of operations or cash flows.

NOTE 2: PCLI Acquisition

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of PCLI. The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars. PCLI is located in Mississauga, Ontario, Canada and is a producer of lubricant products such as base oils, white oils, specialty products and finished lubricants. The operations of our Petro-Canada Lubricants business also include marketing of these products to both retail and wholesale outlets through a global sales network with locations in Canada, the United States, Europe and China.

Aggregate consideration totaled $906.7 million and consists of $862.1 million in cash paid to Suncor at acquisition, a closing date working capital settlement of $30.6 million that was paid to Suncor in the second quarter of 2017, an accrued payable in the amount of $7.4 million, and $6.6 million representing a portion of the fair value of replacement restricted stock unit awards issued to PCLI employees that relate to pre-acquisition services.

This transaction is accounted for as a business combination using the acquisition method of accounting, with the purchase price allocated to the fair value of the acquired PCLI assets and liabilities as of the February 1 acquisition date, with the excess purchase price recorded as goodwill assigned to our Lubricants and Specialty Products segment. This goodwill is not deductible for income tax purposes.

The following summarizes the PCLI value of assets and liabilities acquired on February 1, 2017:

	(in millions)
Cash and cash equivalents	$ 21.6
Accounts receivable and other current assets	118.5
Inventories	214.9
Properties, plants and equipment	438.0
Goodwill	194.8
Intangibles, precious metals and other noncurrent assets	124.3
Accounts payable and accrued liabilities	(87.4)
Deferred income tax liabilities	(105.4)
Other long-term liabilities	(12.6)
Net assets acquired	$ 906.7

Our consolidated financial and operating results reflect the operations of our Petro-Canada Lubricants business beginning February 1, 2017. Our results of operations for the year ended December 31, 2017 included revenues and income before income taxes of $1,125.3 million and $71.8 million, respectively, related to these operations.

As of December 31, 2017, we have incurred $27.9 million in incremental direct acquisition and integration costs that principally relate to legal, advisory and other professional fees and are presented as selling, general and administrative expenses.

NOTE 3: Holly Energy Partners

HEP is a publicly held master limited partnership that owns and operates logistic assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and refinery processing units that principally support our refining and marketing operations in the Mid-Continent, Southwest and Rocky Mountain regions of the United States and Delek's refinery in Big Spring, Texas. Additionally, HEP owns a 75% interest in UNEV Pipeline, LLC ("UNEV"), the owner of pipeline running from Woods Cross, Utah to Las Vegas, Nevada (the "UNEV Pipeline") and associated product terminals, and a 50% ownership interest in each of the Osage Pipeline and the Cheyenne Pipeline.

At December 31, 2017, we owned a 59% limited partner interest and a non-economic general partner interest in HEP. As the general partner of HEP, we have the sole ability to direct the activities that most significantly impact HEP's financial performance, and therefore as HEP's primary beneficiary, we consolidate HEP.

HEP has two primary customers (including us) and generates revenues by charging tariffs for transporting petroleum products and crude oil though its pipelines, by charging fees for terminalling refined products and other hydrocarbons, and storing and providing other services at its storage tanks and terminals. Under our long-term transportation agreements with HEP (discussed further below), we accounted for 83% of HEP's total revenues for the year ended December 31, 2017. We do not provide financial or equity support through any liquidity arrangements and / or debt guarantees to HEP.

HEP has outstanding debt under a senior secured revolving credit agreement and its senior notes. HEP's creditors have no recourse to our assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries. See Note 12 for a description of HEP's debt obligations.

HEP has risk associated with its operations. If a major customer of HEP were to terminate its contracts or fail to meet desired shipping or throughput levels for an extended period of time, revenue would be reduced and HEP could suffer substantial losses to the extent that a new customer is not found. In the event that HEP incurs a loss, our operating results will reflect HEP's loss, net of intercompany eliminations, to the extent of our ownership interest in HEP at that point in time.

SLC Pipeline and Frontier Pipeline
On October 31, 2017, HEP acquired the remaining 75% interest in SLC Pipeline LLC, the owner of a pipeline that serves refineries in the Salt Lake City, Utah area (the "SLC Pipeline"), and the remaining 50% interest in Frontier Aspen LLC, the owner of a pipeline running from Wyoming to Frontier Station, Utah (the "Frontier Pipeline"), from subsidiaries of Plains All American Pipeline, L.P. ("Plains") for cash consideration of $250.0 million.

These acquisitions were accounted for as a business combination achieved in stages. HEP's preexisting equity method investments in SLC Pipeline and Frontier Aspen were remeasured at an acquisition date fair value of $112.0 million, since HEP acquired a controlling interest, and a gain was recognized on the remeasurement of $36.3 million. The fair value of HEP's preexisting equity method investments in SLC Pipeline and Frontier Aspen was estimated using Level 3 inputs under the income method for these entities, adjusted for lack of control and marketability.

The total consideration of $362.0 million, consisting of cash consideration of $250.0 million and the fair value of HEP's preexisting equity method investments in SLC Pipeline and Frontier Aspen of $112.0 million, was allocated to the acquisition date fair value of assets and liabilities acquired as of the October 31, 2017 acquisition date, with the excess purchase price recorded as goodwill. The fair values are preliminary, and therefore, may change once all needed information has become available and valuations are complete.

Woods Cross Assets
On October 3, 2016, HEP acquired from us all the membership interests of Woods Cross Operating LLC, which owns the crude unit, FCCU and polymerization unit of the first phase of our Woods Cross Refinery expansion project that was completed in the second quarter of 2016, for cash consideration of approximately $278.0 million.

In connection with this transaction, we entered into 15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of $56.7 million.

Cheyenne Pipeline
On June 3, 2016, HEP acquired a 50% interest in Cheyenne Pipeline LLC, owner of the Cheyenne Pipeline, in exchange for a contribution of $42.6 million in cash to Cheyenne Pipeline LLC. Cheyenne Pipeline will continue to be operated by an affiliate of Plains, which owns the remaining 50% interest. The 87-mile crude oil pipeline runs from Fort Laramie, Wyoming to Cheyenne, Wyoming and has an 80,000 BPD capacity.

Tulsa Tanks
On March 31, 2016, HEP acquired crude oil tanks located at our Tulsa Refineries from Plains for $39.5 million. Previously in 2009, we sold these tanks to Plains and leased them back, and due to our continuing interest in the tanks, we accounted for the transaction as a financing arrangement. Accordingly, the tanks remained on our balance sheet and were depreciated for accounting purposes, and the proceeds received from Plains were recorded as a financing obligation and presented as a component of outstanding debt.

In accounting for HEP’s March 2016 purchase from Plains, the amount paid was recorded against our outstanding financing obligation balance of $30.8 million, with the excess $8.7 million resulting in a loss on early extinguishment of debt.

Magellan Asset Exchange
On February 22, 2016, we obtained a 50% membership interest in Osage Pipe Line Company, LLC (“Osage”) in exchange for a 20-year terminalling services agreement, whereby, a subsidiary of Magellan Midstream Partners (“Magellan Midstream”) will provide terminalling services for all of our products originating in Artesia, New Mexico that require terminalling in or through El Paso, Texas. Under the agreement, we will be charged tariffs based on the volumes of refined product processed. Osage is the owner of the Osage Pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery in Kansas and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas. This exchange was accounted for at fair value, whereby the 50% membership interest in the Osage Pipeline was recorded at fair value and an offsetting residual deferred credit in the amount of $38.9 million was recorded, which will be amortized to cost of products sold over the 20-year service period. No gain or loss was recorded for this exchange.

Also on February 22, 2016, we contributed the 50% membership interest in Osage to HEP, and in exchange received HEP's El Paso terminal. Pursuant to this exchange, HEP agreed to build two connections to Magellan Midstream's El Paso terminal. In addition, HEP agreed to become the operator of the Osage Pipeline. This exchange was accounted for at carry-over basis with no resulting gain or loss.

El Dorado Asset Transaction
On November 1, 2015, HEP acquired from us newly constructed naphtha fractionation and hydrogen generation units at our El Dorado Refinery for cash consideration of $62.0 million. In connection with this transaction, we entered into 15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of $15.1 million.

Frontier Pipeline Transaction
On August 31, 2015, HEP purchased a 50% interest in Frontier Aspen LLC (previously known as Frontier Pipeline Company), owner of the Frontier Pipeline, from an affiliate of Enbridge, Inc. for $55.0 million. The 289-mile crude oil pipeline runs from Casper, Wyoming to Frontier Station, Utah, has a 72,000 BPD capacity and supplies Canadian and Rocky Mountain crudes to Salt Lake City area refiners through a connection to the SLC Pipeline. As noted above, HEP acquired the remaining 50% interest on October 31, 2017.

Transportation Agreements
HEP serves our refineries under long-term pipeline, terminal and tankage throughput agreements and refinery processing tolling agreements expiring from 2020 through 2036. Under these agreements, we pay HEP fees to transport, store and process throughput volumes of refined products, crude oil and feedstocks on HEP's pipelines, terminals, tankage, loading rack facilities and refinery processing units that result in minimum annual payments to HEP including UNEV (a consolidated subsidiary of HEP). Under these agreements, the agreed upon tariff rates are subject to annual tariff rate adjustments on July 1 at a rate based upon the percentage change in Producer Price Index or Federal Energy Regulatory Commission index. As of December 31, 2017, these agreements result in minimum annualized payments to HEP of $324.5 million.

Our transactions with HEP and fees paid under our transportation agreements with HEP and UNEV are eliminated and have no impact on our consolidated financial statements.

Incentive Distribution Rights Simplification Agreement
On October 31, 2017, we closed on an equity restructuring transaction with HEP pursuant to which our incentive distribution rights were canceled and our 2% general partner interest in HEP was converted into a non-economic general partner interest in HEP. In consideration, we received 37,250,000 HEP common units. In addition, we agreed to waive $2.5 million of limited partner cash distributions for each of twelve consecutive quarters beginning with the first quarter the units issued were eligible to receive distributions as consideration.

HEP Private Placement Agreements
On January 25, 2018, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,700,000 HEP common units, representing limited partner interests, at a price of $29.73 per common unit. The private placement closed on February 6, 2018, at which time HEP received proceeds of approximately $110.0 million, which were used to repay indebtedness under the HEP Credit Agreement. After this common unit issuance, our limited partner interest in HEP is 57%.

On October 3, 2016, HEP closed on a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,420,000 HEP common units, representing limited partnership interests, at a price of $30.18 per common unit. HEP received proceeds of approximately $103.0 million, which were used to finance a portion of the Woods Cross assets acquisition. In connection with this private placement and to maintain our then economic 2% general partner interest in HEP, we made capital contributions totaling $2.1 million to HEP in October 2016.

HEP Common Unit Continuous Offering Program
On May 10, 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of $200 million. During the year ended December 31, 2017, HEP issued 1,538,452 common units under this program, providing $52.1 million in net proceeds. In connection with this program and to maintain our then economic 2% general partner interest in HEP, we made capital contributions totaling $1.1 million during the year ended December 31, 2017. As of December 31, 2017, HEP has issued 2,241,907 common units with an aggregate gross sales amount of $77.1 million.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP’s credit facility may be reborrowed from time to time.

As a result of these transactions and resulting HEP ownership changes, we adjusted additional capital and equity attributable to HEP's noncontrolling interest holders to reallocate HEP's equity among its unitholders.

NOTE 4: Fair Value Measurements

Our financial instruments measured at fair value on a recurring basis consist of investments in marketable securities, derivative instruments and RINs credit obligations.

Fair value measurements are derived using inputs (assumptions that market participants would use in pricing an asset or liability, including assumptions about risk). GAAP categorizes inputs used in fair value measurements into three broad levels as follows:

- (Level 1) Quoted prices in active markets for identical assets or liabilities.
- (Level 2) Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, similar assets and liabilities in markets that are not active or can be corroborated by observable market data.
- (Level 3) Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes valuation techniques that involve significant unobservable inputs.

The carrying amounts of marketable securities, derivative instruments and RINs credit obligations at December 31, 2017 and December 31, 2016 were as follows:

		Fair Value by Input Level		
Financial Instrument	**Carrying Amount**	**Level 1**	**Level 2**	**Level 3**
	(In thousands)			
December 31, 2017				
Assets:				
Commodity forward contracts	$ 3,840	$ —	$ 3,840	$ —
Total assets	$ 3,840	$ —	$ 3,840	$ —
Liabilities:				
NYMEX futures contracts	$ 3,360	$ 3,360	$ —	$ —
Commodity price swaps	2,424	—	2,424	—
Commodity forward contracts	1,020	—	1,020	—
RINs credit obligations (1)	8,931	—	8,931	—
Total liabilities	$ 15,735	$ 3,360	$ 12,375	$ —

		Fair Value by Input Level		
Financial Instrument	**Carrying Amount**	**Level 1**	**Level 2**	**Level 3**
	(In thousands)			
December 31, 2016				
Assets:				
Marketable securities	$ 424,148	$ —	$ 424,148	$ —
Commodity price swaps	14,563	—	14,358	205
Commodity forward contracts	5,905	—	5,905	—
HEP interest rate swaps	91	—	91	—
Total assets	$ 444,707	$ —	$ 444,502	$ 205
Liabilities:				
NYMEX futures contracts	$ 1,975	$ 1,975	$ —	$ —
Commodity price swaps	26,845	—	24,086	2,759
Commodity forward contracts	8,316	—	8,316	—
Foreign currency forward contracts	6,519	—	6,519	—
Total liabilities	$ 43,655	$ 1,975	$ 38,921	$ 2,759

(1) Represent obligations for RINs credits for which we do not have sufficient quantities at December 31, 2017 to satisfy our Environmental Protection Agency ("EPA") regulatory blending requirements.

Level 1 Financial Instruments
Our NYMEX futures contracts are exchange traded and are measured and recorded at fair value using quoted market prices, a Level 1 input.

Level 2 Financial Instruments
Investments in marketable securities, derivative instruments consisting of commodity price swaps and forward sales and purchase contracts and HEP's interest rate swaps are measured and recorded at fair value using Level 2 inputs. The fair values of the commodity price and interest rate swap contracts are based on the net present value of expected future cash flows related to both variable and fixed rate legs of the respective swap agreements. The measurements are computed using market-based observable inputs, quoted forward commodity prices with respect to our commodity price swaps and the forward London Interbank Offered Rate ("LIBOR") yield curve with respect to HEP's interest rate swaps. RINs credit obligations are valued based on current market RINs prices. The fair value of the marketable securities is based on values provided by a third party, which were derived using market quotes for similar type instruments, a Level 2 input.

Level 3 Financial Instruments

We at times have commodity price swap and forward contracts that relate to forecasted sales and purchases of commodities for which quoted forward market prices are not readily available. The forward rate used to value these price swaps and forward sales and purchase contracts are derived using a projected forward rate using quoted market rates for similar products, adjusted for regional pricing and grade differentials, a Level 3 input.

The following table presents the changes in fair value of our Level 3 assets and liabilities (all related to derivative instruments) for the years ended December 31, 2017 and 2016:

Level 3 Financial Instruments	Years Ended December 31, 2017	2016
	(In thousands)	
Liability balance at beginning of period	$ (2,554)	$ —
Change in fair value:		
Recognized in other comprehensive income	1,626	(1,460)
Recognized in cost of products sold	(4,664)	(1,094)
Settlement date fair value of contractual maturities:		
Recognized in sales and other revenues	(165)	—
Recognized in cost of products sold	5,757	—
Liability balance at end of period	$ —	$ (2,554)

NOTE 5: Earnings Per Share

Basic earnings per share is calculated as net income (loss) attributable to HollyFrontier stockholders divided by the average number of shares of common stock outstanding. Diluted earnings per share assumes, when dilutive, the issuance of the net incremental shares from restricted shares and performance share units. The following is a reconciliation of the denominators of the basic and diluted per share computations for net income (loss) attributable to HollyFrontier stockholders:

	Years Ended December 31, 2017	2016	2015
	(In thousands, except per share data)		
Net income (loss) attributable to HollyFrontier stockholders	$ 805,395	$ (260,453)	$ 740,101
Participating securities' (restricted stock) share in earnings	5,047	1,003	2,306
Net income (loss) attributable to common shares	$ 800,348	$ (261,456)	$ 737,795
Average number of shares of common stock outstanding	176,174	176,101	188,731
Effect of dilutive variable restricted shares and performance share units (1)	1,022	—	209
Average number of shares of common stock outstanding assuming dilution	177,196	176,101	188,940
Basic earnings (loss) per share	$ 4.54	$ (1.48)	$ 3.91
Diluted earnings (loss) per share	$ 4.52	$ (1.48)	$ 3.90
(1) Excludes anti-dilutive restricted and performance share units of:	543	469	89

NOTE 6: Stock-Based Compensation

As of December 31, 2017, we have two principal share-based compensation plans (collectively, the "Long-Term Incentive Compensation Plan").

The compensation cost charged against income for these plans was $39.8 million, $22.8 million and $26.9 million for the years ended December 31, 2017, 2016 and 2015, respectively. Our accounting policy for the recognition of compensation expense for awards with pro-rata vesting is to expense the costs ratably over the vesting periods.

Additionally, HEP maintains a share-based compensation plan for Holly Logistic Services, L.L.C.'s non-employee directors and certain executives and employees. Compensation cost attributable to HEP's share-based compensation plan was $2.5 million, $2.7 million and $3.5 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Restricted Stock and Restricted Stock Units
Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees restricted stock unit awards with awards generally vesting over a period of two to three years. We previously granted restricted stock to certain officers and key employees with awards vesting over a period of three years. Certain restricted stock unit award recipients have the right to receive dividends, however, restricted stock units do not have any other rights of absolute ownership. Restricted stock award recipients are generally entitled to all the rights of absolute ownership of the restricted shares from the date of grant including the right to vote the shares and to receive dividends. Upon vesting, restrictions on the restricted shares and restricted share units lapse at which time they convert to common shares. In addition, we grant non-employee directors restricted stock unit awards, which typically vest over a period of one year and are payable in stock. The fair value of each restricted stock and restricted stock unit award is measured based on the grant date market price of our common shares and is amortized over the respective vesting period.

A summary of restricted stock and restricted stock unit activity and changes during the year ended December 31, 2017 is presented below:

Restricted Stock and Restricted Stock Units	Grants	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value ($000)
Outstanding at January 1, 2017 (non-vested)	1,188,774	$ 28.87	
Granted (1)	1,426,106	35.02	
Vesting (transfer/conversion to common stock)	(817,601)	30.41	
Forfeited	(71,091)	30.20	
Outstanding at December 31, 2017 (non-vested)	1,726,188	$ 33.51	$ 88,415

(1) Includes restricted stock units issued to employees in the PCLI acquisition.

In connection with our February 1, 2017 PCLI acquisition, we issued 472,276 restricted stock units to PCLI employees as replacement units for unvested awards issued under the legacy PCLI plan. The fair value of these awards totaled $13.3 million and is based on a February 1, 2017 grant date value of $28.12 per unit. Of this total, $6.6 million is recognized as an increase to our PCLI purchase price as it represents the value of the awards attributable to pre-acquisition services, and the remaining $6.7 million is to be recognized as compensation expense over the two-year vesting period.

For the years ended December 31, 2017, 2016 and 2015, restricted stock and restricted stock units vested having a grant date fair value of $24.9 million, $18.4 million and $14.2 million, respectively. For the years ended December 31, 2016 and 2015, we granted restricted stock and restricted stock units having a weighted average grant date fair value of $21.66 and $49.92, respectively. As of December 31, 2017, there was $33.9 million of total unrecognized compensation cost related to non-vested restricted stock and restricted stock unit grants. That cost is expected to be recognized over a weighted-average period of 1.6 years.

Performance Share Units
Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees performance share units, which are payable in stock upon meeting certain criteria over the service period, and generally vest over a period of three years. Under the terms of our performance share unit grants, awards are subject to "financial performance" and "market performance" criteria. Financial performance is based on our financial performance compared to a peer group of independent refining companies, while market performance is based on the relative standing of total shareholder return achieved by HollyFrontier compared to peer group companies. The number of shares ultimately issued under these awards can range from zero to 200% of target award amounts. As of December 31, 2017, estimated share payouts for outstanding non-vested performance share unit awards averaged approximately 110% of target amounts.

A summary of performance share unit activity and changes during the year ended December 31, 2017 is presented below:

Performance Share Units	Grants
Outstanding at January 1, 2017 (non-vested)	703,939
Granted	239,964
Vesting and transfer of ownership to recipients	(151,599)
Forfeited	(99,643)
Outstanding at December 31, 2017 (non-vested)	692,661

For the year ended December 31, 2017, we issued 138,374 shares of common stock, representing a 91% payout on vested performance share units having a grant date fair value of $6.6 million. For the years ended December 31, 2016 and 2015, we issued common stock upon the vesting of the performance share units having a grant date fair value of $7.4 million and $10.4 million, respectively. As of December 31, 2017, there was $15.6 million of total unrecognized compensation cost related to non-vested performance share units having a grant date fair value of $33.94 per unit. That cost is expected to be recognized over a weighted-average period of 2.1 years.

NOTE 7: Cash and Cash Equivalents and Investments in Marketable Securities

Our investment portfolio at December 31, 2017 consisted of cash and cash equivalents.

We periodically invest in marketable debt securities with the maximum maturity or put date of any individual issue generally not greater than one year from the date of purchase, which are usually held until maturity. All of these instruments are classified as available-for-sale and are reported at fair value. Interest income is recorded as earned. Unrealized gains and losses, net of related income taxes, are reported as a component of accumulated other comprehensive income. Upon sale or maturity, realized gains on our marketable debt securities are recognized as interest income. These gains are computed based on the specific identification of the underlying cost of the securities, net of unrealized gains and losses previously reported in other comprehensive income. Unrealized gains and losses on our available-for-sale securities are due to changes in market prices and are considered temporary.

The following is a summary of our marketable securities at December 31, 2016:

	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value (Net Carrying Amount)
		(In thousands)		
December 31, 2016				
Commercial paper	$ 7,687	$ 1	$ (1)	$ 7,687
Corporate debt securities	4,001	—	—	4,001
State and political subdivisions debt securities	412,462	1	(3)	412,460
Total marketable securities	$ 424,150	$ 2	$ (4)	$ 424,148

Interest income recognized on our marketable securities was $0.3 million, $0.8 million and $1.9 million for the years ended December 31, 2017, 2016 and 2015, respectively.

NOTE 8: Inventories

Inventory consists of the following components:

	December 31, 2017	December 31, 2016
	(In thousands)	
Crude oil	$ 581,417	$ 549,886
Other raw materials and unfinished products[1]	396,618	287,561
Finished products[2]	655,336	465,432
Lower of cost or market reserve	(223,833)	(332,518)
Process chemicals[3]	24,792	2,767
Repairs and maintenance supplies and other [4]	195,762	162,548
Total inventory	$ 1,630,092	$ 1,135,676

(1) Other raw materials and unfinished products include feedstocks and blendstocks, other than crude.
(2) Finished products include gasolines, jet fuels, diesels, lubricants, asphalts, LPG's and residual fuels.
(3) Process chemicals include additives and other chemicals.
(4) Includes RINs

We acquired $214.9 million of other raw materials, unfinished and finished products and repair and maintenance supplies in connection with our February 1, 2017 acquisition of PCLI. We value these inventories at the lower of FIFO cost or net realizable value.

Inventories which are valued at the lower of LIFO cost or market reflect a valuation reserve of $223.8 million and $332.5 million at December 31, 2017 and 2016, respectively. The December 31, 2016 market reserve of $332.5 million was reversed due to the sale of inventory quantities that gave rise to the 2016 reserve. A new market reserve of $223.8 million was established as of December 31, 2017 based on market conditions and prices at that time. The effect of the change in the lower of cost or market reserve was a decrease to cost of goods sold of $108.7 million and $291.9 million for the years ended December 31, 2017 and 2016, respectively, and an increase of $227.0 million for the year ended December 31, 2015.

At December 31, 2017, 2016 and 2015, the LIFO value of inventory, net of the lower of cost or market reserve, was equal to current costs.

In May 2017, the EPA granted the Cheyenne Refinery a one-year small refinery exemption from the Renewable Fuel Standard ("RFS") program requirements for the 2016 calendar year. As a result, the Cheyenne Refinery's gasoline and diesel production are not subject to the percentage of production that must satisfy a Renewable Volume Obligation ("RVO") for 2016. In September 2017, the EPA reinstated the RINs previously submitted to meet our Cheyenne Refinery's 2016 RVO. The cost of the RINs used earlier to satisfy the Cheyenne Refinery's 2016 RVO of $30.5 million was charged to cost of products sold in 2016. In the second quarter of 2017, we increased our inventory of RINs and reduced our cost of products sold by this amount, representing the cost of the RINs that were reinstated as a result of the RFS exemption received by the Cheyenne Refinery.

Additionally, in December 2017, the EPA granted the Woods Cross Refinery a one-year small refinery exemption from the RFS program requirements for the 2016 calendar year. In the fourth quarter of 2017, we increased our inventory of RINs and reduced our cost of products sold in the amount of $27.3 million, representing the cost of the RINs to be reinstated as a result of the RFS exemption received by the Woods Cross Refinery. These RINs were reinstated in January 2018.

NOTE 9: Properties, Plants and Equipment

The components of properties, plants and equipment are as follows:

	December 31, 2017	December 31, 2016
	(In thousands)	
Land, buildings and improvements	$ 442,214	$ 326,097
Refining facilities	3,904,161	3,382,369
Pipelines and terminals	1,484,502	1,392,898
Transportation vehicles	20,394	18,841
Other fixed assets	467,469	153,463
Construction in progress	205,049	273,188
	6,523,789	5,546,856
Accumulated depreciation	(1,810,515)	(1,538,408)
	$ 4,713,274	$ 4,008,448

During the year ended December 31, 2016, we recorded impairment charges of $309.3 million that are attributable to properties, plant and equipment of our Cheyenne reporting unit. See Note 10 for additional information.

We capitalized interest attributable to construction projects of $5.0 million, $8.0 million and $5.5 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Depreciation expense was $286.5 million, $247.9 million and $233.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

NOTE 10: Goodwill and Long-lived Asset Impairment

As of December 31, 2017, our goodwill balance was $2.2 billion. During 2017, we recognized $194.8 million in goodwill as a result of our PCLI acquisition. Also during 2017, HEP recognized $21.6 million in goodwill as a result of the acquisition of HEP's remaining interests in SLC Pipeline and Frontier Pipeline. See Note 20 for additional information on our segments. The carrying amount of our goodwill may fluctuate from period to period due to the effects of foreign currency translation adjustments on goodwill assigned to our Lubricants and Specialty Products segment.

The following is a summary of our goodwill by segment:

	Refining	Lubricants and Specialty Products	HEP	Total
	(In thousands)			
Balance at December 31, 2016				
Goodwill	$ 2,042,790	$ —	$ 288,991	$ 2,331,781
Accumulated impairment losses	(309,318)	—	—	(309,318)
	1,733,472	—	288,991	2,022,463
Additional goodwill acquired	—	194,760	21,619	216,379
Foreign currency translation adjustment	—	5,902	—	5,902
Balance at December 31, 2017				
Goodwill	2,042,790	200,662	310,610	2,554,062
Accumulated impairment losses	(309,318)	—	—	(309,318)
	$ 1,733,472	$ 200,662	$ 310,610	$ 2,244,744

We performed our annual goodwill impairment testing as of July 1, 2017 and determined the fair value of our El Dorado reporting unit exceeded its carrying value by approximately 10%. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit as some point in the future and such impairment charges could be material. Additionally, qualitative testing indicated no impairment of goodwill attributable to our other reporting units.

During the second quarter of 2017, we incurred long-lived asset impairment charges totaling $23.2 million, including $19.2 million of construction-in-progress consisting primarily of engineering work for a planned expansion of our Woods Cross refinery to add lubricants production capabilities. During the second quarter of 2017, we concluded to no longer pursue this expansion for various reasons including our recent acquisition of PCLI. The remaining $4.0 million in charges relate to property, plant and equipment that we expensed in the form of accelerated depreciation in the income statement. Additionally, as a result of our impairment testing in the second quarter of 2016, we determined that the carrying value of the long-lived assets of the Cheyenne Refinery had been impaired and recorded long-lived asset impairment charges of $344.8 million that principally related to properties, plant and equipment.

During the second quarter of 2016, we performed interim goodwill impairment and related long-lived asset impairment testing of our El Dorado and Cheyenne Refinery reporting units after identifying a combination of events and circumstances that are indicators of potential goodwill and long-lived asset impairment. The indicators included lower than typical gross margins during the summer driving season, a decrease in the gross margin outlook and decrease in our market capitalization due to a decline in our common share price. Our testing first assessed the carrying values of our refining long-lived asset groups for recoverability. This entailed a comparison of our reporting unit fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit. The estimated fair values of our goodwill reporting units and long-lived asset groups were derived using a combination of both income and market approaches. The income approach reflects expected future cash flows based on estimates of future crack spreads, forecasted production levels, operating costs and capital expenditures. Our market approaches include both the guideline public company and guideline transaction methods. Both methods utilize pricing multiples derived from historical market transactions of other like-kind assets. These fair value measurements involve significant unobservable inputs (Level 3 inputs). As a result of our impairment testing during the second quarter of 2016, we determined that the carrying value of the Cheyenne Refinery's goodwill was fully impaired and a goodwill impairment charge of $309.3 million was recorded, representing all of the goodwill allocated to our Cheyenne Refinery. Our interim testing in 2016 did not identify any impairment related to our El Dorado reporting unit.

There were no impairments of goodwill or long-lived assets during the year ended December 31, 2015.

NOTE 11: Environmental

We expensed $13.1 million, $6.6 million and $14.7 million for the years ended December 31, 2017, 2016 and 2015, respectively, for environmental remediation obligations. The accrued environmental liability reflected in our consolidated balance sheets was $103.7 million and $96.4 million at December 31, 2017 and 2016, respectively, of which $89.6 million and $82.9 million, respectively, were classified as other long-term liabilities. These accruals include remediation and monitoring costs expected to be incurred over an extended period of time (up to 30 years for certain projects). The amount of our accrued liability includes $2.9 million of environmental obligations assumed in connection with our February 1, 2017 PCLI acquisition. Estimated liabilities could increase in the future when the results of ongoing investigations become known, are considered probable and can be reasonably estimated.

NOTE 12: Debt

HollyFrontier Credit Agreement
We have a $1.35 billion senior unsecured revolving credit facility maturing in February 2022 (the “HollyFrontier Credit Agreement”). The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the year ended December 31, 2017, we received advances totaling $26.0 million and repaid $26.0 million under the HollyFrontier Credit Agreement. At December 31, 2017, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling $2.8 million under the HollyFrontier Credit Agreement.

Indebtedness under the HollyFrontier Credit Agreement bears interest, at our option at either a) an alternate base rate (as defined in the credit agreement) plus an applicable margin of (ranging from 0.125% - 1.000%), b) LIBOR plus an applicable margin (ranging from 1.125% to 2.000%), or c) Canadian Dealer Offered Rate plus an applicable margin (ranging from 1.125% to 2.000%) for Canadian dollar denominated borrowings.

HEP Credit Agreement
HEP has a $1.4 billion senior secured revolving credit facility maturing in July 2022 (the “HEP Credit Agreement”) and is available to fund capital expenditures, investments, acquisitions, distribution payments, working capital and for general partnership purposes. It is also available to fund letters of credit up to a $50 million sub-limit and has a $300 million accordion. During the year ended December 31, 2017, HEP received advances totaling $969.0 million and repaid $510.0 million under the HEP Credit Agreement. At December 31, 2017, HEP was in compliance with all of its covenants, had outstanding borrowings of $1,012.0 million and no outstanding letters of credit under the HEP Credit Agreement.

Indebtedness under the HEP Credit Agreement bears interest, at HEP's option, at either a reference rate announced by the administrative agent plus an applicable margin or at a rate equal to LIBOR plus an applicable margin. In each case, the applicable margin is based upon the ratio of HEP’s funded debt to earnings before interest, taxes, depreciation and amortization (as defined in the HEP Credit Agreement). The weighted average interest rates in effect on HEP’s Credit Agreement borrowings were 3.73% and 2.98% at December 31, 2017 and 2016, respectively.

HEP’s obligations under the HEP Credit Agreement are collateralized by substantially all of HEP’s assets and are guaranteed by HEP's material wholly-owned subsidiaries. Any recourse to the general partner would be limited to the extent of HEP Logistics Holdings, L.P.’s assets, which other than its investment in HEP, are not significant. HEP’s creditors have no recourse to our other assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

HollyFrontier Senior Notes
In March 2016 and November 2016, we issued $250 million and $750 million, respectively, in aggregate principal amount of 5.875% senior notes (the “HollyFrontier Senior Notes”) maturing April 2026. The HollyFrontier Senior Notes are unsecured and unsubordinated obligations of ours and rank equally with all our other existing and future unsecured and unsubordinated indebtedness.

In June 2015, we redeemed our $150.0 million aggregate principal amount of 6.875% senior notes maturing November 2018 at a redemption cost of $155.2 million at which time we recognized a $1.4 million early extinguishment loss consisting of a $5.2 million debt redemption premium, net of an unamortized premium of $3.8 million.

HollyFrontier Financing Obligation
In March 2016, we extinguished a financing obligation at a cost of $39.5 million and recognized an $8.7 million loss on the early termination. The financing obligation related to a sale and lease-back of certain crude oil tankage that we sold to an affiliate of Plains in October 2009 for $40.0 million.

HollyFrontier Term Loan
In April 2016, we entered into a $350 million senior unsecured term loan (the “HollyFrontier Term Loan”) maturing in April 2019. The HollyFrontier Term Loan was fully repaid with proceeds received upon the November 2016 issuance of the HollyFrontier Senior Notes.

HEP Senior Notes

In July 2016 and September 2017, HEP issued $400 million and $100 million, respectively, in aggregate principal amount of 6.0% HEP senior notes in a private placement. HEP used the net proceeds to repay indebtedness under the HEP Credit Agreement.

HEP's 6.0% senior notes ($500 million aggregate principal amount maturing August 2024) (the “HEP Senior Notes”) are unsecured and impose certain restrictive covenants, including limitations on HEP’s ability to incur additional indebtedness, make investments, sell assets, incur certain liens, pay distributions, enter into transactions with affiliates, and enter into mergers. At any time when the HEP Senior Notes are rated investment grade by both Moody’s and Standard & Poor’s and no default or event of default exists, HEP will not be subject to many of the foregoing covenants. Additionally, HEP has certain redemption rights under the HEP Senior Notes.

In January 2017, HEP redeemed its $300 million aggregate principal amount of 6.5% senior notes maturing March 2020 at a redemption cost of $309.8 million, at which time HEP recognized a $12.2 million early extinguishment loss consisting of a $9.8 million debt redemption premium and unamortized discount and financing costs of $2.4 million. HEP funded the redemption with borrowings under the HEP Credit Agreement.

Indebtedness under the HEP Senior Notes is guaranteed by HEP’s wholly-owned subsidiaries. HEP’s creditors have no recourse to our assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

The carrying amounts of long-term debt are as follows:

	December 31, 2017	December 31, 2016
	(In thousands)	
HollyFrontier 5.875% Senior Notes		
Principal	$ 1,000,000	$ 1,000,000
Unamortized discount and debt issuance costs	(8,315)	(8,775)
	991,685	991,225
HEP Credit Agreement	1,012,000	553,000
HEP 6% Senior Notes		
Principal	500,000	400,000
Unamortized discount and debt issuance costs	(4,692)	(6,607)
	495,308	393,393
HEP 6.5% Senior Notes		
Principal	—	300,000
Unamortized discount and debt issuance costs	—	(2,481)
	—	297,519
Total HEP long-term debt	1,507,308	1,243,912
Total long-term debt	$ 2,498,993	$ 2,235,137

The fair values of the senior notes are as follows:

	December 31, 2017	December 31, 2016
	(In thousands)	
HollyFrontier senior notes	$ 1,113,470	$ 1,022,500
HEP senior notes	$ 525,120	$ 723,750

These fair values are based on estimates provided by a third party using market quotes for similar type instruments, a Level 2 input. See Note 4 for additional information on Level 2 inputs.

Principal maturities of long-term debt are as follows:

Years Ending December 31,	(In thousands)
2018	$ —
2019	—
2020	—
2021	—
2022	1,012,000
Thereafter	1,500,000
Total	$ 2,512,000

NOTE 13: Derivative Instruments and Hedging Activities

Commodity Price Risk Management

Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps, forward purchase and sales and futures contracts to mitigate price exposure with respect to:

- our inventory positions;
- natural gas purchases;
- costs of crude oil and related grade differentials;
- prices of refined products; and
- our refining margins.

Accounting Hedges

We have swap contracts serving as cash flow hedges against price risk on forecasted purchases of natural gas. We also periodically have forward sales contracts that lock in the prices of future sales of crude oil and refined product and swap contracts serving as cash flow hedges against price risk on forecasted purchases of WTI crude oil and forecasted sales of refined product. These contracts have been designated as accounting hedges and are measured at fair value with offsetting adjustments (gains/losses) recorded directly to other comprehensive income. These fair value adjustments are later reclassified to earnings as the hedging instruments mature. On a quarterly basis, hedge ineffectiveness is measured by comparing the change in fair value of the swap contracts against the expected future cash inflows/outflows on the respective transaction being hedged. Any hedge ineffectiveness is also recognized in earnings.

The following table presents the pre-tax effect on other comprehensive income ("OCI") and earnings due to fair value adjustments and maturities of commodity price swaps and forward sales under hedge accounting:

	Unrealized Gain (Loss) Recognized in OCI	Gain (Loss) Recognized in Earnings Due to Settlements		Gain (Loss) Attributable to Hedge Ineffectiveness Recognized in Earnings	
		Location	Amount	Location	Amount
			(In thousands)		
Year Ended December 31, 2017					
Commodity price swaps					
Change in fair value	$ 2,831	Sales and other revenues	$ 7,836		
Loss reclassified to earnings due to settlements	10,627	Cost of products sold	(299)		
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	(19,244)	Operating expenses	$ (54)
Total	$ 14,538		$ (11,707)		$ (54)
Year Ended December 31, 2016					
Commodity price swaps					
Change in fair value	$ (17,018)				
Loss reclassified to earnings due to settlements	41,077	Sales and other revenues	$ (20,293)		
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	(21,864)	Operating expenses	$ —
Total	$ 25,139		$ (42,157)		$ —
Year Ended December 31, 2015					
Commodity price swaps					
Change in fair value	$ (3,983)	Sales and other revenues	$ 245,819	Sales and other revenues	$ (274)
Gain reclassified to earnings due to settlements	(49,592)	Cost of products sold	(179,700)	Cost of products sold	4,376
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	(17,607)	Operating expenses	547
Total	$ (52,495)		$ 48,512		$ 4,649

As of December 31, 2017, we have the following notional contract volumes related to outstanding derivative instruments serving as cash flow hedges against price risk on forecasted transactions:

		Notional Contract Volumes by Year of Maturity				
Derivative Instrument	Total Outstanding Notional	2018	2019	2020	2021	Unit of Measure
Natural gas price swaps - long	7,200,000	1,800,000	1,800,000	1,800,000	1,800,000	MMBTU
Forward gasoline and diesel contracts - short	250,000	250,000	—	—	—	Barrels
Forward crude oil contracts - short	276,751	276,751	—	—	—	Barrels

Economic Hedges

We also have commodity forward contracts and NYMEX futures contracts to lock in prices on forecasted purchases of inventory. In addition, we periodically have swap contracts that serve as economic hedges (derivatives used for risk management, but not designated as accounting hedges) to lock in basis spread differentials on forecasted purchases of crude oil and natural gas. Furthermore, we had Canadian currency swap contracts that effectively fixed the conversion rate on $1.125 billion Canadian dollars (the PCLI purchase price), which were settled on February 1, 2017, in connection with the closing of the PCLI acquisition. These contracts are measured at fair value with offsetting adjustments (gains/losses) recorded directly to income.

The following table presents the pre-tax effect on income due to maturities and fair value adjustments of our economic hedges:

Location of Gain (Loss) Recognized in Earnings	Years Ended December 31, 2017	2016	2015
	(In thousands)		
Cost of products sold	$ (12,327)	$ (6,889)	$ 48,082
Operating expenses	(6,697)	7,276	(12,003)
Gain (loss) on foreign currency swap	24,545	(6,520)	—
Total	$ 5,521	$ (6,133)	$ 36,079

As of December 31, 2017, we have the following notional contract volumes related to our outstanding derivative contracts serving as economic hedges (all maturing in 2018):

Derivative Instrument	Total Outstanding Notional	Unit of Measure
NYMEX futures (WTI) - short	1,175,000	Barrels
Forward gasoline and diesel contracts - long	85,000	Barrels

Interest Rate Risk Management

HEP used interest rate swaps to manage its exposure to interest rate risk. These swap contracts, which matured in July 2017, had been designated as cash flow hedges.

The following table presents the pre-tax effect on other comprehensive income and earnings due to fair value adjustments and maturities of HEP's interest rate swaps under hedge accounting:

	Unrealized Gain (Loss) Recognized in OCI	Income (Loss) Recognized in Earnings Due to Settlements: Location	Amount
		(In thousands)	
Year Ended December 31, 2017			
Interest rate swaps			
Change in fair value	$ 88		
Gain reclassified to earnings due to settlements	(179)	Interest expense	$ 179
Total	$ (91)		$ 179
Year Ended December 31, 2016			
Interest rate swaps			
Change in fair value	$ (607)		
Loss reclassified to earnings due to settlements	508	Interest expense	$ (508)
Total	$ (99)		$ (508)
Year Ended December 31, 2015			
Interest rate swaps			
Change in fair value	$ (1,864)		
Loss reclassified to earnings due to settlements	2,100	Interest expense	$ (2,100)
Total	$ 236		$ (2,100)

The following table presents the fair value and balance sheet locations of our outstanding derivative instruments. These amounts are presented on a gross basis with offsetting balances that reconcile to a net asset or liability position in our consolidated balance sheets. We present on a net basis to reflect the net settlement of these positions in accordance with provisions of our master netting arrangements.

	Derivatives in Net Asset Position			Derivatives in Net Liability Position		
	Gross Assets	Gross Liabilities Offset in Balance Sheet	Net Assets Recognized in Balance Sheet	Gross Liabilities	Gross Assets Offset in Balance Sheet	Net Liabilities Recognized in Balance Sheet
	(In thousands)					
December 31, 2017						
Derivatives designated as cash flow hedging instruments:						
Commodity price swap contracts	$ —	$ —	$ —	$ 2,424	$ —	$ 2,424
Commodity forward contracts	3,067	—	3,067	418	—	418
	$ 3,067	$ —	$ 3,067	$ 2,842	$ —	$ 2,842
Derivatives not designated as cash flow hedging instruments:						
NYMEX futures contracts	$ —	$ —	$ —	$ 3,360	$ —	$ 3,360
Commodity forward contracts	773	—	773	602	—	602
	$ 773	$ —	$ 773	$ 3,962	$ —	$ 3,962
Total net balance			$ 3,840			$ 6,804
Balance sheet classification:					Accrued liabilities	$ 5,365
					Other long-term liabilities	1,439
		Prepayment and other	$ 3,840			$ 6,804

	Derivatives in Net Asset Position			Derivatives in Net Liability Position		
	Gross Assets	Gross Liabilities Offset in Balance Sheet	Net Assets Recognized in Balance Sheet	Gross Liabilities	Gross Assets Offset in Balance Sheet	Net Liabilities Recognized in Balance Sheet
	(In thousands)					
December 31, 2016						
Derivatives designated as cash flow hedging instruments:						
Commodity price swap contracts	$ —	$ —	$ —	$ 13,185	$ (431)	$ 12,754
Commodity forward contracts	—	—	—	2,978	—	2,978
Interest rate swap contracts	91	—	91	—	—	—
	$ 91	$ —	$ 91	$ 16,163	$ (431)	$ 15,732
Derivatives not designated as cash flow hedging instruments:						
Commodity price swap contracts	$ 4,244	$ (756)	$ 3,488	$ 12,903	$ (9,887)	$ 3,016
NYMEX futures contracts	—	—	—	1,975	—	1,975
Commodity forward contracts	5,905	—	5,905	5,338	—	5,338
Foreign currency forward contracts	—	—	—	6,519	—	6,519
	$ 10,149	$ (756)	$ 9,393	$ 26,735	$ (9,887)	$ 16,848
Total net balance			$ 9,484			$ 32,580
Balance sheet classification:		Prepayment and other	$ 9,484		Accrued liabilities	$ 32,580

At December 31, 2017, we had a pre-tax net unrealized loss of $1.3 million classified in accumulated other comprehensive income that relates to all accounting hedges having contractual maturities through 2021. Assuming commodity prices remain unchanged, an unrealized gain of $0.1 million will be effectively transferred from accumulated other comprehensive income into the statement of income as the hedging instruments contractually mature over the next twelve-month period.

NOTE 14: Income Taxes

The Tax Cuts and Jobs Act (the "Act") was enacted on December 22, 2017. The Act reduces the U.S. federal corporate tax rate from 35% to 21%, requires companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously deferred and creates new taxes on certain foreign sourced earnings. At December 31, 2017, we have not completed our accounting for the tax effects of enactment of the Act; however, in certain cases, as described below, we have made a reasonable estimate of the effects on our existing deferred tax balances, the one-time transition tax and related matters. For the items for which a reasonable estimate has been made, we recognized a provisional tax benefit amount of $307.1 million, which is included as a component of the income tax provision in 2017.

Provisional Amounts

Deferred Tax Assets and Liabilities: We remeasured certain deferred tax assets and liabilities based upon the rates at which they are expected to reverse in the future, which is generally 25%. However, we are still analyzing certain aspects of the Act and refining our calculations, which could potentially affect the measurement of these balances or potentially give rise to new deferred tax amounts. The provisional amount recorded that related to remeasurement of our deferred tax balance was a tax benefit of $315.0 million. Included within our net deferred liability are deferred state income tax balances, which are recorded net of federal tax expense. While many states have not publicly commented on the changes in the Act, we have estimated the value of our state deferred tax balances based upon existing law and related guidance.

Foreign Tax Effects: The one-time transition tax is based on our foreign subsidiaries' earnings and profits ("E&P") arising primarily from our acquisition of PCLI in 2017. This E&P was previously deferred from U.S. income taxes at 35% plus the effect of U.S. state income tax, or together generally 38%. We previously provided deferred U.S. taxes for the repatriation of these deferred amounts. At December 31, 2017, we recorded a provisional amount for our one-time transition tax liability of $6.5 million for our foreign subsidiaries at 15.5% plus the effect of state income tax, or together generally 20%. We have not yet completed our calculation of the total foreign E&P for these foreign subsidiaries. This amount may change when we finalize the calculation of foreign E&P previously deferred from U.S. federal taxation. Additional income taxes have been provided for the remaining outside basis difference inherent in these entities at 21% plus the effect of U.S. state income tax, or together generally 25% as these amounts are not considered to be indefinitely reinvested in foreign operations for which we have provided deferred taxes of $1.4 million.

Our accounting for these provisional amounts related to foreign tax effects is incomplete pending the completion of our analysis of E&P, the related US foreign tax credits and outside basis differences.

The provision for income taxes is comprised of the following:

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Current			
Federal	$ 102,786	$ (71,878)	$ 480,446
State	2,760	(7,304)	71,750
Foreign	19,597	—	—
Deferred			
Federal	(156,767)	100,208	(127,714)
State	28,527	(1,615)	(18,422)
Foreign	(9,282)	—	—
	$ (12,379)	$ 19,411	$ 406,060

The statutory federal income tax rate applied to pre-tax book income reconciles to income tax expense (benefit) as follows:

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Tax computed at statutory rate	$ 304,102	$ (60,037)	$ 422,999
Effect of the Act	(307,101)	—	—
State income taxes, net of federal tax benefit	21,343	(14,056)	40,385
Domestic production activities deduction	(9,937)	4,170	(35,200)
Noncontrolling interest in net income	(29,357)	(26,903)	(24,155)
Goodwill	—	119,722	—
Other	8,571	(3,485)	2,031
	$ (12,379)	$ 19,411	$ 406,060

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Our deferred income tax assets and liabilities as of December 31, 2017 and 2016 are as follows:

	December 31, 2017		
	Assets	Liabilities	Total
	(In thousands)		
Deferred income taxes			
Properties, plants and equipment (due primarily to tax in excess of book depreciation)	$ —	$ (560,957)	$ (560,957)
Accrued employee benefits	14,685	—	14,685
Accrued post-retirement benefits	10,358	—	10,358
Accrued environmental costs	28,657	—	28,657
Hedging instruments	16	—	16
Inventory differences	—	(35,501)	(35,501)
Deferred turnaround costs	—	(58,645)	(58,645)
Net operating loss and tax credit carryforwards	21,682	—	21,682
Investment in HEP	—	(62,321)	(62,321)
Other	—	(5,759)	(5,759)
Total	$ 75,398	$ (723,183)	$ (647,785)

	December 31, 2016		
	Assets	Liabilities	Total
	(In thousands)		
Deferred income taxes			
Properties, plants and equipment (due primarily to tax in excess of book depreciation)	$ —	$ (618,053)	$ (618,053)
Accrued employee benefits	21,355	—	21,355
Accrued post-retirement benefits	10,024	—	10,024
Accrued environmental costs	41,152	—	41,152
Hedging instruments	7,396	—	7,396
Inventory differences	—	(8,341)	(8,341)
Deferred turnaround costs	—	(83,993)	(83,993)
Net operating loss and tax credit carryforwards	23,203	—	23,203
Investment in HEP	—	(27,276)	(27,276)
Other	14,119	—	14,119
Total	$ 117,249	$ (737,663)	$ (620,414)

We have Oklahoma income tax credits of $9.7 million that can be carried forward indefinitely, and Kansas income tax credits of $16.8 million that can be carried forward for 16 tax years.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Years Ended December 31,		
	2017	2016	2015
		(In thousands)	
Balance at January 1	$ 22,137	$ —	$ —
Additions based on tax positions related to the current year	31,615	22,137	—
Balance at December 31	$ 53,752	$ 22,137	$ —

At December 31, 2017 and 2016, there were $53.8 million and $22.1 million, respectively, of unrecognized tax benefits that, if recognized, would affect our effective tax rate. We had no unrecognized benefits at December 31, 2015. Unrecognized tax benefits are adjusted in the period in which new information about a tax position becomes available or the final outcome differs from the amount recorded.

The 2016 and 2017 additions to unrecognized tax benefits relates to claims filed with the IRS on the federal income tax treatment of refundable biodiesel/ethanol blending tax credits for certain prior years. The issues related to the claims are complex and uncertain, and we cannot conclude that it is more likely than not that we will sustain the claims. Therefore, no tax benefit has been recognized for the filed claims. We believe it is reasonably possible that the total amounts of unrecognized tax benefits will significantly increase within 12 months of the reporting date based on additional filings.

We recognize interest and penalties relating to liabilities for unrecognized tax benefits as an element of tax expense. We have not recorded any penalties related to our uncertain tax positions as we believe that it is more likely than not that there will not be any assessment of penalties.

We are subject to U.S. and Canadian federal income tax, Oklahoma, Kansas, New Mexico, Iowa, Arizona, Utah, Colorado and Nebraska income tax and to income tax of multiple other state jurisdictions. We have substantially concluded all state and local income tax matters for tax years through 2012. Other than the federal claim noted above, we have materially concluded all U.S. federal income tax matters for tax years through December 31, 2013.

NOTE 15: Stockholders' Equity

Shares of our common stock outstanding and activity for the years ended December 31, 2017, 2016 and 2015 are presented below:

	Years Ended December 31,		
	2017	2016	2015
Common shares outstanding at January 1	177,345,266	180,234,388	196,086,090
Issuance of restricted stock, excluding restricted stock with performance feature	55,626	870,378	447,534
Vesting of performance units	138,374	76,404	136,896
Vesting of restricted stock with performance feature	350,063	40,294	43,774
Forfeitures of restricted stock	(139,634)	(16,795)	(51,332)
Purchase of treasury stock [(1)]	(342,073)	(3,859,403)	(16,428,574)
Common shares outstanding at December 31	177,407,622	177,345,266	180,234,388

(1) Includes 342,073, 147,922 and 151,967 shares, respectively, withheld under the terms of stock-based compensation agreements to provide funds for the payment of payroll and income taxes due at the vesting of share-based awards, as well as other stock repurchases under separate authority from our Board of Directors.

In May 2015, our Board of Directors approved a $1 billion share repurchase program, which replaced all existing share repurchase programs, authorizing us to repurchase common stock in the open market or through privately negotiated transactions. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by the Board of Directors. As of December 31, 2017, we had remaining authorization to repurchase up to $178.8 million under this stock repurchase program. In addition, we are authorized by our Board of Directors to repurchase shares in an amount sufficient to offset shares issued under our compensation programs.

During the years ended December 31, 2017, 2016 and 2015, we withheld shares of our common stock from certain employees in the amounts of $15.9 million, $4.7 million and $6.2 million, respectively. These withholdings were made under the terms of restricted stock and performance share unit agreements upon vesting, at which time, we concurrently made cash payments to fund payroll and income taxes on behalf of officers and employees who elected to have shares withheld from vested amounts to pay such taxes.

NOTE 16: Other Comprehensive Income (Loss)

The components and allocated tax effects of other comprehensive income are as follows:

	Before-Tax	Tax Expense (Benefit)	After-Tax
		(In thousands)	
Year Ended December 31, 2017			
Net change in foreign currency translation adjustment	$ 22,151	$ 7,774	$ 14,377
Net unrealized loss on marketable securities	(4)	(1)	(3)
Net unrealized gain on hedging instruments	14,447	5,613	8,834
Net change in pension and other post-retirement benefit obligations	(5,807)	(2,037)	(3,770)
Other comprehensive income	30,787	11,349	19,438
Less other comprehensive loss attributable to noncontrolling interest	(57)	—	(57)
Other comprehensive gain attributable to HollyFrontier stockholders	$ 30,844	$ 11,349	$ 19,495
Year Ended December 31, 2016			
Net unrealized gain on marketable securities	$ 104	$ 40	$ 64
Net unrealized gain on hedging instruments	25,040	9,713	15,327
Net change in other post-retirement benefit obligations	(1,113)	(431)	(682)
Other comprehensive income	24,031	9,322	14,709
Less other comprehensive loss attributable to noncontrolling interest	(58)	—	(58)
Other comprehensive income attributable to HollyFrontier stockholders	$ 24,089	$ 9,322	$ 14,767
Year Ended December 31, 2015			
Net unrealized gain on marketable securities	$ 38	$ 14	$ 24
Net unrealized loss on hedging instruments	(52,259)	(20,282)	(31,977)
Net change in other post-retirement benefit obligations	79	31	48
Other comprehensive loss	(52,142)	(20,237)	(31,905)
Less other comprehensive income attributable to noncontrolling interest	144	—	144
Other comprehensive loss attributable to HollyFrontier stockholders	$ (52,286)	$ (20,237)	$ (32,049)

The following table presents the income statement line item effects for reclassifications out of accumulated other comprehensive income ("AOCI"):

AOCI Component	**Gain (Loss) Reclassified From AOCI**			**Income Statement Line Item**
	Years Ended December 31,			
	2017	**2016**	**2015**	
	(In thousands)			
Marketable securities	$ —	$ (23)	$ (51)	Interest income
	—	—	42	Other, net
	—	(23)	(9)	
	—	(9)	(3)	Income tax benefit
	—	(14)	(6)	Net of tax
Hedging instruments:				
Commodity price swaps	7,836	(20,293)	245,819	Sales and other revenues
	(299)	—	(179,700)	Cost of products sold
	(19,244)	(21,864)	(17,607)	Operating expenses
Interest rate swaps	179	(508)	(2,100)	Interest expense
	(11,528)	(42,665)	46,412	
	(4,490)	(16,387)	18,454	Income tax expense (benefit)
	(7,038)	(26,278)	27,958	Net of tax
	(74)	320	1,273	Noncontrolling interest
	(7,112)	(25,958)	29,231	Net of tax and noncontrolling interest
Other post-retirement benefit obligations:				
Post-retirement healthcare obligation	87	130	271	Cost of products sold
	3,012	2,989	2,681	Operating expenses
	382	363	347	Selling, general and administrative expenses
	3,481	3,482	3,299	
	1,347	1,348	1,277	Income tax expense
	2,134	2,134	2,022	Net of tax
Retirement restoration plan	(17)	(15)	(20)	Selling, general and administrative expenses
	(7)	(6)	(8)	Income tax benefit
	(10)	(9)	(12)	Net of tax
Total reclassifications for the period	$ (4,988)	$ (23,847)	$ 31,235	

Accumulated other comprehensive income in the equity section of our consolidated balance sheets includes:

	Years Ended December 31,	
	2017	**2016**
	(In thousands)	
Foreign currency translation adjustment	$ 14,377	$ —
Unrealized loss on pension obligation	(654)	—
Unrealized gain on post-retirement benefit obligations	16,939	20,055
Unrealized gain on marketable securities	—	3
Unrealized loss on hedging instruments, net of noncontrolling interest	(793)	(9,446)
Accumulated other comprehensive income	$ 29,869	$ 10,612

NOTE 17: Post-retirement Plans

In connection with our PCLI acquisition, we agreed to establish employee benefit plans including union and non-union pension plans and a post-retirement healthcare plan for PCLI employees that were previously covered under legacy Suncor plans.

Our agreement with Suncor also provides that pension assets related to the union and non-union pension plans will be transferred from the Suncor plans to a pension trust established by us and will be computed in accordance with the share purchase agreement, subject to regulatory approval. Our purchase price allocation as of February 1, 2017 included estimates of the amount of pension benefit obligation and the pension assets to be transferred using actuarial estimates. The actual asset transfer to our PCLI pension plan trust will be a cash transfer that is expected to occur in 2018. As of December 31, 2017, the plan asset balance represents a receivable for the pending transfer from the Suncor plans.

The following table sets forth the changes in the benefit obligation and plan assets of our PCLI pension plans for the eleven months ended December 31, 2017:

		February 1, 2017 to December 31, 2017
		(In thousands)
Change in plans' benefit obligations		
Pension plans' benefit obligation at acquisition	$	52,155
Service cost		3,598
Interest cost		1,979
Actuarial loss		4,503
Benefits paid		(966)
Foreign currency exchange rate changes		2,313
Pension plans' benefit obligation - end of year	$	63,582
Change in pension plans assets		
Fair value of plans assets at acquisition	$	51,870
Actual return on plans assets		6,182
Benefits paid		(966)
Foreign currency exchange rate changes		2,175
Fair value of plans assets - end of year	$	59,261
Funded status		
Under-funded balance	$	(4,321)
Amounts recognized in consolidated balance sheets		
Accrued pension liability	$	(4,321)
Amounts recognized in accumulated other comprehensive income		
Cumulative actuarial loss	$	1,162

The accumulated benefit obligation was $52.8 million at December 31, 2017. The measurement date used for our pension plans was December 31, 2017.

The weighted average assumptions used to determine end of period benefit obligations:

	December 31, 2017
Discount rate	3.40%
Rate of future compensation increases	3.00%

Net periodic pension expense consisted of the following components:

		February 1, 2017 to December 31, 2017
		(In thousands)
Service cost - benefit earned during the period	$	3,598
Interest cost on projected benefit obligations		1,979
Expected return on plans assets		(2,841)
Net periodic pension expense	$	2,736

The weighted average assumptions used to determine net periodic pension expense:

	February 1, 2017 to December 31, 2017
Discount rate	3.80%
Rate of future compensation increases	3.00%
Expected long-term rate of return on assets	5.75%

Benefit payments, which reflect expected future service, are expected to be paid as follows: $0.8 million in 2018, $1.2 million in 2019, $1.5 million in 2020, $1.8 million in 2021, $2.1 million in 2022 and $14.9 million in 2023 to 2027.

Post-retirement Healthcare Plans
We have a post-retirement healthcare and other benefits plan that is available to certain of our employees who satisfy certain age and service requirements. This plan is unfunded and provides differing levels of healthcare benefits dependent upon hire date and work location. Not all of our employees are covered by this plan at December 31, 2017. In addition, we established a post-retirement healthcare and other benefits plan for our PCLI employees.

The following table sets forth the changes in the benefit obligation and plan assets of our post-retirement healthcare plans for the years ended December 31, 2017 and 2016:

	Years Ended December 31,	
	2017	2016
	(In thousands)	
Change in plan's benefit obligation		
Post-retirement plan's benefit obligation - beginning of year	$ 18,992	$ 21,201
PCLI acquisition	8,212	—
Service cost	1,511	1,294
Interest cost	987	787
Participant contributions	181	244
Amendments	—	21
Benefits paid	(1,800)	(2,171)
Actuarial loss (gain)	1,058	(2,384)
Foreign currency exchange rate changes	358	—
Post-retirement plans' benefit obligation - end of year	$ 29,499	$ 18,992
Change in plan assets		
Fair value of plan assets - beginning of year	$ —	$ —
Employer contributions	1,542	1,927
Participant contributions	258	244
Benefits paid	(1,800)	(2,171)
Fair value of plan assets - end of year	$ —	$ —
Funded status		
Under-funded balance	$ (29,499)	$ (18,992)
Amounts recognized in consolidated balance sheets		
Accrued post-retirement liability	$ (29,499)	$ (18,992)
Amounts recognized in accumulated other comprehensive income		
Cumulative actuarial (loss) gain	$ (287)	$ 771
Prior service credit	28,953	32,434
Total	$ 28,666	$ 33,205

Benefit payments, which reflect expected future service, are expected to be paid as follows: $1.9 million in 2018; $1.6 million in 2019; $1.6 million in 2020; $1.7 million in 2021; $1.7 million in 2022; and $8.2 million in 2023 through 2027.

The weighted average assumptions used to determine end of period benefit obligations:

	December 31, 2017		December 31, 2016
	HFC	PCLI	HFC
Discount rate	3.35%	3.40%	3.75%
Current health care trend rate	7.00%	6.50%	7.00%
Ultimate health care trend rate	5.00%	5.00%	5.00%
Year rate reaches ultimate trend rate	2028	2022	2030

Net periodic post-retirement credit consisted of the following components:

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Service cost – benefit earned during the year	$ 1,511	$ 1,294	$ 1,694
Interest cost on projected benefit obligations	987	787	819
Amortization of prior service credit	(3,481)	(3,482)	(3,482)
Amortization of net loss	—	—	183
Net periodic post-retirement credit	$ (983)	$ (1,401)	$ (786)

Prior service credits are amortized over the average remaining effective period to obtain full benefit eligibility for participants.

Assumed health care cost trend rates have an effect on the amounts reported for the post-retirement health care benefit plan. The weighted average assumptions used to determine net periodic benefit expense follow:

	Years Ended December 31,			
	2017		2016	2015
	HFC	PCLI	HFC	
Discount rate	3.75%	3.80%	3.90%	3.60%
Current health care trend rate	7.00%	6.50%	8.00%	8.00%
Ultimate health care trend rate	5.00%	5.00%	5.00%	5.00%
Year rate reaches ultimate trend rate	2030	2022	2041	2042

The effect of a 1% change in health care cost trend rates is as follows:

	1% Point Increase	1% Point Decrease
	(In thousands)	
Service cost	$ 175	$ (146)
Interest cost	$ 48	$ (42)
Year-end accumulated post-retirement benefit obligation	$ 1,393	$ (1,204)

Retirement Restoration Plan
We have an unfunded retirement restoration plan that provides for additional payments from us so that total retirement plan benefits for certain executives will be maintained at the levels provided in the retirement plan before the application of Internal Revenue Code limitations. We expensed $0.1 million, $0.1 million and $0.1 million for the years ended December 31, 2017, 2016 and 2015, respectively, in connection with this plan. The accrued liability reflected in the consolidated balance sheets was $2.7 million and $2.7 million at December 31, 2017 and 2016, respectively. As of December 31, 2017, the projected benefit obligation under this plan was $2.7 million. Annual benefit payments of $0.2 million are expected to be paid through 2027, which reflect expected future service.

Defined Contribution Plan
We have a defined contribution “401(k)” plan that covers substantially all U.S. employees. Our contributions are based on an employee's eligible compensation and years of service. We also partially match our employees’ contributions. We expensed $17.6 million, $17.5 million and $17.2 million for the years ended December 31, 2017, 2016 and 2015, respectively, in connection with this plan.

NOTE 18: Lease Commitments

We lease certain office and storage facilities, rail cars and other equipment under long-term operating leases, most of which contain renewal options. At December 31, 2017, the minimum future rental commitments under operating leases having non-cancellable lease terms in excess of one year are as follows:

	(In thousands)
2018	$ 82,345
2019	74,987
2020	70,654
2021	58,571
2022	51,019
Thereafter	88,626
Total	$ 426,202

Rental expense charged to operations was $95.7 million, $93.2 million and $107.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

NOTE 19: Contingencies and Contractual Commitments

We are a party to various litigation and legal proceedings which we believe, based on advice of counsel, will not either individually or in the aggregate have a materially adverse effect on our financial condition, results of operations or cash flows.

Contractual Commitments
We have various long-term agreements (entered in the normal course of business) to purchase crude oil, natural gas, feedstocks and other resources to ensure we have adequate supplies to operate our refineries. The substantial majority of our purchase obligations are based on market prices or rates. These contracts expire in 2019 through 2033.

We also have long-term agreements with third parties for the transportation and storage of crude oil, natural gas and feedstocks to our refineries and for terminal and storage services that expire in 2018 through 2033. At December 31, 2017, the minimum future transportation and storage fees under transportation agreements having terms in excess of one year are as follows:

	(In thousands)
2018	$ 148,716
2019	132,547
2020	119,639
2021	107,400
2022	102,884
Thereafter	857,454
Total	$ 1,468,640

Transportation and storage costs incurred under these agreements totaled $140.5 million, $135.1 million and $137.7 million for the years ended December 31, 2017, 2016 and 2015, respectively. These amounts do not include contractual commitments under our long-term transportation agreements with HEP, as all transactions with HEP are eliminated in these consolidated financial statements.

We have a crude oil supply contract that requires the supplier to deliver a specified volume of crude oil or pay a shortfall fee for the difference in the actual barrels delivered to us less the specified barrels per the supply contract. For the contract year ended August 31, 2017, the actual number of barrels delivered to us was substantially less than the specified barrels, and we recorded a reduction to cost of goods sold and accumulated a shortfall fee receivable of $26.0 million during this period. In September 2017, the supplier notified us they are disputing the shortfall fee owed and in October 2017 notified us of their demand for arbitration. We offset the receivable with payments of invoices for deliveries of crude oil received subsequent to August 31, 2017, which is permitted under the supply contract. We believe the disputes and claims made by the supplier are without merit.

In March, 2006, a subsidiary of ours sold the assets of Montana Refining Company under an Asset Purchase Agreement (“APA”). Calumet Montana Refining LLC, the current owner of the assets, has submitted requests for reimbursement of approximately $20.0 million pursuant to contractual indemnity provisions under the APA for various costs incurred, as well as additional claims related to environmental matters. We have rejected most of the claims for payment, and this matter is scheduled for arbitration beginning in July 2018. We have accrued the costs we believe are owed pursuant to the APA, and we estimate that any reasonably possible losses beyond the amounts accrued are not material.

NOTE 20: Segment Information

Effective fourth quarter of 2017, we revised our reportable segments to align with certain changes in how our chief operating decision maker manages and allocates resources to our business. Accordingly, our Tulsa Refineries’ lubricants operations, previously reported in the Refining segment, are now combined with the operations of our Petro-Canada Lubricants business (acquired February 1, 2017) and reported in the Lubricants and Specialty Products segment. Our prior period segment information has been retrospectively adjusted to reflect our current segment presentation.

Our operations are organized into three reportable segments, Refining, Lubricants and Specialty Products and HEP. Our operations that are not included in the Refining, Lubricants and Specialty Products and HEP segments are included in Corporate and Other. Intersegment transactions are eliminated in our consolidated financial statements and are included in Eliminations. Corporate and Other and Eliminations are aggregated and presented under Corporate, Other and Eliminations column.

The Refining segment represents the operations of the El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries and HFC Asphalt (aggregated as a reportable segment). Refining activities involve the purchase and refining of crude oil and wholesale and branded marketing of refined products, such as gasoline, diesel fuel and jet fuel. These petroleum products are primarily marketed in the Mid-Continent, Southwest and Rocky Mountain regions of the United States. HFC Asphalt operates various asphalt terminals in Arizona, New Mexico and Oklahoma.

The Lubricants and Specialty Products segment involves PCLI's production operations, located in Mississauga, Ontario, that includes lubricant products such as base oils, white oils, specialty products and finished lubricants, and the operations of our Petro-Canada Lubricants business that includes the marketing of products to both retail and wholesale outlets through a global sales network with locations in Canada, the United States, Europe and China. Additionally, the Lubricants and Specialty Products segment includes specialty lubricant products produced at our Tulsa Refineries that are marketed throughout North America and are distributed in Central and South America.

The HEP segment includes all of the operations of HEP, which owns and operates logistics and refinery assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and processing units in the Mid-Continent, Southwest and Rocky Mountain regions of the United States. The HEP segment also includes a 75% ownership interest in UNEV (a consolidated subsidiary of HEP) and 50% ownership interest in each of the Osage Pipeline and the Cheyenne Pipeline. Revenues from the HEP segment are earned through transactions with unaffiliated parties for pipeline transportation, rental and terminalling operations as well as revenues relating to pipeline transportation services provided for our refining operations. Due to certain basis differences, our reported amounts for the HEP segment may not agree to amounts reported in HEP's periodic public filings.

The accounting policies for our segments are the same as those described in the summary of significant accounting policies (see Note 1).

	Refining	Lubricants and Specialty Products	HEP	Corporate, Other and Eliminations	Consolidated Total
			(In thousands)		
Year Ended December 31, 2017					
Sales and other revenues:					
Revenues from external customers	$ 12,579,672	$ 1,594,036	$ 77,225	$ 366	$ 14,251,299
Intersegment revenues	338,390	—	377,137	(715,527)	—
	$ 12,918,062	$ 1,594,036	$ 454,362	$ (715,161)	$ 14,251,299
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	$ 11,009,345	$ 1,093,984	$ —	$ (635,530)	$ 11,467,799
Lower of cost or market inventory valuation adjustment	(107,479)	(1,206)	—	—	(108,685)
Operating expenses	$ 1,006,675	$ 222,461	$ 137,605	$ (72,507)	$ 1,294,234
Selling, general and administrative expenses	$ 103,067	$ 105,112	$ 14,323	$ 42,372	$ 264,874
Depreciation and amortization	$ 289,434	$ 31,894	$ 77,660	$ 10,949	$ 409,937
Asset impairment	$ 19,247	$ —	$ —	$ —	$ 19,247
Income (loss) from operations	$ 597,773	$ 141,791	$ 224,774	$ (60,445)	$ 903,893
Earnings of equity method investments	$ —	$ —	$ 12,510	$ —	$ 12,510
Capital expenditures	$ 176,533	$ 31,464	$ 44,810	$ 19,452	$ 272,259
Total assets	$ 6,474,666	$ 1,610,472	$ 2,191,984	$ 415,032	$ 10,692,154

	Refining	Lubricants and Specialty Products	HEP	Corporate, Other and Eliminations	Consolidated Total
			(In thousands)		
Year Ended December 31, 2016					
Sales and other revenues:					
Revenues from external customers	$ 10,002,831	$ 464,359	$ 68,927	$ (417)	$ 10,535,700
Intersegment revenues	317,884	—	333,116	(651,000)	—
	$ 10,320,715	$ 464,359	$ 402,043	$ (651,417)	$ 10,535,700
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	$ 9,003,505	$ 377,136	$ —	$ (614,714)	$ 8,765,927
Lower of cost or market inventory valuation adjustment	$ (287,848)	$ (4,090)	$ —	$ —	$ (291,938)
Operating expenses	$ 909,724	$ 13,867	$ 123,984	$ (28,736)	$ 1,018,839
Selling, general and administrative expenses	$ 92,297	$ 2,899	$ 12,532	$ 17,920	$ 125,648
Depreciation and amortization	$ 281,701	$ 620	$ 68,811	$ 11,895	$ 363,027
Goodwill and asset impairment	$ 654,084	$ —	$ —	$ —	$ 654,084
Income (loss) from operations	$ (332,748)	$ 73,927	$ 196,716	$ (37,782)	$ (99,887)
Earnings of equity method investments	$ —	$ —	$ 14,213	$ —	$ 14,213
Capital expenditures	$ 357,407	$ 5,708	$ 107,595	$ 9,080	$ 479,790
Total assets	$ 6,048,091	$ 465,715	$ 1,920,487	$ 1,001,368	$ 9,435,661
Year Ended December 31, 2015					
Sales and other revenues:					
Revenues from external customers	$ 12,677,901	$ 493,282	$ 66,654	$ 83	$ 13,237,920
Intersegment revenues	361,211	—	292,221	(653,432)	—
	$ 13,039,112	$ 493,282	$ 358,875	$ (653,349)	$ 13,237,920
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	$ 10,472,268	$ 414,553	$ —	$ (647,603)	$ 10,239,218
Lower of cost or market inventory valuation adjustment	$ 225,736	$ 1,243	$ —	$ —	$ 226,979
Operating expenses	$ 940,629	$ 14,042	$ 105,554	$ 148	$ 1,060,373
Selling, general and administrative expenses	$ 91,279	$ 2,615	$ 12,556	$ 14,396	$ 120,846
Depreciation and amortization	$ 273,091	$ 254	$ 61,690	$ 11,116	$ 346,151
Income (loss) from operations	$ 1,036,109	$ 60,575	$ 179,075	$ (31,406)	$ 1,244,353
Earnings (loss) of equity method investments	$ —	$ —	$ 4,803	$ (8,541)	$ (3,738)
Capital expenditures	$ 461,326	$ 7,685	$ 193,121	$ 14,023	$ 676,155
Total assets	$ 6,286,154	$ 320,510	$ 1,802,970	$ (21,335)	$ 8,388,299

NOTE 21: Significant Customers

We have two significant customers (Shell Oil and Sinclair), each of which has historically accounted for approximately 10% of our annual revenues. Shell Oil accounted for $1,317.9 million (9%), $1,048.2 million (10%) and $1,252.6 million (9%) for the years ended December 31, 2017, 2016 and 2015, respectively, and Sinclair accounted for $1,135.7 million (8%), $927.0 million (9%) and $1,104.9 million (8%) of our revenues for the years ended December 31, 2017, 2016 and 2015, respectively.

Non-U.S. sales represented 7% of our revenues for the year ended December 31, 2017. The Canadian market represents our largest concentration of foreign sales and accounted for 4% of our revenues for the year ended December 31, 2017.

NOTE 22: Quarterly Information (Unaudited)

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year
	(In thousands, except per share data)				
Year Ended December 31, 2017					
Sales and other revenues	$ 3,080,483	$ 3,458,864	$ 3,719,247	$ 3,992,705	$ 14,251,299
Operating costs and expenses	$ 3,113,207	$ 3,337,179	$ 3,269,967	$ 3,627,053	$ 13,347,406
Income (loss) from operations (1,2)	$ (32,724)	$ 121,685	$ 449,280	$ 365,652	$ 903,893
Income (loss) before income taxes	$ (54,571)	$ 106,069	$ 446,103	$ 371,262	$ 868,863
Net income (loss) attributable to HollyFrontier stockholders	$ (45,468)	$ 57,767	$ 272,014	$ 521,082	$ 805,395
Net income (loss) per share attributable to HollyFrontier stockholders - basic	$ (0.26)	$ 0.33	$ 1.53	$ 2.94	$ 4.54
Net income (loss) per share attributable to HollyFrontier stockholders - diluted	$ (0.26)	$ 0.33	$ 1.53	$ 2.92	$ 4.52
Dividends per common share	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 1.32
Average number of shares of common stock outstanding:					
Basic	176,210	176,147	176,149	176,265	176,174
Diluted	176,210	176,302	176,530	177,457	177,196
Year Ended December 31, 2016					
Sales and other revenues	$ 2,018,724	$ 2,714,638	$ 2,847,270	$ 2,955,068	$ 10,535,700
Operating costs and expenses	$ 1,935,126	$ 3,135,180	$ 2,722,505	$ 2,842,776	$ 10,635,587
Income (loss) from operations (3) (4)	$ 83,598	$ (420,542)	$ 124,765	$ 112,292	$ (99,887)
Income (loss) before income taxes	$ 65,698	$ (430,515)	$ 109,867	$ 83,416	$ (171,534)
Net income (loss) attributable to HollyFrontier stockholders	$ 21,253	$ (409,368)	$ 74,497	$ 53,165	$ (260,453)
Net income (loss) per share attributable to HollyFrontier stockholders - basic	$ 0.12	$ (2.33)	$ 0.42	$ 0.30	$ (1.48)
Net income (loss) per share attributable to HollyFrontier stockholders - diluted	$ 0.12	$ (2.33)	$ 0.42	$ 0.30	$ (1.48)
Dividends per common share	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 1.32
Average number of shares of common stock outstanding:					
Basic	176,737	175,865	175,871	175,936	176,101
Diluted	176,784	175,865	175,993	176,137	176,101

(1) For 2017, income from operations reflects non-cash lower of cost or market inventory valuation charges of $11.8 million and $84.0 million for the first and second quarters, respectively, and a reduction of $111.1 million and $93.4 million for the third and fourth quarters, respectively.

(2) For 2017, income from operations reflects long-lived asset impairment charges of $23.2 million in the second quarter.

(3) For 2016, income from operations reflects non-cash lower of cost or market inventory valuation reductions of $56.1 million and $138.5 million for the first and second quarters, respectively, and increases of $0.3 million for the third quarter and a reduction of $97.7 million for the fourth quarter.

(4) For 2016, income from operations reflects non-cash goodwill and long-lived asset impairment charges of $309.3 million and $344.8 million , respectively, in the second quarter.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

We have had no change in, or disagreement with, our independent registered public accountants on matters involving accounting and financial disclosure.

Item 9A. Controls and Procedures

Evaluation of disclosure controls and procedures. Our principal executive officer and principal financial officer have evaluated, as required by Rule 13a-15(b) under the Securities Exchange Act of 1934 (the "Exchange Act"), our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e)) under the Exchange Act as of the end of the period covered by this annual report on Form 10-K. Our disclosure controls and procedures are designed to provide reasonable assurance that the information we are required to disclose in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure and is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms. Based upon the evaluation, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2017.

Changes in internal control over financial reporting. There have been no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during our last fiscal quarter that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

See Item 8 for "Management's Report on its Assessment of the Company's Internal Control Over Financial Reporting" and "Report of the Independent Registered Public Accounting Firm."

Item 9B. Other Information

There have been no events that occurred in the fourth quarter of 2017 that would need to be reported on Form 8-K that have not previously been reported.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by Items 401, 405, 406 and 407(c)(3), (d)(4) and (d)(5) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for the annual meeting of stockholders to be held on May 9, 2018 and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by Items 402 and 407(e)(4) and (e)(5) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for the annual meeting of stockholders to be held on May 9, 2018 and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The equity compensation plan information required by Item 201(d) and the information required by Item 403 of Regulation S-K in response to this item will be set forth in our definitive proxy statement for the annual meeting of stockholders to be held on May 9, 2018 and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by Items 404 and 407(a) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for the annual meeting of stockholders to be held on May 9, 2018 and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by Item 9(e) of Schedule 14A in response to this item will be set forth in our definitive proxy statement for the annual meeting of stockholders to be held on May 9, 2018 and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) Documents filed as part of this report

(1) Index to Consolidated Financial Statements

(2) Index to Consolidated Financial Statement Schedules

All schedules are omitted since the required information is not present or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the consolidated financial statements or notes thereto.

(3) Exhibits

The Exhibit Index on pages 102 to 107 of this Annual Report on Form 10-K lists the exhibits that are filed or furnished, as applicable, as part of this Annual Report on Form 10-K.

HOLLYFRONTIER CORPORATION
INDEX TO EXHIBITS

Exhibits are numbered to correspond to the exhibit table
in Item 601 of Regulation S-K

Exhibit Number	Description
2.1	Asset Sale and Purchase Agreement, dated October 19, 2009, between Holly Refining & Marketing-Tulsa LLC, HEP Tulsa LLC and Sinclair Tulsa Refining Company (incorporated by reference to Exhibit 2.1 of Registrant's Current Report on Form 8-K filed October 21, 2009, File No. 1-03876).
2.2	Amendment No. 1 to Asset Sale and Purchase Agreement, dated December 1, 2009, between Holly Refining & Marketing-Tulsa LLC, HEP Tulsa LLC and Sinclair Tulsa Refining Company (incorporated by reference to Exhibit 2.1 of Registrant's Current Report on Form 8-K filed December 7, 2009, File No. 1-03876).
2.3	Asset Sale and Purchase Agreement, dated April 15, 2009, between Holly Refining & Marketing-Midcon, L.L.C. and Sunoco, Inc. (incorporated by reference to Exhibit 2.1 of Registrant's Current Report on Form 8-K filed April 16, 2009, File No. 1-03876).
2.4	Share Purchase Agreement, dated October 29, 2016, by and between Suncor Energy Inc. and 9952110 Canada Inc. (incorporated by reference to Exhibit 2.1 of Registrant's Current Report on Form 8-K filed October 31, 2016, File No. 1-03876).
2.5	Equity Restructuring Agreement, dated as of October 18, 2017, by and between HEP Logistics Holdings, L.P. and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 2.1 of Registrant's Current Report on Form 8-K filed October 19, 2017, File No. 1-03876).
3.1	Amended and Restated Certificate of Incorporation of HollyFrontier Corporation (incorporated by reference to Exhibit 3.1 of Registrant's Current Report on Form 8-K filed July 8, 2011, File No. 1-03876).
3.2	Amended and Restated Bylaws of HollyFrontier Corporation (incorporated by reference to Exhibit 3.1 of Registrant's Current Report on Form 8-K filed February 20, 2014, File No. 1-03876).
4.1	Indenture, dated July 19, 2016, among Holly Energy Partners, L.P., Holly Energy Finance Corp., and each of the Guarantors party thereto and U.S. Bank National Association (incorporated by reference to Exhibit 4.1 of Holly Energy Partners, L.P.'s Current Report on Form 8-K filed July 19, 2016, File Number 1-32225).
4.2	First Supplemental Indenture, dated November 2, 2016, among Woods Cross Operating LLC, Holly Energy Partners, L.P., and Holly Energy Finance Corp., the other Guarantors and U.S. Bank National Association (incorporated by reference to Exhibit 4.3 of Holly Energy Partners, L.P.'s Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2016, File Number 1-32225).
4.3	Second Supplemental Indenture, dated July 26, 2017, by and among Holly Energy Holdings LLC, HEP Cheyenne Shortline LLC, Holly Energy Partners, L.P., Holly Energy Finance Corp., the other guarantors therein and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2017, File No. 1-03876).
4.4	Indenture, dated March 22, 2016, between HollyFrontier Corporation and Wells Fargo Bank, National Association (incorporated by reference to Exhibit 4.1 of Registrant's Current Report on Form 8-K filed March 22, 2016, File No. 1-03876).
4.5	Supplemental Indenture, dated March 22, 2016, between HollyFrontier Corporation and Wells Fargo Bank, National Association (incorporated by reference to Exhibit 4.2 of Registrant's Current Report on Form 8-K filed March 22, 2016, File No. 1-03876).
10.1	Amended and Restated Intermediate Pipelines Agreement, dated June 1, 2009, among Holly Corporation, Navajo Refining Company, L.L.C, Holly Energy Partners, L.P., Holly Energy Partners – Operating, L.P., HEP Pipeline, L.L.C., Lovington-Artesia, L.L.C., HEP Logistics Holdings, L.P., Holly Logistics Services, L.L.C. and HEP Logistics GP, L.L.C. (incorporated by reference to Exhibit 10.2 of Holly Energy Partners, L.P.'s Current Report on Form 8-K filed June 5, 2009, File No. 1-32225).
10.2	Amendment to Amended and Restated Intermediate Pipelines Agreement, dated December 9, 2010, among Navajo Refining Company, L.L.C, Holly Energy Partners, L.P., Holly Energy Partners – Operating, L.P., HEP Pipeline, L.L.C., Lovington-Artesia, L.L.C., HEP Logistics Holdings, L.P., Holly Logistics Services, L.L.C. and HEP Logistics GP, L.L.C. (incorporated by reference to Exhibit 10.4 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2010, File No. 1-03876).

Exhibit Number	Description
10.3	Assignment and Assumption Agreement (Amended and Restated Intermediate Pipelines Agreement), effective January 1, 2011, between Navajo Refining Company, L.L.C. and Holly Refining & Marketing Company LLC (incorporated by reference to Exhibit 10.5 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2010, File No. 1-03876).
10.4	Tulsa Equipment and Throughput Agreement, dated August 1, 2009, between Holly Refining & Marketing - Tulsa LLC and HEP Tulsa LLC (incorporated by reference to Exhibit 10.3 of Holly Energy Partners L.P.'s Current Report on Form 8-K filed August 6, 2009, File No. 1-32225).
10.5	Amendment to Tulsa Equipment and Throughput Agreement, dated December 9, 2010, among Holly Refining & Marketing - Tulsa LLC and HEP Tulsa LLC (incorporated by reference to Exhibit 10.7 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2010, File No. 1-03876).
10.6	Assignment and Assumption Agreement (Tulsa Equipment and Throughput Agreement), effective January 1, 2011, between Holly Refining & Marketing - Tulsa, LLC and Holly Refining & Marketing Company LLC (incorporated by reference to Exhibit 10.8 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2010, File No. 1-03876).
10.7	Tulsa Purchase Option Agreement, dated August 1, 2009, between Holly Refining & Marketing - Tulsa LLC and HEP Tulsa LLC (incorporated by reference to Exhibit 10.4 of Holly Energy Partners L.P.'s Current Report on Form 8-K filed August 6, 2009, File No. 1-32225).
10.8	Third Amended and Restated Crude Pipelines and Tankage Agreement, dated March 12, 2015, by and among Navajo Refining Company, L.L.C., Holly Refining & Marketing Company - Woods Cross LLC, HollyFrontier Refining & Marketing LLC, Holly Energy Partners-Operating, L.P., HEP Pipeline, L.L.C. and HEP Woods Cross L.L.C. (incorporated by reference to Exhibit 10.2 of Registrant's Current Report on Form 8-K filed March 16, 2015, File No. 1-03876).
10.9	Second Amended and Restated Refined Products Pipelines and Terminals Agreement, dated February 22, 2016, by and among HollyFrontier Refining & Marketing LLC, HollyFrontier Corporation, Holly Energy Partners - Operating, L.P. and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.3 of Registrant's Current Report on Form 8-K filed February 22, 2016, File No. 1-03876).
10.10	Second Amended and Restated Throughput Agreement (Tucson Terminal), dated September 19, 2013, effective June 1, 2013, among HollyFrontier Refining & Marketing LLC, HEP Refining, L.L.C. and Holly Energy Partners - Operating, L.P. (incorporated by reference to Exhibit 10.4 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2013, File No. 1-03876).
10.11*	Eighteenth Amended and Restated Omnibus Agreement, dated January 19, 2018, effective December 8, 2017, by and among HollyFrontier Corporation, Holly Energy Partners, L.P. and certain of their respective subsidiaries.
10.12	Senior Unsecured 5-Year Revolving Credit Agreement, dated July 1, 2014, among HollyFrontier Corporation, as borrower, Union Bank, N. A. as administrative agent, and each of the financial institutions party thereto as lenders (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed July 8, 2014, File No. 1-03876).
10.13	First Amendment to Senior Unsecured 5-Year Revolving Credit Agreement, dated as of February 16, 2017, among HollyFrontier Corporation, as borrower, The Bank of Tokyo-Mitsubishi UFJ, Ltd., as administrative agent, and the lenders party thereto (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed February 21, 2017, File No. 1-03876).
10.14	Release of Subsidiary Guarantee, dated December 29, 2015, by and among HollyFrontier Corporation and Union Bank, N.A. (incorporated by reference to Exhibit 10.40 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015, File No. 1-03876).
10.15	Frontier Products Offtake Agreement El Dorado Refinery, dated October 19, 1999, between Frontier Oil and Refining Company and Equiva Trading Company (now Shell Oil Products US, assignee of Equiva Trading Company) (“the Agreement”) and First Amendment to the Agreement dated September 18, 2000, Second Amendment to the Agreement dated September 21, 2000, Third Amendment to the Agreement dated December 19, 2000, Fourth Amendment to the Agreement dated February 22, 2001, Fifth Amendment to the Agreement dated August 14, 2001, Sixth Amendment to the Agreement dated November 5, 2001, Seventh Amendment to the Agreement dated April 22, 2002, Eighth Amendment to the Agreement date d May 30, 2003, Ninth Amendment to the Agreement dated May 25, 2004, Tenth Amendment to the Agreement dated May 3, 2005, Eleventh Amendment to the Agreement dated March 31, 2006, Twelfth Amendment to the Agreement dated May 11, 2006, Thirteenth Amendment to the Agreement dated September 30, 2007, Fourteenth Amendment to the Agreement dated May 1, 2008 and Fifteenth Amendment to the Agreement dated May 28, 2008 (incorporated by reference to Exhibit 10.1 to Frontier Oil Corporation's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2008, File No. 1-07627).

Exhibit Number	Description
10.16	Seventeenth Amendment, dated August 27, 2013, to the Frontier Products Offtake Agreement El Dorado Refinery, dated October 19, 1999, between Frontier Oil and Refining Company (now HollyFrontier Refining & Marketing LLC, as successor-by-merger to Frontier Oil and Refining Company) and Equiva Trading Company (now Shell Oil Products US, assignee of Equiva Trading Company) (incorporated by reference to Exhibit 10.5 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2013, File No. 1-03876).
10.17	Master Crude Oil Purchase and Sale Contract, dated November 1, 2010, among BNP Paribas Energy Trading GP, BNP Paribas Energy Trading Canada Corp., Frontier Oil and Refining Company and Frontier Oil Corporation (incorporated by reference to Exhibit 10.1 to Frontier Oil Corporation's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2010, File No. 1-07627).
10.18	Guaranty, dated November 1, 2010, by Frontier Oil Corporation in favor of BNP Paribas Energy Trading GP and BNP Paribas Energy Trading Canada Corp. (incorporated by reference to Exhibit 10.2 to Frontier Oil Corporation's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2010, File No. 1-07627).
10.19	Amended and Restated Limited Liability Company Agreement of HEP UNEV Holdings LLC, dated July 12, 2012, among HEP UNEV Holdings LLC, HollyFrontier Holdings LLC and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2012, File No. 1-03876).
10.20	Refined Products Purchase Agreement, dated December 1, 2009, between Holly Refining & Marketing - Tulsa LLC and Sinclair Tulsa Refining Company (incorporated by reference to Exhibit 10.4 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2013, File No. 1-03876).
10.21	First Amendment to Refined Products Purchase Agreement, dated May 17, 2010, between Holly Refining & Marketing - Tulsa LLC and Sinclair Tulsa Refining Company (incorporated by reference to Exhibit 10.5 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2013, File No. 1-03876).
10.22	Second Amendment to Refined Products Purchase Agreement, dated December 19, 2011, between HollyFrontier Refining & Marketing LLC and Sinclair Oil Corporation (incorporated by reference to Exhibit 10.6 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2013, File No 1-03876).
10.23	Third Amendment to Refined Products Purchase Agreement, dated June 1, 2012, between HollyFrontier Refining & Marketing LLC and Sinclair Oil Corporation (incorporated by reference to Exhibit 10.7 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2013, File No. 1-03876).
10.24	Fourth Amendment to Refined Products Purchase Agreement, dated February 27, 2014, between HollyFrontier Refining & Marketing LLC and Sinclair Oil Corporation (incorporated by reference to Exhibit 10.55 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2014, File No. 1-03876).
10.25	Fifth Amendment to Refined Products Purchase Agreement dated June 23, 2014, between HollyFrontier Refining & Marketing LLC and Sinclair Oil Corporation (incorporated by reference to Exhibit 10.56 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2014, File No. 1-03876).
10.26	Amended and Restated Unloading and Blending Services Agreement, dated January 18, 2017, effective September 16, 2016, by and between HollyFrontier Refining & Marketing LLC, Holly Energy Partners - Operating, L.P. and HEP Refining L.L.C. (incorporated by reference to Exhibit 10.26 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.27	Third Amended and Restated Master Throughput Agreement, dated January 18, 2017, effective January 1, 2017, by and between HollyFrontier Refining & Marketing LLC and Holly Energy Partners - Operating, L.P. (incorporated by reference to Exhibit 10.27of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.28	Construction Payment Agreement, dated as of October 16, 2015, by and between HEP Refining, L.L.C. and HollyFrontier Refining & Marketing LLC (incorporated by reference to Exhibit 10.3 of Registrant's Current Report on Form 8-K filed October 21, 2015, File No. 1-03876).
10.29	Third Amended and Restated Services and Secondment Agreement, dated October 3, 2016, by and among Holly Logistic Services, L.L.C., certain subsidiaries of Holly Energy Partners, L.P. and certain subsidiaries of HollyFrontier Corporation (incorporated by reference to Exhibit 10.4 to Registrant's Current Report on Form 8-K filed October 4, 2016, File No. 1-03876).

Exhibit Number	Description
10.30	Fourth Amended and Restated Master Lease and Access Agreement, dated January 18, 2017, effective January 1, 2017, by and among certain subsidiaries of Holly Energy Partners, L.P. and certain subsidiaries of HollyFrontier Corporation (incorporated by reference to Exhibit 10.30 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.31	First Amendment to Fourth Amended and Restated Master Lease and Access Agreement, dated as of October 13, 2017, by and among certain subsidiaries of Holly Energy Partners, L.P. and certain subsidiaries of HollyFrontier Corporation (incorporated by reference to Exhibit 10.1 of Registrant's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2017, File No. 1-03876).
10.32	Master Tolling Agreement (Refinery Assets), dated as of November 2, 2015, by and between Frontier El Dorado Refining LLC and Holly Energy Partners-Operating L.P. (incorporated by reference to Exhibit 10.2 of Registrant's Current Report on Form 8-K filed November 3, 2015, File No. 1-03876).
10.33	Amendment to Master Tolling Agreement (Refinery Assets), dated effective January 1, 2017, by and among HollyFrontier El Dorado Refining LLC, HollyFrontier Woods Cross Refining LLC, and Holly Energy Partners-Operating, L.P. (incorporated by reference to Exhibit 10.7 to the Registrant's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017, File No. 1-03876).
10.34	Amended and Restated Master Tolling Agreement (Operating Assets), dated October 3, 2016, by and between HollyFrontier El Dorado Refining LLC, HollyFrontier Woods Cross Refining LLC, Holly Energy Partners - Operating L.P., HollyFrontier Corporation and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.2 to Registrant's Current Report on Form 8-K filed October 4, 2016, File No. 1-03876).
10.35	Amendment to Amended and Restated Master Tolling Agreement (Operating Assets), dated effective January 1, 2017, by and among HollyFrontier El Dorado Refining LLC, HollyFrontier Woods Cross Refining LLC, and Holly Energy Partners-Operating, L.P. (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017, File No. 1-03876).
10.36	LLC Interest Purchase Agreement, dated February 22, 2016, by and among HollyFrontier Refining & Marketing LLC, HollyFrontier Corporation, Holly Energy Partners - Operating, L.P. and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.67 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2015, File No. 1-03876).
10.37	Refined Products Terminal Transfer Agreement, dated February 22, 2016, by and among HEP Refining Assets, L.P., Holly Energy Partners, L.P., El Paso Logistics LLC, HollyFrontier Corporation and Holly Energy Partners - Operating, L.P. (incorporated by reference to Exhibit 10.68 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2015, File No. 1-03876).
10.38	Second Amended and Restated Pipelines and Terminals Agreement, dated February 22, 2016, by and among HollyFrontier Refining & Marketing LLC, HollyFrontier Corporation, Holly Energy Partners - Operating, L.P. and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.3 of Registrant's Current Report on Form 8-K filed February 22, 2016, File No. 1-03876).
10.39	Pipeline Deficiency Agreement, dated August 8, 2016, by and between HollyFrontier Refining & Marketing LLC and Holly Energy Partners - Operating, L.P. (incorporated by reference to Exhibit 10.5 to Registrant's Current Report on Form 8-K filed August 10, 2016, File No. 1-03876).
10.40	LLC Interest Purchase Agreement, dated October 3, 2016, by and between HollyFrontier Corporation, HollyFrontier Woods Cross Refining LLC, Holly Energy Partners - Operating, L.P. and Holly Energy Partners, L.P. (incorporated by reference to Exhibit 10.1 to Registrant's Current Report on Form 8-K filed October 4, 2016, File No. 1-03876).
10.41+	HollyFrontier Corporation Long-Term Incentive Compensation Plan (formerly the Holly Corporation Long-Term Incentive Compensation Plan), as amended and restated on May 24, 2007 as approved at the Annual Meeting of Stockholders of Holly Corporation on May 24, 2007 (incorporated by reference to Exhibit 10.4 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2008, File No. 1-03876).
10.42+	First Amendment to the HollyFrontier Corporation Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.5 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2008, File No. 1-03876).
10.43+	Second Amendment to the HollyFrontier Corporation Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 of the Registrant's Current Report on Form 8-K filed May 18, 2011, File No. 1-03876).

Exhibit Number	Description
10.44+	Third Amendment to the HollyFrontier Corporation Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 4.6 of the Registrant's Registration Statement on Form S-8 filed November 9, 2012, File No. 333-184877).
10.45+	Fourth Amendment to the HollyFrontier Corporation Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.2 of Registrant's Current Report on Form 8-K filed May 15, 2015, File No. 1-03876).
10.46+	Fifth Amendment to the HollyFrontier Corporation Long-Term Incentive Plan, effective May 11, 2016 (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed May 16, 2016, File No. 1-03876).
10.47+	HollyFrontier Corporation Long-Term Incentive Plan UK Sub-Plan, effective February 14, 2017 (incorporated by reference to Exhibit 10.43 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.48+	Holly Corporation Amended and Restated Change in Control Agreement Policy (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed March 1, 2011, File No. 1-03876).
10.49+	Holly Corporation Employee Form of Change in Control Agreement (incorporated by reference to Exhibit 10.46 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.50+	Form of Performance Share Unit Agreement (for 162(m) covered employees) (incorporated by reference to Exhibit 4.11 of the Registrant's Registration Statement on Form S-8 filed November 9, 2012, File No. 333-184877).
10.51+	Form of Performance Share Unit Agreement (for non-162(m) covered employees) (incorporated by reference to Exhibit 4.12 of the Registrant's Registration Statement on Form S-8 filed November 9, 2012, File No. 333-184877).
10.52+*	Form of Performance Share Unit Agreement (for 162(m) covered employees).
10.53+*	Form of Performance Share Unit Agreement (for non-162(m) covered employees).
10.54+	Form of Restricted Stock Agreement (time-based vesting) (incorporated by reference to Exhibit 10.49 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.55+	Form of Notice of Grant of Restricted Stock (incorporated by reference to Exhibit 10.50 of Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, File No. 1-03876).
10.56+	Form of Restricted Stock Unit Agreement (for non-employee directors) (incorporated by reference to Exhibit 10.63 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2012, File No. 1-03876).
10.57+	Form of Notice of Grant of Restricted Stock Units (for non-employee directors) (incorporated by reference to Exhibit 10.64 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2012, File No. 1-03876).
10.58+*	Form of Restricted Stock Unit Agreement (for employees).
10.59+*	Form of Notice of Grant of Restricted Stock Units (for employees).
10.60+	Form of Indemnification Agreement entered into with directors and officers of Holly Corporation (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed December 13, 2006, File No. 1-03876).
10.61+	HollyFrontier Corporation Omnibus Incentive Compensation Plan (formerly the Frontier Oil Corporation Omnibus Incentive Compensation Plan) (incorporated by reference to Exhibit 10.5 of Registrant's Current Report on Form 8-K filed July 8, 2011, File No. 1-03876).
10.62+	First Amendment to the HollyFrontier Corporation Omnibus Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed May 15, 2015, File No. 1-03876).
10.63+	Second Amendment to the HollyFrontier Corporation Omnibus Incentive Compensation Plan, dated November 9, 2016 (incorporated by reference to Exhibit 10.56 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2016, File No. 1-03876).
10.64+	HollyFrontier Corporation Executive Nonqualified Deferred Compensation Plan (formerly the Frontier Deferred Compensation Plan) (incorporated by reference to Exhibit 10.73 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2012, File No. 1-03876).

Exhibit Number	Description
10.65+	Form of Indemnification Agreement between Frontier and each of its officers and directors (incorporated by reference to Exhibit 10.41 to Frontier Oil Corporation's Annual Report on Form 10-K for its fiscal year ended December 31, 2006, File No. 1-07627).
10.66+	Form of Indemnification Agreement between HollyFrontier Corporation and each of its officers and directors (incorporated by reference to Exhibit 10.79 of Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2011, File No. 1-03876).
10.67+	Retirement Agreement, dated January 13, 2017, between HollyFrontier Corporation and Douglas S. Aron (incorporated by reference to Exhibit 10.1 of Registrant's Current Report on Form 8-K filed January 13, 2017, File No. 1-03876).
21.1*	Subsidiaries of Registrant
23.1*	Consent of Independent of Registered Public Accounting Firm
31.1*	Certification of Chief Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Chief Financial Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Chief Executive Officer under Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Chief Financial Officer under Section 906 of the Sarbanes-Oxley Act of 2002.
101++	The following financial information from Registrant's Annual Report on Form 10-K for its fiscal year ended December 31, 2017, formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Income, (iii) Consolidated Statements of Comprehensive Income, (iv) Consolidated Statements of Cash Flows, (v) Consolidated Statements of Equity, and (vi) Notes to the Consolidated Financial Statements.

* Filed herewith.
** Furnished herewith.
\+ Constitutes management contracts or compensatory plans or arrangements.
++ Filed electronically herewith.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HOLLYFRONTIER CORPORATION
(Registrant)

Date: February 21, 2018

/s/ George J. Damiris
George J. Damiris
Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and as of the date indicated.

Signature	Capacity	Date
/s/ George J. Damiris George J. Damiris	Chief Executive Officer, President and Director	February 21, 2018
/s/ Richard L. Voliva III Richard L. Voliva III	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 21, 2018
/s/ J.W. Gann, Jr. J.W. Gann, Jr.	Vice President, Controller and Chief Accounting Officer (Principal Accounting Officer)	February 21, 2018
/s/ Michael C. Jennings Michael C. Jennings	Chairman of the Board	February 21, 2018
/s/ Anne-Marie N. Ainsworth Anne-Marie N. Ainsworth	Director	February 21, 2018
/s/ Douglas Y. Bech Douglas Y. Bech	Director	February 21, 2018
/s/ Anna C. Catalano Anna C. Catalano	Director	February 21, 2018
/s/ Leldon Echols Leldon Echols	Director	February 21, 2018
/s/ R. Kevin Hardage R. Kevin Hardage	Director	February 21, 2018
/s/ Robert J. Kostelnik Robert J. Kostelnik	Director	February 21, 2018
/s/ James H. Lee James H. Lee	Director	February 21, 2018
/s/ Franklin Myers Franklin Myers	Director	February 21, 2018
/s/ Michael E. Rose Michael E. Rose	Director	February 21, 2018

EIGHTEENTH AMENDED AND RESTATED OMNIBUS AGREEMENT

among

HOLLYFRONTIER CORPORATION,

HOLLY ENERGY PARTNERS, L.P.

and

CERTAIN OF THEIR RESPECTIVE SUBSIDIARIES

January 19, 2018

TABLE OF CONTENTS

Page

EXHIBITS

EIGHTEENTH AMENDED AND RESTATED

OMNIBUS AGREEMENT

THIS EIGHTEENTH AMENDED AND RESTATED OMNIBUS AGREEMENT (this " Agreement") is being entered into on January 19, 2018 and effective as of December 8, 2017 (the "Effective Date"), by and among the following entities (all Delaware limited liability companies unless otherwise noted):

HollyFrontier Corporation, a Delaware corporation ("HFC"), and its Affiliates listed below (singularly, "HFC Entity"; and with HFC collectively, the "HFC Entities"):	
	El Paso Operating LLC ("El Paso Operating")
	HollyFrontier El Dorado Refining LLC ("HollyFrontier El Dorado")
	HollyFrontier Cheyenne Refining LLC ("HollyFrontier Cheyenne")
	HollyFrontier Tulsa Refining LLC ("HollyFrontier Tulsa")
	HollyFrontier Woods Cross Refining LLC ("HollyFrontier Woods Cross")
	Navajo Pipeline Co., L.P., a Delaware limited partnership ("Navajo Pipeline")

	HollyFrontier Navajo Refining LLC ("HollyFrontier Navajo")
	HollyFrontier Refining & Marketing LLC ("HFRM")
	HollyFrontier Transportation LLC ("HollyFrontier Transportation")
AND	
Holly Energy Partners, L.P., a Delaware limited partnership ("HEP"), and its Affiliates listed below (singularly, "HEP Entity"; and with HEP collectively, the "HEP Entities"):	
	Cheyenne Logistics LLC ("Cheyenne Logistics")
	El Dorado Logistics LLC ("El Dorado Logistics")
	El Dorado Operating LLC ("El Dorado Operating")
	El Dorado Osage LLC ("El Dorado Osage")
	Frontier Aspen LLC
	HEP El Dorado LLC ("HEP El Dorado")
	HEP Logistics GP, L.L.C. (the "OLP GP")
	HEP Logistics Holdings, L.P., a Delaware limited partnership (the "General Partner")
	HEP Mountain Home, L.L.C.
	HEP Navajo Southern, L.P., a Delaware limited partnership
	HEP Pipeline Assets, Limited Partnership, a Delaware limited partnership
	HEP Pipeline GP, L.L.C.
	HEP Pipeline, L.L.C. ("HEP Pipeline")
	HEP Refining Assets, L.P., a Delaware limited partnership ("HEP Refining Assets")
	HEP Refining GP, L.L.C.
	HEP Refining, L.L.C. ("HEP Refining")
	HEP Tulsa LLC ("HEP Tulsa")
	HEP UNEV Holdings LLC ("HEP UNEV")
	HEP UNEV Pipeline LLC ("HEP UNEV Pipeline")
	HEP Woods Cross, L.L.C.
	Holly Energy Partners – Operating, L.P., a Delaware limited partnership (the "Operating Partnership")
	Holly Energy Storage – Lovington LLC
	Holly Logistic Services, L.L.C. ("Holly GP"),
	Lovington-Artesia, L.L.C.
	NWNAL LLC
	Roadrunner Pipeline, L.L.C. ("Roadrunner")
	SLC Pipeline LLC
	Woods Cross Operating LLC ("Woods Cross Operating")

This Agreement amends and restates in its entirety the Seventeenth Amended and Restated Omnibus Agreement which was effective as of January 1, 2017, among certain of the HFC Entities and certain of the HEP Entities which were signatories thereto (the "Previous Amended and Restated Omnibus Agreement").

RECITALS:

WHEREAS, the Parties entered into an Omnibus Agreement on July 13, 2004 (as amended, the "Original Omnibus Agreement") to evidence their agreement with respect to various administrative, indemnity and other obligations, which agreement has been further amended and restated as set forth on Exhibit A, resulting in the Previous Amended and Restated Omnibus Agreement.

WHEREAS, the Parties desire to amend and restate the Previous Amended and Restated Omnibus Agreement as provided herein in order to, among other things, consolidate terms from various other agreements between the parties and to clarify terms as more particularly set forth herein.

AGREEMENT:

NOW, THEREFORE, in consideration of the premises and the covenants, conditions and agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

Article I
DEFINITIONS AND INTERPRETATIONS

1.1 Definitions. Capitalized terms used throughout this Agreement and not otherwise defined herein shall have the meanings set forth on Exhibit B.

1.2 Interpretation. Matters relating to the interpretation of this Agreement are set forth on Exhibit C.

ARTICLE II
BUSINESS OPPORTUNITIES

2.1 Restricted Businesses. For so long as a HFC Group Member owns a controlling interest in the general partner of HEP, and except as permitted by Section 2.2, Holly GP and each HFC Group Member shall be prohibited from engaging in or acquiring a controlling interest in or operating any business having assets or operations engaged in the Restricted Businesses.

2.2 Permitted Exceptions. Notwithstanding any provision of Section 2.1 to the contrary, Holly GP and the HFC Group Members may engage in the following activities under the following circumstances:

(a) the ownership and/or operation of any of the Retained Assets (including replacements of the Retained Assets);

(b) any Restricted Businesses conducted by a HFC Group Member and Holly GP with the approval of the General Partner;

(c) the ownership and/or operation of Restricted Businesses by an HFC Entity or Holly GP in its capacity as general partner of HEP or its general partner;

(d) the ownership and/or operation of any asset or group of related assets used in the Restricted Business that are acquired or constructed by a HFC Group Member or Holly GP after the Closing Date (the "Permitted Assets"), the fair market value of which (as determined in good faith by the Board of Directors of HFC) is as follows:

(i)less than $5 million at the time of such acquisition or good faith estimate of construction costs, as the case may be; or

(ii)equal to or greater than $5 million at the time of the acquisition or good faith estimate of construction costs; provided, HEP has been offered the opportunity to purchase the Permitted Assets in accordance with Section 2.3 and HEP has elected not to purchase the Permitted Assets;

(e) the ownership of the UNEV Profits Interest;

(f) the ownership of limited or any general partnership interests in HEP; and

(g) the ownership and/or operation of the El Paso Hawkins Terminal.

2.3 Right of Offer.

(a) If Holly GP or a HFC Group Member becomes aware of an opportunity to acquire Permitted Assets with a fair market value (as determined in good faith by the Board of Directors of HFC) equal to or greater than $5 million, then, subject to Section 2.3(c), as soon as practicable, Holly GP or such HFC Group Member shall notify HEP of such opportunity and deliver to HEP, or provide HEP access to all information prepared by or on behalf of, or material information submitted or delivered to, Holly GP or such HFC Group Member relating to such potential transaction. As soon as practicable, but in any event within 30 days after receipt of such notification and information, HEP shall notify Holly GP or the HFC Group Member that it has either elected:

(i)not to cause a HEP Group Member to pursue the opportunity to purchase the Permitted Assets, or

(ii)to cause a HEP Group Member to pursue the opportunity to purchase the Permitted Assets, in which case the applicable Parties shall follow the procedures in Section 2.4.

(b) If, at any time, HEP abandons such opportunity (as evidenced in writing by HEP to the HFC Group Member), Holly GP or the HFC Group Member may pursue such opportunity. Any Permitted Assets which are permitted to be acquired by Holly GP or a HFC Group Member must be so acquired:

(i)within 12 months of the later to occur of (i) the date that Holly GP or the HFC Group Member becomes able to pursue such acquisition in accordance with the provisions of this Section 2.3, and (ii) the date upon which all required governmental approvals to consummate such acquisition have been obtained, and

(ii)on terms not materially more favorable to Holly GP or the HFC Group Member than were offered to HEP.

If either of these conditions are not satisfied, the opportunity must be reoffered to HEP in accordance with Section 2.3(a).

(c) Section 2.3(a) shall not apply if Holly GP or a HFC Group Member:

(i)becomes aware of an opportunity to make an acquisition that includes Permitted Assets and assets that are not Permitted Assets, and the Permitted Assets have a fair market value (as determined in good faith by the Board of Directors of HFC) equal to or greater than $5 million but comprise less than half of the fair market value (as determined in good faith by the Board of Directors of HFC) of the total assets being considered for acquisition, or

(ii)desires to construct Permitted Assets with an estimated construction cost (as determined in good faith by the Board of Directors of HFC) equal to or greater than $5 million;

provided, however, that in each case Holly GP or a HFC Group Member, as the case may be, shall comply with Section 2.4.

2.4 Procedure for Offering Acquired or Constructed Assets to HEP .

(a) Within 180 days after the consummation of the acquisition or the completion of construction by Holly GP or a HFC Group Member of the Permitted Assets, as the case may be, Holly GP or the HFC Group Member shall notify HEP in writing of such acquisition or construction and offer HEP the opportunity to purchase such Permitted Assets (the "Offer"). The Offer shall set forth the terms relating to the purchase of the Permitted Assets, and, if Holly GP or any HFC Group Member desires to utilize the Permitted Assets, the Offer will also include (i) the commercially reasonable terms on which the HEP Group will provide services to Holly GP or the HFC Group Member to enable Holly GP or the HFC Group Member to utilize the Permitted Assets and (ii) the terms of any service agreements, leases or access agreements to be provided to HEP by Holly GP or the HFC Group relating to such assets. As soon as practicable, but in any event within 30 days after receipt of such written notification, HEP shall notify Holly GP or the HFC Group Member in writing that HEP has elected (i) not to cause a HEP Group Member to purchase the Permitted Assets, in which event Holly GP or the HFC Group Member shall be forever free to continue to own or operate such Permitted Assets, or (ii) to cause a HEP Group Member to purchase the Permitted Assets, in which event Section 2.4(b) and Section 2.4(c) shall apply.

(b) If within 60 days after receipt by HEP of the Offer, Holly GP or the HFC Group Member and HEP are able to agree on the fair market value of the subject Permitted Assets and the other terms of the Offer including, the terms, if any, on which the HEP Group will provide services to Holly GP or the HFC Group Member to enable it to utilize the Permitted Assets, a HEP Group Member shall purchase the Permitted Assets for the agreed upon fair market value as soon as commercially practicable after such agreement has been reached and, if required by the Offer or otherwise agreed, enter into an agreement with Holly GP or the HFC Group Member to provide services in a manner consistent with the Offer.

(c) If Holly GP or the HFC Group Member and HEP are unable to agree within 60 days after receipt by HEP of the Offer on the fair market value of the subject Permitted Assets and/or the other terms of the Offer, Holly GP or the HFC Entity, on the one hand, and HEP, on the other hand, will engage a mutually agreed upon investment banking firm to determine the disputed terms. Such investment banking firm will determine the disputed terms within 30 days of its engagement and furnish Holly GP or the HFC Group Member, on the one hand, and HEP, on the other hand, its determination. The fees of the investment banking firm will be split equally between Holly GP or the HFC Group Member, on the one hand, and HEP, on the other hand. Once the investment banking firm has submitted its determination of the disputed terms, HEP will have the right, but not the obligation, to cause a HEP Group Member to purchase the Permitted Assets pursuant to the Offer as modified by the determination of the investment banking firm. HEP will provide written notice of its decision to Holly GP or the HFC Group Member within 30 days after the investment banking firm has submitted its determination. Failure to provide such notice within such 30-day period shall be deemed to constitute a decision not to purchase the Permitted Assets. If HEP elects to cause a HEP Group Member to purchase the Permitted Assets, then the HEP Group Member shall purchase the Permitted Assets pursuant to the Offer as modified by the determination of the investment banking firm as soon as commercially practicable after such determination and, if applicable, enter into an agreement with Holly GP or the HFC Group Member to provide services in a manner consistent with the Offer, as modified by the determination of the investment banking firm, if applicable.

2.5 Scope of Prohibition. Except as provided in this Article II and the Partnership Agreement, Holly GP and each HFC Group Member shall be free to engage in any business activity, including those that may be in direct competition with any HEP Group Member.

2.6 Enforcement. Holly GP and the HFC Group Members agree and acknowledge that the HEP Group does not have an adequate remedy at law for the breach by Holly GP and the HFC Group of the covenants and agreements set forth in this Article II, and that any breach by Holly GP and the HFC Group of the covenants and agreements set forth in this Article II would result in irreparable injury to the HEP Group. Holly GP and the HFC Group Members further agree and acknowledge that any HEP Group Member may, in addition to the other remedies that may be available to the HEP Group, file a suit in equity to enjoin Holly GP and the HFC Group from such breach and hereby consent to the issuance of injunctive relief under this Agreement.

2.7 Limitation on Acquisitions of Permitted Assets by HEP Group Members. Notwithstanding anything in this Agreement to the contrary, a HEP Group Member who is not a party to this Agreement is prohibited from acquiring Permitted Assets. In the event HEP desires a HEP Group Member who is not a party to this Agreement to acquire any Permitted Assets, then the General Partner shall first cause such HEP Group Member to become a party to this Agreement.

2.8 Termination of Article II. The provisions of this Article II may be terminated by HFC upon a Change of Control of HFC.

ARTICLE III
INDEMNIFICATION

3.1 Conditions of Indemnification by the HFC Entities. All indemnities set forth in Section 3.2 are subject to the following conditions:

(a) Except for the indemnity in Sections 3.2(a)(ii), (vii) and (viii), indemnities apply only to the Transferred Assets and only until the applicable expiration date, if any, related to each such Transferred Asset shown on Exhibit D.

(b) The aggregate liability of the HFC Entities for all Covered Environmental Losses under Section 3.2(a) shall not exceed the amounts shown in column (b) on Exhibit D. The liability limits listed in column (b) represent separate individual limits for each location.

(c) Indemnities in Section 3.2(a)(i) apply only to the extent that such events or conditions occurred before the applicable Closing Date.

3.2 Indemnification by the HFC Entities.

(a) Subject to Section 3.1, the HFC Entities shall indemnify, defend and hold harmless the HEP Entities from and against any Liability or Claim incurred by the HEP Entities or any Third Party to the extent arising out of:

(i)the Covered Environmental Losses relating to the Transferred Assets to the extent caused by the acts or omissions of an HFC Entity;

(ii)the ownership or operation by HFC and its Affiliates of any asset not constituting part of the Transferred Assets, except to the extent arising out of the negligent acts or omissions or willful misconduct of HEP or any of its Affiliates;

(iii)the failure of the applicable HEP Entity to be the owner of valid and indefeasible easement rights or fee ownership for interests in and to the lands on which any pipeline or related pump station, tank farm or equipment conveyed or contributed or otherwise Transferred (including by way of a Transfer of the ownership interest of a Person or by operation of law) to the applicable HEP Entity on the applicable Closing Date;

(iv)the failure of the applicable HEP Entity to have the consents, licenses and permits necessary to allow any such Transferred Assets referred to in Section 3.2(a)(iii) to cross the roads, waterways, railroads and other areas upon which any such Transferred Assets are located as of the Closing Date;

(v)the cost of curing any condition set forth in clauses (iii) or (iv) above to the extent such conditions do not allow any Transferred Asset to be operated in accordance with Prudent Industry Practice;

(vi)the following:

(A)events and conditions associated with the operation of the Transferred Assets before the Closing Date (other than Covered Environmental Losses which are provided for under Section 3.2(a)(i) and events and conditions covered by Section 3.4);

(B)all legal actions pending against the HFC Entities on July 13, 2004;

(C)the completion of remediation projects at the respective HEP Entity's El Paso Hawkins Terminal, Albuquerque terminal and Mountain Home terminal that were ongoing or scheduled as of July 13, 2004;

(D)events and conditions associated with the Retained Assets and whether occurring before or after the Closing Date;

(E)all federal, state and local tax liabilities attributable to the operation or ownership of the Transferred Assets prior to the applicable Closing Date, including any such tax liabilities of the HFC Entities that may result from the consummation of the formation transactions for the HEP Entities and the General Partner; and

(F)any breach by HollyFrontier Tulsa of the representations and warranties set forth in Section 3.9 of the Master Lease and Access Agreement.

(vii)the operation by HEP and its Affiliates of any assets owned by HFC or any of its Affiliates, except to the extent arising out of the gross negligence or willful misconduct of HEP or any of its Affiliates;

(viii)any failure to perform any covenant or agreement made or undertaken by HFC or its Affiliates in the (A) Master Lease and Access Agreement, or the exercise by HFC or its Affiliates of any rights and obligations under Section 2.2 thereof; or (B) Services and Secondment Agreement; except in either case to the extent arising out of the willful misconduct or negligence (standard negligence or gross negligence) of HEP or any of its Affiliates; and

(ix) any failure of HEP or any of its Affiliates to perform its obligations pursuant to the Storage and Handling Agreement to the extent arising after February 22, 2016, except to the extent arising out of gross negligence and willful misconduct of HEP or any of its Affiliates.

(b) The indemnities provided for in Section 3.2(a)(i) through (v) shall only apply if the HFC Entities are notified in writing of any of the foregoing prior to the applicable expiration date listed in column (b) on Exhibit D.

(c) The indemnities provided for in Section 3.2(a)(vi) shall only apply if to the extent that the HFC Entities are notified in writing of any of the following events and conditions within five years after the applicable Closing Date.

(d) Notwithstanding anything in this Agreement to the contrary, because HEP has been involved since the inception with the following Transferred Assets, as used in this Section 3.2, the definition of "Transferred Assets" shall not include the 16" Lovington/Artesia Intermediate Pipeline, the Beeson Pipeline, the Roadrunner Pipeline, the Tulsa Interconnecting Pipelines, and the UNEV Pipeline.

(e) To the extent that a good faith Claim by the HEP Entities for indemnification under Section 3.2(a) arises from events or conditions at the Transferred Tanks or the soil immediately underneath the Transferred Tanks or the Transferred Tanks' secondary containment, and the HFC Entities refuse to provide such indemnification, then the burden of proof shall be on the HFC Entities to demonstrate that the events or conditions giving rise to the Claim arose after the Closing Date.

(f) As used in this Section 3.2, "Affiliates" of the Indemnifying Party shall not include the HEP Group Members when a HFC Entity is the Indemnifying Party and shall not include the HFC Group Members when the Indemnifying Party is a HEP Entity.

3.3 Conditions of Indemnification by the HEP Entities. The indemnities set forth in Section 3.4 apply only to the extent that such events or conditions occurred on or after the applicable Closing Date, if any.

3.4 Indemnification by the HEP Entities.

(a) Subject to Section 3.3, the HEP Entities shall indemnify, defend and hold harmless the HFC Entities from and against any Liability or Claim suffered or incurred by the HFC Entities or any Third Party to the extent arising from:

(i) the Covered Environmental Losses associated with operation of (A) the Other Assets (except as otherwise indicated in Exhibit D, Part 2), and (B) the Transferred Assets by a Person (other than a HFC Entity or ownership and operation of the Transferred Assets by a Person other than a HFC Entity);

(ii) operation by HEP and HEP's Affiliates of any asset owned by HFC or any of HFC's Affiliates but only to the extent caused by the gross negligence or willful misconduct of any of the HEP Entities; and

(iii) any failure to perform any covenant or agreement made or undertaken by any HEP or its Affiliates in the (A) Master Lease and Access Agreement, or the exercise by HEP or its Affiliates of any rights and obligations under Section 2.2 thereof; or (B) Services and Secondment Agreement; except in either case to the extent arising out of the willful misconduct or negligence (standard negligence or gross negligence) of HFC or any of its Affiliates.

(b) Nothing set forth in Section 3.4(a) shall make the HEP Entities responsible for any post-Closing Date negligent actions or omissions or willful misconduct by the HFC Entities.

(c) Notwithstanding Section 3.4(a)(i), the indemnity provided for in Section 3.4(a)(i) shall only apply to the El Dorado Repurchased Tanks to the extent the Environmental Losses arise from a violation, correction, event or condition occurring during the period that El Dorado Logistics owned such Repurchased Tanks.

3.5 Mutual General Indemnity. Following the applicable Closing Dates, the HFC Entities and the HEP Entities, respectively, agree to indemnify, protect, defend and hold harmless each other from and against any and all Liabilities and Claims based upon, in connection with, relating to or arising out of their respective actions or inactions in connection with the operation of the Indemnifying Party's respective assets or any failure to comply with any Applicable Laws; in any case of or by any Indemnifying Party or its subcontractors, suppliers, materialmen, employees, agents, successors and assigns, or other persons directly or indirectly employed by them, including the following:

(a) any injury to or death of any Person or the damage to or theft, destruction, loss or loss of use of, any property; or

(b) the failure to perform any covenant or agreement made or undertaken by the applicable Party in agreements with any of the other Parties.

3.6 Exclusions from Indemnity for Post-Closing Date Claims. **NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY, FOR ANY LIABILITIES OR CLAIMS ARISING OUT OF EVENTS OCCURRING AFTER AN APPLICABLE CLOSING DATE:**

(a) **EXCEPT AS EXPRESSLY PROVIDED IN SECTION 3.2(a)(vii), THE INDEMNIFICATION OBLIGATIONS HEREIN SHALL NOT EXTEND TO THE PROPORTIONATE AMOUNT OF ANY SUCH LIABILITY OR CLAIM CAUSED BY THE NEGLIGENCE OR WILLFUL MISCONDUCT OF AN INDEMNITEE OR ITS AGENTS OR EMPLOYEES.**

(b) No statute, rule or regulation that precludes an injured party from bringing an action against a fellow employee or employer shall preclude a Party from seeking and obtaining a judicial determination of the fault or negligence of such Persons.

(c) Each Party shall be responsible for any insurance deductibles or self-insured retention arising out of any Liability or Claim to the extent such Liability or Claim arises out of the negligence or willful misconduct of such Party, except to the extent the subrogation waiver provided for in Section 3.9 applies to such Liability or Claim.

3.7 Indemnification Procedures.

(a) The Indemnified Party agrees that promptly after it becomes aware of facts giving rise to a Claim for indemnification under this Article III, it will provide notice thereof in writing to the Indemnifying Party, specifying the nature of and specific basis for such Claim.

(b) The Indemnifying Party shall have the right to control all aspects of the defense of (and any counterclaims with respect to) any claims brought against the Indemnified Party that are covered by the indemnification under this Article III, including, the selection of counsel, determination of whether to appeal any decision of any court and the settling of any such matter or any issues relating thereto; provided, however, that no such settlement shall be entered into without the consent of the Indemnified Party unless it includes a full release of the Indemnified Party from such matter or issues, as the case may be.

(c) The Indemnified Party agrees to cooperate fully with the Indemnifying Party, with respect to all aspects of the defense of any Claims covered by the indemnification under this Article III, including, the prompt furnishing to the Indemnifying Party of any correspondence or other notice relating thereto that the Indemnified Party may receive, permitting the name of the Indemnified Party to be utilized in connection with such defense, the making available to the Indemnifying Party of any files, records or other information of the Indemnified Party that the Indemnifying Party considers relevant to such defense and making available to the Indemnifying Party any employees of the Indemnified Party.

(d) In no event shall the obligation of the Indemnified Party to cooperate with the Indemnifying Party as set forth in Section 3.7(c) be construed as imposing upon the Indemnified Party an obligation to hire and pay for counsel in connection with the defense of any Claims covered by the indemnification set forth in this Article III; provided, however, that the Indemnified Party may, at its own option, cost and expense, hire and pay for counsel in connection with any such defense. The Indemnifying Party agrees to keep any such counsel hired by the Indemnified Party informed as to the status of any such defense, but the Indemnifying Party shall have the right to retain sole control over such defense.

(e) In connection with the indemnities in this Article III, Indemnifying Party:

(i)agrees to use reasonable efforts to minimize the impact thereof on the operations of the Indemnified Party;

(ii)agrees to enter into a joint defense agreement with Indemnifying Party in order to allow communication by counsel if Indemnified Party elects to involve separate counsel; and

(iii)agrees to maintain the confidentiality of all files, records, and other information furnished by the Indemnified Party pursuant to this Section 3.7.

(f) The amounts for which an Indemnified Party is entitled to indemnification under this Article III shall be reduced by the net amounts recovered by the Indemnified Party pursuant to contractual indemnities from any Third Party (other than pursuant to insurance policies that are not required to include a waiver of subrogation pursuant to Section 3.9) after deducting the reasonable unreimbursed out-of-pocket fees and expenses incurred by the Indemnified Party in recovering such amounts (the "Net Recovery"). If the Indemnified Party receives a Net Recovery subsequent to an indemnification payment by the Indemnifying Party under this Article III, then such Indemnified Party shall promptly reimburse the Indemnifying Party for any payment made or expense incurred by such Indemnifying Party in connection with providing such indemnification payment up to Net Recovery. An Indemnified Party shall be obligated to pursue all contractual indemnities (including insurance claims) that such Indemnified Party has with any Third Party, provided, however, if the Indemnified Party's right to such indemnification is assignable, the Indemnified Party may, in its sole discretion and in lieu of pursuing such claim, elect to assign such indemnification claim to the Indemnifying Party to pursue and shall reasonably cooperate with the Indemnifying Party (including, making its relevant books, records, officers, information and testimony reasonably available to the Indemnifying Party) in the Indemnifying Party's pursuit of such claim.

(g) For avoidance of doubt, no Claim may be asserted pursuant to Section 3.2 or Section 3.4 following the applicable expiration of the indemnity related to such Claim; provided that any Claim asserted in writing prior to the expiration date of such indemnity that is the basis for such Claim shall survive until such Claim is finally resolved and satisfied. The date on which notification of a Claim for indemnification is received by the Indemnifying Party shall determine whether such Claim is timely made.

3.8 Limitation on Indemnification Obligations.

(a) Notwithstanding anything in this Agreement to the contrary, when referring to the indemnification obligations of the HFC Entities in Article III, the definition of HFC Entities shall be deemed to mean solely (b) the HFC Entity or HFC Entities that own or operate, or owned or operated immediately prior to the transfer to the HEP Entities, the Retained Asset, Transferred Asset or other property in question with respect to which indemnification is sought by reason of such HFC Entity's or HFC Entities' ownership or operation of the Retained Asset, Transferred Asset or other property in question or that is responsible for causing such loss, damage, injury, judgment, claim, cost, expense or other liability suffered or incurred by the HEP Entities for which it is entitled to indemnification under Article III and (c) HFC.

(b) Notwithstanding anything in this Agreement to the contrary, when referring to the indemnification obligations of the HEP Entities in Article III, the definition of HEP Entities shall be deemed to mean solely (d) the HEP Entity or HEP Entities that own or operate, or previously owned or operated, the Transferred Asset or other property in question or that is responsible for causing such loss, damage, injury, judgment, claim, cost, expense or other liability suffered or incurred by the HFC Entities for which they are entitled to indemnification under Article III, (e) HEP and (f) Operating Partnership.

(c) For the avoidance of doubt, any indemnification obligations of the HFC Entities in Article III with respect to any indemnifiable losses incurred by or attributable to the UNEV Pipeline shall be (i) limited to an amount that is the product of (x) the amount of such losses, multiplied by (y) HEP UNEV's direct or indirect percentage ownership interest in the UNEV Pipeline at the time such losses were incurred and (ii) payable to, for the benefit of and recoverable solely by HEP UNEV or any HEP Entity designated by HEP UNEV (and not by UNEV Pipeline, LLC).

3.9 Subrogation; Waiver of Subrogation. To the extent that any of the HFC Entities or HEP Entities in fact receive full indemnification payments pursuant to Section 3.2(a)(viii) or Section 3.4(a)(iii) hereof, as the case may be, the HFC Entity or HEP Entity paying such Claim shall be subrogated to the receiving party's rights with respect to the transaction or event requiring or giving rise to such indemnity. Notwithstanding the foregoing, each of the HFC Entities and the HEP Entities, hereby waives and releases, and shall cause their respective insurers, to waive and release, all rights against each other and any of their respective contractors, subsidiaries, consultants, agents and employees for loss or damages to any of the Transferred Assets to the extent of fire and other hazards covered by property insurance applicable to the property to which such loss or damage occurs, except such rights as they have to proceeds of such insurance. For the purposes of this Section 3.9, all deductibles shall be considered insured losses. Without limiting the foregoing, all of the Parties' policies of property insurance for the Transferred Assets shall be endorsed to provide a complete waiver for the benefit of the other Parties and their Affiliates of (i) any right of recovery which the insurer may have or acquire against the other Parties or any of its Affiliates, or its or their employees, officers or directors for payments made or to be made under such policies and (ii) any lien or right of subrogation which the insurer may have or acquire for payments made or to be made to any person or entity who asserts a Claim against such other Parties or any of its Affiliates, or its or their employees, officers or directors. The releases and waivers of subrogation set forth above in this paragraph shall apply notwithstanding any obligation of a Party to indemnify the other Party for the Claim(s) at issue.

ARTICLE IV

GENERAL AND ADMINISTRATIVE EXPENSES

4.1 General.

(a) The Operating Partnership will pay HFC an administrative fee (the "Administrative Fee"), payable in equal quarterly installments, for the provision by HFC and its Affiliates for the HEP Group's benefit of all the general and administrative services that HFC and its Affiliates provide, including, the general and administrative services listed on Exhibit E. As of December 31, 2017, the Administrative Fee is $2,464,000.

(b) The Administrative Fee shall be adjusted on July 1, 2018, effective as of January 1, 2018, by an amount equal to the PPI Adjustment. Thereafter, the Administrative Fee shall be adjusted on July 1 of each calendar year, commencing on July 1, 2019, by an amount equal to the PPI Adjustment. If the PPI is no longer published, then HFC and HEP shall negotiate in good faith to agree on a new index that gives comparable protection against inflation, and the same method of adjustment for increases in the new index shall be used to calculate increases in the Administrative Fee. If the Parties are unable to agree, a new index will be determined by the dispute resolution process in Article VIII.

(c) At the end of each year, either Party will have the right to submit to the other Party a proposal to change the Administrative Fee for that year and/or the method of adjusting the Administrative Fee if either Party believes in good faith that the general and administrative services performed by HFC and its Affiliates for the benefit of the HEP Group for the year in question are inconsistent with the Administrative Fee for that year. If either Party submits such a proposal, the Parties agree that they will negotiate in good faith to determine if the Administrative Fee for that year should be changed and, if so, the amount of such change. If the Parties are unable to agree, the Parties will submit the matter to dispute resolution pursuant to Article VIII.

(d) The Administrative Fee shall not include and the HEP Group shall reimburse HFC and its Affiliates for:

(i) salaries of employees of HFC or its Affiliates, to the extent, but only to the extent, such employees perform services for the HEP Group;

(ii) the cost of employee benefits relating to employees of HFC or its Affiliates, such as 401(k), pension, and health insurance benefits, to the extent, but only to the extent, such employees perform services for the HEP Group and have not been paid by HEP pursuant to the Master Site Services Agreement and the Services and Secondment Agreement;

(iii) any amounts payable under the Master Site Services Agreement and the Services and Secondment Agreement;

(iv) all sales, use, excise, value added or similar taxes, if any, that may be applicable from time to time in respect of the services provided by the HFC and its Affiliates to HEP pursuant to Section 4.1(a); and

(v) all premiums for insurance policies carried for and on behalf of HEP.

(e) Either HFC, on the one hand, or HEP, on the other hand, may terminate this Article IV, by providing the other with written notice of its election to do so at least six months prior to the proposed date of termination.

ARTICLE V
RIGHT OF FIRST REFUSAL

5.1 HFC Right of First Refusal: Prohibition on Transfer.

(a) The HEP Entities hereby grant to HFC a right of first refusal on any proposed Transfer (other than a grant of a security interest to a bona fide third-party lender or a Transfer to another HEP Group Member) of any of the Assets.

(b) The HEP Entities are prohibited from Transferring any of the Assets to a HEP Group Member that is not a party to this Agreement. In the event the HEP Entities desire to Transfer any of the Assets to a HEP Group Member that is not a Party to this Agreement, they shall first cause the proposed transferee HEP Group Member to become a Party to this Agreement.

(c) The Parties acknowledge that all potential Transfers of Sale Assets pursuant to this Article V are subject to obtaining any and all required written consents of governmental authorities and other third parties and to the terms of all existing agreements in respect of the Sale Assets.

(d) Notwithstanding anything in this Agreement to the contrary, as used in Article V the definition of "Assets" shall not include the Tulsa Transferred Assets or the UNEV Pipeline, but shall expressly include the equity interests of UNEV Pipeline, LLC, HEP UNEV Pipeline, HEP UNEV, El Dorado Osage and Osage then owned directly or indirectly by the HEP Entities.

5.2 Procedures.

(a) If a HEP Entity proposes to Transfer any of the Assets to any Person pursuant to a bona fide third-party offer (an "Acquisition Proposal"), then HEP shall promptly give written notice (a "Disposition Notice") thereof to HFC. The Disposition Notice shall set forth the following information in respect of the proposed Transfer:

(i)the name and address of the prospective acquiror (the "Proposed Transferee");

(ii)the Assets subject to the Acquisition Proposal (the "Sale Assets");

(iii)the purchase price offered by such Proposed Transferee (the "Offer Price");

(iv)reasonable detail concerning any non-cash portion of the proposed consideration, if any, to allow HFC to reasonably determine the fair market value of such non-cash consideration;

(v)the HEP Entities' estimate of the fair market value of any non-cash consideration; and

(vi)all other material terms and conditions of the Acquisition Proposal that are then known to the HEP Entities.

(b) To the extent the Acquisition Proposal consists of consideration other than cash (or in addition to cash) the Offer Price shall be deemed equal to the amount of any such cash plus the fair market value of such non-cash consideration. In the event HFC and the HEP Entities agree as to the fair market value of any non-cash consideration, HFC will provide written notice of its decision regarding the exercise of its right of first refusal to purchase the Sale Assets within 30 days of its receipt of the Disposition Notice (the "First ROFR Acceptance Deadline"). Failure to provide such notice within such 30-day period shall be deemed to constitute a decision not to purchase the Sale Assets.

(c) In the event (i) HFC's determination of the fair market value of any non-cash consideration described in the Disposition Notice (to be determined by HFC within 30 days of receipt of such Disposition Notice) is less than the fair market value of such consideration as determined by the HEP Entities in the Disposition Notice and (ii) HFC and the HEP Entities are unable to mutually agree upon the fair market value of such non-cash consideration within 30 days after HFC notifies the HEP Entities of its determination thereof, the HEP Entities and HFC shall engage a mutually-agreed-upon investment banking firm to determine the fair market value of the non-cash consideration. Such investment banking firm shall be instructed to return its decision within 30 days after all material information is submitted thereto, which decision shall be final. The fees of the investment banking firm will be split equally between HFC and the HEP Entities. HFC will provide written notice of its decision regarding the exercise of its right of first refusal to purchase the Sale Assets to the HEP Entities within 30 days after the investment banking firm has submitted its determination (the "Second ROFR Acceptance Deadline"). Failure to provide such notice within such 30-day period shall be deemed to constitute a decision by HFC not to purchase the Sale Assets.

(d) If HFC fails to exercise a right during any applicable period set forth in this Section 5.2, HFC shall be deemed to have waived its rights with respect to such proposed disposition of the Sale Assets, but not with respect to any future offer of such Sale Assets.

(e) If HFC chooses to exercise its right of first refusal to purchase the Sale Assets under Sections 5.1(a) and 5.2(c), HFC and the HEP Entities shall enter into a purchase and sale agreement for the Sale Assets which shall include the following terms:

(i)HFC will agree to deliver cash for the Offer Price (or any other consideration agreed to by HFC and the HEP Entities (each in their sole discretion));

(ii) the HEP Entities will represent that they have good, indefeasible and unencumbered title to the Sale Assets, subject to all recorded and unrecorded matters and all physical conditions and other matters in existence on the closing date for the Sale Assets, plus any other reasonable and customary matters and such matters as HFC may approve, which approval will not be unreasonably withheld. If HFC desires to obtain any title insurance with respect to the Sale Assets, the full cost and expense of obtaining the same (including the cost of title examination, document duplication and policy premium) shall be borne by HFC;

(iii) the HEP Entities will grant to HFC the right, exercisable at HFC's risk and expense, to conduct such surveys, tests and inspections of the Sale Assets as HFC may deem desirable, so long as such surveys, tests or inspections do not damage the Sale Assets or interfere with the activities of the HEP Entities thereon and so long as HFC has furnished the HEP Entities with evidence that adequate liability insurance is in full force and effect;

(iv) HFC will have the right to terminate its obligation to purchase the Sale Assets under this Article V if the results of any searches, surveys, tests or inspections conducted pursuant to Section 5.2(e)(ii) or Section 5.2(e)(iii) above are, in the reasonable opinion of HFC, unsatisfactory;

(v) the closing date for the purchase of the Sale Assets shall, unless otherwise agreed to by HFC and the HEP Entities, occur no later than 90 days following receipt by the HEP Entities of written notice by HFC of its intention to exercise its option to purchase the Sale Assets pursuant to Section 5.2(b) or (c);

(vi) the HEP Entities shall execute, have acknowledged and deliver to HFC a special warranty deed, assignment of easement, or comparable document, as appropriate, in the applicable jurisdiction, on the closing date for the purchase of the Sale Assets constituting real property interests conveying the Sale Assets unto HFC free and clear of all encumbrances created by the HEP Entities other than those set forth in Section 5.2(e)(ii) above;

(vii) the sale of any Sale Assets shall be made on an "as is," "where is" and "with all faults" basis, and the instruments conveying such Sale Assets shall contain appropriate disclaimers; and

(viii) neither the HEP Entities nor HFC shall have any obligation to sell or buy the Sale Assets if any of the material consents referred to in Section 5.1(c) have not been obtained or such sale or purchase is prohibited by Applicable Law.

(f) HFC and the HEP Entities shall cooperate in good faith in obtaining all necessary governmental and other Third Party approvals, waivers and consents required for the closing. Any such closing shall be delayed, to the extent required, until the third Business Day following the expiration of any required waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended; provided, however, that such delay shall not exceed 120 days and, if governmental approvals and waiting periods shall not have been obtained or expired, as the case may be, by such 120th day, then HFC shall be deemed to have waived its right of first refusal with respect to the Sale Assets described in the Disposition Notice and thereafter neither HFC nor HEP shall have any further obligation under this Article V with respect to such Sale Assets unless such Sale Assets again become subject to this Article V pursuant to Section 5.2(g).

(g) If the Transfer to the Proposed Transferee is not consummated in accordance with the terms of the Acquisition Proposal within the later of (i) 180 days after the later of the applicable ROFR Acceptance Deadline, and (ii) 10 days after the satisfaction of all governmental approval or filing requirements, if any, the Acquisition Proposal shall be deemed to lapse, and the HEP Entities may not Transfer any of the Sale Assets described in the Disposition Notice without complying again with the provisions of this Article V if and to the extent then applicable.

ARTICLE VI
HFC PURCHASE OPTION

6.1 Option to Purchase Tulsa Transferred Assets. The Parties acknowledge the purchase options and right of first refusal granted to an Affiliate of HFC with respect to the Tulsa Transferred Assets in the Purchase Option Agreement.

ARTICLE VII
API INSPECTIONS

7.1 API Inspections. With respect only to the 2008 Tanks, the applicable HFC Entity that sold the particular tank(s) to the applicable HEP Entity shall, during the period that commences on the applicable Closing Date and ends five (5) years thereafter (the

"Initial Tank Inspection Period") reimburse the applicable HEP Entity for the actual costs associated with the first regularly scheduled API 653 inspection (the "Initial Tank Inspections") and the costs associated with the replacement of the tank mixers on each of the Transferred Tanks after the Closing Date and any repairs required to be made to the 2008 Tanks as a result of any discovery made during the Initial Tank Inspections; provided, however, that

(a) such HFC Entity shall not reimburse such HEP Entity with respect to the relocated crude oil Tank 437 in the Artesia refinery complex or the new crude oil tank to replace crude oil Tank 439 in the Artesia refinery complex more particularly described in the Purchase and Sale Agreement referenced in the definition of 2008 Crude Pipelines, Tanks and Related Assets, and

(b) upon expiration of the Initial Tank Inspection Period, all of the obligations of the applicable HFC Entity pursuant to this Article VII shall terminate, except that the Initial Tank Inspection Period shall be extended if, and only to the extent that

(i)inaccessibility of the 2008 Tanks during the Initial Tank Inspection Period caused the delay of an Initial Tank Inspection originally scheduled to be performed during the Initial Tank Inspection Period, and

(ii)the applicable HFC Entity received notice from the applicable HEP Entity regarding such delay at the time it occurred.

ARTICLE VIII
DISPUTE RESOLUTION

8.1 Dispute Resolution.

(a) Any Arbitrable Dispute arising out of or in connection with this Agreement, including any question regarding the existence, validity or termination of this Agreement, shall be exclusively resolved in accordance with this Article VIII.

(b) In the event of a Arbitrable Dispute between an HFC Entity and an HEP Entity, the HFC Entity and the HEP Entity shall, within ten (10) days of a written request by either of them to the other, meet in good faith to resolve such Arbitrable Dispute in a meeting that includes individuals with authority to resolve the Arbitrable Dispute at such meeting.

(c) If the HFC Entity and the HEP Entity are unable to resolve the Arbitrable Dispute within ten (10) days after submission of such Arbitrable Dispute as provided in Section 8.1(b), either the HFC Entity or the HEP Entity may submit the matter to arbitration in accordance with the terms of Section 8.2 below.

(d) Pending resolution of any Arbitrable Dispute between the HFC Entity and the HEP Entity, the HFC Entity and the HEP Entity shall continue to perform in good faith their respective obligations under this Agreement based upon the last agreed performance demonstrated prior to the Arbitrable Dispute.

(e) Resolution of any Arbitrable Dispute between the HFC Entity and the HEP Entity involving payment of money by either the HFC Entity and the HEP Entity to the other shall include payment of interest at the Prime Rate from the original due date of such amount.

(f) Each of the HFC Entity and the HEP Entity shall, in addition to all rights provided herein or provided by Law, be entitled to the remedies of specific performance and injunction to enforce its rights hereunder.

8.2 Arbitration. Any and all Arbitrable Disputes must be resolved through the use of binding arbitration using three arbitrators, in accordance with the Commercial Arbitration Rules of the American Arbitration Association, as supplemented to the extent necessary to determine any procedural appeal questions by the Federal Arbitration Act (Title 9 of the United States Code, as amended from time to time).

(a) Arbitration must be initiated within the time limits set forth in this Agreement, or if no such limits apply, then within the time period allowed by the applicable statute of limitations. Arbitration may be initiated by either party ("Claimant") by delivering written notice to the other ("Respondent") that the Claimant elects to refer the Arbitrable Dispute to binding arbitration. Claimant's notice initiating binding arbitration must identify the arbitrator Claimant has appointed. The Respondent shall respond to Claimant within thirty (30) days after receipt of Claimant's notice, identifying the arbitrator Respondent has appointed. If the Respondent fails for any reason to name an arbitrator within the 30-day period, Claimant shall petition the American Arbitration Association for appointment of an arbitrator for Respondent's account. The two arbitrators so chosen shall select a third arbitrator within thirty (30) days after the second arbitrator has been appointed.

(b) The hearing will be conducted in Dallas, Texas and commence within thirty (30) days after the selection of the third arbitrator. The parties and the arbitrators shall proceed diligently and in good faith in order that the award may be made as promptly as possible. Except as provided in the Federal Arbitration Act, the decision of the arbitrators will be binding on, and non-appealable by, the Claimant and Respondent.

(c) The Claimant will pay the compensation and expenses of the arbitrator named by it, and the Respondent will pay the compensation and expenses of the arbitrator named by or for it. The Claimant and Respondent will each pay one-half of the compensation and expenses of the third arbitrator.

(d) All arbitrators must (i) be neutral parties who have never been officers, directors or employees of any of the Parties or any of their Affiliates and who have not provided consulting services (directly or indirectly) for at least three (3) years prior to their appointment and (ii) have at least seven (7) years' experience in the petroleum transportation industry.

(e) The arbitrators shall have no right to grant or award indirect, consequential, punitive or exemplary damages of any kind.

(f) The Arbitrable Disputes may be arbitrated in a common proceeding along with disputes under other agreements between the Claimant and Respondent to the extent that the issues raised in such disputes are related. Without the written consent of the Claimant and Respondent, no unrelated disputes (including those with Affiliates of either Claimant or Respondent) or Third Party disputes may be joined to an arbitration pursuant to this Agreement.

8.3 Conflict . If there is any inconsistency between this Article VIII and the Commercial Arbitration Rules or the Federal Arbitration Act, the terms of this Article VIII will control the rights and obligations of the parties seeking arbitration.

ARTICLE IX
FORCE MAJEURE

9.1 Force Majeure. In the event of any Party being rendered unable, wholly or in part, by a Force Majeure event from performing its obligations under any of the Master Agreements, Services and Secondment Agreement or this Agreement for a period of more than thirty (30) consecutive days, then, upon the delivery of notice and full particulars of the Force Majeure event relied on ("Force Majeure Notice") to the other affected Party(ies), the obligations of the Parties, so far are they are affected by the Force Majeure event, shall be suspended during the continuance of any inability so caused. The cause of the Force Majeure event shall, as far as possible, be remedied with all reasonable dispatch, except that no Party shall be compelled to resolve any strikes, lockouts or other industrial disputes other than as it shall determine to be in its best interests.

ARTICLE X
MISCELLANEOUS

10.1 Choice of Law. This Agreement shall be subject to and governed by the laws of the State of Delaware, excluding any conflicts-of-law rule or principle that might refer the construction or interpretation of this Agreement to the laws of another state.

10.2 Notices.

(a) Any notice or other communication given under this Agreement shall be in writing and shall be (1) delivered personally, (2) sent by documented overnight delivery service, (3) sent by email transmission, or (4) sent by first class mail, postage prepaid (certified or registered mail, return receipt requested). Such notice shall be deemed to have been duly given (x) if received, on the date of the delivery, with a receipt for delivery, (y) if refused, on the date of the refused delivery, with a receipt for refusal, or (z) with respect to email transmissions, on the date the recipient confirms receipt. Notices or other communications shall be directed to the following addresses:

Notices to the HFC Entities:

HollyFrontier Corporation
2828 N. Harwood, Suite 1300
Dallas, Texas 75201
Attention: President
Email address: president@hollyfrontier.com

with a copy, which shall not constitute notice, but is required in order to give proper notice, to:

HollyFrontier Corporation
2828 N. Harwood, Suite 1300
Dallas, Texas 75201
Attention: General Counsel
Email address: general.counsel@hollyfrontier.com

Notices to the HEP Entities:

Holly Energy Partners, L.P.
c/o Holly Logistic Services, L.L.C.
2828 N. Harwood, Suite 1300
Dallas, Texas 75201
Attention: President
Email address: president-HEP@hollyenergy.com

with a copy, which shall not constitute notice, but is required in order to give proper notice, to:

Holly Energy Partners, L.P.
c/o Holly Logistic Services, L.L.C.
2828 N. Harwood, Suite 1300
Dallas, Texas 75201
Attention: General Counsel
Email address: general.counsel@hollyenergy.com

(b) Any Party may at any time change its address for service from time to time by giving notice to the other Parties in accordance with this Section 10.2.

10.3 Entire Agreement. This Agreement, together with the other agreements and instruments referred to herein, constitutes the entire agreement of the Parties relating to the matters contained herein, superseding as of the Effective Date all prior contracts or agreements (including the Original Omnibus Agreement), whether oral or written, relating to the matters contained herein. For avoidance of doubt the Eleventh Amended and Restated Omnibus Agreement, effective as of January 1, 2015, shall remain in full force and effect with respect to any event, act or omission occurring before January 1, 2015.

10.4 Amendment or Modification. No amendment or modification of this Agreement shall be valid unless it is in writing and signed by the parties hereto**.** No waiver of any provision of this Agreement shall be valid unless it is in writing and signed by the Party against whom the waiver is sought to be enforced. Any of the exhibits to this Agreement may be amended, modified, revised or updated by the Parties hereto if each of HFC (on behalf of the HFC Entities) and HEP (on behalf of the HEP Entities) execute an amended, modified, revised or updated exhibit or schedule, as applicable, and attach it to this Agreement. Such amended, modified, revised or updated exhibits shall be sequentially numbered (e.g. Exhibit A-1, Exhibit A-2, etc.), dated and appended as an additional exhibit or schedule to this Agreement and shall replace the prior exhibit or schedule, as applicable, in its entirety, except as specified therein. No failure or delay in exercising any right hereunder, and no course of conduct, shall operate as a waiver of any provision of this Agreement. No single or partial exercise of a right hereunder shall preclude further or complete exercise of that right or any other right hereunder.

10.5 Assignment. No Party shall have the right to assign any of its rights or obligations under this Agreement without the consent of the other Parties hereto.

10.6 Counterparts. This Agreement may be executed in any number of paper or electronic counterparts with the same effect as if all signatory parties had signed the same document. All such counterparts shall be construed together and shall constitute one and the same agreement.

10.7 Severability. If any provision of this Agreement shall be held invalid or unenforceable by a court or regulatory body of competent jurisdiction, the remainder of this Agreement shall remain in full force and effect.

10.8 Further Assurances. In connection with this Agreement and all transactions contemplated by this Agreement, each Party hereto agrees to execute and deliver such additional documents and instruments and to perform such additional acts as may be necessary or appropriate to effectuate, carry out and perform all of the terms, provisions and conditions of this Agreement and all such transactions.

10.9 Rights of Limited Partners. The provisions of this Agreement are enforceable solely by the Parties to this Agreement, and no Limited Partner (as defined in the Partnership Agreement) of HEP shall have the right, separate and apart from HEP, to enforce any provision of this Agreement or to compel any Party to this Agreement to comply with the terms of this Agreement. There are no Third Party beneficiaries to this Agreement.

10.10 Headings. Headings of the Sections of this Agreement are for convenience of the parties only and shall be given no substantive or interpretative effect whatsoever.

10.11 Limitation of Damages. **NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED IN ANY OTHER PROVISION OF THIS AGREEMENT AND EXCEPT FOR CLAIMS MADE BY THIRD PARTIES WHICH SHALL NOT BE LIMITED BY THIS SECTION, THE PARTIES AGREE THAT THE RECOVERY BY ANY PARTY, INCLUDING, PURSUANT TO ARTICLE III, OF ANY LIABILITIES, DAMAGES, COSTS OR OTHER EXPENSES (i) AS A RESULT OF ANY BREACH OR NONFULFILLMENT BY A PARTY OF ANY OF ITS COVENANTS, AGREEMENTS OR OTHER OBLIGATIONS UNDER THIS AGREEMENT OR (ii) BY REASON OF OR ARISING OUT OF ANY OF THE EVENTS, CONDITIONS OR OTHER MATTERS LISTED IN SECTIONS 3.2 OR 3.4 WHICH THE PARTIES HAVE AGREED TO INDEMNIFY THE OTHER PARTY AGAINST, SHALL BE LIMITED TO ACTUAL DAMAGES AND SHALL NOT INCLUDE OR APPLY TO, NOR SHALL ANY PARTY BE ENTITLED TO RECOVER, ANY INDIRECT, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES (INCLUDING, ANY DAMAGES ON ACCOUNT OF LOST PROFITS OR OPPORTUNITIES OR BUSINESS INTERRUPTION OR DIMINUTION IN VALUE) SUFFERED OR INCURRED BY ANY PARTY; PROVIDED, HOWEVER, THAT SUCH RESTRICTION AND LIMITATION SHALL NOT APPLY TO A PARTY'S OBLIGATION TO INDEMNIFY THE OTHER PARTY:**

(X) AS A RESULT OF A THIRD PARTY CLAIM FOR SUCH INDIRECT, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES,

(Y) FOR CLAIMS THAT ARE COVERED BY INSURANCE AND ANY RELATED DEDUCTIBLES, OR

(Z) FOR INDIRECT, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES (INCLUDING LIABILITIES ON ACCOUNT OF LOST PROFITS OR OPPORTUNITIES OR BUSINESS INTERRUPTION OR DIMINUTION IN VALUE) THAT ARE A RESULT OF SUCH INDEMNIFYING PARTY'S OR ITS AFFILIATES' GROSS NEGLIGENCE OR WILLFUL MISCONDUCT.

As used in this Section 10.11, "Affiliates" of the Indemnifying Party shall not include the HEP Group Members when a HFC Entity is the Indemnifying Party and shall not include the HFC Group Members when the Indemnifying Party is a HEP Entity.

10.12 Nature of the Relationship. Notwithstanding the foregoing, nothing in this Agreement and no actions taken by the Parties shall constitute a partnership, joint venture, association or other co-operative entity among the Parties or authorize either Party to represent or contract on behalf of the other Party.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Parties have executed this Agreement to be effective as of the Effective Date.

HFC ENTITIES:

HOLLYFRONTIER CORPORATION
HOLLYFRONTIER EL DORADO REFINING LLC
HOLLYFRONTIER CHEYENNE REFINING LLC
HOLLYFRONTIER WOODS CROSS REFINING LLC
HOLLYFRONTIER TULSA REFINING LLC

NAVAJO PIPELINE CO., L.P.
HOLLYFRONTIER NAVAJO REFINING LLC
EL PASO OPERATING LLC
HOLLYFRONTIER TRANSPORTATION LLC

By: /s/ George J. Damiris
Name: George J. Damiris
Title: Chief Executive Officer and President

HEP ENTITIES:

HOLLY ENERGY PARTNERS, L.P.

By: HEP Logistics Holdings, L.P.
Its General Partner

By: Holly Logistic Services, L.L.C.
Its General Partner

By: /s/ Richard L. Voliva III
Name: Richard L. Voliva III
Title: Executive Vice President and Chief Financial Officer

HEP LOGISTICS HOLDINGS, L.P.

By: Holly Logistic Services, L.L.C,
Its General Partner

By: /s/ Richard L. Voliva III
Name: Richard L. Voliva III
Title: Executive Vice President and Chief Financial Officer
CHEYENNE LOGISTICS LLC
EL DORADO LOGISTICS LLC
EL DORADO OPERATING LLC
EL DORADO OSAGE LLC
FRONTIER ASPEN LLC
HEP EL DORADO LLC
HEP LOGISTICS GP, L.L.C.
HEP MOUNTAIN HOME, L.L.C.
HEP PIPELINE ASSETS, LIMITED PARTNERSHIP
HEP PIPELINE GP, L.L.C.
HEP PIPELINE, L.L.C.
HEP REFINING ASSETS, L.P.
HEP REFINING GP, L.L.C.
HEP REFINING, L.L.C.
HEP TULSA LLC
HEP UNEV HOLDINGS LLC
HEP UNEV PIPELINE LLC
HEP WOODS CROSS, L.L.C.
HOLLY ENERGY PARTNERS – OPERATING, L.P.
HOLLY ENERGY STORAGE – LOVINGTON LLC
HOLLY LOGISTIC SERVICES, L.L.C.
LOVINGTON-ARTESIA, L.L.C.
NWNAL LLC
ROADRUNNER PIPELINE, L.L.C.

SLC PIPELINE LLC
WOODS CROSS OPERATING LLC

By: /s/ Richard L. Voliva III
Name: Richard L. Voliva III
Title: Executive Vice President and Chief Financial Officer

HEP NAVAJO SOUTHERN, L.P.

By: HEP Pipeline GP, L.L.C.
Its General Partner

By: /s/ Richard L. Voliva III
Name: Richard L. Voliva III
Title: Executive Vice President and Chief Financial Officer

Exhibit A
to
Eighteenth Amended and Restated Omnibus Agreement

Omnibus Agreement Amendments

Agreement	Effective Date	Reason for Amendment
Original Omnibus Agreement	July 13, 2004	n/a
First Amended and Restated Omnibus Agreement	June 1, 2009	16” Lovington/Artesia Intermediate Pipeline Purchase Agreement
Second Amended and Restated Omnibus Agreement	August 1, 2009	Tulsa West (Sunoco) Asset Purchase Agreement
Third Amended and Restated Omnibus Agreement	October 19, 2009	(i) Tulsa East (Sinclair) Purchase Agreement (ii) Beeson Pipeline Purchase Agreement, and (iii) Roadrunner Pipeline Purchase Agreement
Fourth Amended and Restated Omnibus Agreement	March 31, 2010	LLC Interest Purchase Agreement for certain Tulsa East Assets
Fifth Amended and Restated Omnibus Agreement	August 31, 2011	Tulsa Throughput Agreement
Sixth Amended and Restated Omnibus Agreement	November 1, 2011	LLC Interest Purchase Agreement for Cheyenne Assets and El Dorado Assets
Seventh Amended and Restated Omnibus Agreement	July 12, 2012	UNEV LLC Interest Purchase Agreement
Eighth Amended and Restated Omnibus Agreement	June 1, 2013	Malaga Throughput Agreement
Ninth Amended and Restated Omnibus Agreement	January 7, 2014	Amended and Restated El Dorado Throughput Agreement for the El Dorado New Tank No. 647

Tenth Amended and Restated Omnibus Agreement	September 26, 2014	Amended and Restated Malaga Throughput Agreement
Eleventh Amended and Restated Omnibus Agreement	January 1, 2015	Unloading and Blending Services Agreement (Artesia) and Third Amended and Restated Crude Pipelines and Tankage Agreement (Beeson to Lovington System Expansion)
Twelfth Amended and Restated Omnibus Agreement	January 1, 2015	Artesia Rail Yard Facility, El Dorado Terminal and Cheyenne New Tank No. 117
Thirteenth Amended and Restated Omnibus Agreement	November 2, 2015	LLC Interest Purchase Agreement for the membership interest of El Dorado Operating
Fourteenth Amended and Restated Omnibus Agreement	February 22, 2016	LLC Interest Purchase Agreement for the Osage Membership Interest
Fifteenth Amended and Restated Omnibus Agreement	March 31, 2016	Tulsa West Crude Tank Assets and Tulsa New Tanks
Sixteenth Amended and Restated Omnibus Agreement	October 1, 2016	LLC Interest Purchase Agreement for the membership interest of Woods Cross Operating
Seventeenth Amended and Restated Omnibus Agreement	January 1, 2017	El Dorado Repurchased Tanks

Exhibit B
to
Eighteenth Amended and Restated Omnibus Agreement

Definitions

"**8" and 10" Lovington/Artesia Intermediate Pipelines**" means the 8-inch pipeline and the 10-inch pipeline, each running from Lovington, New Mexico to Artesia, New Mexico and owned by HEP Pipeline.

"**16" Lovington/Artesia Intermediate Pipeline**" means the 16-inch pipeline running from Lovington, New Mexico to Artesia, New Mexico, owned by Lovington-Artesia, L.L.C.

"**16" Lovington/Artesia Intermediate Pipeline Purchase Agreement**" means that certain LLC Interest Purchase Agreement dated as of June 1, 2009, by and among HFC, Navajo Pipeline and the Operating Partnership, pursuant to which Navajo Pipeline transferred and conveyed to the Operating Partnership, and the Operating Partnership acquired, all of the limited liability company interests of Lovington-Artesia, L.L.C., the entity that owns the 16" Lovington/Artesia Intermediate Pipeline.

"**2004 Product Pipelines, Terminal and Related Assets**" means the assets transferred under the July 13, 2004 Contribution, Conveyance and Assumption Agreement at the time of HEP's initial public offering.

"**2008 Crude Pipelines, Tanks and Related Assets**" means the Drop-Down Assets as defined in the Purchase and Sale Agreement, dated February 25, 2008, by and among HFC, Navajo Pipeline, Woods Cross Refining Company, L.L.C., a Delaware limited liability company, and HollyFrontier Navajo, as the seller parties, and HEP, the Operating Partnership, HEP Woods Cross, L.L.C., a Delaware limited liability company, and HEP Pipeline, as the buyer parties.

"**2008 Tanks**" means the Transferred Tanks included in the 2008 Crude Pipelines, Tanks and Related Assets.

"**Acquisition Proposal**" is defined in Section 5.2(a).

"**Additional Lovington Assets**" means the Transferred Lovington Assets as defined in the March 2010 Drop Down LLC Interest Purchase Agreement.

"**Additional Tulsa East Assets**" means the Transferred Tulsa East Assets as defined in the March 2010 Drop Down LLC Interest Purchase Agreement.

"**Administrative Fee**" is defined in Section 4.1(a).

“**Affiliate**” means, with respect to any Person, any other Person that directly or indirectly through one or more intermediaries controls, is controlled by or is under common control with, the Person in question. As used herein, the term “control” means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership of voting securities, by contract or otherwise.

“**Agreement**” is defined in the introduction to this Agreement.

“**Applicable Law**” means any applicable statute, law, regulation, ordinance, rule, judgment, rule of law, order, decree, permit, approval, concession, grant, franchise, license, agreement, requirement, or other governmental restriction or any similar form of decision of, or any provision or condition of any permit, license or other operating authorization issued under any of the foregoing by, or any determination by any Governmental Authority having or asserting jurisdiction over the matter or matters in question, whether now or hereafter in effect and in each case as amended (including, all of the terms and provisions of the common law of such Governmental Authority), as interpreted and enforced at the time in question.

“**Arbitrable Dispute**” means any and all disputes, Claims, controversies and other matters in question between any of the HEP Entities, on the one hand, and any of the HFC Entities, on the other hand, arising out of or relating to this Agreement, the Master Agreements, or the Services and Secondment Agreement, or the alleged breach hereof and thereof, or in any way relating to the subject matter of this Agreement, the Master Agreements, or the Services and Secondment Agreement, regardless of whether (a) allegedly extra-contractual in nature, (b) sounding in contract, tort or otherwise, (c) provided for by Applicable Law or otherwise or (d) seeking damages or any other relief, whether at law, in equity or otherwise.

“**Artesia Blending Facility**” means the two tanks and related equipment for the unloading and blending of ethanol and biodiesel at the refined product truck rack located at the refinery owned by HollyFrontier Navajo in Artesia, New Mexico.

“**Artesia Rail Yard Facility**” means (a) the railroad track siding consisting of approximately 8,300 track feet of siding (rail storage) and two mainline switches and three industry switches located on certain land leased by HFRM from the Operating Partnership pursuant to that certain Track Lease Agreement effective as of November 1, 2014 by and between HEP Refining and HFRM, pursuant to which HEP Refining agreed to lease to HFRM, and HFRM agreed to lease from HEP Refining, the Artesia Rail Yard Facility, and (b) HEP Refining’s leasehold interest, as tenant, under the BNSF Lease (New Mexico), and (c) HEP Refining’s leasehold interest, as landlord, under that certain Sublease Agreement effective as of November 1, 2014 by and between HEP Refining and HFRM, pursuant to which HEP Refining agreed to sublease to HFRM, and HFRM agreed to sublease from HEP Refining, the BNSF Land (New Mexico).

“**Assets**” means the Transferred Assets and the Other Assets, collectively.

“**Beeson Pipeline**” means the 8” crude oil pipeline extending from Beeson station to Lovington, New Mexico, owned by HEP Pipeline.

“**Beeson Pipeline Purchase Agreement**” means that certain Asset Purchase Agreement dated as of December 1, 2009, by and among HFC, Navajo Pipeline and HEP Pipeline, pursuant to which Navajo Pipeline agreed to transfer and convey to HEP Pipeline, and HEP Pipeline agreed to acquire, the Beeson Pipeline.

“**Beeson to Lovington System Expansion**” means the following project undertaken by HEP Pipeline: the installation of a larger pump at the Beeson station and the replacement of five miles of existing 8-inch pipeline with 10-inch pipeline beginning at the Beeson station end of the Beeson Pipeline.

“**BNSF Land (New Mexico)**” means the land located in Eddy County, New Mexico leased to HEP Refining pursuant to the BNSF Lease (New Mexico).

“**BNSF Lease (New Mexico)**” means that certain Lease of Land Including New Track Construction dated to be effective as of February 14, 2014, pursuant to which HEP Reining agreed to lease from BNSF Railway Company the BNSF Land (New Mexico).

“**Business Day**” means any day other than Saturday, Sunday or other day upon which commercial banks in Dallas, Texas are authorized by law to close.

“**Change of Control**” means, with respect to any Person (the “Applicable Person”), any of the following events:

(a) any sale, lease, exchange, or other transfer (in one transaction or a series of related transactions) of all or substantially all of the Applicable Person’s assets to any other Person unless immediately following such sale, lease, exchange, or other transfer such assets are owned, directly or indirectly, by the Applicable Person;

(b) the consolidation or merger of the Applicable Person with or into another Person pursuant to a transaction in which the outstanding Voting Securities of the Applicable Person are changed into or exchanged for cash, securities, or other property, other than any such transaction where

(i) the outstanding Voting Securities of the Applicable Person are changed into or exchanged for Voting Securities of a surviving Person or its parent and

(ii) the holders of the Voting Securities of the Applicable Person immediately prior to such transaction own, directly or indirectly, not less than a majority of the Voting Securities of the surviving Person or its parent immediately after such transaction; and

(c) a "person" or "group" (within the meaning of Sections 13(d) or 14(d)(2) of the Securities Exchange Act of 1934, as amended) (in the case of HFC, other than a group consisting of some of all of the current control persons of HFC), being or becoming the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Securities Exchange Act of 1934, as amended) of more than 50% of all of the then outstanding Voting Securities of the Applicable Person, except in a merger or consolidation that would not constitute a Change of Control under clause (b) above.

"**Cheyenne Assets**" is defined in the November 2011 Frontier Drop Down LLC Interest Purchase Agreement.

"**Cheyenne Logistics**" is defined in the introduction to this Agreement.

"**Cheyenne New Tank**" means petroleum storage tank no. 117 located at the Cheyenne Refinery Complex.

"**Claim**" means any existing or threatened future claim, demand, suit, judgment, settlement, action, investigation, proceeding, governmental action, cause of action, claims, demands, causes of action, suits, judgments, settlements, fines, penalties, costs, and expenses (including court costs and reasonable attorneys' and experts' fees) of any kind or character (in each case, whether civil, criminal, investigative or administrative), known or unknown, under any theory, including those based on theories of contract, tort, statutory liability, strict liability, employer liability, premises liability, products liability, breach of warranty or malpractice of any and every kind or character, known or unknown, fixed, contingent or suffered.

"**Claimant**" is defined in Section 8.2(a).

"**Closing Date**" means

(a) for all sections other than Articles III and VII, July 13, 2004, the date of the closing of HEP's initial public offering, and

(b) for purposes of Articles III and VII, Closing Date means, with respect to a group of assets, the effective date of the purchase of such assets or the stock, partnership interests or membership interests of the entity that directly or indirectly owns such assets, by a HEP Entity (such Closing Date being shown in Exhibit D, column (a)).

"**Contribution Agreement**" means that certain Contribution, Conveyance and Assumption Agreement, dated as of July 13, 2004, among HFC, Navajo Pipeline, the General Partner, HEP, the OLP GP, the Operating Partnership and certain other parties, together with the additional conveyance documents and instruments contemplated or referenced thereunder.

"**control**" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership of voting securities, by contract, or otherwise.

"**Covered Environmental Losses**" means Environmental Claims to the extent arising from:

(a) any violation or correction of violation of Environmental Laws associated with the ownership or operation of the Assets, or

(b) any event or condition associated with ownership or operation of the Assets (including, the presence of Hazardous Substances on, under, about or migrating from the Assets or the disposal or release of Hazardous Substances generated by operation of the Assets at any non-Asset locations), including:

(i) the cost and expense of any investigation, assessment, evaluation, monitoring, containment, cleanup, repair, restoration, remediation, or other corrective action required or necessary under Environmental Laws;

(ii) the cost or expense of the preparation and implementation of any closure, remedial, corrective action, or other plans required or necessary under Environmental Laws; and

(iii) the cost and expense for any environmental or Toxic Tort pre-trial, trial, or appellate legal or litigation support work.

"**Disposition Notice**" is defined in Section 5.2(a).

"**Effective Date**" is defined in the introduction to this Agreement.

"**El Dorado Assets**" is defined in the November 2011 Frontier Drop Down LLC Interest Purchase Agreement.

"**El Dorado Logistics**" is defined in the introduction to this Agreement.

"**El Dorado New Tank**" means petroleum products storage tanks no. 647 and no. 651 located at the El Dorado Refinery Complex.

"**El Dorado Operating**" is defined in the introduction to this Agreement.

"**El Dorado Osage**" is defined in the introduction to this Agreement.

"**El Dorado Refinery Assets**" means "Assets" as defined in that certain LLC Interest Purchase Agreement dated as of October 30, 2015 and effective as of November 1, 2015 by and among HollyFrontier El Dorado, HFC and the Operating Partnership, pursuant to which HollyFrontier El Dorado agreed sell to the Operating Partnership all of the issued and outstanding limited liability company interests in El Dorado Operating.

"**El Dorado Repurchased Tanks**" means tank 243 and tank 244 located at the El Dorado Terminal that were repurchased by HollyFrontier El Dorado from El Dorado Logistics effective January 1, 2017.

"**El Dorado Terminal**" means that certain petroleum products tank farm located in El Dorado Kansas, and more particularly described in that certain Membership Interest Purchase Agreement dated as of March 6, 2015 by and between El Dorado Logistics and Rimrock Midstream, LLC, as such terminal may be modified, expanded or upgraded from time to time.

"**El Paso Hawkins Terminal**" means the El Paso Hawkins Terminal as defined in that certain Refined Products Terminal Transfer Agreement effective as of February 22, 2016 between HEP Refining Assets and El Paso Operating, pursuant to which El Paso Operating acquired the El Paso Hawkins Terminal.

"**El Paso Operating**" is defined in the introduction to this Agreement.

"**Environmental Claims**" means environmental and Toxic Tort Liabilities and Claims of any and every kind or character, known or unknown, fixed or contingent.

"**Environmental Costs**" means (i) the cost and expense of any investigation, assessment, evaluation, monitoring, containment, cleanup, repair, restoration, remediation, or other corrective action required or necessary under Environmental Laws, (ii) the cost or expense of the preparation and implementation of any closure, remedial, corrective action, or other plans required or necessary under Environmental Laws, and (iii) the cost and expense for any Environmental Claim, including pre-trial, trial, or appellate legal or litigation support work.

"**Environmental Laws**" means all federal, state and local laws, statutes, rules, regulations, orders and ordinances, now or hereafter in effect, relating to protection of the environment, including the federal Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments Reauthorization Act, the Resource Conservation and Recovery Act, the Clean Air Act, the Federal Water Pollution Control Act, the Toxic Substances Control Act, the Oil Pollution Act, the Safe Drinking Water Act, the Hazardous Materials Transportation Act, and other environmental conservation and protection laws, each as amended from time to time.

"**First ROFR Acceptance Deadline**" is defined in Section 5.2(b).

"**Force Majeure**" means acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars (whether or not an official declaration is made thereof), terrorist attacks, blockades, insurrections, riots, epidemics, landslides, lightening, earthquakes, fires, hurricanes, storms, floods, washouts, freezeoffs, arrests, the order of any Governmental Authority having jurisdiction while the same is in force and effect, civil disturbances, explosions, breakage, accident to machinery, equipment, storage tanks or lines of pipe, repairs, maintenance, inability to obtain or unavoidable delay in obtaining permits, material or equipment, and any other causes whether of the kind herein enumerated or otherwise not reasonably within the control of the Party claiming suspension and which by the exercise of due diligence such Party is unable to prevent or overcome. Notwithstanding anything in this Agreement to the contrary, inability of a Party to make payments when due, be profitable or to secure funds, arrange bank loans or other financing, obtain credit or have adequate capacity or production (other than for reasons of Force Majeure) shall not be regarded as events of Force Majeure.

"**Frontier Aspen Pipeline**" means the Frontier Aspen Pipeline as defined in the Frontier Aspen Membership Purchase Agreement.

"**Frontier Aspen Membership Purchase Agreement**" means that certain Membership Interest Purchase Agreement dated effective August 7, 2017 between Plains Pipeline, L.P. and HEP Casper SLC, LLC.

"**General Partner**" is defined in the introduction to this Agreement.

"**Governmental Authority**" means any federal, state, local or foreign government or any provincial, departmental or other political subdivision thereof, or any entity, body or authority exercising executive, legislative, judicial, regulatory, administrative or other governmental functions or any court, department, commission, board, bureau, agency, instrumentality or administrative body of any of the foregoing.

"**Hazardous Substance**" means (a) any substance that is designated, defined or classified as a hazardous waste, hazardous material, pollutant, contaminant, or toxic or hazardous substance, or that is otherwise regulated under any Environmental Law, including, any hazardous substance as defined under the Comprehensive Environmental Response, Compensation, and Liability Act, and (b) petroleum, crude oil, gasoline, natural gas, fuel oil, motor oil, waste oil, diesel fuel, jet fuel and other refined petroleum hydrocarbons.

"**HEP**" is defined in the introduction to this Agreement.

"**HEP El Dorado**" is defined in the introduction to this Agreement.

"**HEP Entities**" is defined in the introduction to this Agreement.

"**HEP Entity**" means any of the HEP Entities.

"**HEP Group**" means the HEP Entities and any Subsidiary of any such Person, all of which are treated as a single consolidated entity for purposes of this Agreement.

"**HEP Group Member**" means any member of the HEP Group.

"**HEP Pipeline**" is defined in the introduction to this Agreement.

"**HEP Refining**" is defined in the introduction to this Agreement.

"**HEP Refining Assets**" is defined in the introduction to this Agreement.

"**HEP Tulsa**" is defined in the introduction to this Agreement.

"**HEP UNEV**" is defined in the introduction to this Agreement.

"**HEP UNEV Pipeline**" is defined in the introduction to this Agreement.

"**HFC**" is defined in the introduction to this Agreement.

"**HFC Group**" means the HFC Entities and any Person controlled, directly or indirectly, by HFC other than the HEP Entities.

"**HFC Group Member**" means any member of the HFC Group.

"**HFRM**" is defined in the introduction to this Agreement.

"**HollyFrontier Cheyenne**" is defined in the introduction to this Agreement.

"**HollyFrontier El Dorado**" is defined in the introduction to this Agreement.

"**HollyFrontier Navajo**" is defined in the introduction to this Agreement.

"**HollyFrontier Transportation**" is defined in the introduction of this Agreement.

"**HollyFrontier Tulsa**" is defined in the introduction to this Agreement.

"**HollyFrontier Woods Cross**" is defined in the introduction to this Agreement.

"**Holly GP**" is defined in the introduction to this Agreement.

"**Indemnified Claims**" means losses, damages, liabilities, Claims, demands, causes of action, judgments, settlements, fines, penalties, costs, and expenses (including, court costs and reasonable attorney's and expert's fees) of any and every kind or character.

"**Indemnified Party**" means all or part of either the HEP Entities or the HFC Entities, as the case may be, in their capacity as the parties entitled to indemnification in accordance with Article III.

"**Indemnifying Party**" means all or part of either the HEP Entities or the HFC Entities, as the case may be, in their capacity as the parties from whom indemnification may be required in accordance with Article III.

"**Initial Tank Inspections**" is defined in Section 7.1.

"**Initial Tank Inspection Period**" is defined in Section 7.1

"**Liability**" means with respect to any Person, any economic losses (including, diminution in value and lost profits suffered by third parties to the extent an Indemnified Party is required to pay for such damages), damages, injuries (including, personal injury and death), liabilities, of any and every kind or character, known or unknown, fixed, contingent or suffered.

"**Limited Partner**" is defined in the Partnership Agreement.

"**Malaga Pipeline System**" means the Pipeline System, as such term is defined in the Malaga TSA.

"**Malaga TSA**" means that certain Amended and Restated Transportation Services Agreement (Malaga) dated as of September 26, 2014 by and between HFRM and Operating Partnership, pursuant to which Operating Partnership provides certain transportation services for HFRM on the Malaga Pipeline System, as such agreement may be amended, modified or replaced from time to time.

"**March 2010 Drop Down LLC Interest Purchase Agreement**" means that certain LLC Interest Purchase Agreement dated as of March 31, 2010, by and among HFC, Lea Refining Company, HollyFrontier Tulsa, HEP Refining and HEP Tulsa, pursuant to which HFC, Lea Refining Company and HollyFrontier Tulsa agreed to transfer and convey to HEP Refining and HEP Tulsa the Additional Tulsa East Assets and the Additional Lovington Assets.

"**Master Agreements**" means the Master Lease and Access Agreement, Master Site Services Agreement, Master Systems Operating Agreement, Master Throughput Agreement and Master Tolling Agreements.

"**Master Lease and Access Agreement**" means that certain Fourth Amended and Restated Master Lease and Access Agreement dated effective as of January 1, 2017 among certain of the HEP Entities and the Refinery Owners.

"**Master Site Services Agreement**" means that certain Third Amended and Restated Master Site Services Agreement dated effective as of October 1, 2016, as amended, among certain of the HEP Entities and the Refinery Owners.

"**Master Systems Operating Agreement**" means that certain Amended and Restated Master Systems Operating Agreement dated as of February 22, 2016 among certain of the HEP Entities and the Refinery Owners.

"**Master Throughput Agreement**" means that certain Third Amended and Restated Master Throughput Agreement effective as of January 1, 2017 between the Operating Partnership and HFRM.

"**Master Tolling Agreements**" means that certain Master Tolling Agreement (Refinery Assets) dated effective as of November 1, 2015, as amended dated effective as of January 1, 2017, between HollyFrontier El Dorado and the Operating Partnership, and that certain Amended and Restated Master Tolling Agreement (Operating Assets) dated effective as of October 1, 2016, as amended dated effective as of January 18, 2017, between HollyFrontier El Dorado, HollyFrontier Woods Cross and the Operating Partnership.

"**Navajo Pipeline**" is defined in the introduction to this Agreement.

"**Net Recovery**" is defined in Section 3.7(f).

"**NWNAL Assets**" means those assets described in Section 8(a)(i)(2) of the SLC Pipeline Membership Purchase Agreement.

"**North Loco Tanks**" means the Facilities as defined in that certain Conveyance, Assignment and Bill of Sale (Tanks 1075, 1076 and 1077) effective as of December 8, 2017 by and between HollyFrontier Transportation and HEP Pipeline.

"**November 2011 Frontier Drop Down LLC Interest Purchase Agreement**" means that certain LLC Interest Purchase Agreement effective as of November 1, 2011, by and among HFC, HollyFrontier Cheyenne, HollyFrontier El Dorado, the Operating Partnership and HEP, pursuant to which HollyFrontier Cheyenne and HollyFrontier El Dorado agreed sell to the Operating Partnership the entities that own the Cheyenne Assets and the El Dorado Assets.

"**Offer**" is defined in Section 2.4(a)

"**Offer Price**" is defined in Section 5.2(a)(iii).

"**OLP GP**" is defined in the introduction to this Agreement.

"**Operating Partnership**" is defined in the introduction to this Agreement.

"**Original Omnibus Agreement**" is defined in the recitals to this Agreement.

"**Osage**" means Osage Pipe Line Company, LLC, a Delaware limited liability company.

"**Osage Membership Interest**" means a fifty percent (50%) limited liability company membership interest in Osage.

"**Other Assets**" means those assets owned by a HEP Entity that serve the Refineries and were not conveyed, contributed, or otherwise transferred, directly or indirectly by the HFC Entities to the HEP Entities, as indicated in column (a) of Exhibit D, Part 2; provided, that for the purposes of Section 3.2, Other Assets shall not include that certain 8" pipeline extending 50 miles from the White City Station that was formerly used as a refined products pipeline and that was conveyed to the HEP Entities as part of the 2004 Product Pipelines, Terminal and Related Assets.

"**Partnership Agreement**" means the Second Amended and Restated Agreement of Limited Partnership of Holly Energy Partners, L.P. dated as of October 31, 2017. No amendment or modification to the Partnership Agreement subsequent to the date of this Agreement shall be given effect for the purposes of this Agreement unless consented to by each of the Parties.

"**Party**" means any one of the entities listed on the signature page to this Agreement, collectively the "Parties".

"**Permitted Assets**" is defined in Section 2.2(d).

"**Person**" means an individual or a corporation, limited liability company, partnership, joint venture, trust, unincorporated organization association, government agency or political subdivision thereof or other entity.

"**Post-Closing Covered Environmental Losses**" means, to the extent such violation, event or condition occurred after the Closing Date:

(a)any violation or correction of violation of Environmental Laws associated with the operation of the Transferred Assets by a Person other than a HFC Entity or ownership and operation of the Transferred Assets by a Person other than a HFC Entity, or

(b)any event or condition associated with the ownership and/or operation of the Transferred Assets by a Person other than a HFC Entity (including the presence of Hazardous Substances on, under, about or migrating to or from the Transferred Assets or the disposal or release of Hazardous Substances generated by operation of the Transferred Assets) including, the Environmental Costs;

provided, however, that nothing stated above shall make the HEP Entities responsible for any post-Closing Date negligent actions or omissions or willful misconduct by any of the HFC Entities.

"**PPI**" means the Producers Price Index-Commodities-Finished Goods, (PPI), et al.

"**PPI Adjustment**" means the upper change in the annual change rounded to four decimal places of the PPI, produced by the U.S. Department of Labor, Bureaus of Labor Statistics. The series ID is WPUFD49207 – located at http://www.bls.gov/data/. The change factor shall be calculated as follows: annual PPI index (most current year) less annual PPI index (most current year minus 1) divided by annual PPI index (most current year minus 1). An example for year 2014 change is: PPI (2013) – PPI (2012)] / PPI (2012) or (197.3 – 193.3) / 193.3 or .021 or 2.1%. If the PPI change is negative in a given year then there will be no change in the Administrative Fee.

"**Pre-Closing Covered Environmental Losses**" means, to the extent such violation, event or condition occurred before the Closing Date:

(a) any violation or correction of violation of Environmental Laws associated with the ownership or operation of the Transferred Assets by a Person other than a HEP Entity or ownership and operation of the Transferred Assets by a Person other than a HEP Entity, or

(b) any event or condition associated with ownership and/or operation of the Transferred Assets by a Person other than a HEP Entity (including, the presence of Hazardous Substances on, under, about or migrating to or from the Transferred Assets or the disposal or release of Hazardous Substances generated by operation of the Transferred Assets), including, the Environmental Costs.

provided, however, that nothing stated above shall make the HFC Entities responsible for any pre-Closing Date negligent actions omissions or willful misconduct by any of the HEP Entities.

"**Previous Amended and Restated Omnibus Agreement**" is defined in the introduction to this Agreement.

"**Proposed Transferee**" is defined in Section 5.2(a)(i).

"**Prudent Industry Practice**" means such practices, methods, acts, techniques, and standards as are in effect at the time in question that are consistent with (a) the standards generally followed by the United States pipeline and terminalling industries or (b) such higher standards as may be applied or followed by the HFC Entities in the performance of similar tasks or projects, or by the HEP Entities in the performance of similar tasks or projects.

"**Purchase Option Agreement**" has the meaning set forth in the Asset Purchase Agreement, dated August 1, 2009, between HollyFrontier Tulsa, as the seller, and HEP Tulsa, as the buyer.

"**Refinery**" or "**Refineries**" means each of the Refinery Complexes identified in the Master Lease and Access Agreement.

"**Refinery Owners**" means each of the HFC Entities that own one or more of the Refineries.

"**Respondent**" is defined in Section 8.2(a).

"**Restricted Business**" or "**Restricted Businesses**" means the ownership or operation of crude oil pipelines or terminals, intermediate petroleum product pipelines or terminals, refined petroleum products pipelines, terminals, truck racks or crude oil gathering systems in the continental United States.

"**Retained Assets**" means the pipelines, terminals and other assets and investments owned by any HFC Group Member on the date of the Contribution Agreement that were not conveyed, contributed or otherwise transferred to the HEP Entities pursuant to the Contribution Agreement or otherwise.

"**Roadrunner**" is defined in the introduction to this Agreement.

"**Roadrunner Pipeline**" means 16" crude oil pipeline extending from Slaughter station in Texas to Lovington, New Mexico owned by Roadrunner.

"**Roadrunner Pipeline Purchase Agreement**" means that certain LLC Interest Purchase Agreement dated as of December 1, 2009 by and among Navajo Pipeline and the Operating Partnership, pursuant to which the Operating Partnership acquired, all of the outstanding limited liability company interests of Roadrunner, the entity that owns the Roadrunner Pipeline.

"**ROFR Acceptance Deadline**" means the First ROFR Acceptance Deadline or the Second ROFR Acceptance Deadline, as applicable, both as defined in Section 5.2(b) and (c).

"**Sale Assets**" is defined in Section 5.2(a)(ii).

"**Second ROFR Acceptance Deadline**" is defined in Section 5.2(c).

"**Services and Secondment Agreement**" means that certain Third Amended and Restated Services and Secondment Agreement dated effective as of October 1, 2016, by and among Holly GP, the Operating Partnership, Cheyenne Logistics, El Dorado Logistics, El Dorado Operating, HEP Tulsa, Woods Cross Operating, HollyFrontier Payroll Services, Inc., a Delaware corporation, HollyFrontier Cheyenne, HollyFrontier El Dorado, HollyFrontier Tulsa and HollyFrontier Woods Cross.

"**Sinclair**" means Sinclair Tulsa Refining Company.

"**Sinclair Purchase Agreement**" means that certain Asset Sale and Purchase Agreement dated as of October 19, 2009, by and among HollyFrontier Tulsa, HEP Tulsa and Sinclair, pursuant to which HEP Tulsa acquired the Sinclair Transferred Assets.

"**Sinclair Transferred Assets**" means the HEP Tulsa Assets as defined in the Sinclair Purchase Agreement.

"**SLC Pipeline**" means the SLC Pipeline as defined in the SLC Pipeline Membership Interest Purchase Agreement.

"**SLC Pipeline Membership Purchase Agreement**" means that certain Membership Interest Purchase Agreement dated effective August 7, 2017, between Rocky Mountain Pipeline System LLC and HEP SLC, LLC.

"**Storage and Handling Agreement**" means that certain Storage and Handling Agreement dated February 21, 1997, between the Operating Partnership and Alon U.S.A., L.P., as amended effective January 1, 2004, September 1, 2008 and March 1, 2011.

"**Third Party**" means a Person which is not (a) HEP or an Affiliate of HEP, (b) HFC or an affiliate of HFC, (c) a Person that, after the signing of this Agreement becomes a successor entity of HEP, HFC or any of their respective Affiliates. An employee of HFC or HEP shall not be deemed an Affiliate.

“**Toxic Tort**” means a Claim or cause of action arising from personal injury or property damage incurred by the plaintiff that is alleged to have been caused by exposure to, or contamination by, Hazardous Substances that have been released into the environment by or as a result of the actions or omissions of the defendant.

“**Transfer**” including the correlative terms “Transferring” or “Transferred” means any direct or indirect transfer, assignment, sale, gift, pledge, hypothecation or other encumbrance, or any other disposition (whether voluntary, involuntary or by operation of law) of the Assets.

“**Transferred Assets**” means all of the assets conveyed, contributed, or otherwise transferred, directly or indirectly (including by transfer or sale of the entity that owns such assets or the entity that owns the interests in the entity that owns such assets) that serve the Refineries, by the HFC Entities to the HEP Entities, as indicated in column (a) of Exhibit D, Part 1; provided that for the purposes of Section 3.2, the term “Transferred Assets” shall include (a) that certain 8” pipeline extending 50 miles from the White City Station that was formerly used as a refined products pipeline and that was conveyed to the HEP Entities as part of the 2004 Product Pipelines, Terminal and Related Assets, and (b) the Tulsa West Crude Tank Assets.

“**Transferred Tanks**” means the tanks included in the Assets, as indicated in column (h) of Exhibit D, provided however that from and after January 1, 2017, such tanks shall not include the El Dorado Repurchased Tanks.

“**Tulsa Interconnecting Pipelines”** means the Interconnecting Pipelines as defined in the Tulsa Throughput Agreement.

“**Tulsa New Tanks**” means petroleum products storage tank nos. 45 and 444A located at the Tulsa Refinery Complex.

“**Tulsa Purchase Agreement**” means that certain Asset Purchase Agreement dated as of August 1, 2009, by and between HollyFrontier Tulsa and HEP Tulsa, pursuant to which HollyFrontier Tulsa transferred and conveyed to HEP Tulsa, and HEP Tulsa acquired, the Tulsa Transferred Assets.

“**Tulsa Throughput Agreement**” means that certain Second Amended and Restated Pipelines, Tankage and Loading Rack Throughput Agreement (Tulsa East), dated as of August 31, 2011, pursuant to which HEP Tulsa agreed to provide transportation services to HollyFrontier Tulsa with respect to the Tulsa Interconnecting Pipelines.

“**Tulsa Transferred Assets**” means the Transferred Assets as defined in the Tulsa Purchase Agreement.

“**Tulsa West Crude Tank Assets**” means the Leased Property as defined in the Bill of Sale, Assignment and Assumption Agreement dated as of March 31, 2016 between Plains Marketing, L.P. and HEP Tulsa.

“**UNEV LLC Interest Purchase Agreement**” means that certain LLC Interest Purchase Agreement dated as of July 12, 2012, by and among HFC, HEP UNEV and HEP, pursuant to which HFC agreed to sell to HEP UNEV the entity that owns 75% of all of the issued and outstanding membership interests of UNEV Pipeline, LLC, the entity that owns the UNEV Pipeline.

“**UNEV Pipeline**” means, collectively, an approximately 400 mile, 12-inch refined products pipeline currently running from Woods Cross, Utah to Las Vegas, Nevada, related products terminals in or near Cedar City, Utah and Las Vegas, Nevada and other related assets owned by UNEV Pipeline, LLC.

“**UNEV Profits Interest**” means the membership interest in HEP UNEV held directly or indirectly by HFC.

“**Voting Securities**” means securities of any class of a Person entitling the holders thereof to vote on a regular basis in the election of members of the board of directors or other governing body of such Person.

“**Wood Cross Operating**” is defined in the introduction to this Agreement.

“**Woods Cross Refinery Assets**” has the meaning ascribed to the term “Assets” in that certain LLC Interest Purchase Agreement dated as of October 3, 2016 and effective as of October 1, 2016 by and among HollyFrontier Woods Cross, HFC and the Operating Partnership, pursuant to which HollyFrontier Woods Cross agreed to sell to the Operating Partnership all of the issued and outstanding limited liability company interests in Woods Cross Operating.

Exhibit C
to
Eighteenth Amended and Restated Omnibus Agreement

Interpretation

As used in this Agreement, unless a clear contrary intention appears:

(a) any reference to the singular includes the plural and vice versa, any reference to natural persons includes legal persons and vice versa, and any reference to a gender includes the other gender;

(b) the words “hereof”, “hereby”, “herein” and “hereunder” and words of similar import, when used in this Agreement, shall refer to this Agreement as a whole and not to any particular provision of this Agreement;

(c) any reference to Articles, Sections and Exhibits are, unless otherwise stated, references to Articles, Sections and Exhibits of or to this Agreement and references in any Section or definition to any clause means such clause of such Section or definition. The headings in this Agreement have been inserted for convenience only and shall not be taken into account in its interpretation;

(d) reference to any agreement (including this Agreement), document or instrument means such agreement, document, or instrument as amended, modified or supplemented and in effect from time to time in accordance with the terms thereof and, if applicable, the terms of this Agreement;

(e) the Exhibits hereto form an integral part of this Agreement and are equally binding therewith. Any reference to “this Agreement” shall include such Exhibits;

(f) references to a Person shall include any permitted assignee or successor to such Party in accordance with this Agreement and reference to a Person in a particular capacity excludes such Person in any other capacity;

(g) if any period is referred to in this Agreement by way of reference to a number of days, the days shall be calculated exclusively of the first and inclusively of the last day unless the last day falls on a day that is not a Business Day in which case the last day shall be the next succeeding Business Day;

(h) the use of “or” is not intended to be exclusive unless explicitly indicated otherwise;

(i) references to “$” or to “dollars” shall mean the lawful currency of the United States of America; and

(j) the words “includes,” “including,” or any derivation thereof shall mean “including without limitation” or “including, but not limited to.”

Exhibit D
to
Eighteenth Amended and Restated Omnibus Agreement

Asset Indemnification Summary

Part 1: Transferred Assets:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
TRANSFERRED ASSET AND CLOSING DATE	HFC ENVIRONMENTAL (Expiration Date)	HEP ENVIRONMENTAL	RIGHT-OF-WAY	ADDITIONAL INDEMNITIES	OPERATIONAL INDEMNITY	RIGHT OF FIRST REFUSAL	INCLUDES TRANSFERRED TANKS
	Indemnity from HFC to HEP for Pre-Closing Covered Environmental Losses under Section 3.2(a) / Aggregate cap on HFC environmental indemnity in Section 3.1(b) (expiration date of indemnity)	Indemnity from HEP to HFC for Post-Closing Covered Environmental Losses under Section 3.4(a)	Right-of-Way Indemnity under Sections 3.2(a)(iii) and 3.2(a)(iv) (expiration date of indemnity)	Additional Indemnities under Section 3.2(a)(vi) (expiration date of indemnity)	Additional Indemnities under Section 3.5	Right of First Refusal under Article V	

2004 Product Pipelines, Terminal and Related Assets (July 13, 2004)	$15,000,000 (July 13, 2014)	✓	✓ (July 13, 2014)	✓ (July 13, 2009)	✓	✓	No
8" and 10" Lovington/Artesia Intermediate Pipelines (June 1, 2009)	$2,500,000 (June 1, 2019)	✓	✓ (June 1, 2019)	✓ (June 1, 2014)	✓	✓	No

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
TRANSFERRED ASSET AND CLOSING DATE	HFC ENVIRONMENTAL (Expiration Date)	HEP ENVIRONMENTAL	RIGHT-OF-WAY	ADDITIONAL INDEMNITIES	OPERATIONAL INDEMNITY	RIGHT OF FIRST REFUSAL	INCLUDES TRANSFERRED TANKS
2008 Crude Pipelines, Tanks and Related Assets (March 1, 2008)	$7,500,000 (March 1, 2023)	✓	✓ (March 1, 2023)	✓ (March 1, 2013)	✓	✓	Yes
16" Lovington/Artesia Intermediate Pipeline (June 1, 2009)	None	✓	✓ (June 1, 2019)	✓ (June 1, 2014)	✓	✓	No
Tulsa Transferred Assets (August 1, 2009)	None	None	None	None	None	None	No
Beeson Pipeline (December 1, 2009)	None	✓	✓ (December 1, 2019)	✓ (December 1, 2014)	✓	✓	No
Roadrunner Pipeline (December 1, 2009)	None	✓	✓ (December 1, 2019)	✓ (December 1, 2014)	✓	✓	No
Additional Lovington Assets (March 31, 2010)	$15,000,000 (March 31, 2020)	✓	✓ (March 31, 2020)	✓ (March 31, 2015)	✓	✓	No
Additional Tulsa East Assets (March 31, 2010)	unlimited (no expiration)	None	None	None	None	✓	No
Sinclair Transferred Assets (October 19, 2009)	None	None	None	None	None	✓	Yes
Tulsa Interconnecting Pipelines (August 31, 2011)	None	✓	(August 31, 2021)	(August 31, 2016)	✓	✓	No

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
TRANSFERRED ASSET AND CLOSING DATE	HFC ENVIRONMENTAL (Expiration Date)	HEP ENVIRONMENTAL	RIGHT-OF-WAY	ADDITIONAL INDEMNITIES	OPERATIONAL INDEMNITY	RIGHT OF FIRST REFUSAL	INCLUDES TRANSFERRED TANKS
Cheyenne Assets (November 1, 2011)	$15,000,000 (November 1, 2021)	✓	✓ (November 1, 2021)	✓ (November 1, 2016)	✓	✓	Yes
El Dorado Assets (November 1, 2011)	$15,000,000 (November 1, 2021)	✓	✓ (November 1, 2021)	✓ (November 1, 2016)	✓	✓	Yes
UNEV Pipeline (July 12, 2012)	None	✓	✓ (July 12, 2022)	✓ (July 12, 2017)	✓	None	No
El Dorado Refinery Assets (November 1, 2015)	$15,000,000 (November 1, 2025)	✓	✓ (November 1, 2025)	✓ (November 1, 2020)	✓	✓	No
Osage (February 22, 2016)	None	None	None	None	None	None	No

Tulsa West Crude Tank Assets (11:59 p.m., March 31, 2016)	$5,000,000 (11:59 p.m., March 31, 2026)	✓	None	✓ (11:59 p.m., March 31, 2021)	✓	✓	No
Woods Cross Refinery Assets October 1, 2016	$15,000,000 October 1, 2026	✓	✓ October 1, 2026	✓ October 1, 2026	✓	✓	No
North Loco Tanks (December 8, 2017)	None	None	None	None	None	✓	No

Part 2: Other Assets:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
OTHER ASSET AND CLOSING DATE	HFC ENVIRONMENTAL (Expiration Date)	HEP ENVIRONMENTAL	RIGHT-OF-WAY	ADDITIONAL INDEMNITIES	OPERATIONAL INDEMNITY	RIGHT OF FIRST REFUSAL	INCLUDES TRANSFERRED TANKS
	Indemnity from HFC to HEP for Pre-Closing Covered Environmental Losses under Section 3.2(a) / Aggregate cap on HFC environmental indemnity in Section 3.1(b) (expiration date of indemnity)	Indemnity from HEP to HFC for Post-Closing Covered Environmental Losses under Section 3.4(a)	Right-of-Way Indemnity under Sections 3.2(a)(iii) and 3.2(a)(iv) (expiration date of indemnity)	Additional Indemnities under Section 3.2(a)(vi)(A) (expiration date of indemnity)[1]	Additional Indemnities under Section 3.5	Right of First Refusal under Article V	
Malaga Pipeline System (July 16, 2013, as amended by that certain Amended and Restated Transportation Services Agreement dated September 26, 2014)	None	✓	None	None	✓	✓	No
El Dorado New Tank (Tank 647) (January 7, 2014)	None	✓	✓ (January 7, 2024)	None	✓	✓	No
Artesia Rail Yard Facility (November 1, 2014)	None	✓	None	None	✓	✓	No
El Dorado Terminal (March 6, 2015)	None	✓	None	None	✓	✓	No

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
OTHER ASSET AND CLOSING DATE	HFC ENVIRONMENTAL (Expiration Date)	HEP ENVIRONMENTAL	RIGHT-OF-WAY	ADDITIONAL INDEMNITIES	OPERATIONAL INDEMNITY	RIGHT OF FIRST REFUSAL	INCLUDES TRANSFERRED TANKS
Beeson to Lovington System Expansion (March 12, 2015)	None	✓	None	None	✓	✓	No
Artesia Blending Facility (March 12, 2015)	None	✓	✓ (March 12, 2025)	None	✓	✓	No
Cheyenne New Tank (Tank 117) (December 4, 2014)	None	✓	✓ (December 4, 2029)	None	✓	✓	No
Tulsa New Tanks (Tanks 45 and 444A) (May 1, 2016)	None	✓	✓ (May 1, 2026)	None	✓	✓	No
El Dorado New Tank (Tank 651) (September 12, 2016)	None	✓	✓ (September 12, 2026)	None	✓	✓	No
SLC Pipeline (October 31, 2017)	None	None	None	None	None	✓	No
Frontier Aspen Pipeline (October 31, 2017)	None	None	None	None	None	✓	No
NWNAL Assets (October 31, 2017)	None	None	None	None	None	✓	No

Exhibit E

General and Administrative Services

(1) Executive services

(2) Finance, including treasury, and administration services

(3) Information technology services

(4) Legal services

(5) Corporate health, safety and environmental services

(6) Human resources services

(7) Procurement

(8) Corporate operations team services

Exhibit 10.52

HOLLYFRONTIER CORPORATION

PERFORMANCE SHARE UNIT AGREEMENT

(Section 162(m) Compliant)

This Performance Share Unit Agreement (the "***Agreement***") is made and entered into by and between HollyFrontier Corporation, a Delaware corporation (the "***Company***"), and you. This Agreement is entered into as of the ___ day of [●], 2017 (the "***Date of Grant***").

WITNESSETH:

WHEREAS, the Company has adopted the Plan (as defined below) to attract, retain and motivate employees, directors and consultants;

WHEREAS, the Compensation Committee (the "***Committee***") believes that entering into this Agreement with you is consistent with the stated purposes for which the Plan was adopted; and

WHEREAS, a copy of the Plan has been furnished to you and shall be deemed a part of this Agreement ("***Agreement***") as if fully set forth herein and the terms capitalized but not defined herein or on Appendix A attached hereto shall have the meanings set forth in the Plan.

NOW, THEREFORE, in consideration of the services rendered by you, the parties agree as follows:

1. Grant. The Company hereby grants to you as of the Date of Grant a Performance Award of _________ shares of Phantom Stock consisting of performance share units (the "***Performance Share Units***"), subject to the terms and conditions set forth in this Agreement. Depending on the Company's performance, you may earn from zero percent (0%) to two hundred percent (200%) of the Performance Share Units, based on the Company's performance on two measures set forth in Section 3 over a designated performance period compared to the performance of a group of peer companies selected by the Committee.

2. The Plan. The Performance Share Units granted to you by this Agreement shall be granted under the HollyFrontier Corporation Long-Term Incentive Compensation Plan (the "***Plan***").

3. Performance Period and Measures. This Section 3 sets forth the details of the Performance Award for the "***Performance Period***," which begins on October 1 of the calendar year of the Date of Grant ("***Year One***") and ends on September 30 of the third calendar year following Year One ("***Year Three***"). If you are employed by the Company or one of its Subsidiaries on December 15 of Year Three you will be entitled to a payment in Shares in the amount determined under Section 3(b) or pursuant to Section 4 or 5, as applicable, and payable at the time indicated in Section 6. The period of time beginning on the Date of Grant and ending on December 15 of Year Three is referred to herein as the "***Service Period***."

(a) Performance Measures. The number of Performance Share Units earned for the Performance Period is determined by comparing the Company's performance on the two measures listed below over the Performance Period to the performance of the Peer Group over the Performance Period on the same two measures. The two performance measures are Return on Capital Employed and Total Shareholder Return.

(b) Shares Payable. The number of Shares payable is equal to the result of multiplying the total number of Performance Share Units awarded by the Performance Unit Payout Percentage. The number of Shares of Common Stock payable will be rounded down to the nearest Share. No fractional Shares of Common Stock will be issued pursuant to this Agreement.

4. Termination of Employment.

(a) In the event that your employment with the Company and its Subsidiaries terminates prior to December 15 of Year Three (i) due to your death, (ii) on account of your total and permanent disability, as determined by the Committee in its sole discretion or (iii) by action of the Company or its Subsidiary other than for Cause, you (or your beneficiary, if applicable) shall forfeit a number of the Performance Share Units equal to the number of Performance Share Units specified in Section 1 hereof times the percentage that (A) the number of days beginning on the day on which the date of such termination occurs and ending on the last day of the Service Period, (B) bears to the total number of days in the Service Period. In the event of such forfeiture, the number of Shares payable hereunder shall be equal to the result of multiplying the number of remaining Performance Share Units by the Performance Unit Payout Percentage determined as of the end of the Performance Period in accordance with Section 3. Shares payable pursuant to this Section 4(a) will be paid to you at the time specified in Section 6. Notwithstanding the foregoing, in the event your employment is terminated on account of death or disability, the Committee, in its sole discretion, may elect to make a payment to you pursuant to this Section 4(a) assuming a Performance Unit Payout Percentage of up to two hundred percent (200%) instead of the Performance Unit Payout Percentage that would otherwise be determined at the end of the Performance Period in accordance with Section 3; provided, that if the Committee elects to make such a payment, the amount will be paid to you no later than thirty (30) days following such election.

(b) If, prior to December 15 of Year Three you voluntarily separate from employment (other than due to your Retirement) or are terminated by the Company or a Subsidiary for Cause, all Performance Share Units awarded hereunder will be forfeited.

(c) With respect to the Performance Share Units, the Company or a Subsidiary may, in its sole discretion, determine that if you are on leave of absence for any reason you will be considered to still be in the employ of, or providing services to, the Company and its Subsidiaries, provided that your rights to the Performance Share Units, if any, during a Performance Period in which such a leave of absence occurs will be prorated to reflect the period of time during the Performance Period that you provided actual services to the Company and its Subsidiaries.

5. Special Involuntary Termination. In the event your employment with the Company and its Subsidiaries terminates due to a Special Involuntary Termination or your Retirement before December 15 of Year Three you will remain eligible to receive full payment hereunder (*i.e.*, you will be treated as remaining continuously employed through December 15 of Year Three), and the number of Shares payable to you shall be that number determined pursuant to Section 3(b) hereof.

6. Payment of Performance Share Units. Except as otherwise provided in Section 4(a), the number of Shares payable hereunder shall be paid as soon as reasonably practicable after December 15 of Year Three but in no event later than two and one-half months following the end of Year Three, in the amount determined in accordance with Section 3, as adjusted by Section 4(a), if applicable. Such payment will be subject to withholding for taxes and other applicable payroll adjustments. The Committee's determination of the amount payable shall be binding upon you and your beneficiary or estate. The value of such Shares shall not bear any interest owing to the passage of time. The number of Shares of Common Stock payable will be rounded down to the nearest Share. No fractional Shares of Common Stock will be issued pursuant to this Agreement.

7. Limited Stockholder Rights. The Performance Share Units granted pursuant to this Agreement do not and shall not entitle you to any rights of a holder of Shares, including the right to vote, prior to the date Shares are issued to you in settlement of the Performance Share Units pursuant to Section 6; provided, however, that in the event the Company declares and pays a dividend in respect of its outstanding Shares and, on the record date of that dividend, you hold Performance Share Units granted pursuant to this Agreement that have not been paid, the Company shall pay to you an amount in cash equal to the cash dividends you would have received if you were the holder of record as of such record date, of the number of Shares equal to the number of Performance Share Units specified in Section 1 hereof, such payment shall be made promptly following the date that the Company pays such dividend to its shareholders generally (however, in no event shall the payment be paid later than thirty (30) days following the date on which the Company pays such dividend to its shareholders generally). Your rights with respect to the Performance Share Units shall remain forfeitable at all times prior to the date on which the rights become vested and earned as set forth in Section 3, as adjusted by Section 4(a) or in accordance with Section 5, as applicable.

8. Adjustment in Number of Performance Share Units. The number of Performance Share Units subject to this Agreement shall be adjusted to reflect stock splits or other changes in the capital structure of the Company, all in accordance with the Plan. In the event that the outstanding Shares of the Company are exchanged for a different number or kind of shares or other securities, or if additional, new or different shares are distributed with respect to the Shares through merger, consolidation, or sale of all or substantially all of the assets of the Company, there shall be substituted for the Shares under the Performance Share Units subject to this Agreement the appropriate number and kind of shares of new or replacement securities as determined in the sole discretion of the Committee, subject to the terms and provisions of the Plan.

9. Compliance with Securities Law. Notwithstanding any provision of this Agreement to the contrary, the issuance of Shares will be subject to compliance with all applicable requirements of federal, state, or foreign law with respect to such securities and with the requirements of any stock exchange or market system upon which the Shares may then be listed. No Shares will be issued hereunder if such issuance would constitute a violation of any applicable federal, state, or foreign securities laws or other law or regulations or the requirements of any stock exchange or market system upon which the Shares may then be listed. In addition, Shares will not be issued hereunder unless %2) a registration statement under the Securities Act, is at the time of issuance in effect with respect to the Shares issued or %2) in the opinion of legal counsel to the Company, the Shares issued may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any Shares subject to the Award will relieve the Company of any liability in respect of the failure to issue such Shares as to which such requisite authority has not been obtained. As a condition to any issuance hereunder, the Company may require you to satisfy any qualifications that may be necessary or appropriate to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect to such compliance as may be requested by the Company. From time to time, the Board and appropriate officers of the Company are authorized to take the actions necessary and appropriate to file required documents with governmental authorities, stock exchanges, and other appropriate Persons to make Shares available for issuance.

10. Payment of Taxes. The Company may require you to pay to the Company (or the Company's Subsidiary if you are an employee of a Subsidiary of the Company), an amount the Company deems necessary to satisfy its (or its Subsidiary's) current or future withholding with respect to federal, state or local income or other taxes that you incur as a result of the Award. With respect to any tax withholding and to the extent permissible pursuant to Rule 16b-3 under the Exchange Act, you may (a) direct the Company to withhold from the Shares to be issued to you under this Agreement the number of Shares necessary to satisfy the Company's (or its Subsidiary's) withholding of such taxes, which determination will be based on the Shares' Fair Market Value at the time such determination is made; (b) deliver to the Company Shares sufficient to satisfy the Company's (or its Subsidiary's) tax withholding, based on the Shares' Fair Market Value at the time such determination is made; or (c) deliver cash to the Company (or its Subsidiary) sufficient to satisfy its tax withholding obligations. If you desire to elect to use the stock withholding option described in subparagraph (a), you must make the election at the time and in the manner the Company prescribes and the maximum number of Shares that may be so withheld or surrendered shall be a number of Shares that have an aggregate Fair Market Value on the date of withholding or surrender of up to the aggregate amount of such tax liabilities determined based on the greatest withholding rates for federal, state, foreign and/or local tax purposes, including payroll taxes, that may be utilized without creating adverse accounting treatment with respect to the Award. The Company, in its discretion, may deny your request to satisfy its tax withholding obligations using a method described under subparagraph (a) or (b). In the event the Company determines that the aggregate Fair Market Value of the Shares withheld as payment of any tax withholding obligation is insufficient to discharge that tax withholding obligation, then you must pay to the Company (or its Subsidiary), in cash, the amount of that deficiency immediately upon the Company's (or its Subsidiary's) request.

11. Right of the Company and Subsidiaries to Terminate Services. Nothing in this Agreement confers upon you the right to continue in the employ of or performing services for the Company or any Subsidiary, or interfere in any way with the rights of the Company or any Subsidiary to terminate your employment or service relationship at any time.

12. Furnish Information. You agree to furnish to the Company all information requested by the Company to enable it to comply with any reporting or other requirements imposed upon the Company by or under any applicable statute or regulation.

13. Remedies. The Company shall be entitled to recover from you reasonable attorneys' fees incurred in connection with the successful enforcement of the terms and provisions of this Agreement whether by an action to enforce specific performance or for damages for its breach or otherwise.

14. No Liability for Good Faith Determinations. The Company and the members of the Board shall not be liable for any act, omission or determination taken or made in good faith with respect to this Agreement or the Performance Share Units granted hereunder.

15. Execution of Receipts and Releases. Any payment of cash or any issuance or transfer of Shares or other property to you, or to your legal representative, heir, legatee or distributee, in accordance with the provisions hereof, will, to the extent thereof, be in full satisfaction of all claims of such Persons hereunder. In addition, the Company may require you or your legal representative, heir, legatee or distributee, as a condition precedent to such payment or issuance, to execute a general release of all claims in favor of the Company, any Affiliate and the employees, officers, stockholders or board members of the foregoing in such form as the Company may determine.

16. Clawback. This Agreement is subject to any written clawback policies that the Company, with the approval of the Board or the Committee, may adopt. Any such policy may subject your Performance Share Units and amounts paid or realized with respect to the Performance Share Units under this Agreement to reduction, cancelation, forfeiture or recoupment if certain specified events or wrongful conduct occur, including but not limited to an accounting restatement due to the Company's material noncompliance with financial reporting regulations or other events or wrongful conduct specified in any such clawback policy adopted to conform to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and rules promulgated thereunder by the Securities and Exchange Commission and that the Company determines should apply to this Agreement.

17. No Guarantee of Interests. The Board and the Company do not guarantee the Shares from loss or depreciation.

18. Company Records. Records of the Company or its Subsidiaries regarding your period of service, termination of service and the reason(s) therefor, leaves of absence, re-employment, and other matters shall be conclusive for all purposes hereunder, unless determined by the Company to be incorrect.

19. Notice. All notices required or permitted under this Agreement must be in writing and personally delivered or sent by mail and shall be deemed to be delivered on the date on which it is actually received by the person to whom it is properly addressed or if earlier the date it is sent via certified United States mail.

20. Waiver of Notice. Any person entitled to notice hereunder may waive such notice in writing.

21. Information Confidential. As partial consideration for the granting of the Award hereunder, you hereby agree to keep confidential all information and knowledge, except that which has been disclosed in any public filings required by law, that you have relating to the terms and conditions of this Agreement; provided, however, that such information may be disclosed as required by law and may be given in confidence to your spouse and tax and financial advisors. In the event any breach of this promise comes to the attention of the Company, it shall take into consideration that breach in determining whether to recommend the grant of any future similar award to you, as a factor weighing against the advisability of granting any such future award to you. Nothing in this Agreement will prevent you from: (a) making a good faith report of possible violations of applicable law to any governmental agency or entity or (b) making disclosures that are protected under the whistleblower provisions of applicable law. For the avoidance of doubt, nothing herein shall prevent you from making a disclosure that: (i) is made (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Further, an individual who files a lawsuit for retaliation by an employer of reporting a suspected violation of law may make disclosures without violating this Section 21 to the attorney of the individual and use such information in the court proceeding.

22. Successors. This Agreement shall be binding upon you, your legal representatives, heirs, legatees and distributees, and upon the Company, its successors and assigns.

23. Severability. If any provision of this Agreement is held to be illegal or invalid for any reason, the illegality or invalidity shall not affect the remaining provisions hereof, but such provision shall be fully severable and this Agreement shall be construed and enforced as if the illegal or invalid provision had never been included herein.

24. Company Action. Any action required of the Company shall be by resolution of the Board or by a person or entity authorized to act by resolution of the Board.

25. Headings. The titles and headings of Sections are included for convenience of reference only and are not to be considered in construction of the provisions hereof.

26. Governing Law. All questions arising with respect to the provisions of this Agreement shall be determined by application of the laws of Texas, without giving any effect to any conflict of law provisions thereof, except to the extent Texas state law is preempted by federal law. The obligation of the Company to sell and deliver Shares hereunder is subject to applicable

laws and to the approval of any governmental authority required in connection with the authorization, issuance, sale, or delivery of such Shares.

27. Consent to Texas Jurisdiction and Venue . You hereby consent and agree that state courts located in Dallas, Texas and the United States District Court for the Northern District of Texas each shall have personal jurisdiction and proper venue with respect to any dispute between you and the Company arising in connection with the Performance Share Units or this Agreement. In any dispute with the Company, you will not raise, and you hereby expressly waive, any objection or defense to any such jurisdiction as an inconvenient forum.

28. Amendment. This Agreement may be amended the Board or by the Committee at any time (a) if the Board or the Committee determines, in its sole discretion, that amendment is necessary or advisable in light of any addition to or change in any federal or state, tax or securities law or other law or regulation, which change occurs after the Date of Grant and by its terms applies to the Award; or (b) other than in the circumstances described in clause (a) or provided in the Plan, with your consent.

29. The Plan. This Agreement is subject to all the terms, conditions, limitations and restrictions contained in the Plan.

30. Conflict. In the event the terms of this Agreement contradict the terms of any change in control agreement between you and the Company, the terms of this Agreement shall govern, subject to compliance with Section 409A of the Code.

31. Section 409A. It is intended that the Performance Share Units awarded hereunder shall comply with the requirements of Section 409A of the Code (and any regulations and guidelines issued thereunder), and this Agreement shall be interpreted on a basis consistent with such intent. Payments shall only be made on an event and in a manner permitted by Section 409A of the Code. Each payment under this Agreement is considered a separate payment for purposes of Section 409A of the Code. This Agreement may be amended without your consent in any respect deemed by the Committee to be necessary in order to preserve compliance with Section 409A of the Code. All payments to be made upon a termination of employment under this Agreement may only be made upon a "separation from service" under Section 409A of the Code. In no event may you, directly or indirectly, designate the calendar year of a payment. Notwithstanding anything in this Agreement to the contrary, if you are a "specified employee" under Section 409A of the Code at the time of separation from service and if payment of any amount under this Agreement is required to be delayed for a period of six months after the separation from service pursuant to Section 409A of the Code, payment of such amount shall be delayed as required by Section 409A of the Code, and the accumulated postponed amount shall be paid in a lump sum payment within 10 days after the end of the six-month period. If you die during the postponement period prior to the payment of postponed amount, the accumulated postponed amount shall be paid to the personal representative of your estate within 60 days after the date of your death.

32. Nontransferability of Agreement. This Agreement and all rights under this Agreement shall not be transferable by you during your life other than by will or pursuant to applicable laws of descent and distribution. Any of your rights and privileges in connection herewith

shall not be transferred, assigned, pledged or hypothecated by you or by any other person or persons, in any way, whether by operation of law, or otherwise, and shall not be subject to execution, attachment, garnishment or similar process. In the event of any such occurrence, this Agreement shall automatically be terminated and shall thereafter be null and void. Notwithstanding the foregoing, all or some of the Performance Share Units or rights under this Agreement may be transferred to a spouse pursuant to a domestic relations order issued by a court of competent jurisdiction.

HollyFrontier Corporation

George J. Damiris, Chief Executive Officer and President

Appendix A

Defined Terms

For purposes of the Agreement, the following terms shall have the meanings assigned below:

"***Adverse Change***" means (i) a change in the city in which you are required to work regularly, (ii) a substantial increase in travel requirements of employment, (iii) a substantial reduction in duties of the type previously performed by you, or (iv) a significant reduction in your compensation or benefits (other than bonuses and other discretionary items of compensation) that does not apply generally to employees of the Company or its successor.

"***Affiliate***" has the meaning provided in Rule 12b-2 under the Exchange Act.

"***Beneficial Owner***" has the meaning provided in Rule 13d-3 under the Exchange Act.

"***Cause***" means:

(i) An act or acts of dishonesty on your part constituting a felony or serious misdemeanor and resulting or intended to result directly in gain or personal enrichment at the expense of the Company or any of its Subsidiaries;

(ii) Gross or willful and wanton negligence in the performance of your material and substantial duties of employment with the Company or any of its Subsidiaries; or

(iii) Your conviction of a felony involving moral turpitude.

The existence of Cause shall be determined by the Committee, in its sole and absolute discretion.

"***Change in Control***" means the occurrence of any of the following after the Date of Grant:

(i) Any Person, other than (A) the Company or any of its Subsidiaries, (B) a trustee or other fiduciary holding securities under an employee benefit plan of the Company or any of its Affiliates, (C) an underwriter temporarily holding securities pursuant to an offering of such securities, or (D) a corporation owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company, is or becomes the Beneficial Owner, directly or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates) representing more than 40% of the combined voting power of the Company's then outstanding securities, or more than 40% of the then outstanding common stock of the Company, excluding any Person who becomes such a Beneficial Owner in connection with a transaction described in clause (iii)(A) below.

(ii) The individuals who as of the Date of Grant constitute the Board and any New Director cease for any reason to constitute a majority of the Board.

(iii) There is consummated a merger or consolidation of the Company or any direct or indirect Subsidiary of the Company with any other corporation, except if:

(A) the merger or consolidation results in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or any parent thereof) at least 60% of the combined voting power of the voting securities of the Company or such surviving entity or any parent thereof outstanding immediately after such merger or consolidation; or

(B) the merger or consolidation is effected to implement a recapitalization of the Company (or similar transaction) in which no Person is or becomes the Beneficial Owner, directly, or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates other than in connection with the acquisition by the Company or its Affiliates of a business) representing more than 40% of the combined voting power of the Company's then outstanding securities.

(iv) The stockholders of the Company approve a plan of complete liquidation or dissolution of the Company or an agreement for the sale or disposition by the Company of all or substantially all of the Company's assets, other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity at least 60% of the combined voting power of the voting securities of which is owned by the stockholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

"***New Director***" means an individual whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the Date of Grant or whose election or nomination for election was previously so approved or recommended. However, "New Director" shall not include a director whose initial assumption of office is in connection with an actual or threatened election contest, including but not limited to a consent solicitation relating to the election of directors of the Company.

"***Peer Group***" means Andeavor, CVR Energy, Inc., Delek U.S. Holdings, Inc., Marathon Petroleum Corporation, PBF Energy Corporation, Phillips 66, and Valero Energy Corporation. If a member of the Peer Group ceases to be a public company during the Performance Period (whether by merger, consolidation, liquidation or otherwise) or it fails to file financial statements with the SEC in a timely manner, it shall be treated as if it had not been a Peer Group member for the entire Performance Period.

"***Performance Unit Payout Percentage***" means the percentile obtained by dividing the sum of (1) the ROCE Performance Percentage and (2) the TSR Performance Percentage, by two.

"***Person***" has the meaning given in section 3(a)(9) of the Exchange Act as modified and used in sections 13(d) and 14(d) of the Exchange Act.

"***Retirement***" means your termination of employment other than for Cause on or after the date on which you: (i) have achieved ten years of continuous service with the Company and its Subsidiaries, and (ii) are age sixty (60).

"***Return on Capital Employed***," or ROCE, is defined as (i) operating income before depreciation and amortization divided by (ii) the sum of shareholders' equity, plus minority interest, plus debt, less goodwill and intangible assets, less cash and marketable securities at the beginning of the Performance Period; provided, that such metric will be calculated to exclude (a) any gains or losses attributable to FIFO inventory valuation (including lower of cost or market adjustments), (b) the effects of impairment expense related to intangible assets, including goodwill, and (c) non-cash asset writedowns; provided, further, the Committee may exclude the impact of any of the following events or occurrences (with respect to the Company or any member of the Peer Group) which the Committee determines should appropriately be excluded: (A) asset write-downs; (B) litigation, claims, judgments or settlements; (C) the effect of changes in tax law or other such laws or regulations affecting reported results; (D) accruals for reorganization and restructuring programs; (E) any extraordinary, unusual or nonrecurring items as described in the Accounting Standards Codification Topic 225, as the same may be amended or superseded from time to time; (F) any change in accounting principles as defined in the Accounting Standards Codification Topic 250, as the same may be amended or superseded from time to time; (G) any loss from a discontinued operation as described in the Accounting Standards Codification Topic 360, as the same may be amended or superseded from time to time; (H) adjustments to ROCE of the Company or any member (or multiple members) of the Peer Group to reflect mergers, acquisitions, purchases or similar transactions as necessary to prevent the increase or decrease of the ROCE of the Company or member of the Peer Group related to the merger, acquisition, purchase or similar transaction; (I) third party expenses associated with acquisitions; and (J) to the extent set forth with reasonable particularity in connection with the establishment of performance goals, any other extraordinary events or occurrences identified by the Committee.

"***ROCE Performance Percentage***" means the percentage set forth in the table below determined in accordance with the ordinal ranking of the Return on Capital Employed of the Company compared to the ROCE of each entity in the Peer Group achieved during the Performance Period:

Ranking of the Company within Peer Group	**ROCE Performance Percentage**
First	Maximum (200% of Target)
Second	167% of Target
Between Second and Target	Interpolate between 100% and 167%
Average of Fourth and Fifth	Target (100%)
Between Seventh and Target	Interpolate between 50% and 100%
Seventh	50% of Target (Minimum)
Eighth (last)	Zero

In the event the Peer Group contains fewer than seven companies at the end of the Performance Period, the table above will be adjusted by the Committee in a manner consistent with the table above to reflect the change in the number of companies within the Peer Group.

"***SEC***" means the Securities and Exchange Commission.

"***Special Involuntary Termination***" means the occurrence of (1) or (2) below within 60 days prior to, or at any time after, a Change in Control, where (1) is termination of your employment with the Company (including Subsidiaries of the Company) by the Company for any reason other than Cause and (2) is your resignation from employment with the Company (including Subsidiaries of the Company) within 90 days after an Adverse Change by the Company (including Subsidiaries of the Company) in the terms of your employment.

"***Total Shareholder Return***" or TSR, means (A) the sum of (1) share price appreciation (calculated as the closing share price of the Common Stock for the last business day of the Performance Period less the closing share price of the Common Stock for the first business day of the Performance Period), plus (2) cumulative dividends during the Performance Period, plus (3) any additional value or compensation received by shareholders such as stock received from spinoffs, divided by (B) the closing share price of the Common Stock on the first business day of the Performance Period.

"***TSR Performance Percentage***" means the percentage set forth in the table below determined in accordance with the ordinal ranking of the Total Shareholder Return of the Company compared to the TSR of each entity in the Peer Group achieved during the Performance Period:

Ranking of the Company within Peer Group	**TSR Performance Percentage**
First	Maximum (200% of Target)
Second	167% of Target
Between Second and Target	Interpolate between 100% and 167%
Average of Fourth and Fifth	Target (100%)
Between Seventh and Target	Interpolate between 50% and 100%
Seventh	50% of Target (Minimum)
Eighth (last)	Zero

In the event the Peer Group contains fewer than seven companies at the end of the Performance Period, the table above will be adjusted by the Committee in a manner consistent with the table above to reflect the change in the number of companies within the Peer Group.

Exhibit 10.53

HOLLYFRONTIER CORPORATION

PERFORMANCE SHARE UNIT AGREEMENT
(Non-Section 162(m))

This Performance Share Unit Agreement (the "***Agreement***") is made and entered into by and between HollyFrontier Corporation, a Delaware corporation (the "***Company***"), and you. This Agreement is entered into as of the ___ day of [●], 2017 (the "***Date of Grant***").

WITNESSETH:

WHEREAS, the Company has adopted the Plan (as defined below) to attract, retain and motivate employees, directors and consultants;

WHEREAS, the Compensation Committee (the "***Committee***") believes that entering into this Agreement with you is consistent with the stated purposes for which the Plan was adopted; and

WHEREAS, a copy of the Plan has been furnished to you and shall be deemed a part of this Agreement ("***Agreement***") as if fully set forth herein and the terms capitalized but not defined herein or on Appendix A attached hereto shall have the meanings set forth in the Plan.

NOW, THEREFORE, in consideration of the services rendered by you, the parties agree as follows:

1. Grant. The Company hereby grants to you as of the Date of Grant a Performance Award of _________ shares of Phantom Stock consisting of performance share units (the "***Performance Share Units***"), subject to the terms and conditions set forth in this Agreement. Depending on the Company's performance, you may earn from zero percent (0%) to two hundred percent (200%) of the Performance Share Units, based on the Company's performance on two measures set forth in Section 3 over a designated performance period compared to the performance of a group of peer companies selected by the Committee.

2. The Plan. The Performance Share Units granted to you by this Agreement shall be granted under the HollyFrontier Corporation Long-Term Incentive Compensation Plan (the "***Plan***").

3. Performance Period and Measures. This Section 3 sets forth the details of the Performance Award for the "***Performance Period***," which begins on October 1 of the calendar year of the Date of Grant ("***Year One***") and ends on September 30 of the third calendar year following Year One ("***Year Three***"). If you are employed by the Company or one of its Subsidiaries on December 15 of Year Three you will be entitled to a payment in Shares in the amount determined under Section 3(b) or pursuant to Section 4(a), as applicable, and payable at the time indicated in Section 5.

(a) Performance Measures. The number of Performance Share Units earned for the Performance Period is determined by comparing the Company's performance on the two measures listed below over the Performance Period to the performance of the Peer Group over the Performance

Period on the same two measures. The two performance measures are Return on Capital Employed and Total Shareholder Return.

(b) Shares Payable. The number of Shares payable is equal to the result of multiplying the total number of Performance Share Units awarded by the Performance Unit Payout Percentage. The number of Shares of Common Stock payable will be rounded down to the nearest Share. No fractional Shares of Common Stock will be issued pursuant to this Agreement.

4. Termination of Employment.

(a) In the event that your employment with the Company and its Subsidiaries terminates prior to December 15 of Year Three (i) due to your death, (ii) on account of your total and permanent disability, as determined by the Committee in its sole discretion, (iii) as a result of a Special Involuntary Termination or (iv) due to your Retirement, the Performance Share Units will become immediately vested and nonforfeitable assuming a Performance Unit Payout Percentage of one hundred percent (100%) instead of the Performance Unit Payout Percentage that would otherwise be determined at the end of the Performance Period in accordance with Section 3.

(b) If, prior to December 15 of Year Three you voluntarily separate from employment (other than due to your Retirement) or are terminated by action of the Company or a Subsidiary (other than a Special Involuntary Termination), including if you are terminated by the Company or a Subsidiary for Cause, all Performance Share Units awarded hereunder will be forfeited.

(c) With respect to the Performance Share Units, the Company or a Subsidiary may, in its sole discretion, determine that if you are on leave of absence for any reason you will be considered to still be in the employ of, or providing services to, the Company and its Subsidiaries, provided that your rights to the Performance Share Units, if any, during a Performance Period in which such a leave of absence occurs will be prorated to reflect the period of time during the Performance Period that you provided actual services to the Company and its Subsidiaries.

5. Payment of Performance Share Units. The number of Shares payable hereunder shall be paid as soon as reasonably practicable after December 15 of Year Three but in no event later than two and one-half months following the end of Year Three, in the amount determined in accordance with Section 3; provided, however, in the event of your termination of employment with the Company and its Subsidiaries pursuant to Section 4(a) the Shares shall be paid within thirty (30) days following such termination of employment. Such payment will be subject to withholding for taxes and other applicable payroll adjustments. The Committee's determination of the amount payable shall be binding upon you and your beneficiary or estate. The value of such Shares shall not bear any interest owing to the passage of time. The number of Shares of Common Stock payable will be rounded down to the nearest Share. No fractional Shares of Common Stock will be issued pursuant to this Agreement.

6. Limited Stockholder Rights. The Performance Share Units granted pursuant to this Agreement do not and shall not entitle you to any rights of a holder of Shares, including the right to vote, prior to the date Shares are issued to you in settlement of the Performance Share Units pursuant to Section 5; provided, however, that in the event the Company declares and pays a dividend

in respect of its outstanding Shares and, on the record date of that dividend, you hold Performance Share Units granted pursuant to this Agreement that have not been paid, the Company shall pay to you an amount in cash equal to the cash dividends you would have received if you were the holder of record as of such record date, of the number of Shares equal to the number of Performance Share Units specified in Section 1 hereof, such payment shall be made promptly following the date that the Company pays such dividend to its shareholders generally (however, in no event shall the payment be paid later than thirty (30) days following the date on which the Company pays such dividend to its shareholders generally). Your rights with respect to the Performance Share Units shall remain forfeitable at all times prior to the date on which the rights become vested and earned as set forth in Section 3, as adjusted by Section 4(a), as applicable.

7. Adjustment in Number of Performance Share Units. The number of Performance Share Units subject to this Agreement shall be adjusted to reflect stock splits or other changes in the capital structure of the Company, all in accordance with the Plan. In the event that the outstanding Shares of the Company are exchanged for a different number or kind of shares or other securities, or if additional, new or different shares are distributed with respect to the Shares through merger, consolidation, or sale of all or substantially all of the assets of the Company, there shall be substituted for the Shares under the Performance Share Units subject to this Agreement the appropriate number and kind of shares of new or replacement securities as determined in the sole discretion of the Committee, subject to the terms and provisions of the Plan.

8. Compliance with Securities Law. Notwithstanding any provision of this Agreement to the contrary, the issuance of Shares will be subject to compliance with all applicable requirements of federal, state, or foreign law with respect to such securities and with the requirements of any stock exchange or market system upon which the Shares may then be listed. No Shares will be issued hereunder if such issuance would constitute a violation of any applicable federal, state, or foreign securities laws or other law or regulations or the requirements of any stock exchange or market system upon which the Shares may then be listed. In addition, Shares will not be issued hereunder unless %2) a registration statement under the Securities Act, is at the time of issuance in effect with respect to the Shares issued or %2) in the opinion of legal counsel to the Company, the Shares issued may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any Shares subject to the Award will relieve the Company of any liability in respect of the failure to issue such Shares as to which such requisite authority has not been obtained. As a condition to any issuance hereunder, the Company may require you to satisfy any qualifications that may be necessary or appropriate to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect to such compliance as may be requested by the Company. From time to time, the Board and appropriate officers of the Company are authorized to take the actions necessary and appropriate to file required documents with governmental authorities, stock exchanges, and other appropriate Persons to make Shares available for issuance.

9. Payment of Taxes. The Company may require you to pay to the Company (or the Company's Subsidiary if you are an employee of a Subsidiary of the Company), an amount the

Company deems necessary to satisfy its (or its Subsidiary's) current or future withholding with respect to federal, state or local income or other taxes that you incur as a result of the Award. With respect to any tax withholding and to the extent permissible pursuant to Rule 16b-3 under the Exchange Act, you may (a) direct the Company to withhold from the Shares to be issued to you under this Agreement the number of Shares necessary to satisfy the Company's (or its Subsidiary's) withholding of such taxes, which determination will be based on the Shares' Fair Market Value at the time such determination is made; (b) deliver to the Company Shares sufficient to satisfy the Company's (or its Subsidiary's) tax withholding, based on the Shares' Fair Market Value at the time such determination is made; or (c) deliver cash to the Company (or its Subsidiary) sufficient to satisfy its tax withholding obligations. If you desire to elect to use the stock withholding option described in subparagraph (a), you must make the election at the time and in the manner the Company prescribes and the maximum number of Shares that may be so withheld or surrendered shall be a number of Shares that have an aggregate Fair Market Value on the date of withholding or surrender of up to the aggregate amount of such tax liabilities determined based on the greatest withholding rates for federal, state, foreign and/or local tax purposes, including payroll taxes, that may be utilized without creating adverse accounting treatment with respect to the Award. The Company, in its discretion, may deny your request to satisfy its tax withholding obligations using a method described under subparagraph (a) or (b). In the event the Company determines that the aggregate Fair Market Value of the Shares withheld as payment of any tax withholding obligation is insufficient to discharge that tax withholding obligation, then you must pay to the Company (or its Subsidiary), in cash, the amount of that deficiency immediately upon the Company's (or its Subsidiary's) request.

10. Right of the Company and Subsidiaries to Terminate Services. Nothing in this Agreement confers upon you the right to continue in the employ of or performing services for the Company or any Subsidiary, or interfere in any way with the rights of the Company or any Subsidiary to terminate your employment or service relationship at any time.

11. Furnish Information. You agree to furnish to the Company all information requested by the Company to enable it to comply with any reporting or other requirements imposed upon the Company by or under any applicable statute or regulation.

12. Remedies. The Company shall be entitled to recover from you reasonable attorneys' fees incurred in connection with the successful enforcement of the terms and provisions of this Agreement whether by an action to enforce specific performance or for damages for its breach or otherwise.

13. No Liability for Good Faith Determinations. The Company and the members of the Board shall not be liable for any act, omission or determination taken or made in good faith with respect to this Agreement or the Performance Share Units granted hereunder.

14. Execution of Receipts and Releases. Any payment of cash or any issuance or transfer of Shares or other property to you, or to your legal representative, heir, legatee or distributee, in accordance with the provisions hereof, will, to the extent thereof, be in full satisfaction of all claims of such Persons hereunder. In addition, the Company may require you or your legal representative, heir, legatee or distributee, as a condition precedent to such payment or issuance, to execute a general

release of all claims in favor of the Company, any Affiliate and the employees, officers, stockholders or board members of the foregoing in such form as the Company may determine.

15. Clawback. This Agreement is subject to any written clawback policies that the Company, with the approval of the Board or the Committee, may adopt. Any such policy may subject your Performance Share Units and amounts paid or realized with respect to the Performance Share Units under this Agreement to reduction, cancelation, forfeiture or recoupment if certain specified events or wrongful conduct occur, including but not limited to an accounting restatement due to the Company's material noncompliance with financial reporting regulations or other events or wrongful conduct specified in any such clawback policy adopted to conform to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and rules promulgated thereunder by the Securities and Exchange Commission and that the Company determines should apply to this Agreement.

16. No Guarantee of Interests. The Board and the Company do not guarantee the Shares from loss or depreciation.

17. Company Records. Records of the Company or its Subsidiaries regarding your period of service, termination of service and the reason(s) therefor, leaves of absence, re-employment, and other matters shall be conclusive for all purposes hereunder, unless determined by the Company to be incorrect.

18. Notice. All notices required or permitted under this Agreement must be in writing and personally delivered or sent by mail and shall be deemed to be delivered on the date on which it is actually received by the person to whom it is properly addressed or if earlier the date it is sent via certified United States mail.

19. Waiver of Notice. Any person entitled to notice hereunder may waive such notice in writing.

20. Information Confidential. As partial consideration for the granting of the Award hereunder, you hereby agree to keep confidential all information and knowledge, except that which has been disclosed in any public filings required by law, that you have relating to the terms and conditions of this Agreement; provided, however, that such information may be disclosed as required by law and may be given in confidence to your spouse and tax and financial advisors. In the event any breach of this promise comes to the attention of the Company, it shall take into consideration that breach in determining whether to recommend the grant of any future similar award to you, as a factor weighing against the advisability of granting any such future award to you. Nothing in this Agreement will prevent you from: (a) making a good faith report of possible violations of applicable law to any governmental agency or entity or (b) making disclosures that are protected under the whistleblower provisions of applicable law. For the avoidance of doubt, nothing herein shall prevent you from making a disclosure that: (i) is made (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Further, an individual who files a lawsuit for retaliation by an employer of reporting a suspected violation of law may make

disclosures without violating this Section 20 to the attorney of the individual and use such information in the court proceeding.

21. Successors. This Agreement shall be binding upon you, your legal representatives, heirs, legatees and distributees, and upon the Company, its successors and assigns.

22. Severability. If any provision of this Agreement is held to be illegal or invalid for any reason, the illegality or invalidity shall not affect the remaining provisions hereof, but such provision shall be fully severable and this Agreement shall be construed and enforced as if the illegal or invalid provision had never been included herein.

23. Company Action. Any action required of the Company shall be by resolution of the Board or by a person or entity authorized to act by resolution of the Board.

24. Headings. The titles and headings of Sections are included for convenience of reference only and are not to be considered in construction of the provisions hereof.

25. Governing Law. All questions arising with respect to the provisions of this Agreement shall be determined by application of the laws of Texas, without giving any effect to any conflict of law provisions thereof, except to the extent Texas state law is preempted by federal law. The obligation of the Company to sell and deliver Shares hereunder is subject to applicable laws and to the approval of any governmental authority required in connection with the authorization, issuance, sale, or delivery of such Shares.

26. Consent to Texas Jurisdiction and Venue . You hereby consent and agree that state courts located in Dallas, Texas and the United States District Court for the Northern District of Texas each shall have personal jurisdiction and proper venue with respect to any dispute between you and the Company arising in connection with the Performance Share Units or this Agreement. In any dispute with the Company, you will not raise, and you hereby expressly waive, any objection or defense to any such jurisdiction as an inconvenient forum.

27. Amendment. This Agreement may be amended the Board or by the Committee at any time (a) if the Board or the Committee determines, in its sole discretion, that amendment is necessary or advisable in light of any addition to or change in any federal or state, tax or securities law or other law or regulation, which change occurs after the Date of Grant and by its terms applies to the Award; or (b) other than in the circumstances described in clause (a) or provided in the Plan, with your consent.

28. The Plan. This Agreement is subject to all the terms, conditions, limitations and restrictions contained in the Plan.

29. Conflict. In the event the terms of this Agreement contradict the terms of any change in control agreement between you and the Company, the terms of this Agreement shall govern, subject to compliance with Section 409A of the Code.

30. Section 409A. It is intended that the Performance Share Units awarded hereunder shall comply with the requirements of Section 409A of the Code (and any regulations and guidelines issued thereunder), and this Agreement shall be interpreted on a basis consistent with such intent. Payments shall only be made on an event and in a manner permitted by Section 409A of the Code. Each payment under this Agreement is considered a separate payment for purposes of Section 409A of the Code. This Agreement may be amended without your consent in any respect deemed by the Committee to be necessary in order to preserve compliance with Section 409A of the Code. All payments to be made upon a termination of employment under this Agreement may only be made upon a "separation from service" under Section 409A of the Code. In no event may you, directly or indirectly, designate the calendar year of a payment. Notwithstanding anything in this Agreement to the contrary, if you are a "specified employee" under Section 409A of the Code at the time of separation from service and if payment of any amount under this Agreement is required to be delayed for a period of six months after the separation from service pursuant to Section 409A of the Code, payment of such amount shall be delayed as required by Section 409A of the Code, and the accumulated postponed amount shall be paid in a lump sum payment within 10 days after the end of the six-month period. If you die during the postponement period prior to the payment of postponed amount, the accumulated postponed amount shall be paid to the personal representative of your estate within 60 days after the date of your death.

31. Nontransferability of Agreement. This Agreement and all rights under this Agreement shall not be transferable by you during your life other than by will or pursuant to applicable laws of descent and distribution. Any of your rights and privileges in connection herewith shall not be transferred, assigned, pledged or hypothecated by you or by any other person or persons, in any way, whether by operation of law, or otherwise, and shall not be subject to execution, attachment, garnishment or similar process. In the event of any such occurrence, this Agreement shall automatically be terminated and shall thereafter be null and void. Notwithstanding the foregoing, all or some of the Performance Share Units or rights under this Agreement may be transferred to a spouse pursuant to a domestic relations order issued by a court of competent jurisdiction.

HollyFrontier Corporation

George J. Damiris, Chief Executive Officer and President

Appendix A

Defined Terms

For purposes of the Agreement, the following terms shall have the meanings assigned below:

"***Adverse Change***" means (i) a change in the city in which you are required to work regularly, (ii) a substantial increase in travel requirements of employment, (iii) a substantial reduction in duties of the type previously performed by you, or (iv) a significant reduction in your compensation or benefits (other than bonuses and other discretionary items of compensation) that does not apply generally to employees of the Company or its successor.

"***Affiliate***" has the meaning provided in Rule 12b-2 under the Exchange Act.

"***Beneficial Owner***" has the meaning provided in Rule 13d-3 under the Exchange Act.

"***Cause***" means:

(i) An act or acts of dishonesty on your part constituting a felony or serious misdemeanor and resulting or intended to result directly in gain or personal enrichment at the expense of the Company or any of its Subsidiaries;

(ii) Gross or willful and wanton negligence in the performance of your material and substantial duties of employment with the Company or any of its Subsidiaries; or

(iii) Your conviction of a felony involving moral turpitude.

The existence of Cause shall be determined by the Committee, in its sole and absolute discretion.

"***Change in Control***" means the occurrence of any of the following after the Date of Grant:

(i) Any Person, other than (A) the Company or any of its Subsidiaries, (B) a trustee or other fiduciary holding securities under an employee benefit plan of the Company or any of its Affiliates, (C) an underwriter temporarily holding securities pursuant to an offering of such securities, or (D) a corporation owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company, is or becomes the Beneficial Owner, directly or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates) representing more than 40% of the combined voting power of the Company's then outstanding securities, or more than 40% of the then outstanding common stock of the Company, excluding any Person who becomes such a Beneficial Owner in connection with a transaction described in clause (iii)(A) below.

(ii) The individuals who as of the Date of Grant constitute the Board and any New Director cease for any reason to constitute a majority of the Board.

(iii) There is consummated a merger or consolidation of the Company or any direct or indirect Subsidiary of the Company with any other corporation, except if:

(A) the merger or consolidation results in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or any parent thereof) at least 60% of the combined voting power of the voting securities of the Company or such surviving entity or any parent thereof outstanding immediately after such merger or consolidation; or

(B) the merger or consolidation is effected to implement a recapitalization of the Company (or similar transaction) in which no Person is or becomes the Beneficial Owner, directly, or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates other than in connection with the acquisition by the Company or its Affiliates of a business) representing more than 40% of the combined voting power of the Company's then outstanding securities.

(iv) The stockholders of the Company approve a plan of complete liquidation or dissolution of the Company or an agreement for the sale or disposition by the Company of all or substantially all of the Company's assets, other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity at least 60% of the combined voting power of the voting securities of which is owned by the stockholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

"***New Director***" means an individual whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the Date of Grant or whose election or nomination for election was previously so approved or recommended. However, "New Director" shall not include a director whose initial assumption of office is in connection with an actual or threatened election contest, including but not limited to a consent solicitation relating to the election of directors of the Company.

"***Peer Group***" means Andeavor, CVR Energy, Inc., Delek U.S. Holdings, Inc., Marathon Petroleum Corporation, PBF Energy Corporation, Phillips 66, and Valero Energy Corporation. If a member of the Peer Group ceases to be a public company during the Performance Period (whether by merger, consolidation, liquidation or otherwise) or it fails to file financial statements with the SEC in a timely manner, it shall be treated as if it had not been a Peer Group member for the entire Performance Period.

"***Performance Unit Payout Percentage***" means the percentile obtained by dividing the sum of (1) the ROCE Performance Percentage and (2) the TSR Performance Percentage, by two.

"***Person***" has the meaning given in section 3(a)(9) of the Exchange Act as modified and used in sections 13(d) and 14(d) of the Exchange Act.

“***Retirement***” means your termination of employment other than for Cause on or after the date on which you: (i) have achieved ten years of continuous service with the Company and its Subsidiaries, and (ii) are age sixty (60).

“***Return on Capital Employed***,” or ROCE, is defined as (i) operating income before depreciation and amortization divided by (ii) the sum of shareholders’ equity, plus minority interest, plus debt, less goodwill and intangible assets, less cash and marketable securities at the beginning of the Performance Period; provided, that such metric will be calculated to exclude (a) any gains or losses attributable to FIFO inventory valuation (including lower of cost or market adjustments), (b) the effects of impairment expense related to intangible assets, including goodwill, and (c) non-cash asset writedowns; provided, further, the Committee may exclude the impact of any of the following events or occurrences (with respect to the Company or any member of the Peer Group) which the Committee determines should appropriately be excluded: (A) asset write-downs; (B) litigation, claims, judgments or settlements; (C) the effect of changes in tax law or other such laws or regulations affecting reported results; (D) accruals for reorganization and restructuring programs; (E) any extraordinary, unusual or nonrecurring items as described in the Accounting Standards Codification Topic 225, as the same may be amended or superseded from time to time; (F) any change in accounting principles as defined in the Accounting Standards Codification Topic 250, as the same may be amended or superseded from time to time; (G) any loss from a discontinued operation as described in the Accounting Standards Codification Topic 360, as the same may be amended or superseded from time to time; (H) adjustments to ROCE of the Company or any member (or multiple members) of the Peer Group to reflect mergers, acquisitions, purchases or similar transactions as necessary to prevent the increase or decrease of the ROCE of the Company or member of the Peer Group related to the merger, acquisition, purchase or similar transaction; (I) third party expenses associated with acquisitions; and (J) to the extent set forth with reasonable particularity in connection with the establishment of performance goals, any other extraordinary events or occurrences identified by the Committee.

“***ROCE Performance Percentage***” means the percentage set forth in the table below determined in accordance with the ordinal ranking of the Return on Capital Employed of the Company compared to the ROCE of each entity in the Peer Group achieved during the Performance Period:

Ranking of the Company within Peer Group	**ROCE Performance Percentage**
First	Maximum (200% of Target)
Second	167% of Target
Between Second and Target	Interpolate between 100% and 167%
Average of Fourth and Fifth	Target (100%)
Between Seventh and Target	Interpolate between 50% and 100%
Seventh	50% of Target (Minimum)
Eighth (last)	Zero

“***SEC***” means the Securities and Exchange Commission.

"***Special Involuntary Termination***" means the occurrence of (1) or (2) below within 60 days prior to, or at any time after, a Change in Control, where (1) is termination of your employment with the Company (including Subsidiaries of the Company) by the Company for any reason other than Cause and (2) is your resignation from employment with the Company (including Subsidiaries of the Company) within 90 days after an Adverse Change by the Company (including Subsidiaries of the Company) in the terms of your employment.

"***Total Shareholder Return***" or TSR, means (A) the sum of (1) share price appreciation (calculated as the closing share price of the Common Stock for the last business day of the Performance Period less the closing share price of the Common Stock for the first business day of the Performance Period), plus (2) cumulative dividends during the Performance Period, plus (3) any additional value or compensation received by shareholders such as stock received from spinoffs, divided by (B) the closing share price of the Common Stock on the first business day of the Performance Period.

"***TSR Performance Percentage***" means the percentage set forth in the table below determined in accordance with the ordinal ranking of the Total Shareholder Return of the Company compared to the TSR of each entity in the Peer Group achieved during the Performance Period:

Ranking of the Company within Peer Group	**TSR Performance Percentage**
First	Maximum (200% of Target)
Second	167% of Target
Between Second and Target	Interpolate between 100% and 167%
Average of Fourth and Fifth	Target (100%)
Between Seventh and Target	Interpolate between 50% and 100%
Seventh	50% of Target (Minimum)
Eighth (last)	Zero

In the event the Peer Group contains fewer than seven companies at the end of the Performance Period, the table above will be adjusted by the Committee in a manner consistent with the table above to reflect the change in the number of companies within the Peer Group.

HOLLYFRONTIER CORPORATION

RESTRICTED STOCK UNIT AGREEMENT
(Time-Based Vesting)

This Agreement is made and entered into as of the Date of Grant set forth in the Notice of Grant of Restricted Stock Units ("***Notice of Grant***") by and between HollyFrontier Corporation, a Delaware corporation (the "***Company***"), and you;

WHEREAS, the Company, as part of your compensation for services to the Company and its Subsidiaries and in order to induce you to materially contribute to the success of the Company, agrees to grant you this restricted stock unit award;

WHEREAS, the Company adopted the Plan (as defined in the Notice of Grant) under which the Company is authorized to grant stock units and phantom stock awards, as applicable (in each case, herein referred to as restricted stock units) to certain employees, directors and other service providers of the Company and its Subsidiaries;

WHEREAS, a copy of the Plan has been furnished to you and shall be deemed a part of this Restricted Stock Unit Agreement (Time-Based Vesting) ("***Agreement***") as if fully set forth herein and the terms capitalized but not defined herein shall have the meanings set forth in the Plan; and

WHEREAS, you desire to accept the restricted stock unit award made pursuant to this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein and for other valuable consideration hereinafter set forth, the parties hereto agree as follows:

1. The Grant. Subject to the conditions set forth below, the Company hereby grants you effective as of the Date of Grant set forth in the Notice of Grant, as a matter of separate inducement but not in lieu of any cash or other compensation for your services for the Company (or any Subsidiary), an award (the "***Award***") covering the aggregate number of Shares set forth in the Notice of Grant in accordance with the terms and conditions set forth herein, in the Notice of Grant and in the Plan, plus the additional rights to receive possible dividend equivalents, in accordance with the terms and conditions set forth herein.

2. No Shareholder Rights. The Restricted Stock Units ("***RSUs***") granted pursuant to this Agreement do not and shall not entitle you to any rights of a holder of Shares prior to the date Shares are issued to you in settlement of the Award.

3. Dividend Equivalents. In the event that the Company declares and pays a dividend in respect of its outstanding Shares on or after the Date of Grant and, on the record date for such dividend, you hold RSUs granted pursuant to this Agreement that have not been settled, the Company shall pay to you an amount in cash equal to the cash dividends you would have received if you were the holder of record as of such record date, of the number of Shares related to the portion of your

RSUs that have not been settled as of such record date, such payment ("***Dividend Equivalents***") to be made on or promptly following the date that the Company pays such dividend (however, in no event shall the Dividend Equivalents be paid later than 30 days following the date on which the Company pays such dividend to its shareholders generally).

4. Restrictions; Forfeiture. The RSUs are restricted in that they cannot be sold, transferred or otherwise alienated or hypothecated until Shares related to such RSUs are issued pursuant to Section 8 following the removal or expiration of the restrictions as contemplated in Section 5 (and Section 6, if applicable) of this Agreement and as described in the Notice of Grant. In the event you cease to be an employee of the Company and any Subsidiary, other than as provided in Section 6 below, the RSUs that are not vested on the date of such cessation of employment shall be immediately forfeited.

5. Expiration of Restrictions and Risk of Forfeiture. The restrictions on the RSUs granted pursuant to this Agreement will expire and the RSUs will become nonforfeitable as set forth in the Notice of Grant, provided that you remain an employee of the Company and its Subsidiaries until the applicable dates and times set forth therein. RSUs that have become vested and non-forfeitable as provided in this Agreement are referred to herein as "***Vested***."

6. Termination of Employment.

(a) Termination Generally**.** Subject to subsections (b), (c), (d) and (e) below, if your employment relationship with the Company and its Subsidiaries is terminated for any reason, then those RSUs that have not become Vested as of the date of termination shall become null and void and those RSUs shall be forfeited to the Company. The RSUs that are Vested as of the date of such termination shall not be forfeited to the Company and will be settled in accordance with Section 8.

(b) Death or Disability. In the event of termination of your employment due to your (i) death or (ii) total and permanent disability, as determined by the Committee in its sole discretion, in either case, before all of the RSUs granted pursuant to this Agreement have become Vested, you will forfeit a number of RSUs equal to the number of RSUs specified in the Notice of Grant times the percentage that (A) the number of days beginning on the day on which the termination due to death or disability occurs and ending on the last day of the Service Period, (B) bears to the total number of days in the Service Period, and any remaining RSUs that are not vested will become Vested; provided, however, that any fractional RSUs will become null and void and automatically forfeited.

(c) Retirement. In the event of termination of your employment with the Company and its Subsidiaries due to your Retirement before all of the RSUs have become Vested, the RSUs granted pursuant to this Agreement that have not become Vested as of such date of termination shall become Vested on such date of termination.

(d) Special Involuntary Termination. In the event of a Special Involuntary Termination, all of the RSUs granted pursuant to this Agreement will become Vested.

(e) Effect of Employment Agreement. Notwithstanding any provision herein to the contrary, in the event of any inconsistency between this Section 6 and any employment, change in control, or similar agreement entered into by and between you and the Company (or any Subsidiary), the terms of the employment, change in control or similar agreement shall control, subject to compliance with Section 409A of the Code.

7. Leave of Absence. With respect to the Award, the Company may, in its sole discretion, determine that if you are on leave of absence for any reason you will be considered to still be in the employ of the Company (or a Subsidiary), provided that rights to the RSUs during a leave of absence will be limited to the extent to which those rights were earned or vested when the leave of absence began.

8. Issuance of Stock. Shares shall be issued to you in settlement of your Vested RSUs within 30 days following the date upon which such RSUs become Vested in accordance with the Agreement. At the time of settlement, the Company shall cause to be issued Shares registered in your name in payment of the Award. The Company shall evidence the Shares to be issued in payment of the RSUs in the manner it deems appropriate. The value of any fractional RSU shall be rounded down at the time Shares are issued to you. No fractional Shares, nor the cash value of any fractional Shares, will be issuable or payable to you pursuant to this Agreement. The value of Shares shall not bear any interest owing to the passage of time. Neither this Section 8 nor any action taken pursuant to or in accordance with this Section 8 shall be construed to create a trust or a funded or secured obligation of any kind.

9. Payment of Taxes. The Company may require you to pay to the Company (or the Company's Subsidiary if you are an employee of a Subsidiary of the Company), an amount the Company deems necessary to satisfy its (or its Subsidiary's) current or future withholding with respect to federal, state or local income or other taxes that you incur as a result of the Award. With respect to any tax withholding (and to the extent permissible pursuant to Rule 16b-3 under the Exchange Act, if applicable), you may (a) direct the Company to withhold from the Shares to be issued to you under this Agreement the number of Shares necessary to satisfy the Company's withholding of such taxes, which determination will be based on the Shares' Fair Market Value at the time such determination is made; (b) deliver to the Company Shares sufficient to satisfy the Company's tax withholding, based on the Shares' Fair Market Value at the time such determination is made; or (c) deliver cash to the Company sufficient to satisfy its tax withholding obligations. If you desire to elect to use the stock withholding option described in subparagraph (a), you must make the election at the time and in the manner the Company prescribes and the maximum number of Shares that may be so withheld or surrendered shall be a number of Shares that have an aggregate Fair Market Value on the date of withholding or repurchase of up to the aggregate amount of such tax liabilities determined based on the greatest withholding rates for you in your relevant federal, state, foreign and/or local tax jurisdiction, including payroll taxes, that may be utilized without creating adverse accounting treatment with respect to the Award. The Company, in its discretion, may deny your request to satisfy its tax withholding obligations using a method described under subparagraph (a) or (b). In the event the Company determines that the aggregate Fair Market Value of the Shares withheld as payment of any tax withholding obligation is insufficient to discharge

that tax withholding obligation, then you must pay to the Company, in cash, the amount of that deficiency immediately upon the Company's request.

10. Compliance with Securities and Other Applicable Laws. Notwithstanding any provision of this Agreement to the contrary, the issuance of Shares will be subject to compliance with all applicable requirements of federal, state, or foreign law with respect to such securities and with the requirements of any stock exchange or market system upon which the Shares may then be listed. No Shares will be issued hereunder if such issuance would constitute a violation of any applicable federal, state, or foreign securities laws or other law or regulations or the requirements of any stock exchange or market system upon which the Shares may then be listed. In addition, Shares will not be issued hereunder unless (a) a registration statement under the Securities Act is, at the time of issuance, in effect with respect to the Shares issued or (b) in the opinion of legal counsel to the Company, the Shares issued may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any Shares subject to the Award will relieve the Company of any liability in respect of the failure to issue such Shares as to which such requisite authority has not been obtained. As a condition to any issuance hereunder, the Company may require you to satisfy any qualifications that may be necessary or appropriate to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect to such compliance as may be requested by the Company. From time to time, the Board and appropriate officers of the Company are authorized to take the actions necessary and appropriate to file required documents with governmental authorities, stock exchanges, and other appropriate Persons to make Shares available for issuance.

11. Legends. The Company may at any time place legends referencing any restrictions imposed on the Shares pursuant to Sections 4 and 10 of this Agreement on all certificates representing Shares issued with respect to this Award.

12. Right of the Company and Subsidiaries to Terminate Services. Nothing in this Agreement confers upon you the right to continue in the employ of or performing services for the Company or any Subsidiary, or interfere in any way with the rights of the Company or any Subsidiary to terminate your employment or service relationship at any time.

13. Furnish Information. You agree to furnish to the Company all information requested by the Company to enable it to comply with any reporting or other requirements imposed upon the Company by or under any applicable statute or regulation.

14. Remedies. The Company shall be entitled to recover from you reasonable attorneys' fees incurred in connection with the successful enforcement of the terms and provisions of this Agreement whether by an action to enforce specific performance or for damages for its breach or otherwise to the extent allowed by applicable law.

15. No Liability for Good Faith Determinations. The Company and the members of the Board shall not be liable for any act, omission or determination taken or made in good faith with respect to this Agreement or the RSUs granted hereunder.

16. Execution of Receipts and Releases. Any payment of cash or any issuance or transfer of RSUs or other property to you, or to your legal representative, heir, legatee or distributee, in accordance with the provisions hereof, will, to the extent thereof, be in full satisfaction of all claims of such Persons hereunder. In addition, the Company may require you or your legal representative, heir, legatee or distributee, as a condition precedent to such payment or issuance, to execute a general release of all claims in favor of the Company, any Affiliate and the employees, officers, stockholders or board members of the foregoing in such form as the Company may determine; provided, however, that any review period under such release will not modify the date of settlement with respect to your Award.

17. Clawback. This Agreement is subject to any written clawback policies that the Company, with the approval of the Board or the Committee, may adopt to the extent allowed by applicable law. Any such policy may subject your RSUs and amounts paid or realized with respect to the RSUs under this Agreement to reduction, cancelation, forfeiture or recoupment if certain specified events or wrongful conduct occur, including but not limited to an accounting restatement due to the Company's material noncompliance with financial reporting regulations or other events or wrongful conduct specified in any such clawback policy adopted by the Company, including any policy to conform to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and rules promulgated thereunder by the Securities and Exchange Commission and that the Company determines should apply to this Agreement.

18. No Guarantee of Interests. Neither the Board nor the Company guarantee the Shares from loss or depreciation.

19. Company Records. Records of the Company or its Subsidiaries regarding your period of employment or service, termination of service and/or employment and the reason(s) therefor, leaves of absence, re-employment, and other matters shall be conclusive for all purposes hereunder, unless determined by the Company to be incorrect.

20. Notice. All notices required or permitted under this Agreement must be in writing and personally delivered or sent by mail and shall be deemed to be delivered on the date on which it is actually received by the person to whom it is properly addressed or, if earlier, the date it is sent via certified United States mail.

21. Waiver of Notice. Any person entitled to notice hereunder may waive such notice in writing.

22. Information Confidential. As partial consideration for the granting of the Award hereunder, you hereby agree to keep confidential all information and knowledge, except that which has been disclosed in any public filings required by law, that you have relating to the terms and conditions of this Agreement; provided, however, that such information may be disclosed as required by law and may be given in confidence to your spouse and tax and financial advisors. In the event any breach of this promise comes to the attention of the Company, it shall take into consideration that breach in determining whether to recommend the grant of any future similar award to you, as a factor weighing against the advisability of granting any such future award to you. Nothing in this Agreement will prevent you from: (a) making a good faith report of possible violations of applicable

law to any governmental agency or entity or (b) making disclosures that are protected under the whistleblower provisions of applicable law. For the avoidance of doubt, nothing herein shall prevent you from making a disclosure that: (i) is made (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Further, an individual who files a lawsuit for retaliation by an employer of reporting a suspected violation of law may make disclosures without violating this Section 21 to the attorney of the individual and use such information in the court proceeding.

23. Section 409A. It is intended that the RSUs awarded hereunder shall comply with the requirements of Section 409A of the Code (and any regulations and guidelines issued thereunder), and this Agreement shall be interpreted on a basis consistent with such intent. Payments shall only be made on an event and in a manner permitted by Section 409A of the Code. Each payment under this Agreement is considered a separate payment for purposes of Section 409A of the Code. This Agreement may be amended without your consent in any respect deemed by the Committee to be necessary in order to preserve compliance with Section 409A of the Code. All payments to be made upon a termination of employment under this Agreement may only be made upon a “separation from service” under Section 409A of the Code. In no event may you, directly or indirectly, designate the calendar year of a payment. Notwithstanding anything in this Agreement to the contrary, if you are a “specified employee” under Section 409A of the Code at the time of separation from service and if payment of any amount under this Agreement is required to be delayed for a period of six months after the separation from service pursuant to Section 409A of the Code, payment of such amount shall be delayed as required by Section 409A of the Code, and the accumulated postponed amount shall be paid in a lump sum payment within 10 days after the end of the six-month period. If you die during the postponement period prior to the payment of postponed amount, the accumulated postponed amount shall be paid to the personal representative of your estate within 60 days after the date of your death.

24. Successors. This Agreement shall be binding upon you, your legal representatives, heirs, legatees and distributees, and upon the Company, its successors and assigns.

25. Severability. If any provision of this Agreement is held to be illegal or invalid for any reason, the illegality or invalidity shall not affect the remaining provisions hereof, but such provision shall be fully severable and this Agreement shall be construed and enforced as if the illegal or invalid provision had never been included herein.

26. Company Action. Any action required of the Company shall be by resolution of the Board or by a person or entity authorized to act by resolution of the Board.

27. Headings. The titles and headings of Sections are included for convenience of reference only and are not to be considered in construction of the provisions hereof.

28. Governing Law. All questions arising with respect to the provisions of this Agreement shall be determined by application of the laws of the State of Texas, without giving any effect to any conflict of law provisions thereof, except to the extent Texas state law is preempted

by federal law. The obligation of the Company to sell and deliver Shares hereunder is subject to applicable laws and to the approval of any governmental authority required in connection with the authorization, issuance, sale, or delivery of such Shares.

29. Consent to Texas Jurisdiction and Venue . You hereby consent and agree that state courts located in Dallas, Texas and the United States District Court for the Northern District of Texas each shall have personal jurisdiction and proper venue with respect to any dispute between you and the Company arising in connection with the RSUs or this Agreement. In any dispute with the Company, you will not raise, and you hereby expressly waive, any objection or defense to any such jurisdiction as an inconvenient forum.

30. Amendment. This Agreement may be amended the Board or by the Committee at any time (a) if the Board or the Committee determines, in its sole discretion, that amendment is necessary or advisable in light of any addition to or change in any federal or state, tax or securities law or other law or regulation, which change occurs after the Date of Grant and by its terms applies to the Award; or (b) other than in the circumstances described in clause (a) or provided in the Plan, with your consent.

31. The Plan. This Agreement is subject to all the terms, conditions, limitations and restrictions contained in the Plan.

32. Defined Terms.

(a) "***Adverse Change***" means (i) a change in the city in which you are required to work regularly, (ii) a substantial increase in travel requirements of employment, (iii) a substantial reduction in duties of the type previously performed by you, or (iv) a significant reduction in your compensation or benefits (other than bonuses and other discretionary items of compensation) that does not apply generally to employees of the Company or its successor.

(b) "***Affiliate***" has the meaning provided in Rule 12b-2 under the Exchange Act.

(c) "***Beneficial Owner***" has the meaning provided in Rule 13d-3 under the Exchange Act.

(d) "***Cause***" means:

(i) An act or acts of dishonesty on your part constituting a felony or serious misdemeanor and resulting or intended to result directly in gain or personal enrichment at the expense of the Company or any Subsidiary;

(ii) Gross or willful and wanton negligence in the performance of your material and substantial duties of employment with the Company and its Subsidiaries; or

(iii) Your conviction of a felony involving moral turpitude.

The existence of Cause shall be determined by the Committee, in its sole and absolute discretion.

(e) "***Change in Control***" means the occurrence of any of the following after the Date of Grant:

(i) Any Person, other than (A) the Company or any of its Subsidiaries, (B) a trustee or other fiduciary holding securities under an employee benefit plan of the Company or any of its Affiliates, (C) an underwriter temporarily holding securities pursuant to an offering of such securities, or (D) a corporation owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company, is or becomes the Beneficial Owner, directly or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates) representing more than 40% of the combined voting power of the Company's then outstanding securities, or more than 40% of the then outstanding common stock of the Company, excluding any Person who becomes such a Beneficial Owner in connection with a transaction described in Section 32(e)(iii)(1) below.

(ii) The individuals who as of the Date of Grant constitute the Board and any New Director cease for any reason to constitute a majority of the Board.

(iii) There is consummated a merger or consolidation of the Company or any direct or indirect Subsidiary of the Company with any other corporation, except if:

(1) the merger or consolidation results in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or any parent thereof) at least 60% of the combined voting power of the voting securities of the Company or such surviving entity or any parent thereof outstanding immediately after such merger or consolidation; or

(2) the merger or consolidation is effected to implement a recapitalization of the Company (or similar transaction) in which no Person is or becomes the Beneficial Owner, directly, or indirectly, of securities of the Company (not including in the securities beneficially owned by such Person any securities acquired directly from the Company or its Affiliates other than in connection with the acquisition by the Company or its Affiliates of a business) representing more than 40% of the combined voting power of the Company's then outstanding securities.

(iv) The stockholders of the Company approve a plan of complete liquidation or dissolution of the Company or an agreement for the sale or disposition by the Company of all or substantially all of the Company's assets, other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity at least 60% of the combined voting power of the voting securities of which is owned by the stockholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

(f) "***New Director***" means an individual whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the Date of Grant or whose election or nomination for election was previously so approved or recommended. However, "New Director" shall not include a director whose initial assumption of office is in connection with an actual or threatened election contest, including but not limited to a consent solicitation relating to the election of directors of the Company.

(g) "***Person***" has the meaning given in section 3(a)(9) of the Exchange Act as modified and used in sections 13(d) and 14(d) of the Exchange Act.

(h) "***Retirement***" means your termination of employment other than for Cause on or after the date on which you: (i) have achieved ten years of continuous service with the Company, and (ii) are age sixty (60).

(i) "***Service Period***" means the period of time beginning on the Date of Grant specified in the Notice of Grant and ending on the final vesting date specified in the Notice of Grant.

(j) "***Special Involuntary Termination***" means the occurrence of (1) or (2) below within 60 days prior to, or at any time after, a Change in Control, where (1) is termination of your employment with the Company (including Subsidiaries of the Company) by the Company (or any Subsidiary) for any reason other than Cause and (2) is your resignation from employment with the Company (including Subsidiaries of the Company) within 90 days after an Adverse Change by the Company (including Subsidiaries of the Company) in the terms of your employment.

[Remainder of page intentionally left blank]

Exhibit 10.59

HOLLYFRONTIER CORPORATION

NOTICE OF GRANT OF RESTRICTED STOCK UNITS
(Time-Based Vesting)

Pursuant to the terms and conditions of the HollyFrontier Corporation Long-Term Incentive Compensation Plan (the "***Plan***"), and the associated Restricted Stock Unit Agreement (Time-Based Vesting) which has been made separately available to you (the "***Agreement***"), you are hereby granted an award to receive the number of Restricted Stock Units ("***RSUs***") set forth below, whereby each RSU represents the right to receive one Share, plus rights to certain dividend equivalents described in Section 3 of the Agreement, under the terms and conditions set forth below, in the Agreement, and in the Plan. Capitalized terms used but not defined herein shall have the meanings set forth in the Plan or the Agreement. You may obtain a copy of the Plan and a copy of the prospectus related to the Shares by following the instructions attached as Appendix A. Additionally, you may request a copy of the Plan or the prospectus by contacting Cara Whitesel at Cara.Whitesel@hollyfrontier.com or 214.954.6530.

Grantee: ______________________

Date of Grant: [●], 20[●] ("***Date of Grant***")

Number of Restricted Stock Units: ______________________

Vesting Schedule: The restrictions on all of the RSUs granted pursuant to the Agreement will expire and the RSUs will vest according to the following schedule (or on the first business day thereafter if the date below falls on a weekend) (each such date, a "***Regular Vesting Date***"); provided, that (except as otherwise provided in Section 6 of your Agreement) you remain in the employ of the Company or its Subsidiaries continuously from the Date of Grant through such Regular Vesting Dates (as determined under the Agreement).

On Each of the Following Regular Vesting Dates	**Cumulative Portion of RSUs that will become Vested**
December 15, 2018	One-third
December 15, 2019	One-third
December 15, 2020	One-third

Except as otherwise provided in Section 6 of your Agreement, all RSUs that have not become vested and non-forfeitable pursuant to this Notice will be null and void and forfeited to the Company in the event of your termination by the Company or its Subsidiaries for any reason.

The Shares you receive upon settlement will be taxable to you in an amount equal to the closing price of the Shares on the date of settlement. By accepting the RSUs you acknowledge and agree that (a) you are not relying on any written or oral statement or representation by the Company, its affiliates, or any of their respective employees, directors, officers, attorneys or agents (collectively, the "***Company Parties***") regarding the tax effects associated with this Notice of Grant of Restricted Stock Units and the Agreement and your receipt, holding and vesting of the RSUs, (b) in accepting the RSUs you are relying on your own judgment and the judgment of the professionals of your choice with whom you have consulted, and (c) a copy of the Agreement and the Plan has been made available to you. By accepting the RSUs you hereby release, acquit and forever discharge the Company Parties from all actions, causes of actions, suits, debts, obligations, liabilities, claims, damages, losses, costs and expenses of any nature whatsoever, known or unknown, on account of, arising out of, or in any way related to the tax effects associated with this Notice of Grant of Restricted Stock Unit and the Agreement and your receipt, holding and the vesting of the RSUs.

HollyFrontier Corporation

George J. Damiris, Chief Executive Officer and President

Appendix A

EXHIBIT 21.1

HOLLYFRONTIER CORPORATION
SUBSIDIARIES OF REGISTRANT

Name of Entity	State or Country of Incorporation or Organization
7037619 Canada Inc.	Canada
Black Eagle LLC	Delaware
Cheyenne Logistics LLC (3)	Delaware
Cheyenne Pipeline LLC (joint venture) (3)	Texas
El Dorado Logistics LLC (3)	Delaware
El Dorado Osage LLC	Delaware
El Dorado Operating LLC (3)	Delaware
El Paso Operating LLC	Delaware
Eagle Consolidation LLC	Delaware
Ethanol Management Company LLC	Delaware
Frontier Aspen LLC (f/k/a HEP Casper SLC LLC) (3)	Delaware
Frontier Pipeline LLC	Delaware
Frontier Refining & Marketing LLC	Delaware
HEP Cheyenne LLC (3)	Delaware
HEP Cheyenne Shortline LLC (3)	Delaware
HEP El Dorado LLC (3)	Delaware
HEP Fin-Tex/Trust-River, L.P. (3)	Texas
HEP Logistics GP, L.L.C (3)	Delaware
HEP Logistics Holdings, L.P.	Delaware
HEP Mountain Home, L.L.C. (3)	Delaware
HEP Navajo Southern, L.P. (3)	Delaware
HEP Pipeline Assets, Limited Partnership (3)	Delaware
HEP Pipeline GP, L.L.C. (3)	Delaware
HEP Pipeline, L.L.C. (3)	Delaware
HEP Refining GP, L.L.C. (3)	Delaware
HEP Refining Assets, L.P. (3)	Delaware
HEP Refining, L.L.C. (3)	Delaware
HEP Tulsa LLC (3)	Delaware
HEP UNEV Holdings LLC (3)	Delaware
HEP UNEV Pipeline LLC (3)	Delaware
HEP Woods Cross, L.L.C. (3)	Delaware
Holly Biofuels LLC	Delaware
Holly Energy Finance Corp. (3)	Delaware
Holly Energy Partners, L.P. (2) (3)	Delaware
Holly Energy Holdings LLC (3)	Delaware
Holly Energy Partners – Operating, L.P. (2), (3)	Delaware
Holly Energy Storage – Lovington LLC (3)	Delaware
Holly Logistics Limited LLC	Delaware
Holly Logistic Services, L.L.C.	Delaware
Holly Petroleum, Inc.	Delaware
Holly Realty, LLC	Delaware
Holly Refining Communications, Inc.	Delaware
HollyFrontier Asphalt Company LLC	Delaware
HollyFrontier Cheyenne Refining LLC	Delaware
HollyFrontier Cyprus Limited	Cyprus
HollyFrontier El Dorado Refining LLC	Delaware
HollyFrontier Holdings LLC	Delaware
HollyFrontier Luxembourg Holding Company	Luxembourg
HollyFrontier Navajo Refining LLC	Delaware
HollyFrontier Netherlands B.V.	Netherlands
HollyFrontier Payroll Services, Inc.	Delaware
HollyFrontier Refining & Marketing LLC	Delaware
HollyFrontier Services LLC	Delaware
HollyFrontier Transportation LLC	Delaware
HollyFrontier Tulsa Refining LLC	Delaware
HollyFrontier Woods Cross Refining LLC	Delaware
Hollymarks, LLC	Delaware
HRM Realty, LLC	Delaware
Jia Shi Lubricants Trading (Shanghai) Co. Ltd.	China
Lea Refining Company	Delaware
Lovington-Artesia, L.L.C. (3)	Delaware
Navajo Holdings, Inc.	New Mexico
Navajo Pipeline Co., L.P. (1)	Delaware
Navajo Pipeline GP, L.L.C.	Delaware
Navajo Pipeline LP, L.L.C.	Delaware
NWNAL LLC (3)	Delaware
Osage Pipe Line Company, LLC (joint venture) (3)	Delaware
Petro-Canada America Lubricants Inc.	Delaware
Petro-Canada Europe Lubricants Limited	U.K.
Petro-Canada Lubricants Inc.	Canada
Roadrunner Pipeline, L.L.C. (3)	Delaware
Sabine Biofuels II, LLC (joint venture)	Delaware
SLC Pipeline LLC (f/k/a HEP SLC, LLC) (3)	Delaware
UNEV Pipeline, LLC (joint venture) (3)	Delaware
Wainoco Resources, Inc.	Delaware
Wainoco Oil and Gas Company	Delaware
Woods Cross Operating LLC (3)	Delaware

(1) Navajo Pipeline Co., L.P. also does business as Navajo Pipeline Co.
(2) Holly Energy Partners, L.P. and Holly Energy Partners – Operating, L.P. also do business as Holly Energy Partners.
(3) Represents a subsidiary of Holly Energy Partners, L.P. We have presented these entities in our list of subsidiaries as a result of our reconsolidation of Holly Energy Partners, L.P. on March 1, 2008.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-211557) of HollyFrontier Corporation, and

(2) Registration Statement (Form S-3 ASR No. 333-208155) of HollyFrontier Corporation;

of our reports dated February 21, 2018, with respect to the consolidated financial statements of HollyFrontier Corporation and the effectiveness of internal control over financial reporting of HollyFrontier Corporation included in this Annual Report (Form 10-K) for the year ended December 31, 2017.

/s/ Ernst & Young LLP

Dallas, Texas
February 21, 2018

Exhibit 31.1

CERTIFICATION

I, George J. Damiris, certify that:

1. I have reviewed this annual report on Form 10-K of HollyFrontier Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of registrant’s board of directors (or persons performing the equivalent functions):
   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting

Date: February 21, 2018

/s/ George J. Damiris

George J. Damiris
Chief Executive Officer and President

Exhibit 31.2

CERTIFICATION

I, Richard L. Voliva III, certify that:

1. I have reviewed this annual report on Form 10-K of HollyFrontier Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's most recent fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
    a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2018

/s/ Richard L. Voliva III

Richard L. Voliva III

Executive Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER UNDER SECTION 906 OF THE SARBANES OXLEY ACT OF 2002, 18 U.S.C. § 1350

In connection with the accompanying report on Form 10-K for the period ending December 31, 2017 and filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, George J. Damaris, Chief Executive Officer of HollyFrontier Corporation (the "Company") hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2018

/s/ George J. Damiris

George J. Damiris
Chief Executive Officer and President

Exhibit 32.2

**CERTIFICATION OF CHIEF FINANCIAL
OFFICER UNDER SECTION 906 OF THE
SARBANES OXLEY ACT OF 2002, 18 U.S.C. § 1350**

In connection with the accompanying report on Form 10-K for the period ending December 31, 2017 and filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Douglas S. Aron, Chief Financial Officer of HollyFrontier Corporation (the "Company") hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2018

/s/ Richard L. Voliva III

Richard L. Voliva III
Executive Vice President and Chief Financial Officer

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2018
OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to ____________

Commission File Number 1-3876

HOLLYFRONTIER CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**75-1056913**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
2828 N. Harwood, Suite 1300 **Dallas, Texas**	**75201**
(Address of principal executive offices)	**(Zip Code)**

(214) 871-3555
(Registrant's telephone number, including area code)

(Former name, former address and former fiscal year, if changed since last report)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐	Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐						

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

173,272,653 shares of Common Stock, par value $.01 per share, were outstanding on October 26, 2018.

HOLLYFRONTIER CORPORATION
INDEX

FORWARD-LOOKING STATEMENTS

References herein to HollyFrontier Corporation (“HollyFrontier”) include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission’s (“SEC”) “Plain English” guidelines, this Quarterly Report on Form 10-Q has been written in the first person. In this document, the words “we,” “our,” “ours” and “us” refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person with certain exceptions. Generally, the words “we,” “our,” “ours” and “us” include Holly Energy Partners, L.P. (“HEP”) and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, “HEP” refers to HEP and its consolidated subsidiaries.

This Quarterly Report on Form 10-Q contains certain “forward-looking statements” within the meaning of the federal securities laws. All statements, other than statements of historical fact included in this Form 10-Q, including, but not limited to, those under “Results of Operations,” “Liquidity and Capital Resources” and “Risk Management” in Part I, Item 2 “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and those in Part II, Item 1 “Legal Proceedings” are forward-looking statements. Forward-looking statements use words such as “anticipate,” “project,” “expect,” “plan,” “goal,” “forecast,” “intend,” “should,” “would,” “could,” “believe,” “may,” and similar expressions and statements regarding our plans and objectives for future operations. These statements are based on management’s beliefs and assumptions using currently available information and expectations as of the date hereof, are not guarantees of future performance and involve certain risks and uncertainties. All statements concerning our expectations for future results of operations are based on forecasts for our existing operations and do not include the potential impact of any future acquisitions. Although we believe that the expectations reflected in these forward-looking statements are reasonable, we cannot assure you that our expectations will prove to be correct. Therefore, actual outcomes and results could materially differ from what is expressed, implied or forecast in these statements. Any differences could be caused by a number of factors including, but not limited to:

- risks and uncertainties with respect to the actions of actual or potential competitive suppliers of refined petroleum products in our markets;
- the demand for and supply of crude oil and refined products;
- the spread between market prices for refined products and market prices for crude oil;
- the possibility of constraints on the transportation of refined products;
- the possibility of inefficiencies, curtailments or shutdowns in refinery operations or pipelines;
- effects of governmental and environmental regulations and policies;
- the availability and cost of our financing;
- the effectiveness of our capital investments and marketing strategies;
- our efficiency in carrying out construction projects;
- our ability to acquire refined product operations or pipeline and terminal operations on acceptable terms and to integrate any existing or future acquired operations;
- the possibility of terrorist or cyber attacks and the consequences of any such attacks;
- general economic conditions; and
- other financial, operational and legal risks and uncertainties detailed from time to time in our SEC filings.

Cautionary statements identifying important factors that could cause actual results to differ materially from our expectations are set forth in this Form 10-Q, including without limitation, the forward-looking statements that are referred to above. This summary discussion should be read in conjunction with the discussion of the known material risk factors and other cautionary statements under the heading “Risk Factors” included in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2017 and in conjunction with the discussion in this Form 10-Q in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” under the heading “Liquidity and Capital Resources.” All forward-looking statements included in this Form 10-Q and all subsequent written or oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The forward-looking statements speak only as of the date made and, other than as required by law, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

PART I. FINANCIAL INFORMATION

DEFINITIONS

Within this report, the following terms have these specific meanings:

"**BPD**" means the number of barrels per calendar day of crude oil or petroleum products.

"**BPSD**" means the number of barrels per stream day (barrels of capacity in a 24 hour period) of crude oil or petroleum products.

"**Base oil**" is a lubricant grade oil initially produced from refining crude oil or through chemical synthesis that is used in producing lubricant products such as lubricating greases, motor oil and metal processing fluids.

"Biodiesel" means a clean alternative fuel produced from renewable biological resources.

"**Black wax crude oil**" is a low sulfur, low gravity crude oil produced in the Uintah Basin in Eastern Utah that has certain characteristics that require specific facilities to transport, store and refine into transportation fuels.

"**Cracking**" means the process of breaking down larger, heavier and more complex hydrocarbon molecules into simpler and lighter molecules.

"**Crude oil distillation**" means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor slightly above atmospheric pressure turning it back to liquid in order to purify, fractionate or form the desired products.

"**Ethanol**" means a high octane gasoline blend stock that is used to make various grades of gasoline.

"**FCC**," or fluid catalytic cracking, means a refinery process that breaks down large complex hydrocarbon molecules into smaller more useful ones using a circulating bed of catalyst at relatively high temperatures.

"**Hydrodesulfurization**" means to remove sulfur and nitrogen compounds from oil or gas in the presence of hydrogen and a catalyst at relatively high temperatures.

"**Hydrogen plant**" means a refinery unit that converts natural gas and steam to high purity hydrogen, which is then used in the hydrodesulfurization, hydrocracking and isomerization processes.

"**Isomerization**" means a refinery process for rearranging the structure of C5/C6 molecules without changing their size or chemical composition and is used to improve the octane of C5/C6 gasoline blendstocks.

"**LPG**" means liquid petroleum gases.

"**Lubricant**" or "**lube**" means a solvent neutral paraffinic product used in commercial heavy duty engine oils, passenger car oils and specialty products for industrial applications such as heat transfer, metalworking, rubber and other general process oil.

"MSAT2" means Control of Hazardous Air Pollutants from Mobile Sources, a rule issued by the U.S. Environmental Protection Agency to reduce hazardous emissions from motor vehicles and motor vehicle fuels.

"**MMBTU**" means one million British thermal units.

"**Rack back**" represents the portion of our Lubricants and Specialty Products business operations that entails the processing of feedstocks into base oils.

"**Rack forward**" represents the portion of our Lubricants and Specialty Products business operations that entails the processing of base oils into finished lubricants and the packaging, distribution and sale to customers.

"**Refinery gross margin**" means the difference between average net sales price and average cost per barrel sold. This does not include the associated depreciation and amortization costs.

"RINs" means renewable identification numbers and refers to serial numbers assigned to credits generated from renewable fuel production under the Environmental Protection Agency's Renewable Fuel Standard ("RFS") regulations, which require blending renewable fuels into the nation's fuel supply. In lieu of blending, refiners may purchase these transferable credits in order to comply with the regulations.

"**Sour crude oil**" means crude oil containing quantities of sulfur greater than 0.4 percent by weight, while "**sweet crude oil**" means crude oil containing quantities of sulfur equal to or less than 0.4 percent by weight.

"**Vacuum distillation**" means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor below atmospheric pressure turning it back to a liquid in order to purify, fractionate or form the desired products.

“White oil” is an extremely pure, highly-refined petroleum product that has a wide variety of applications ranging from pharmaceutical to cosmetic products.

“WTI” means West Texas Intermediate and is a grade of crude oil used as a common benchmark in oil pricing. WTI is a sweet crude oil and has a relatively low density.

Item 1. Financial Statements

HOLLYFRONTIER CORPORATION
CONSOLIDATED BALANCE SHEETS
(In thousands, except share data)

	September 30, 2018 (Unaudited)	December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents *(HEP: $6,375 and $7,776, respectively)*	$ 1,075,677	$ 630,757
Accounts receivable: Product and transportation *(HEP: $10,301 and $12,803, respectively)*	828,629	659,530
Crude oil resales	18,967	61,203
	847,596	720,733
Inventories: Crude oil and refined products	1,635,861	1,409,538
Materials, supplies and other *(HEP: $918 and $916, respectively)*	226,639	220,554
	1,862,500	1,630,092
Income taxes receivable	14,886	44,337
Prepayments and other *(HEP: $1,794 and $1,395, respectively)*	57,066	36,909
Total current assets	3,857,725	3,062,828
Properties, plants and equipment, at cost *(HEP: $2,039,922 and $2,011,915, respectively)*	6,704,162	6,523,789
Less accumulated depreciation *(HEP: $(467,862) and $(408,599), respectively)*	(2,030,719)	(1,810,515)
	4,673,443	4,713,274
Other assets: Turnaround costs	272,601	231,319
Goodwill *(HEP: $314,229 and $310,610, respectively)*	2,255,541	2,244,744
Intangibles and other *(HEP: $183,288 and $206,167, respectively)*	435,816	439,989
	2,963,958	2,916,052
Total assets	$ 11,495,126	$ 10,692,154
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable *(HEP: $9,987 and $14,637, respectively)*	$ 1,176,417	$ 1,220,795
Income taxes payable	78,316	3,159
Accrued liabilities *(HEP: $29,182 and $33,214, respectively)*	285,902	198,756
Total current liabilities	1,540,635	1,422,710
Long-term debt *(HEP: $1,416,748 and $1,507,308, respectively)*	2,409,148	2,498,993
Deferred income taxes *(HEP: $558 and $525, respectively)*	755,561	647,785
Other long-term liabilities *(HEP: $63,106 and $62,590, respectively)*	226,270	225,726
Equity:		
HollyFrontier stockholders' equity:		
Preferred stock, $1.00 par value – 5,000,000 shares authorized; none issued	—	—
Common stock $.01 par value – 320,000,000 shares authorized; 256,015,579 and 256,015,550 shares issued as of September 30, 2018 and December 31, 2017, respectively	2,560	2,560
Additional capital	4,199,938	4,132,696
Retained earnings	4,112,629	3,346,615
Accumulated other comprehensive income	25,906	29,869
Common stock held in treasury, at cost – 81,558,916 and 78,607,928 shares as of September 30, 2018 and December 31, 2017, respectively	(2,328,747)	(2,140,911)
Total HollyFrontier stockholders' equity	6,012,286	5,370,829
Noncontrolling interest	551,226	526,111
Total equity	6,563,512	5,896,940
Total liabilities and equity	$ 11,495,126	$ 10,692,154

Parenthetical amounts represent asset and liability balances attributable to Holly Energy Partners, L.P. ("HEP") as of September 30, 2018 and December 31, 2017. HEP is a variable interest entity.

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF INCOME
(Unaudited)
(In thousands, except per share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
Sales and other revenues	$ 4,770,799	$ 3,719,247	$ 13,370,462	$ 10,258,594
Operating costs and expenses:				
Cost of products sold (exclusive of depreciation and amortization):				
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	3,752,234	2,888,549	10,695,275	8,283,183
Lower of cost or market inventory valuation adjustment	17,837	(111,128)	(192,927)	(15,323)
	3,770,071	2,777,421	10,502,348	8,267,860
Operating expenses (exclusive of depreciation and amortization)	317,196	322,277	933,699	946,264
Selling, general and administrative expenses (exclusive of depreciation and amortization)	71,130	68,252	204,469	185,303
Depreciation and amortization	108,885	102,884	323,605	304,206
Long-lived asset impairment	—	—	—	19,247
Total operating costs and expenses	4,267,282	3,270,834	11,964,121	9,722,880
Income from operations	503,517	448,413	1,406,341	535,714
Other income (expense):				
Earnings of equity method investments	1,114	5,072	4,127	10,965
Interest income	5,136	1,074	10,660	2,069
Interest expense	(32,399)	(28,731)	(97,446)	(85,534)
Loss on early extinguishment of debt	—	—	—	(12,225)
Gain on foreign currency transactions	281	19,122	5,516	19,517
Gain on foreign currency swap contracts	—	—	—	24,545
Other, net	741	1,153	3,451	2,550
	(25,127)	(2,310)	(73,692)	(38,113)
Income before income taxes	478,390	446,103	1,332,649	497,601
Income tax expense (benefit):				
Current	70,595	72,307	216,529	80,242
Deferred	45,663	86,079	102,213	93,351
	116,258	158,386	318,742	173,593
Net income	362,132	287,717	1,013,907	324,008
Less net income attributable to noncontrolling interest	19,666	15,703	57,843	39,695
Net income attributable to HollyFrontier stockholders	$ 342,466	$ 272,014	$ 956,064	$ 284,313
Earnings per share attributable to HollyFrontier stockholders:				
Basic	$ 1.95	$ 1.53	$ 5.42	$ 1.60
Diluted	$ 1.93	$ 1.53	$ 5.37	$ 1.60
Cash dividends declared per common share	$ 0.33	$ 0.33	$ 0.99	$ 0.99
Average number of common shares outstanding:				
Basic	175,097	176,149	175,865	176,143
Diluted	176,927	176,530	177,557	176,616

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)
(In thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
Net income	$ 362,132	$ 287,717	$ 1,013,907	$ 324,008
Other comprehensive income (loss):				
Foreign currency translation adjustment	8,325	16,702	(15,118)	24,287
Unrealized loss on marketable securities available for sale	—	—	—	(4)
Hedging instruments:				
Change in fair value of cash flow hedging instruments	4,161	(2,094)	(4,296)	2,708
Reclassification adjustments to net income on settlement of cash flow hedging instruments	1,631	5,115	6,038	5,049
Amortization of unrealized loss attributable to discontinued cash flow hedges	—	270	—	810
Net unrealized gain on hedging instruments	5,792	3,291	1,742	8,567
Other comprehensive income (loss) before income taxes	14,117	19,993	(13,376)	32,850
Income tax expense (benefit)	124	7,140	(9,413)	11,841
Other comprehensive income (loss)	13,993	12,853	(3,963)	21,009
Total comprehensive income	376,125	300,570	1,009,944	345,017
Less noncontrolling interest in comprehensive income	19,666	15,663	57,843	39,638
Comprehensive income attributable to HollyFrontier stockholders	$ 356,459	$ 284,907	$ 952,101	$ 305,379

See accompanying notes.

HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
(In thousands)

	Nine Months Ended September 30,	
	2018	**2017**
Cash flows from operating activities:		
Net income	$ 1,013,907	$ 324,008
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	323,605	304,206
Long-lived asset impairment	—	19,247
Lower of cost or market inventory valuation adjustment	(192,927)	(15,323)
Earnings of equity method investments, inclusive of distributions	463	816
(Gain) loss on sale of assets	(52)	540
Loss on early extinguishment of debt attributable to unamortized discount	—	2,475
Deferred income taxes	102,213	93,351
Equity-based compensation expense	26,096	26,430
Change in fair value – derivative instruments	(3,007)	2,073
(Increase) decrease in current assets:		
Accounts receivable	(136,764)	(116,986)
Inventories	(33,856)	(43,822)
Income taxes receivable	27,792	68,371
Prepayments and other	(14,089)	(5,268)
Increase (decrease) in current liabilities:		
Accounts payable	(37,160)	88,010
Income taxes payable	76,277	60,661
Accrued liabilities	84,328	83,918
Turnaround expenditures	(114,593)	(111,513)
Other, net	7,664	4,219
Net cash provided by operating activities	1,129,897	785,413
Cash flows from investing activities:		
Additions to properties, plants and equipment	(167,967)	(162,442)
Additions to properties, plants and equipment – HEP	(41,111)	(30,675)
Purchase of PCLI, net of cash acquired	—	(870,627)
Purchase of Red Giant Oil, net of cash acquired	(54,088)	—
Purchases of marketable securities	—	(41,565)
Sales and maturities of marketable securities	—	465,716
Other, net	3,999	2,297
Net cash used for investing activities	(259,167)	(637,296)
Cash flows from financing activities:		
Borrowings under credit agreements	256,000	654,000
Repayments under credit agreements	(347,000)	(457,000)
Proceeds from issuance of senior notes - HEP	—	101,750
Redemption of senior notes - HEP	—	(309,750)
Proceeds from issuance of common units - HEP	114,887	52,285
Purchase of treasury stock	(177,710)	—
Dividends	(175,921)	(176,519)
Distributions to noncontrolling interest	(93,128)	(81,797)
Shares withheld for tax withholding obligations	(544)	(290)
Other, net	—	(13,131)
Net cash used for financing activities	(423,416)	(230,452)
Effect of exchange rate on cash flow	(2,394)	2,498
Cash and cash equivalents:		
Increase (decrease) for the period	444,920	(79,837)
Beginning of period	630,757	710,579
End of period	$ 1,075,677	$ 630,742

Supplemental disclosure of cash flow information:				
Cash (paid) received during the period for:				
Interest	$	(89,553)	$	(84,380)
Income taxes, net	$	(112,520)	$	50,957

See accompanying notes.

HOLLYFRONTIER CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

NOTE 1: Description of Business and Presentation of Financial Statements

References herein to HollyFrontier Corporation ("HollyFrontier") include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission's ("SEC") "Plain English" guidelines, this Quarterly Report on Form 10-Q has been written in the first person. In these financial statements, the words "we," "our," "ours" and "us" refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person, with certain exceptions. Generally, the words "we," "our," "ours" and "us" include Holly Energy Partners, L.P. ("HEP") and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. These financial statements contain certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, "HEP" refers to HEP and its consolidated subsidiaries.

We are principally an independent petroleum refiner that produces high-value light products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate petroleum refineries that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. In addition, we own and operate a lubricant production facility with retail and wholesale marketing of its products through a global sales network with locations in Canada, United States, Europe and China. As of September 30, 2018, we:

- owned and operated a petroleum refinery in El Dorado, Kansas (the "El Dorado Refinery"), two refinery facilities located in Tulsa, Oklahoma (collectively, the "Tulsa Refineries"), a refinery in Artesia, New Mexico that is operated in conjunction with crude oil distillation and vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the "Navajo Refinery"), a refinery located in Cheyenne, Wyoming (the "Cheyenne Refinery") and a refinery in Woods Cross, Utah (the "Woods Cross Refinery");
- owned and operated Petro-Canada Lubricants Inc. ("PCLI") located in Mississauga, Ontario, which produces base oils and other specialized lubricant products;
- owned and operated Red Giant Oil Company LLC ("Red Giant Oil"), which supplies locomotive engine oil with storage facilities in Idaho, Utah and Wyoming, along with a blending and packaging facility in Texas;
- owned and operated HollyFrontier Asphalt Company LLC ("HFC Asphalt"), which operates various asphalt terminals in Arizona, New Mexico and Oklahoma; and
- owned a 57% limited partner interest and a non-economic general partner interest in HEP, a variable interest entity ("VIE").

On July 10, 2018, we entered into a definitive agreement to acquire Red Giant Oil, a privately-owned lubricants company. Red Giant Oil is one of the largest suppliers of locomotive engine oil in North America and is headquartered in Council Bluffs, Iowa. The acquisition closed on August 1, 2018. Cash consideration paid of $54.1 million was allocated to the acquisition date fair value of assets and liabilities acquired, with the excess purchase price recorded as goodwill. Preliminary fair values are as follows: current assets $12.6 million, properties and equipment $21.3 million, intangible assets $9.7 million, goodwill $11.2 million and current liabilities $0.7 million.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor Energy Inc. ("Suncor") to acquire 100% of the outstanding capital stock of PCLI. The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars.

We have prepared these consolidated financial statements without audit. In management's opinion, these consolidated financial statements include all normal recurring adjustments necessary for a fair presentation of our consolidated financial position as of September 30, 2018, the consolidated results of operations and comprehensive income for the three and nine months ended September 30, 2018 and 2017 and consolidated cash flows for the nine months ended September 30, 2018 and 2017 in accordance with the rules and regulations of the SEC. Although certain notes and other information required by generally accepted accounting principles in the United States ("GAAP") have been condensed or omitted, we believe that the disclosures in these consolidated financial statements are adequate to make the information presented not misleading. These consolidated financial statements should be read in conjunction with our Annual Report on Form 10-K for the year ended December 31, 2017 that has been filed with the SEC.

Our results of operations for the nine months ended September 30, 2018 are not necessarily indicative of the results of operations to be realized for the year ending December 31, 2018.

Accounts Receivable: Our accounts receivable consist of amounts due from customers that are primarily companies in the petroleum industry. Credit is extended based on our evaluation of the customer's financial condition, and in certain circumstances collateral, such as letters of credit or guarantees, is required. We reserve for doubtful accounts based on our historical loss experience as well as specific accounts identified as high risk, which historically have been minimal. Credit losses are charged to the allowance for doubtful accounts when an account is deemed uncollectible. Our allowance for doubtful accounts was $3.6 million at both September 30, 2018 and December 31, 2017.

Inventories: Inventories related to our refining operations are stated at the lower of cost, using the last-in, first-out ("LIFO") method for crude oil and unfinished and finished refined products, or market. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. An actual valuation of inventory under the LIFO method is made at the end of each year based on the inventory levels at that time. Accordingly, interim LIFO calculations are based on management's estimates of expected year-end inventory levels and are subject to the final year-end LIFO inventory valuation.

Inventories of our Petro-Canada Lubricants business are stated at the lower of cost, using the first-in, first-out ("FIFO") method, or net realizable value.

Inventories consisting of process chemicals, materials and maintenance supplies and renewable identification numbers ("RINs") are stated at the lower of weighted-average cost or net realizable value.

Goodwill and Long-lived Assets: As of September 30, 2018, our goodwill balance was $2.3 billion, with goodwill assigned to our Refining, Lubricants and Specialty Products and HEP segments of $1.7 billion, $0.2 billion and $0.3 billion, respectively. See Note 15 for additional information on our segments. The carrying amount of our goodwill may fluctuate from period to period due to the effects of foreign currency translation adjustments on goodwill assigned to our Lubricants and Specialty Products segment. Goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired and liabilities assumed. Goodwill is not subject to amortization and is tested annually or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. Our goodwill impairment testing first entails a comparison of our reporting units fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

We performed our annual goodwill impairment testing as of July 1, 2018 and determined there was no impairment of goodwill attributable to our reporting units.

Our long-lived assets principally consist of our refining assets that are organized as refining asset groups and our lubricants and specialty products business. Our long-lived assets are evaluated for impairment by identifying whether indicators of impairment exist and if so, assessing whether the long-lived assets are recoverable from estimated future undiscounted cash flows. The actual amount of impairment loss measured, if any, is equal to the amount by which the asset group's carrying value exceeds its fair value.

During the second quarter of 2017, we incurred long-lived asset impairment charges totaling $23.2 million, including $19.2 million of construction-in-progress consisting primarily of engineering work for a planned expansion of our Woods Cross refinery to add lubricants production capabilities. During the second quarter of 2017, we concluded to no longer pursue this expansion for various reasons including our acquisition of PCLI. The remaining $4.0 million in charges relate to property, plant and equipment that we expensed in the form of accelerated depreciation in the income statement.

Foreign Currency Translation: The functional currency of PCLI and its affiliated non-U.S. Petro-Canada Lubricants entities includes the Canadian dollar, the euro and Chinese renminbi. Balance sheet accounts are translated into U.S. dollars using exchange rates in effect as of the balance sheet date. Revenue and expense accounts are translated using the weighted-average exchange rates during the period presented. Foreign currency translation adjustments are recorded as a component of accumulated other comprehensive income.

In connection with our PCLI acquisition on February 1, 2017, we issued intercompany notes to initially fund certain of our foreign businesses. Remeasurement adjustments resulting from the conversion of such intercompany financing amounts to functional currencies are recorded as gains and losses as a component of other income (expense) in the income statement. Such adjustments are not recorded to the Lubricants and Specialty Products segment operations, but to corporate and other. See Note 15 for additional information on our segments.

Income Taxes: Provisions for income taxes include deferred taxes resulting from temporary differences in income for financial and tax purposes, using the liability method of accounting for income taxes. The liability method requires the effect of tax rate changes on deferred income taxes to be reflected in the period in which the rate change was enacted. The liability method also requires that deferred tax assets be reduced by a valuation allowance unless it is more likely than not that the assets will be realized.

The Tax Cuts and Jobs Act (the “Act”) was enacted on December 22, 2017. The Act reduces the U.S. federal corporate tax rate from 35% to 21%, requires companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously deferred and creates new taxes on certain foreign-sourced earnings. At December 31, 2017 and through June 30, 2018, we had not completed our accounting for the tax effects of enactment of the Act; however in certain cases, we made a reasonable estimate of the effects on our existing deferred tax balances, the one-time transition tax and related matters.

During the three months ended September 30, 2018, we completed analysis of a significant portion of the accounting for the tax effects for which provisional adjustments were made during the fourth quarter of 2017 resulting in our recording in the third quarter of 2018 an additional tax benefit of $6.1 million. These adjustments to the previously recorded provisional amounts included the effects on existing deferred tax balances, the one-time transition tax and deferred U.S. taxes on foreign subsidiaries earnings and profits. Some states have not yet publicly commented and other state effects from the changes in the Act are still being analyzed, and the estimated value of the state deferred tax balances are based on existing law and state guidance.

Potential interest and penalties related to income tax matters are recognized in income tax expense. We believe we have appropriate support for the income tax positions taken and to be taken on our income tax returns and that our accruals for tax liabilities are adequate for all open years based on an assessment of many factors, including past experience and interpretations of tax law applied to the facts of each matter.

Inventory Repurchase Obligations: We periodically enter into same-party sell / buy transactions, whereby we sell certain refined product inventory and subsequently repurchase the inventory in order to facilitate delivery to certain locations. Such sell / buy transactions are accounted for as inventory repurchase obligations under which proceeds received under the initial sell is recognized as an inventory repurchase obligation that is subsequently reversed when the inventory is repurchased. For the nine months ended September 30, 2018 and 2017, we received proceeds of $38.4 million and $36.7 million, respectively, and repaid $39.3 million and $37.9 million, respectively, under these sell / buy transactions.

Accounting Pronouncements - Recently Adopted

Accumulated Other Comprehensive Income
In February 2018, Accounting Standard Update (“ASU”) 2018-02, “Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income (“AOCI”),” was issued permitting a reclassification of stranded tax effects caused by the Tax Cuts and Jobs Act enacted on December 22, 2017 between AOCI and retained earnings. We adopted this standard effective in the first quarter of 2018 and recorded a cumulative effect adjustment of $3.6 million as an increase to AOCI and a decrease to retained earnings. During the three months ended September 30, 2018, we completed analysis of the accounting for the stranded tax effects on AOCI and recorded an additional $3.1 million as an increase to AOCI and a decrease to retained earnings.

Hedge Accounting

In August 2017, ASU 2017-12, "Derivatives and Hedging: Targeted Improvements to Accounting for Hedging Activities," was issued amending hedge accounting recognition and presentation requirements, including elimination of the requirement to separately measure and report hedge ineffectiveness, and eases certain documentation and assessment requirements. We adopted this standard effective January 1, 2018 and recorded a cumulative effect adjustment of $0.1 million as a decrease to AOCI and an increase to retained earnings to eliminate the separate measurement of hedge ineffectiveness existing at the date of adoption. Our amended presentation and disclosures have been applied prospectively in Note 10.

Stock Compensation

In May 2017, ASU 2017-09, "Stock Compensation: Scope of Modification Accounting," was issued to provide clarity to accounting for share-based payment awards in the event of a modification in the terms or conditions. We adopted this standard effective January 1, 2018, which did not affect our financial position, results of operations or cash flows.

Post-retirement Benefit Cost

In March 2017, ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-retirement Benefit Cost," was issued amending current GAAP related to the income statement presentation of the components of net periodic pension cost and net periodic post-retirement cost (credit). We adopted this standard effective January 1, 2018 on a retrospective basis with the presentation of service cost separate from the other components of net periodic costs. The interest cost, expected return on plan assets and amortization of prior service credit have been reclassified from selling, general and administrative expenses to other, net. The adoption of this standard had no impact on our financial condition, results of operations or cash flows.

The effect of the retrospective presentation change related to the net periodic cost / benefit of our defined benefit pension and other post-retirement plans on our consolidated income statement was as follows:

	Three Months Ended September 30, 2017		
Income Statement	**Prior to Adoption**	**Increase**	**As Adjusted**
		(In thousands)	
Cost of products sold	$ 2,888,530	$ 19	$ 2,888,549
Operating expenses	$ 321,668	$ 609	$ 322,277
Selling, general and administrative expenses	$ 68,013	$ 239	$ 68,252
Other, net	$ 286	$ 867	$ 1,153

	Nine Months Ended September 30, 2017		
Income Statement	**Prior to Adoption**	**Increase**	**As Adjusted**
		(In thousands)	
Cost of products sold	$ 8,283,127	$ 56	$ 8,283,183
Operating expenses	$ 944,437	$ 1,827	$ 946,264
Selling, general and administrative expenses	$ 184,659	$ 644	$ 185,303
Other, net	$ 23	$ 2,527	$ 2,550

Business Combinations

In January 2017, ASU 2017-01, "Business Combinations: Clarifying the Definition of a Business," was issued clarifying the definition of a business with the objective of providing guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. We adopted this standard effective January 1, 2018, which did not affect our financial position, results of operations or cash flows.

Cash Flow Presentation

In August 2016, ASU 2016-15, "Classification of Certain Cash Receipts and Cash Payments," was issued clarifying how entities should classify certain cash receipts and cash payments in the statements of cash flows and amends certain disclosure requirements. We adopted this standard effective January 1, 2018, which did not affect our financial position, results of operations or cash flows.

Revenue Recognition
In May 2014, ASU 2014-09 "Revenue from Contracts with Customers" was issued requiring revenue to be recognized when promised goods or services are transferred to customers in an amount that reflects the expected consideration for these goods or services. We adopted this standard effective January 1, 2018, and therefore, conformed our revenue recognition policies for certain lubricant product sales agreements with U.S. and European marketers and distributors that provide rights of return provisions under which we repurchase such products and sell directly to end customers. Prior to January 1, 2018, we recognized revenues and costs, net of allowances for expected returns under such agreements when such products were shipped to U.S. and European distributors. Effective with the adoption of ASU 2014-09, revenues and related product costs are no longer recognized when products are shipped to distributors, but rather, revenues and costs are recognized in earnings only when such products are ultimately sold to end customers.

We adopted this standard using the modified retrospective method, whereby the cumulative effect of applying the new standard was recorded as an adjustment to the opening balance of retained earnings as well as the carrying amounts of assets and liabilities as of January 1, 2018, which had no impact on our cash flows. The following reflects the cumulative effect of adoption as of January 1, 2018.

	Prior to Adoption	Increase (Decrease)	As Adjusted
		(In thousands)	
Accounts receivable: Product and transportation	$ 659,530	$ (8,198)	$ 651,332
Inventories: Crude oil and refined products	$ 1,409,538	$ 5,124	$ 1,414,662
Accounts payable	$ 1,220,795	$ 7,336	$ 1,228,131
Deferred income taxes	$ 647,785	$ (2,963)	$ 644,822
Retained earnings	$ 3,346,615	$ (7,447)	$ 3,339,168

See Note 3 for disclosure of revenues from contracts with customers.

Accounting Pronouncements - Not Yet Adopted

Leases
In February 2016, ASU 2016-02, "Leases," was issued requiring leases to be measured and recognized as a lease liability, with a corresponding right-of-use asset on the balance sheet. This standard has an effective date of January 1, 2019, and we are evaluating the impact of this standard. We plan to apply practical expedients provided in the standards update that allow us, among other things, not to reassess contracts that commenced prior to adoption. In preparing for adoption, we have identified, reviewed and evaluated contracts containing lease and embedded lease arrangements. Additionally, we have acquired and are finalizing implementation of software and systems to facilitate lease capture and related accounting treatment.

NOTE 2: Holly Energy Partners

HEP is a publicly held master limited partnership that owns and operates logistic assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and refinery processing units that principally support our refining and marketing operations in the Mid-Continent, Southwest and Rocky Mountain regions of the United States and Delek's refinery in Big Spring, Texas. Additionally, HEP owns a 75% interest in UNEV Pipeline, LLC ("UNEV"), the owner of a pipeline running from Woods Cross, Utah to Las Vegas, Nevada (the "UNEV Pipeline") and associated product terminals, and a 50% ownership interest in each of Osage Pipe Line Company, LLC, the owner of a pipeline running from Cushing, Oklahoma to El Dorado, Kansas (the "Osage Pipeline") and Cheyenne Pipeline, LLC, the owner of a pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming (the "Cheyenne Pipeline").

As of September 30, 2018, we owned a 57% limited partner interest and a non-economic general partner interest in HEP. As the general partner of HEP, we have the sole ability to direct the activities that most significantly impact HEP's financial performance, and therefore as HEP's primary beneficiary, we consolidate HEP.

HEP has two primary customers (including us) and generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, by charging fees for terminalling refined products and other hydrocarbons, and storing and providing other services at its storage tanks and terminals. Under our long-term transportation agreements with HEP (discussed further below), we accounted for 79% of HEP's total revenues for the nine months ended September 30, 2018. We do not provide financial or equity support through any liquidity arrangements and / or debt guarantees to HEP.

HEP has outstanding debt under a senior secured revolving credit agreement and its senior notes. HEP's creditors have no recourse to our assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries. See Note 9 for a description of HEP's debt obligations.

HEP has risk associated with its operations. If a major customer of HEP were to terminate its contracts or fail to meet desired shipping or throughput levels for an extended period of time, revenue would be reduced and HEP could suffer substantial losses to the extent that a new customer is not found. In the event that HEP incurs a loss, our operating results will reflect HEP's loss, net of intercompany eliminations, to the extent of our ownership interest in HEP at that point in time.

SLC Pipeline and Frontier Pipeline
On October 31, 2017, HEP acquired the remaining 75% interest in SLC Pipeline LLC, the owner of a pipeline that serves refineries in the Salt Lake City, Utah area (the "SLC Pipeline"), and the remaining 50% interest in Frontier Aspen LLC, the owner of a pipeline running from Wyoming to Frontier Station, Utah (the "Frontier Pipeline"), from subsidiaries of Plains All American Pipeline, L.P. ("Plains") for cash consideration of $250.0 million.

These acquisitions were accounted for as a business combination achieved in stages. HEP's preexisting equity method investments in SLC Pipeline LLC and Frontier Aspen LLC were remeasured at an acquisition date fair value of $112.0 million, since HEP acquired a controlling interest, and a gain was recognized on the remeasurement of $36.3 million in the fourth quarter of 2017. The fair value of HEP's preexisting equity method investments in SLC Pipeline LLC and Frontier Aspen LLC was estimated using Level 3 inputs under the income method for these entities, adjusted for lack of control and marketability.

The total consideration of $363.8 million, consisting of cash consideration of $250.0 million, the fair value of HEP's preexisting equity method investments in SLC Pipeline LLC and Frontier Aspen LLC of $112.0 million, and working capital adjustments of $1.8 million, was allocated to the acquisition date fair value of assets and liabilities acquired as of the October 31, 2017 acquisition date, with the excess purchase price recorded as goodwill. Fair values were as follows: cash and cash equivalents $4.6 million, current assets $5.2 million, properties and equipment $275.0 million, intangible assets $70.2 million, goodwill $13.8 million and current liabilities $5.0 million.

HEP Private Placement Agreements
On January 25, 2018, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,700,000 HEP common units, representing limited partner interests, at a price of $29.73 per common unit. The private placement closed on February 6, 2018, at which time HEP received proceeds of $110.0 million, which were used to repay indebtedness under the HEP Credit Agreement.

HEP Common Unit Continuous Offering Program
In May 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of $200 million. During the nine months ended September 30, 2018, HEP issued 171,246 common units under this program, providing $5.2 million in gross proceeds. As of September 30, 2018, HEP has issued 2,413,153 common units under this program, providing $82.3 million in gross proceeds.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP's credit facility may be reborrowed from time to time.

As a result of these transactions and resulting HEP ownership changes, we adjusted additional capital and equity attributable to HEP's noncontrolling interest holders to reallocate HEP's equity among its unitholders.

Transportation Agreements

HEP serves our refineries under long-term pipeline, terminal and tankage throughput agreements and refinery processing tolling agreements expiring from 2019 through 2036. Under these agreements, we pay HEP fees to transport, store and process throughput volumes of refined products, crude oil and feedstocks on HEP's pipeline, terminals, tankage, loading rack facilities and refinery processing units that result in minimum annual payments to HEP including UNEV (a consolidated subsidiary of HEP). Under these agreements, the agreed upon tariff rates are subject to annual tariff rate adjustments on July 1 at a rate based upon the percentage change in Producer Price Index or Federal Energy Regulatory Commission index. As of September 30, 2018, these agreements result in minimum annualized payments to HEP of $335.0 million.

Our transactions with HEP and fees paid under our transportation agreements with HEP and UNEV are eliminated and have no impact on our consolidated financial statements.

NOTE 3: Revenues from Contracts with Customers

Substantially all revenue-generating activities relate to sales of refined product and excess crude oil inventories sold at market prices (variable consideration) under contracts with customers. Additionally, we have revenues attributable to HEP logistics services provided under petroleum product and crude oil pipeline transportation, processing, storage and terminalling agreements with third parties.

Disaggregated revenues are as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands)			
Revenues by type				
Refined product revenues				
Transportation fuels [1]	$ 3,598,815	$ 2,839,543	$ 10,193,218	$ 7,910,289
Specialty lubricant products [2]	422,760	369,822	1,237,002	1,054,161
Asphalt, fuel oil and other products [3]	288,013	201,596	741,139	539,526
Total refined product revenues	4,309,588	3,410,961	12,171,359	9,503,976
Excess crude oil revenues [4]	422,122	277,810	1,074,928	658,117
Transportation and logistic services	25,596	15,227	77,799	47,826
Other revenues [5]	13,493	15,249	46,376	48,675
Total sales and other revenues	$ 4,770,799	$ 3,719,247	$ 13,370,462	$ 10,258,594

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands)			
Refined product revenues by market				
North America				
Mid-Continent	$ 2,337,689	$ 1,748,044	$ 6,458,935	$ 5,111,301
Southwest	1,016,771	842,347	2,865,324	2,100,850
Rocky Mountains	627,542	528,380	1,869,414	1,489,203
Northeast	85,344	66,467	261,380	189,039
Canada	190,727	177,767	563,088	486,380
Europe and Asia	51,515	47,956	153,218	127,203
Total refined product revenues	$ 4,309,588	$ 3,410,961	$ 12,171,359	$ 9,503,976

(1) Transportation fuels consist of gasoline, diesel and jet fuel.
(2) Specialty lubricant products consist of base oil, waxes, finished lubricants and other specialty fluids.
(3) Asphalt, fuel oil and other products revenue include revenues attributable to our Refining and Lubricants and Specialty Products segments of $234,887 and $53,126, respectively, for the three months ended September 30, 2018, $158,344 and $43,252, respectively, for the three months ended September 30, 2017, $589,726 and $151,413, respectively, for the nine months ended September 30, 2018, and $415,344 and $124,182, respectively, for the nine months ended September 30, 2017.
(4) Excess crude oil revenues represent sales of purchased crude oil inventory that at times exceeds the supply needs of our refineries.
(5) Other revenues are principally attributable to our Refining segment.

Revenue on refined product and excess crude oil sales are recognized when delivered (via pipeline, in-tank or rack) and the customer obtains control of such inventory, which is typically when title passes and the customer is billed. All revenues are reported inclusive of shipping and handling costs billed and exclusive of any taxes billed to customers. Shipping and handling costs incurred are reported as cost of products sold. HEP recognizes revenues as products are shipped through its pipelines and terminals and as other services are rendered. Additionally, HEP has certain long-term transportation contracts that specify minimum volume requirements, whereby, HEP bills a customer for a minimum level of shipments in the event a customer ships below their contractual requirements. A customer may later utilize such shortfall billings as credit towards future volume shipments in excess of its minimum levels within its respective contractual shortfall make-up period. Such amounts represent an obligation to perform future services, which may be initially deferred and later recognized as revenue based on estimated future shipping levels, including the likelihood of a customer's ability to utilize such amounts prior to the end of the contractual shortfall make-up period. Payment terms under our contracts with customers are consistent with industry norms and are typically payable within 30 days of the date of invoice.

Our consolidated balance sheet reflects contract liabilities related to unearned revenues attributable to future service obligations under HEP's third-party transportation agreements. The following table presents changes to our contract liabilities during the nine months ended September 30, 2018.

	January 1, 2018	Increase	Recognized as Revenue	September 30, 2018
	(In thousands)			
Accrued liabilities	$ 179	$ 5,269	$ (1,746)	$ 3,702

As of September 30, 2018, we have long-term contracts with customers that specify minimum volumes of gasoline, diesel, lubricants and specialty products to be sold ratably at market prices through 2020. Such volumes are typically nominated in the month preceding delivery and delivered ratably throughout the following month. Future prices are subject to market fluctuations and therefore, we have elected the exemption to exclude variable consideration under these contracts under Accounting Standards Codification 606-10-50-14A. Aggregate minimum volumes expected to be sold (future performance obligations) under our long-term product sales contracts with customers are as follows:

	Remainder of 2018	2019	2020	Thereafter	Total
	(In thousands)				
Refined product sales volumes (barrels)	6,546	20,013	777	164	27,500

Additionally, HEP has long-term contracts with third-party customers that specify minimum volumes of product to be transported through its pipelines and terminals that result in fixed-minimum annual of revenues through 2022. Annual minimum revenues attributable to HEP's third-party contracts as of September 30, 2018 are presented below:

	Remainder of 2018	2019	2020	Thereafter	Total
	(In thousands)				
HEP contractual minimum revenues	$ 10,437	$ 41,863	$ 18,040	$ 12,553	$ 82,893

NOTE 4: Fair Value Measurements

Our financial instruments measured at fair value on a recurring basis consist of derivative instruments and RINs credit obligations.

Fair value measurements are derived using inputs (assumptions that market participants would use in pricing an asset or liability, including assumptions about risk). GAAP categorizes inputs used in fair value measurements into three broad levels as follows:

- (Level 1) Quoted prices in active markets for identical assets or liabilities.
- (Level 2) Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, similar assets and liabilities in markets that are not active or can be corroborated by observable market data.
- (Level 3) Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes valuation techniques that involve significant unobservable inputs.

The carrying amounts of derivative instruments and RINs credit obligations at September 30, 2018 and December 31, 2017 were as follows:

		Fair Value by Input Level		
	Carrying Amount	Level 1	Level 2	Level 3
	(In thousands)			
September 30, 2018				
Assets:				
Foreign currency forward contracts	$ 9,137	$ —	$ 9,137	$ —
Commodity price swaps	1,565	—	1,565	—
Commodity forward contracts	25	—	25	—
Total assets	$ 10,727	$ —	$ 10,727	$ —
Liabilities:				
NYMEX futures contracts	$ 8,854	$ 8,854	$ —	$ —
Commodity price swaps	1,615	—	1,615	—
Commodity forward contracts	4	—	4	—
RINs credit obligations (1)	5,221	—	5,221	—
Total liabilities	$ 15,694	$ 8,854	$ 6,840	$ —
December 31, 2017				
Assets:				
Commodity forward contracts	$ 3,840	$ —	$ 3,840	$ —
Total assets	$ 3,840	$ —	$ 3,840	$ —
Liabilities:				
NYMEX futures contracts	$ 3,360	$ 3,360	$ —	$ —
Commodity price swaps	2,424	—	2,424	—
Commodity forward contracts	1,020	—	1,020	—
RINs credit obligations (1)	8,931	—	8,931	—
Total liabilities	$ 15,735	$ 3,360	$ 12,375	$ —

(1) Represent obligations for RINs credits for which we do not have sufficient quantities at September 30, 2018 and December 31, 2017 to satisfy our Environmental Protection Agency ("EPA") regulatory blending requirements.

Level 1 Instruments
Our NYMEX futures contracts are exchange traded and are measured and recorded at fair value using quoted market prices, a Level 1 input.

Level 2 Instruments

Derivative instruments consisting of foreign currency forward contracts, commodity price swaps and forward sales and purchase contracts are measured and recorded at fair value using Level 2 inputs. The fair value of the commodity price swap contracts is based on the net present value of expected future cash flows related to both variable and fixed rate legs of the respective swap agreements. The measurements are computed using market-based observable inputs, quoted forward commodity prices with respect to our commodity price swaps. RINs credit obligations are valued based on current market RINs prices. The fair value of foreign currency forward contracts are based on values provided by a third party, which were derived using market quotes for similar type instruments, a Level 2 input.

NOTE 5: Earnings Per Share

Basic earnings per share is calculated as net income attributable to HollyFrontier stockholders divided by the average number of shares of common stock outstanding. Diluted earnings per share assumes, when dilutive, the issuance of the net incremental shares from restricted shares and performance share units. The following is a reconciliation of the denominators of the basic and diluted per share computations for net income attributable to HollyFrontier stockholders:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands, except per share data)			
Net income attributable to HollyFrontier stockholders	$ 342,466	$ 272,014	$ 956,064	$ 284,313
Participating securities' (restricted stock) share in earnings	1,171	1,735	3,321	1,822
Net income attributable to common shares	$ 341,295	$ 270,279	$ 952,743	$ 282,491
Average number of shares of common stock outstanding	175,097	176,149	175,865	176,143
Effect of dilutive variable restricted shares and performance share units (1)	1,830	381	1,692	473
Average number of shares of common stock outstanding assuming dilution	176,927	176,530	177,557	176,616
Basic earnings per share	$ 1.95	$ 1.53	$ 5.42	$ 1.60
Diluted earnings per share	$ 1.93	$ 1.53	$ 5.37	$ 1.60
(1) Excludes anti-dilutive restricted and performance share units of:	—	104	2	120

NOTE 6: Stock-Based Compensation

As of September 30, 2018, we have two principal share-based compensation plans (collectively, the "Long-Term Incentive Compensation Plan").

The compensation cost charged against income for these plans was $8.1 million and $9.1 million for the three months ended September 30, 2018 and 2017, respectively, and $23.8 million and $24.5 million for the nine months ended September 30, 2018 and 2017, respectively. Our accounting policy for the recognition of compensation expense for awards with pro-rata vesting is to expense the costs ratably over the vesting periods.

Additionally, HEP maintains a share-based compensation plan for Holly Logistic Services, L.L.C.'s non-employee directors and certain executives and employees. Compensation cost attributable to HEP's share-based compensation plan was $0.7 million and $0.8 million for the three months ended September 30, 2018 and 2017, respectively, and $2.3 million and $1.9 million for the nine months ended September 30, 2018 and 2017, respectively.

Restricted Stock and Restricted Stock Units

Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees restricted stock unit awards with awards generally vesting over a period of two to three years. We previously granted restricted stock to certain officers and key employees with awards vesting over a period of three years. Certain restricted stock unit award recipients have the right to receive dividends, however, restricted stock units do not have any other rights of absolute ownership. Restricted stock award recipients are generally entitled to all the rights of absolute ownership of the restricted shares from the date of grant including the right to vote the shares and to receive dividends. Upon vesting, restrictions on the restricted shares and restricted share units lapse at which time they convert to common shares. In addition, we grant non-employee directors restricted stock unit awards, which typically vest over a period of one year and are payable in stock. The fair value of each restricted stock and restricted stock unit award is measured based on the grant date market price of our common shares and is amortized over the respective vesting period.

A summary of restricted stock and restricted stock unit activity and changes during the nine months ended September 30, 2018 is presented below:

Restricted Stock and Restricted Stock Units	Grants	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value ($000)
Outstanding at January 1, 2018 (non-vested)	1,726,188	$ 33.51	
Granted	32,583	55.85	
Vesting (transfer/conversion to common stock)	(29,656)	31.49	
Forfeited	(103,488)	34.45	
Outstanding at September 30, 2018 (non-vested)	1,625,627	33.94	$ 113,631

For the nine months ended September 30, 2018, restricted stock and restricted stock units vested having a grant date fair value of $0.9 million. As of September 30, 2018, there was $15.9 million of total unrecognized compensation cost related to non-vested restricted stock and restricted stock unit grants. That cost is expected to be recognized over a weighted-average period of 1.0 years.

Performance Share Units

Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees performance share units, which are payable in stock upon meeting certain criteria over the service period, and generally vest over a period of three years. Under the terms of our performance share unit grants, awards are subject to “financial performance” and “market performance” criteria. Financial performance is based on our financial performance compared to a peer group of independent refining companies, while market performance is based on the relative standing of total shareholder return achieved by HollyFrontier compared to peer group companies. The number of shares ultimately issued under these awards can range from zero to 200% of target award amounts.

A summary of performance share unit activity and changes during the nine months ended September 30, 2018 is presented below:

Performance Share Units	Grants
Outstanding at January 1, 2018 (non-vested)	692,661
Forfeited	(44,008)
Outstanding at September 30, 2018 (non-vested)	648,653

As of September 30, 2018, there was $9.1 million of total unrecognized compensation cost related to non-vested performance share units having a grant date fair value of $33.91 per unit. That cost is expected to be recognized over a weighted-average period of 1.3 years.

NOTE 7: Inventories

Inventory consists of the following components:

	September 30, 2018	December 31, 2017
	(In thousands)	
Crude oil	$ 529,252	$ 581,417
Other raw materials and unfinished products[(1)]	383,953	396,618
Finished products[(2)]	753,562	655,336
Lower of cost or market reserve	(30,906)	(223,833)
Process chemicals[(3)]	35,259	24,792
Repair and maintenance supplies and other [(4)]	191,380	195,762
Total inventory	$ 1,862,500	$ 1,630,092

(1) Other raw materials and unfinished products include feedstocks and blendstocks, other than crude.
(2) Finished products include gasolines, jet fuels, diesels, lubricants, asphalts, LPG's and residual fuels.
(3) Process chemicals include additives and other chemicals.
(4) Includes RINs.

Inventories, which are valued at the lower of LIFO cost or market, reflect a valuation reserve of $30.9 million and $223.8 million at September 30, 2018 and December 31, 2017, respectively. The December 31, 2017 market reserve of $223.8 million was reversed due to the sale of inventory quantities that gave rise to the 2017 reserve. A new market reserve of $30.9 million was established as of September 30, 2018 based on market conditions and prices at that time. The effect of the change in lower of cost or market reserve was an increase to cost of products sold totaling $17.8 million for the three months ended September 30, 2018 and a decrease of $111.1 million for the three months ended September 30, 2017, and a decrease to cost of products sold totaling $192.9 million and $15.3 million for the nine months ended September 30, 2018 and 2017, respectively.

During the three months ended June 30, 2018, the EPA granted the Woods Cross Refinery a one-year small refinery exemption from the Renewable Fuel Standard ("RFS") program requirements for the 2017 calendar year end. As a result, the Woods Cross Refinery's gasoline and diesel production are not subject to the percentage of production that must satisfy a Renewable Volume Obligation ("RVO") for 2017. In the second quarter of 2018, we increased our inventory of RINs and reduced our cost of products sold by $25.3 million, representing the net cost of the Woods Cross Refinery's RINs charge to cost of products sold in 2017, less the loss incurred for selling 2017 vintage RINs in excess of those which we can use subject to the 20% carryover limit.

During the three months ended March 31, 2018, the EPA granted the Cheyenne Refinery a one-year small refinery exemption from the RFS program requirements for the 2015 and 2017 calendar years end. As a result, the Cheyenne Refinery's gasoline and diesel production are not subject to the percentage of production that must satisfy an RVO for those years. At the date we received the 2017 Cheyenne Refinery exemption, we had not yet submitted RINs to the EPA to satisfy this 2017 RVO, which we intended to satisfy, in part, with 2016 vintage RINs subject to the 20% carryover limit. In the first quarter of 2018, we increased our inventory of RINs and reduced our cost of products sold by $37.9 million, representing the net cost of the Cheyenne Refinery's RINs charged to cost of products sold in 2017, less the loss incurred from selling 2016 vintage RINs prior to their expiration in 2018.

In the first quarter of 2018, the EPA allowed us to generate new 2018 vintage RINs to replace the RINs previously submitted to meet the Cheyenne Refinery's 2015 RVO. In the first quarter of 2018, we increased our inventory of RINs and reduced our cost of products sold by $33.8 million representing the fair value of the 2018 RINs generated because of the Cheyenne Refinery's exemption of its 2015 RVO.

During the second quarter of 2018, the Renewable Fuel Association and three other associations sought judicial review of three hardship waivers granted by the EPA under the RFS provisions of the Clean Air Act by filing a lawsuit in the United States Court of Appeals for the Tenth Circuit ("Tenth Circuit") that alleges the EPA erred in granting the waivers. This challenge includes two hardship waivers granted to our subsidiaries for the 2016 compliance year. The Tenth Circuit granted our motion to intervene in the case, thereby making us a party to this case. It is too early to assess whether the case is expected to have any impact on us.

NOTE 8: Environmental

Environmental costs are charged to operating expenses if they relate to an existing condition caused by past operations and do not contribute to current or future revenue generation. We have ongoing investigations of environmental matters at various locations and routinely assess our recorded environmental obligations, if any, with respect to such matters. Liabilities are recorded when site restoration and environmental remediation, cleanup and other obligations are either known or considered probable and can be reasonably estimated. Such estimates are undiscounted and require judgment with respect to costs, time frame and extent of required remedial and cleanup activities and are subject to periodic adjustments based on currently available information. Recoveries of environmental costs through insurance, indemnification arrangements or other sources are included in other assets to the extent such recoveries are considered probable.

We incurred expense of $3.3 million and $4.9 million for the three and nine months ended September 30, 2018, respectively, and incurred expense of $0.1 million for the three months ended September 30, 2017 and reduced expense by $0.8 million for the nine months ended September 30, 2017, for environmental remediation obligations. The accrued environmental liability reflected in our consolidated balance sheets was $102.9 million and $103.7 million at September 30, 2018 and December 31, 2017, respectively, of which $86.5 million and $89.6 million, respectively, were classified as other long-term liabilities. These accruals include remediation and monitoring costs expected to be incurred over an extended period of time (up to 30 years for certain projects). Estimated liabilities could increase in the future when the results of ongoing investigations become known, are considered probable and can be reasonably estimated.

NOTE 9: Debt

HollyFrontier Credit Agreement
We have a $1.35 billion senior unsecured revolving credit facility maturing in February 2022 (the "HollyFrontier Credit Agreement"). The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the nine months ended September 30, 2018, there was no activity under the HollyFrontier Credit Agreement. At September 30, 2018, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling $2.4 million under the HollyFrontier Credit Agreement.

HEP Credit Agreement
HEP has a $1.4 billion senior secured revolving credit facility maturing in July 2022 (the "HEP Credit Agreement") and is available to fund capital expenditures, investments, acquisitions, distribution payments, working capital and for general partnership purposes. It is also available to fund letters of credit up to a $50 million sub-limit and has a $300 million accordion. During the nine months ended September 30, 2018, HEP received advances totaling $256.0 million and repaid $347.0 million under the HEP Credit Agreement. At September 30, 2018, HEP was in compliance with all of its covenants, had outstanding borrowings of $921.0 million and no outstanding letters of credit under the HEP Credit Agreement.

HEP's obligations under the HEP Credit Agreement are collateralized by substantially all of HEP's assets and are guaranteed by HEP's material wholly-owned subsidiaries. Any recourse to the general partner would be limited to the extent of HEP Logistics Holdings, L.P.'s assets, which other than its investment in HEP are not significant. HEP's creditors have no recourse to our other assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

HollyFrontier Senior Notes
Our 5.875% senior notes ($1 billion aggregate principal amount maturing April 2026) (the "HollyFrontier Senior Notes") are unsecured and unsubordinated obligations of ours and rank equally with all our other existing and future unsecured and unsubordinated indebtedness.

HEP Senior Notes

In September 2017, HEP issued an additional $100 million in aggregate principal amount of 6.0% HEP senior notes maturing in August 2024 in a private placement. HEP used the net proceeds of $101.8 million to repay indebtedness under the HEP Credit Agreement.

HEP's 6.0% senior notes ($500 million aggregate principal amount maturing August 2024) (the "HEP Senior Notes") are unsecured and impose certain restrictive covenants, including limitations on HEP's ability to incur additional indebtedness, make investments, sell assets, incur certain liens, pay distributions, enter into transactions with affiliates, and enter into mergers. At any time when the HEP Senior Notes are rated investment grade by both Moody's and Standard & Poor's and no default or event of default exists, HEP will not be subject to many of the foregoing covenants. Additionally, HEP has certain redemption rights under the HEP Senior Notes.

In January 2017, HEP redeemed its $300 million aggregate principal amount of 6.5% senior notes maturing March 2020 at a redemption cost of $309.8 million, at which time HEP recognized a $12.2 million early extinguishment loss consisting of a $9.8 million debt redemption premium and unamortized discount and financing costs of $2.4 million. HEP funded the redemption with borrowings under the HEP Credit Agreement.

Indebtedness under the HEP Senior Notes is guaranteed by HEP's wholly-owned subsidiaries. HEP's creditors have no recourse to our assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

The carrying amounts of long-term debt are as follows:

	September 30, 2018	December 31, 2017
	(In thousands)	
HollyFrontier 5.875% Senior Notes		
Principal	$ 1,000,000	$ 1,000,000
Unamortized discount and debt issuance costs	(7,600)	(8,315)
	992,400	991,685
HEP Credit Agreement	921,000	1,012,000
HEP 6% Senior Notes		
Principal	500,000	500,000
Unamortized discount and debt issuance costs	(4,252)	(4,692)
	495,748	495,308
Total HEP long-term debt	1,416,748	1,507,308
Total long-term debt	$ 2,409,148	$ 2,498,993

The fair values of the senior notes are as follows:

	September 30, 2018	December 31, 2017
	(In thousands)	
HollyFrontier senior notes	$ 1,065,980	$ 1,113,470
HEP senior notes	$ 512,840	$ 525,120

These fair values are based on estimates provided by a third party using market quotes for similar type instruments, a Level 2 input. See Note 4 for additional information on Level 2 inputs.

We capitalized interest attributable to construction projects of $1.3 million and $1.0 million for the three months ended September 30, 2018 and 2017, respectively, and $3.3 million and $4.2 million for the nine months ended September 30, 2018 and 2017, respectively.

NOTE 10: Derivative Instruments and Hedging Activities

Commodity Price Risk Management
Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps, forward purchase and sales and futures contracts to mitigate price exposure with respect to our inventory positions, natural gas purchases, sales prices of refined products and crude oil costs.

Foreign Currency Risk Management
We are exposed to market risk related to the volatility in foreign currency exchange rates. We periodically enter into derivative contracts in the form of foreign exchange forward and foreign exchange swap contracts to mitigate the exposure associated with fluctuations on intercompany notes with our foreign subsidiaries that are not denominated in the U.S. dollar.

Accounting Hedges
We have swap contracts serving as cash flow hedges against price risk on forecasted purchases of natural gas and to lock in basis spread differentials on forecasted purchases of crude oil. We also periodically have forward sales contracts that lock in the prices of future sales of crude oil and refined product and swap contracts serving as cash flow hedges against price risk on forecasted purchases of WTI crude oil and forecasted sales of refined product. These contracts have been designated as accounting hedges and are measured at fair value with offsetting adjustments (gains/losses) recorded directly to other comprehensive income. These fair value adjustments are later reclassified to earnings as the hedging instruments mature.

The following table presents the pre-tax effect on other comprehensive income ("OCI") and earnings due to fair value adjustments and maturities of derivatives designated as hedging instruments under hedge accounting:

Derivatives Designated as Cash Flow Hedging Instruments	Unrealized Gain (Loss) Recognized in OCI — Three Months Ended September 30, 2018	2017	Gain (Loss) Reclassified into Earnings — Income Statement Location	Three Months Ended September 30, 2018	2017
			(In thousands)		
Commodity contracts	$ 5,792	$ 3,354	Sales and other revenues	$ (1,422)	$ (488)
			Operating expenses	(209)	(4,961)
Interest rate contracts (1)	—	(63)	Interest expense	—	64
Total	$ 5,792	$ 3,291		$ (1,631)	$ (5,385)

Derivatives Designated as Cash Flow Hedging Instruments	Unrealized Gain (Loss) Recognized in OCI — Nine Months Ended September 30, 2018	2017	Gain (Loss) Reclassified into Earnings — Income Statement Location	Nine Months Ended September 30, 2018	2017
			(In thousands)		
Commodity contracts	$ 1,742	$ 8,658	Sales and other revenues	$ (5,093)	$ 7,937
			Cost of products sold	—	(299)
			Operating expenses	(945)	(13,676)
Interest rate contracts (1)	—	(91)	Interest expense	—	179
Total	$ 1,742	$ 8,567		$ (6,038)	$ (5,859)

(1) HEP used interest rate swap contracts to manage its exposure to interest rate risk, which matured in July 2017.

Economic Hedges
We have commodity contracts including forward purchase and sell contracts and swap contracts to lock in the crack spread of WTI and sub-octane gasoline and NYMEX futures contracts to lock in prices on forecasted purchases and sales of inventory that serve as economic hedges (derivatives used for risk management, but not designated as accounting hedges). We also have forward currency contracts to fix the rate of foreign currency. These contracts are measured at fair value with offsetting adjustments (gains/losses) recorded directly to income.

The following table presents the pre-tax effect on income due to maturities and fair value adjustments of our economic hedges:

Derivatives Not Designated as Hedging Instruments	Income Statement Location	Gain (Loss) Recognized in Earnings — Three Months Ended September 30, 2018	2017	Nine Months Ended September 30, 2018	2017
		(In thousands)			
Commodity contracts	Cost of products sold	$ (8,252)	$ (10,632)	$ (20,580)	$ 3,403
	Operating expenses	—	(629)	—	(6,392)
Foreign currency contracts	Gain on foreign currency transactions	(7,052)	—	18,504	—
	Gain on foreign currency swap contracts (1)	—	—	—	24,545
	Total	$ (15,304)	$ (11,261)	$ (2,076)	$ 21,556

(1) Relates to Canadian currency swap contracts that settled on February 1, 2017 and effectively fixed the conversion rate on our PCLI purchase price.

As of September 30, 2018, we have the following notional contract volumes related to outstanding derivative instruments:

	Total Outstanding Notional	Notional Contract Volumes by Year of Maturity — 2018	2019	2020	2021	Unit of Measure
Derivatives Designated as Hedging Instruments						
Natural gas price swaps - long	5,850,000	450,000	1,800,000	1,800,000	1,800,000	MMBTU
Crude oil price swaps (basis spread) - long	4,388,000	—	1,460,000	2,928,000	—	Barrels
Derivatives Not Designated as Hedging Instruments						
NYMEX futures (WTI) - short	2,303,000	2,102,000	201,000	—	—	Barrels
WTI and sub-octane gasoline crack spread swaps - short	400,000	400,000	—	—	—	Barrels
Forward gasoline contracts - long	25,000	25,000	—	—	—	Barrels
Foreign currency forward contracts	$ 446,361,369	$ 113,632,223	$ 332,729,146	—	—	U.S. Dollar

The following table presents the fair value and balance sheet locations of our outstanding derivative instruments. These amounts are presented on a gross basis with offsetting balances that reconcile to a net asset or liability position in our consolidated balance sheets. We present on a net basis to reflect the net settlement of these positions in accordance with provisions of our master netting arrangements.

	Derivatives in Net Asset Position			Derivatives in Net Liability Position		
	Gross Assets	Gross Liabilities Offset in Balance Sheet	Net Assets Recognized in Balance Sheet	Gross Liabilities	Gross Assets Offset in Balance Sheet	Net Liabilities Recognized in Balance Sheet
	(In thousands)					
September 30, 2018						
Derivatives designated as cash flow hedging instruments:						
Commodity price swap contracts	$ 1,565	$ —	$ 1,565	$ 3,243	$ (2,114)	$ 1,129
	$ 1,565	$ —	$ 1,565	$ 3,243	$ (2,114)	$ 1,129
Derivatives not designated as cash flow hedging instruments:						
Foreign exchange forward contracts	$ 9,137	$ —	$ 9,137	$ —	$ —	$ —
NYMEX futures contracts	—	—	—	8,854	—	8,854
Commodity price swap contracts	—	—	—	1,288	(802)	486
Commodity forward contracts	25	—	25	4	—	4
	$ 9,162	$ —	$ 9,162	$ 10,146	$ (802)	$ 9,344
Total net balance			$ 10,727			$ 10,473
Balance sheet classification:		Prepayment and other	$ 9,162	Accrued liabilities		$ 10,332
		Intangibles and other	1,565	Other long-term liabilities		141
			$ 10,727			$ 10,473

	Derivatives in Net Asset Position			Derivatives in Net Liability Position		
	Gross Assets	Gross Liabilities Offset in Balance Sheet	Net Assets Recognized in Balance Sheet	Gross Liabilities	Gross Assets Offset in Balance Sheet	Net Liabilities Recognized in Balance Sheet
	(In thousands)					
December 31, 2017						
Derivatives designated as cash flow hedging instruments:						
Commodity price swap contracts	$ —	$ —	$ —	$ 2,424	$ —	$ 2,424
Commodity forward contracts	3,067	—	3,067	418	—	418
	$ 3,067	$ —	$ 3,067	$ 2,842	$ —	$ 2,842
Derivatives not designated as cash flow hedging instruments:						
NYMEX futures contracts	$ —	$ —	$ —	$ 3,360	$ —	$ 3,360
Commodity forward contracts	773	—	773	602	—	602
	$ 773	$ —	$ 773	$ 3,962	$ —	$ 3,962
Total net balance			$ 3,840			$ 6,804
Balance sheet classification:				Accrued liabilities		$ 5,365
				Other long-term liabilities		1,439
		Prepayment and other	$ 3,840			$ 6,804

At September 30, 2018, we had a pre-tax net unrealized gain of $0.4 million classified in accumulated other comprehensive income that relates to all accounting hedges having contractual maturities through 2021. Assuming commodity prices remain unchanged, an unrealized loss of $1.0 million will be effectively transferred from accumulated other comprehensive income into the statement of income as the hedging instruments contractually mature over the next twelve-month period.

NOTE 11: Equity

Changes to equity during the nine months ended September 30, 2018 are presented below:

	HollyFrontier Stockholders' Equity	Noncontrolling Interest	Total Equity
		(In thousands)	
Balance at December 31, 2017	$ 5,370,829	$ 526,111	$ 5,896,940
Net income	956,064	57,843	1,013,907
Dividends	(175,921)	—	(175,921)
Distributions to noncontrolling interest holders	—	(93,128)	(93,128)
Other comprehensive loss, net of tax	(3,963)	—	(3,963)
Allocated equity on HEP common unit issuances, net of tax	42,198	58,202	100,400
Equity-based compensation	23,840	2,256	26,096
Purchase of treasury stock (1)	(186,632)	—	(186,632)
Purchase of HEP units for restricted grants	—	(58)	(58)
Adoption of accounting standards	(14,129)	—	(14,129)
Balance at September 30, 2018	$ 6,012,286	$ 551,226	$ 6,563,512

(1) Includes 12,593 shares withheld under the terms of stock-based compensation agreements to provide funds for the payment of payroll and income taxes due at the vesting of share-based awards.

In September 2018, our Board of Directors approved a $1 billion share repurchase program, which replaced all existing share repurchase programs, authorizing us to repurchase common stock in the open market or through privately negotiated transactions. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by the Board of Directors. As of September 30, 2018, we had remaining authorization to repurchase up to $949.3 million under this stock repurchase program. In addition, we are authorized by our Board of Directors to repurchase shares in an amount sufficient to offset shares issued under our compensation programs.

NOTE 12: Other Comprehensive Income

The components and allocated tax effects of other comprehensive income are as follows:

	Before-Tax	Tax Expense (Benefit)	After-Tax
		(In thousands)	
Three Months Ended September 30, 2018			
Net change in foreign currency translation adjustment	$ 8,325	$ (1,354)	$ 9,679
Net unrealized gain on hedging instruments	5,792	1,478	4,314
Other comprehensive income attributable to HollyFrontier stockholders	$ 14,117	$ 124	$ 13,993
Three Months Ended September 30, 2017			
Net change in foreign currency translation adjustment	$ 16,702	$ 5,851	$ 10,851
Net unrealized gain on hedging instruments	3,291	1,289	2,002
Other comprehensive income	19,993	7,140	12,853
Less other comprehensive loss attributable to noncontrolling interest	(40)	—	(40)
Other comprehensive income attributable to HollyFrontier stockholders	$ 20,033	$ 7,140	$ 12,893
Nine Months Ended September 30, 2018			
Net change in foreign currency translation adjustment	$ (15,118)	$ (6,304)	$ (8,814)
Net unrealized gain on hedging instruments	1,742	625	1,117
Net change in pension and other post-retirement benefit obligations	—	(3,734)	3,734
Other comprehensive loss attributable to HollyFrontier stockholders	$ (13,376)	$ (9,413)	$ (3,963)
Nine Months Ended September 30, 2017			
Net change in foreign currency translation adjustment	$ 24,287	$ 8,505	$ 15,782
Net unrealized loss on marketable securities	(4)	(1)	(3)
Net unrealized gain on hedging instruments	8,567	3,337	5,230
Other comprehensive income	32,850	11,841	21,009
Less other comprehensive loss attributable to noncontrolling interest	(57)	—	(57)
Other comprehensive income attributable to HollyFrontier stockholders	$ 32,907	$ 11,841	$ 21,066

The following table presents the income statement line item effects for reclassifications out of accumulated other comprehensive income ("AOCI"):

AOCI Component	Gain (Loss) Reclassified From AOCI		Income Statement Line Item
	(In thousands)		
	Three Months Ended September 30,		
	2018	2017	
Hedging instruments:			
Commodity price swaps	$ (1,422)	$ (488)	Sales and other revenues
	(209)	(4,961)	Operating expenses
Interest rate swaps	—	64	Interest expense
	(1,631)	(5,385)	
	(416)	(2,100)	Income tax benefit
	(1,215)	(3,285)	Net of tax
	—	(41)	Noncontrolling interest
Total reclassifications for the period	$ (1,215)	$ (3,326)	Net of tax and noncontrolling interest
	Nine Months Ended September 30,		
	2018	2017	
Hedging instruments:			
Commodity price swaps	$ (5,093)	$ 7,937	Sales and other revenues
	—	(299)	Cost of products sold
	(945)	(13,676)	Operating expenses
Interest rate swaps	—	179	Interest expense
	(6,038)	(5,859)	
	(1,540)	(2,312)	Income tax benefit
	(4,498)	(3,547)	Net of tax
	—	(114)	Noncontrolling interest
Total reclassifications for the period	$ (4,498)	$ (3,661)	Net of tax and noncontrolling interest

Accumulated other comprehensive income in the equity section of our consolidated balance sheets includes:

	September 30, 2018	December 31, 2017
	(In thousands)	
Foreign currency translation adjustment	$ 5,563	$ 14,377
Unrealized loss on pension obligation	(692)	(654)
Unrealized gain on post-retirement benefit obligations	20,711	16,939
Unrealized gain (loss) on hedging instruments	324	(793)
Accumulated other comprehensive income	$ 25,906	$ 29,869

NOTE 13: Post-retirement Plans

In connection with our PCLI acquisition, we agreed to establish employee benefit plans including union and non-union pension plans and a post-retirement healthcare plan for PCLI employees that were previously covered under legacy Suncor plans.

Our agreement with Suncor also provides that pension assets related to the union and non-union pension plans are transferred to a pension trust which we established and are computed in accordance with the share purchase agreement, subject to regulatory approval. The actual asset transfer to our PCLI pension plan trust was a cash transfer that occurred in September 2018.

The net periodic pension expense of these plans consisted of the following components:

	Three Months Ended September 30,		Nine Months Ended September 30,	February 1 to September 30,
	2018	2017	2018	2017
	(in thousands)			
Service cost - benefit earned during the period	$ 1,093	$ 1,013	$ 3,337	$ 2,596
Interest cost on projected benefit obligations	556	556	1,698	1,424
Expected return on plan assets	(856)	(802)	(2,615)	(2,053)
Net periodic pension expense	$ 793	$ 767	$ 2,420	$ 1,967

The expected long-term annual rate of return on plan assets is 5.75%. This rate was used in measuring 2018 net periodic benefit costs. We expect to contribute $6.4 million to the PCLI pension plans in 2018.

We have a post-retirement healthcare and other benefits plan that is available to certain of our employees who satisfy certain age and service requirements. In addition, we have a post-retirement healthcare and other benefits plan for our PCLI employees. The net periodic benefit credit of these plans consisted of the following components:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands)			
Service cost – benefit earned during the period	$ 411	$ 380	$ 1,238	$ 1,106
Interest cost on projected benefit obligations	234	250	705	714
Amortization of prior service credit	(870)	(870)	(2,611)	(2,610)
Net periodic post-retirement credit	$ (225)	$ (240)	$ (668)	$ (790)

NOTE 14: Contingencies

We are a party to various litigation and legal proceedings which we believe, based on advice of counsel, will not either individually or in the aggregate have a material adverse effect on our financial condition, results of operations or cash flows.

We have a crude oil supply contract that requires the supplier to deliver a specified volume of crude oil or pay a shortfall fee for the difference in the actual barrels delivered to us less the specified barrels per the supply contract. For the contract year ended August 31, 2017, the actual number of barrels delivered to us was substantially less than the specified barrels, and we recorded a reduction to cost of products sold and accumulated a shortfall fee receivable of $26.0 million during this period. In September 2017, the supplier notified us they are disputing the shortfall fee owed and in October 2017 notified us of their demand for arbitration. We offset the receivable with payments of invoices for deliveries of crude oil received subsequent to August 31, 2017, which is permitted under the supply contract. We believe the disputes and claims made by the supplier are without merit. For the second contract year ended August 31, 2018, the actual number of barrels delivered to us was less than the specified barrels, and we recorded a reduction to cost of products sold and accumulated a shortfall fee receivable of $8.0 million during this period. We offset the receivable with payments of invoices for deliveries of crude oil received subsequent to August 31, 2018, which is permitted under the supply contract. The shortfall fees owed for the second contract year are now also part of the arbitration proceedings.

In March 2006, a subsidiary of ours sold the assets of Montana Refining Company under an Asset Purchase Agreement ("APA"). Calumet Montana Refining LLC, the current owner of the assets, has submitted requests for reimbursement of approximately $20.0 million pursuant to contractual indemnity provisions under the APA for various costs incurred. Calumet has also asserted claims related to environmental matters. We have rejected all of the currently pending claims for payment, and selected issues were arbitrated in July 2018. In September 2018, the arbitration panel ruled on the selected issues and held that the APA places a number of important limitations on claims advanced by Calumet. We have accrued appropriate costs for this matter, and we believe that any reasonably possible losses beyond the amounts accrued are not material.

NOTE 15: Segment Information

In the fourth quarter of 2017, we revised our reportable segments to align with certain changes in how our chief operating decision maker manages and allocates resources to our business. Accordingly, our Tulsa Refineries' lubricants operations, previously reported in the Refining segment, are now combined with the operations of our Petro-Canada Lubricants business (acquired February 1, 2017) and reported in the Lubricants and Specialty Products segment. Our prior period segment information has been retrospectively adjusted to reflect our current segment presentation.

Our operations are organized into three reportable segments, Refining, Lubricants and Specialty Products and HEP. Our operations that are not included in the Refining, Lubricants and Specialty Products and HEP segments are included in Corporate and Other. Intersegment transactions are eliminated in our consolidated financial statements and are included in Eliminations. Corporate and
Other and Eliminations are aggregated and presented under Corporate, Other and Eliminations column.

The Refining segment represents the operations of the El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries and HFC Asphalt (aggregated as a reportable segment). Refining activities involve the purchase and refining of crude oil and wholesale and branded marketing of refined products, such as gasoline, diesel fuel and jet fuel. These petroleum products are primarily marketed in the Mid-Continent, Southwest and Rocky Mountain regions of the United States. HFC Asphalt operates various asphalt terminals in Arizona, New Mexico and Oklahoma.

The Lubricants and Specialty Products segment involves PCLI's production operations, located in Mississauga, Ontario, that includes lubricant products such as base oils, white oils, specialty products and finished lubricants, and the operations of our Petro- Canada Lubricants business that includes the marketing of products to both retail and wholesale outlets through a global sales network with locations in Canada, the United States, Europe and China. Additionally, the Lubricants and Specialty Products segment includes specialty lubricant products produced at our Tulsa Refineries that are marketed throughout North America and are distributed in Central and South America. Also, effective with our acquisition that closed August 1, 2018, the Lubricants and Specialty Products segment includes Red Giant Oil, one of the largest suppliers of locomotive engine oil in North America.

The HEP segment includes all of the operations of HEP, which owns and operates logistics and refinery assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and processing units in the Mid-Continent, Southwest and Rocky Mountain regions of the United States. The HEP segment also includes a 75% ownership interest in UNEV (a consolidated subsidiary of HEP); and 50% ownership interests in each of the Osage Pipeline and the Cheyenne Pipeline. Revenues from the HEP segment are earned through transactions with unaffiliated parties for pipeline transportation, rental and terminalling operations as well as revenues relating to pipeline transportation services provided for our refining operations. Due to certain basis differences, our reported amounts for the HEP segment may not agree to amounts reported in HEP's periodic public filings.

The accounting policies for our segments are the same as those described in the summary of significant accounting policies in our Annual Report on Form 10-K for the year ended December 31, 2017.

	Refining	Lubricants and Specialty Products	HEP	Corporate, Other and Eliminations	Consolidated Total
			(In thousands)		
Three Months Ended September 30, 2018					
Sales and other revenues:					
Revenues from external customers	$ 4,270,835	$ 474,260	$ 25,596	$ 108	$ 4,770,799
Intersegment revenues	101,334	1,626	100,188	(203,148)	—
	$ 4,372,169	$ 475,886	$ 125,784	$ (203,040)	$ 4,770,799
Cost of products sold (exclusive of lower of cost or market inventory)	$ 3,572,593	$ 359,742	$ —	$ (180,101)	$ 3,752,234
Lower of cost or market inventory valuation adjustment	$ 17,837	$ —	$ —	$ —	$ 17,837
Operating expenses	$ 262,010	$ 40,288	$ 35,995	$ (21,097)	$ 317,196
Selling, general and administrative expenses	$ 30,394	$ 33,514	$ 2,498	$ 4,724	$ 71,130
Depreciation and amortization	$ 70,793	$ 11,139	$ 24,367	$ 2,586	$ 108,885
Income (loss) from operations	$ 418,542	$ 31,203	$ 62,924	$ (9,152)	$ 503,517
Earnings of equity method investments	$ —	$ —	$ 1,114	$ —	$ 1,114
Capital expenditures	$ 47,088	$ 8,094	$ 9,541	$ 5,214	$ 69,937
Three Months Ended September 30, 2017					
Sales and other revenues:					
Revenues from external customers	$ 3,291,417	$ 413,074	$ 15,227	$ (471)	$ 3,719,247
Intersegment revenues	82,705	—	95,137	(177,842)	—
	$ 3,374,122	$ 413,074	$ 110,364	$ (178,313)	$ 3,719,247
Cost of products sold (exclusive of lower of cost or market inventory)	$ 2,774,722	$ 270,279	$ —	$ (156,452)	$ 2,888,549
Lower of cost or market inventory valuation adjustment	$ (109,690)	$ (1,438)	$ —	$ —	$ (111,128)
Operating expenses	$ 246,409	$ 59,726	$ 36,061	$ (19,919)	$ 322,277
Selling, general and administrative expenses	$ 26,582	$ 30,796	$ 3,626	$ 7,248	$ 68,252
Depreciation and amortization	$ 74,070	$ 7,734	$ 18,601	$ 2,479	$ 102,884
Income (loss) from operations	$ 362,029	$ 45,977	$ 52,076	$ (11,669)	$ 448,413
Earnings of equity method investments	$ —	$ —	$ 5,072	$ —	$ 5,072
Capital expenditures	$ 30,979	$ 9,815	$ 10,151	$ 5,122	$ 56,067

	Refining	Lubricants and Specialty Products	HEP	Corporate, Other and Eliminations	Consolidated Total
			(In thousands)		
Nine Months Ended September 30, 2018					
Sales and other revenues:					
Revenues from external customers	$ 11,915,797	$ 1,376,531	$ 77,799	$ 335	$ 13,370,462
Intersegment revenues	284,538	11,884	295,629	(592,051)	—
	$ 12,200,335	$ 1,388,415	$ 373,428	$ (591,716)	$ 13,370,462
Cost of products sold (exclusive of lower of cost or market inventory)	$ 10,179,509	$ 1,040,414	$ —	$ (524,648)	$ 10,695,275
Lower of cost or market inventory valuation adjustment	$ (192,927)	$ —	$ —	$ —	$ (192,927)
Operating expenses	$ 764,415	$ 125,101	$ 106,731	$ (62,548)	$ 933,699
Selling, general and administrative expenses	$ 82,966	$ 99,425	$ 8,293	$ 13,785	$ 204,469
Depreciation and amortization	$ 210,957	$ 30,023	$ 74,117	$ 8,508	$ 323,605
Income (loss) from operations	$ 1,155,415	$ 93,452	$ 184,287	$ (26,813)	$ 1,406,341
Earnings of equity method investments	$ —	$ —	$ 4,127	$ —	$ 4,127
Capital expenditures	$ 132,050	$ 23,138	$ 41,111	$ 12,779	$ 209,078
Nine Months Ended September 30, 2017					
Sales and other revenues:					
Revenues from external customers	$ 9,033,148	$ 1,178,343	$ 47,826	$ (723)	$ 10,258,594
Intersegment revenues	268,208	—	277,315	(545,523)	—
	$ 9,301,356	$ 1,178,343	$ 325,141	$ (546,246)	$ 10,258,594
Cost of products sold (exclusive of lower of cost or market inventory)	$ 7,949,813	$ 818,981	$ —	$ (485,611)	$ 8,283,183
Lower of cost or market inventory valuation adjustment	$ (15,365)	$ 42	$ —	$ —	$ (15,323)
Operating expenses	$ 743,493	$ 154,795	$ 102,773	$ (54,797)	$ 946,264
Selling, general and administrative expenses	$ 71,591	$ 71,877	$ 8,882	$ 32,953	$ 185,303
Depreciation and amortization	$ 218,934	$ 20,570	$ 56,515	$ 8,187	$ 304,206
Asset impairment	$ 19,247	$ —	$ —	$ —	$ 19,247
Income (loss) from operations	$ 313,643	$ 112,078	$ 156,971	$ (46,978)	$ 535,714
Earnings of equity method investments	$ —	$ —	$ 10,965	$ —	$ 10,965
Capital expenditures	$ 130,238	$ 20,772	$ 30,675	$ 11,432	$ 193,117

	Refining	Lubricants and Specialty Products	HEP	Corporate, Other and Eliminations	Consolidated Total
			(In thousands)		
September 30, 2018					
Cash and cash equivalents	$ 6,915	$ 72,652	$ 6,375	$ 989,735	$ 1,075,677
Total assets	$ 7,044,358	$ 1,498,586	$ 2,146,124	$ 806,058	$ 11,495,126
Long-term debt	$ —	$ —	$ 1,416,748	$ 992,400	$ 2,409,148
December 31, 2017					
Cash and cash equivalents	$ 7,488	$ 41,756	$ 7,776	$ 573,737	$ 630,757
Total assets	$ 6,474,666	$ 1,610,472	$ 2,191,984	$ 415,032	$ 10,692,154
Long-term debt	$ —	$ —	$ 1,507,308	$ 991,685	$ 2,498,993

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

This Item 2 contains "forward-looking" statements. See "Forward-Looking Statements" at the beginning of Part I of this Quarterly Report on Form 10-Q. References herein to HollyFrontier Corporation ("HollyFrontier") include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission's ("SEC") "Plain English" guidelines, this Quarterly Report on Form 10-Q has been written in the first person. In this document, the words "we," "our," "ours" and "us" refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person with certain exceptions. Generally, the words "we," "our," "ours" and "us" include Holly Energy Partners, L.P. ("HEP") and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, "HEP" refers to HEP and its consolidated subsidiaries.

OVERVIEW

We are principally an independent petroleum refiner that produces high-value refined products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate refineries having a combined nameplate crude oil processing capacity of 457,000 barrels per day that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. Our refineries are located in El Dorado, Kansas (the "El Dorado Refinery"), Tulsa, Oklahoma (the "Tulsa Refineries"), which comprise two production facilities, the Tulsa West and East facilities, Artesia, New Mexico, which operates in conjunction with crude, vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the "Navajo Refinery"), Cheyenne, Wyoming (the "Cheyenne Refinery") and Woods Cross, Utah (the "Woods Cross Refinery").

On July 10, 2018, we entered into a definitive agreement to acquire Red Giant Oil Company LLC ("Red Giant Oil"), a privately-owned lubricants company, for $54.1 million. Red Giant Oil is one of the largest suppliers of locomotive engine oil in North America and is headquartered in Council Bluffs, Iowa with storage facilities in Idaho, Utah and Wyoming, along with a blending and packaging facility in Texas. The acquisition closed on August 1, 2018.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of Petro-Canada Lubricants Inc. ("PCLI"). The acquisition closed on February 1, 2017. Cash consideration paid was $862.1 million, or $1.125 billion in Canadian dollars.

PCLI is a Canadian-based producer of base oils with a plant having 15,600 BPD of lubricant production capacity that is located in Mississauga, Ontario. The facility is downstream integrated from base oils to finished lubricants and produces a broad spectrum of specialty lubricants and white oils that are distributed to end customers worldwide through a global sales network with locations in Canada, the United States, Europe and China.

For the three months ended September 30, 2018, net income attributable to HollyFrontier stockholders was $342.5 million compared to $272.0 million for the three months ended September 30, 2017. For the nine months ended September 30, 2018, net income attributable to HollyFrontier stockholders was $956.1 million compared to $284.3 million for the nine months ended September 30, 2017. Overall gross refining margins per produced barrel sold for the three months ended September 30, 2018 increased 38% over the same period of 2017 due to higher 2018 crack spreads and crude oil basis differentials. Included in our financial results for the third quarter was an inventory reserve adjustment that decreased pre-tax earnings by $17.8 million. Crude oil charge averaged 441,990 BPD compared to 454,790 BPD for the third quarter of 2017. The lower crude charge is due to the planned turnaround at the El Dorado Refinery that commenced in the last week of September 2018, combined with reduced production rates at our Woods Cross Refinery throughout July and August.

Pursuant to the 2007 Energy Independence and Security Act, the Environmental Protection Agency ("EPA") promulgated the Renewable Fuel Standard ("RFS") regulations, which increased the volume of renewable fuels mandated to be blended into the nation's fuel supply. The regulations, in part, require refiners to add annually increasing amounts of "renewable fuels" to their petroleum products or purchase credits, known as renewable identification numbers ("RINs"), in lieu of such blending. Compliance with RFS significantly increases our cost of products sold, with RINs costs totaling $72.5 million for the three months ended September 30, 2018.

OUTLOOK

For the remainder of 2018, we expect favorable diesel market fundamentals, combined with favorable basis differentials for the Midland and Canadian crude oil we process, will continue to support strong earnings in our refining business. Operationally, our El Dorado and Mississauga refineries plan to return from planned maintenance in November, and we expect to run between 410,000 and 420,000 barrels per day of crude oil for the fourth quarter.

In our lubricants business, strong macroeconomic conditions continue to support demand and pricing for finished products, underpinning the Rack Forward portion of our business. The base oil markets continue to experience cyclical weakness, and we expect weak Rack Back earnings into 2019.

At HEP, we anticipate higher earnings and distributable cash flow in the fourth quarter due to the normal seasonality around the UNEV pipeline as well as higher crude gathering volumes in the Permian Basin. HEP remains on track to report a distribution coverage ratio of 1.0x for the full year 2018.

A more detailed discussion of our financial and operating results for the three and nine months ended September 30, 2018 and 2017 is presented in the following sections.

RESULTS OF OPERATIONS

Financial Data

	Three Months Ended September 30,		Change from 2017	
	2018	2017	Change	Percent
	(In thousands, except per share data)			
Sales and other revenues	$ 4,770,799	$ 3,719,247	$ 1,051,552	28 %
Operating costs and expenses:				
Cost of products sold (exclusive of depreciation and amortization):				
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	3,752,234	2,888,549	863,685	30
Lower of cost or market inventory valuation adjustment	17,837	(111,128)	128,965	(116)
	3,770,071	2,777,421	992,650	36
Operating expenses (exclusive of depreciation and amortization)	317,196	322,277	(5,081)	(2)
Selling, general and administrative expenses (exclusive of depreciation and amortization)	71,130	68,252	2,878	4
Depreciation and amortization	108,885	102,884	6,001	6
Total operating costs and expenses	4,267,282	3,270,834	996,448	30
Income from operations	503,517	448,413	55,104	12
Other income (expense):				
Earnings of equity method investments	1,114	5,072	(3,958)	(78)
Interest income	5,136	1,074	4,062	378
Interest expense	(32,399)	(28,731)	(3,668)	13
Gain on foreign currency transactions	281	19,122	(18,841)	(99)
Other, net	741	1,153	(412)	(36)
	(25,127)	(2,310)	(22,817)	988
Income before income taxes	478,390	446,103	32,287	7
Income tax expense	116,258	158,386	(42,128)	(27)
Net income	362,132	287,717	74,415	26
Less net income attributable to noncontrolling interest	19,666	15,703	3,963	25
Net income attributable to HollyFrontier stockholders	$ 342,466	$ 272,014	$ 70,452	26 %
Earnings per share attributable to HollyFrontier stockholders:				
Basic	$ 1.95	$ 1.53	$ 0.42	27 %
Diluted	$ 1.93	$ 1.53	$ 0.40	26 %
Cash dividends declared per common share	$ 0.33	$ 0.33	$ —	— %
Average number of common shares outstanding:				
Basic	175,097	176,149	(1,052)	(1)%
Diluted	176,927	176,530	397	— %

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2017	Change from 2017 Change	Change from 2017 Percent
	(In thousands, except per share data)			
Sales and other revenues	$ 13,370,462	$ 10,258,594	$ 3,111,868	30 %
Operating costs and expenses:				
Cost of products sold (exclusive of depreciation and amortization):				
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	10,695,275	8,283,183	2,412,092	29
Lower of cost or market inventory valuation adjustment	(192,927)	(15,323)	(177,604)	1,159
	10,502,348	8,267,860	2,234,488	27
Operating expenses (exclusive of depreciation and amortization)	933,699	946,264	(12,565)	(1)
Selling, general and administrative expenses (exclusive of depreciation and amortization)	204,469	185,303	19,166	10
Depreciation and amortization	323,605	304,206	19,399	6
Long-lived asset impairment	—	19,247	(19,247)	(100)
Total operating costs and expenses	11,964,121	9,722,880	2,241,241	23
Income from operations	1,406,341	535,714	870,627	163
Other income (expense):				
Earnings of equity method investments	4,127	10,965	(6,838)	(62)
Interest income	10,660	2,069	8,591	415
Interest expense	(97,446)	(85,534)	(11,912)	14
Loss on early extinguishment of debt	—	(12,225)	12,225	(100)
Gain on foreign currency transactions	5,516	19,517	(14,001)	(72)
Gain on foreign currency swap contracts	—	24,545	(24,545)	(100)
Other, net	3,451	2,550	901	35
	(73,692)	(38,113)	(35,579)	93
Income before income taxes	1,332,649	497,601	835,048	168
Income tax expense	318,742	173,593	145,149	84
Net income	1,013,907	324,008	689,899	213
Less net income attributable to noncontrolling interest	57,843	39,695	18,148	46
Net income attributable to HollyFrontier stockholders	$ 956,064	$ 284,313	$ 671,751	236 %
Earnings per share attributable to HollyFrontier stockholders:				
Basic	$ 5.42	$ 1.60	$ 3.82	239 %
Diluted	$ 5.37	$ 1.60	$ 3.77	236 %
Cash dividends declared per common share	$ 0.99	$ 0.99	$ —	— %
Average number of common shares outstanding:				
Basic	175,865	176,143	(278)	— %
Diluted	177,557	176,616	941	1 %

Balance Sheet Data

	September 30, 2018	December 31, 2017
	(Unaudited)	
	(In thousands)	
Cash and cash equivalents	$ 1,075,677	$ 630,757
Working capital	$ 2,317,090	$ 1,640,118
Total assets	$ 11,495,126	$ 10,692,154
Long-term debt	$ 2,409,148	$ 2,498,993
Total equity	$ 6,563,512	$ 5,896,940

Other Financial Data

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands)			
Net cash provided by operating activities	$ 401,752	$ 312,015	$ 1,129,897	$ 785,413
Net cash used for investing activities	$ (113,089)	$ (56,787)	$ (259,167)	$ (637,296)
Net cash used for financing activities	$ (193,701)	$ (86,986)	$ (423,416)	$ (230,452)
Capital expenditures	$ 59,601	$ 56,067	$ 209,078	$ 193,117
EBITDA [1]	$ 594,872	$ 560,941	$ 1,685,197	$ 845,577

(1) Earnings before interest, taxes, depreciation and amortization, which we refer to as "EBITDA," is calculated as net income attributable to HollyFrontier stockholders plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization. EBITDA is not a calculation provided for under GAAP; however, the amounts included in the EBITDA calculation are derived from amounts included in our consolidated financial statements. EBITDA should not be considered as an alternative to net income or operating income as an indication of our operating performance or as an alternative to operating cash flow as a measure of liquidity. EBITDA is not necessarily comparable to similarly titled measures of other companies. EBITDA is presented here because it is a widely used financial indicator used by investors and analysts to measure performance. EBITDA is also used by our management for internal analysis and as a basis for financial covenants. EBITDA presented above is reconciled to net income under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 3 of Part I of this Form 10-Q.

Segment Operating Data

Effective in the fourth quarter of 2017, we revised our reportable segments to align with certain changes in how our chief operating decision maker manages and allocates resources to our business. Accordingly, our Tulsa Refineries' lubricants operations, previously reported in the Refining segment, are now combined with the operations of our Petro-Canada Lubricants business and reported in the Lubricants and Specialty Products segment. Segment information for the three and nine months ended September 30, 2017 has been retrospectively adjusted to reflect our current segment presentation.

Our operations are organized into three reportable segments, Refining, Lubricants and Specialty Products and HEP. See Note 15 "Segment Information" in the Notes to Consolidated Financial Statements for additional information on our reportable segments.

Refining Segment Operating Data

Our refinery operations include the El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries.The following tables set forth information, including non-GAAP performance measures, about our consolidated refinery operations. The cost of products and refinery gross and net operating margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments and depreciation and amortization. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 3 of Part I of this Form 10-Q.

In the fourth quarter of 2017, we revised the following refining segment operating data computations: refinery gross margin; net operating margin; and operating expenses to better align with similar measurements provided by other companies in our industry and to facilitate comparison of our refining performance relative to our peers. Effective with this change, these measurements are now inclusive of all refining segment activities including HFC Asphalt operations and revenues and costs related to products purchased for resale and excess crude oil sales. Refining segment operating data for the three and nine months ended September 30, 2017 has been retrospectively adjusted to reflect our current presentation.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Mid-Continent Region (El Dorado and Tulsa Refineries)				
Crude charge (BPD) [1]	262,550	262,470	260,150	258,420
Refinery throughput (BPD) [2]	276,560	275,270	274,330	274,200
Sales of produced refined products (BPD) [3]	255,840	253,700	259,890	255,160
Refinery utilization [4]	101.0%	101.0%	100.1%	99.4%
Average per produced barrel [5]				
Refinery gross margin [6]	$ 16.43	$ 12.60	$ 12.99	$ 9.36
Refinery operating expenses [7]	5.48	5.02	5.18	5.17
Net operating margin	$ 10.95	$ 7.58	$ 7.81	$ 4.19
Refinery operating expenses per throughput barrel [8]	$ 5.07	$ 4.63	$ 4.90	$ 4.81
Feedstocks:				
Sweet crude oil	59%	65%	54%	62%
Sour crude oil	21%	14%	24%	17%
Heavy sour crude oil	15%	16%	17%	15%
Other feedstocks and blends	5%	5%	5%	6%
Total	100%	100%	100%	100%
Sales of produced refined products:				
Gasolines	49%	50%	51%	50%
Diesel fuels	34%	34%	33%	33%
Jet fuels	6%	6%	6%	7%
Fuel oil	1%	1%	1%	1%
Asphalt	4%	3%	3%	3%
Base oils	4%	4%	4%	4%
LPG and other	2%	2%	2%	2%
Total	100%	100%	100%	100%

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Southwest Region (Navajo Refinery)				
Crude charge (BPD) [1]	109,560	112,060	109,200	96,350
Refinery throughput (BPD) [2]	117,880	122,890	118,300	105,190
Sales of produced refined products (BPD) [3]	122,210	130,740	120,900	107,890
Refinery utilization [4]	109.6%	112.1%	109.2%	96.4%
Average per produced barrel [5]				
Refinery gross margin [6]	$ 22.60	$ 14.64	$ 17.84	$ 12.21
Refinery operating expenses [7]	4.53	4.34	4.63	5.38
Net operating margin	$ 18.07	$ 10.30	$ 13.21	$ 6.83
Refinery operating expenses per throughput barrel [8]	$ 4.69	$ 4.62	$ 4.73	$ 5.52
Feedstocks:				
Sweet crude oil	28%	25%	31%	23%
Sour crude oil	65%	66%	61%	68%
Other feedstocks and blends	7%	9%	8%	9%
Total	100%	100%	100%	100%
Sales of produced refined products:				
Gasolines	49%	49%	50%	50%
Diesel fuels	41%	40%	40%	40%
Fuel oil	3%	4%	3%	3%
Asphalt	5%	5%	4%	4%
LPG and other	2%	2%	3%	3%
Total	100%	100%	100%	100%
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)				
Crude charge (BPD) [1]	69,880	80,260	71,000	76,510
Refinery throughput (BPD) [2]	76,120	87,620	78,410	84,050
Sales of produced refined products (BPD) [3]	69,720	79,310	74,850	78,910
Refinery utilization [4]	72.0%	82.7%	73.2%	78.9%
Average per produced barrel [5]				
Refinery gross margin [6]	$ 24.75	$ 17.71	$ 24.95	$ 15.78
Refinery operating expenses [7]	12.80	10.47	11.97	10.36
Net operating margin	$ 11.95	$ 7.24	$ 12.98	$ 5.42
Refinery operating expenses per throughput barrel [8]	$ 11.72	$ 9.48	$ 11.42	$ 9.72
Feedstocks:				
Sweet crude oil	24%	32%	25%	34%
Heavy sour crude oil	44%	37%	44%	36%
Black wax crude oil	24%	23%	22%	21%
Other feedstocks and blends	8%	8%	9%	9%
Total	100%	100%	100%	100%
Sales of produced refined products:				
Gasolines	54%	58%	56%	58%
Diesel fuels	34%	32%	33%	33%
Fuel oil	2%	3%	3%	2%
Asphalt	7%	4%	5%	5%
LPG and other	3%	3%	3%	2%
Total	100%	100%	100%	100%

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Consolidated				
Crude charge (BPD) (1)	441,990	454,790	440,350	431,280
Refinery throughput (BPD) (2)	470,560	485,780	471,040	463,440
Sales of produced refined products (BPD) (3)	447,770	463,750	455,640	441,960
Refinery utilization (4)	96.7%	99.5%	96.4%	94.4%
Average per produced barrel (5)				
Refinery gross margin (6)	$ 19.41	$ 14.05	$ 16.25	$ 11.20
Refinery operating expenses (7)	6.36	5.78	6.15	6.16
Net operating margin	$ 13.05	$ 8.27	$ 10.10	$ 5.04
Refinery operating expenses per throughput barrel (8)	$ 6.05	$ 5.51	$ 5.94	$ 5.88
Feedstocks:				
Sweet crude oil	45%	49%	43%	48%
Sour crude oil	29%	25%	30%	25%
Heavy sour crude oil	16%	16%	17%	16%
Black wax crude oil	4%	4%	4%	4%
Other feedstocks and blends	6%	6%	6%	7%
Total	100%	100%	100%	100%
Sales of produced refined products:				
Gasolines	50%	51%	52%	51%
Diesel fuels	36%	36%	35%	34%
Jet fuels	3%	3%	3%	4%
Fuel oil	2%	2%	2%	2%
Asphalt	5%	4%	4%	4%
Base oils	2%	2%	2%	3%
LPG and other	2%	2%	2%	2%
Total	100%	100%	100%	100%

(1) Crude charge represents the barrels per day of crude oil processed at our refineries.
(2) Refinery throughput represents the barrels per day of crude and other refinery feedstocks input to the crude units and other conversion units at our refineries.
(3) Represents barrels sold of refined products produced at our refineries (including HFC Asphalt) and does not include volumes of refined products purchased for resale or volumes of excess crude oil sold.
(4) Represents crude charge divided by total crude capacity (BPSD). Our consolidated crude capacity is 457,000 BPSD.
(5) Represents average amount per produced barrel sold, which is a non-GAAP measure. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 3 of Part I of this Form 10-Q.
(6) Excludes lower of cost or market inventory valuation adjustments that decreased gross margin by $17.8 million and increased gross margin by $111.1 million for the three months ended September 30, 2018 and 2017, respectively, and increased gross margin by $192.9 million and $15.3 million for the nine months ended September 30, 2018 and 2017, respectively.
(7) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by sales volumes of refined products produced at our refineries.
(8) Represents total refining segment operating expenses, exclusive of depreciation and amortization, divided by refinery throughput.

Lubricants and Specialty Products Operating Data

The following table sets forth information about our lubricants and specialty products operations and includes our Petro-Canada Lubricants business from the date of acquisition (February 1, 2017).

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Lubricants and Specialty Products				
Throughput (BPD)	21,410	22,360	20,530	21,980
Sales of produced refined products (BPD)	31,970	30,440	21,340	34,790
Sales of produced refined products:				
Finished products	49%	49%	48%	44%
Base oils	28%	28%	31%	33%
Other	23%	23%	21%	23%
Total	100%	100%	100%	100%

Supplemental financial data attributable to our Lubricants and Specialty Products segment is presented below.

	Rack Back [1]	Rack Forward [2]	Eliminations [3]	Total Lubricants and Specialty Products
	(In thousands)			
Three months ended September 30, 2018				
Sales and other revenues	$ 197,226	$ 424,386	$ (145,726)	$ 475,886
Cost of products sold	177,748	327,720	(145,726)	359,742
Operating expenses	26,748	13,540	—	40,288
Selling, general and administrative expenses	7,439	26,075	—	33,514
Depreciation and amortization	6,345	4,794	—	11,139
Income (loss) from operations	$ (21,054)	$ 52,257	$ —	$ 31,203
Three months ended September 30, 2017				
Sales and other revenues	$ 166,851	$ 369,822	$ (123,599)	$ 413,074
Cost of products sold	127,371	266,507	(123,599)	270,279
Lower of cost or market inventory valuation adjustment	—	(1,438)	—	(1,438)
Operating expenses	26,691	33,035	—	59,726
Selling, general and administrative expenses	6,847	23,949	—	30,796
Depreciation and amortization	5,388	2,346	—	7,734
Income (loss) from operations	$ 554	$ 45,423	$ —	$ 45,977

	Rack Back (1)	Rack Forward (2)	Eliminations (3)	Total Lubricants and Specialty Products
		(In thousands)		
Nine months ended September 30, 2018				
Sales and other revenues	$ 546,300	$ 1,248,886	$ (406,771)	$ 1,388,415
Cost of products sold	482,842	964,343	(406,771)	1,040,414
Operating expenses	82,729	42,372	—	125,101
Selling, general and administrative expenses	22,146	77,279	—	99,425
Depreciation and amortization	17,986	12,037	—	30,023
Income (loss) from operations	$ (59,403)	$ 152,855	$ —	$ 93,452
Nine months ended September 30, 2017				
Sales and other revenues	$ 434,675	$ 1,054,161	$ (310,493)	$ 1,178,343
Cost of products sold	351,641	777,833	(310,493)	818,981
Lower of cost or market inventory valuation adjustment	—	42	—	42
Operating expenses	65,252	89,543	—	154,795
Selling, general and administrative expenses	15,905	55,972	—	71,877
Depreciation and amortization	14,475	6,095	—	20,570
Income (loss) from operations	$ (12,598)	$ 124,676	$ —	$ 112,078

(1) Rack back consists of our PCLI base oil production activities, by-product sales to third parties and intra-segment base oil sales to rack forward.
(2) Rack forward activities include the purchase of base oils from rack back and the blending, packaging, marketing and distribution and sales of finished lubricants and specialty products to third parties.
(3) Intra-segment sales of rack back produced base oils to rack forward are eliminated under the "Eliminations" column.

Results of Operations – Three Months Ended September 30, 2018 Compared to Three Months Ended September 30, 2017

Summary
Net income attributable to HollyFrontier stockholders for the three months ended September 30, 2018 was $342.5 million ($1.95 per basic and $1.93 per diluted share), a $70.5 million increase compared to net income of $272.0 million ($1.53 per basic and diluted share) for the three months ended September 30, 2017. Net income increased due principally to an increase in gross refining margins, partially offset by a decrease in refining segment sales volumes. For the three months ended September 30, 2018, lower of cost or market inventory reserve adjustments decreased pre-tax earnings by $17.8 million compared to an increase of $111.1 million for the three months ended September 30, 2017. Refinery gross margins for the three months ended September 30, 2018 increased to $19.41 per barrel sold from $14.05 for the three months ended September 30, 2017.

Sales and Other Revenues
Sales and other revenues increased 28% from $3,719.2 million for the three months ended September 30, 2017 to $4,770.8 million for the three months ended September 30, 2018 due to a year-over-year increase in third quarter sales prices, partially offset by lower refined product sales volumes. Sales and other revenues for the three months ended September 30, 2018 and 2017 included $25.6 million and $15.2 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties. Additionally, sales and other revenues included $474.3 million and $413.1 million in unaffiliated revenues related to our Lubricants and Specialty Products segment for the three months ended September 30, 2018 and 2017, respectively.

Cost of Products Sold
Total cost of products sold increased 36% from $2,777.4 million for the three months ended September 30, 2017 to $3,770.1 million for the three months ended September 30, 2018, due principally to higher crude oil costs, partially offset by lower refined product sales volumes. Additionally during the third quarter of 2018, we recognized a $17.8 million lower of cost or market inventory valuation charge compared to a $111.1 million benefit for the same period of 2017, resulting in a new $30.9 million inventory reserve at September 30, 2018. The reserve at September 30, 2018 is based on market conditions and prices at that time.

Gross Refinery Margins

Gross refinery margin per barrel sold increased 38% from $14.05 for the three months ended September 30, 2017 to $19.41 for the three months ended September 30, 2018. This was due to the effects of an increase in the average per barrel sold sales price, partially offset by increased crude oil and feedstock prices during the current year quarter. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments or depreciation and amortization. See "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 3 of Part I of this Form 10-Q for a reconciliation to the income statement of sale prices of products sold and cost of products purchased.

Operating Expenses

Operating expenses, exclusive of depreciation and amortization, decreased 2% from $322.3 million for the three months ended September 30, 2017 to $317.2 million for the three months ended September 30, 2018 due principally to the effects of reclassification of transportation costs to cost of products sold that were classified as operating expenses during 2017. Additionally, operating expenses include higher repair and maintenance costs as a result of the Woods Cross Refinery fire and resulting damage in March 2018.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased 4% from $68.3 million for the three months ended September 30, 2017 to $71.1 million for the three months ended September 30, 2018 due principally to higher legal and professional fees and salary costs. Additionally, we incurred $4.2 million in direct acquisition and integration costs of our PCLI business during the three months ended September 30, 2017.

Depreciation and Amortization Expenses

Depreciation and amortization increased 6% from $102.9 million for the three months ended September 30, 2017 to $108.9 million for the three months ended September 30, 2018. This increase was due principally to depreciation and amortization attributable to capitalized improvement projects and capitalized refinery turnaround costs.

Interest Income

Interest income for the three months ended September 30, 2018 was $5.1 million compared to $1.1 million for the three months ended September 30, 2017. This increase was due to higher interest rates and higher cash balances during the current year quarter.

Interest Expense

Interest expense was $32.4 million for the three months ended September 30, 2018 compared to $28.7 million for the three months ended September 30, 2017. This increase was due to interest attributable to higher HEP debt levels and market interest rate increases during the current year quarter relative to the same period of 2017. For the three months ended September 30, 2018 and 2017, interest expense included $18.0 million and $14.1 million, respectively, in interest costs attributable to HEP operations.

Gain on Foreign Currency Transactions

Remeasurement adjustments resulting from the conversion of the intercompany financing structure on our PCLI acquisition from local currencies to the U.S. dollar resulted in a $0.3 million gain for the three months ended September 30, 2018, and a $19.1 million gain for the three months ended September 30, 2017.

Income Taxes

For the three months ended September 30, 2018, we recorded income tax expense of $116.3 million compared to $158.4 million for the three months ended September 30, 2017. This decrease was due principally to effects of a lower federal tax rate, partially offset by higher pre-tax income during the three months ended September 30, 2018 compared to the same period of 2017. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were 24.3% and 35.5% for the three months ended September 30, 2018 and 2017, respectively. The Tax Cuts and Jobs Act was enacted on December 22, 2017, reducing the U.S. federal tax rate from 35% to 21%.

Results of Operations – Nine Months Ended September 30, 2018 Compared to Nine Months Ended September 30, 2017

Summary

Net income attributable to HollyFrontier stockholders for the nine months ended September 30, 2018 was $956.1 million ($5.42 per basic and $5.37 per diluted share), a $671.8 million increase compared to net income attributable to HollyFrontier stockholders of $284.3 million ($1.60 per basic and diluted share) for the nine months ended September 30, 2017. Net income increased due principally to an increase in gross refining margins and refining segment sales volumes. For the nine months ended September 30, 2018, lower of cost or market inventory reserve adjustments increased pre-tax earnings by $192.9 million compared to $15.3 million for the nine months ended September 30, 2017. Refinery gross margins for the nine months ended September 30, 2018 increased to $16.25 per produced barrel from $11.20 for the nine months ended September 30, 2017. During the nine months ended September 30, 2018, our Cheyenne Refinery was granted a one-year small refinery exemption from the EPA for the 2015 and 2017 calendar years and our Woods Cross Refinery was granted a one-year small refinery exemption for 2017. As a result of these exemptions, we recorded reductions totaling $97.0 million to our cost of products sold. Additionally, we recorded long-lived asset impairment charges totaling $23.2 million for the nine months ended September 30, 2017.

Sales and Other Revenues

Sales and other revenues increased 30% from $10,258.6 million for the nine months ended September 30, 2017 to $13,370.5 million for the nine months ended September 30, 2018 due to a year-over-year increase in sales prices and higher refined product sales volumes. Sales and other revenues for the nine months ended September 30, 2018 and 2017 include $77.8 million and $47.8 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties. Additionally, sales and other revenues included $1,376.5 million and $1,178.3 million in unaffiliated revenues related to our Lubricants and Specialty Products segment for the nine months ended September 30, 2018 and 2017, respectively.

Cost of Products Sold

Total cost of products sold increased 27% from $8,267.9 million for the nine months ended September 30, 2017 to $10,502.3 million for the nine months ended September 30, 2018, due principally to higher crude oil costs and higher refined product sales volumes. Additionally, during the nine months ended September 30, 2018, we recognized a $192.9 million lower of cost or market inventory valuation benefit compared to $15.3 million for the same period of last year, resulting in a new $30.9 million inventory reserve at September 30, 2018. The reserve at September 30, 2018 is based on market conditions and prices at that time. During the nine months ended September 30, 2018 and 2017, we recorded $97.0 million and $30.5 million, respectively, RINs cost reduction as a result of our Cheyenne Refinery and Woods Cross Refinery small refinery exemptions.

Gross Refinery Margins

Gross refinery margin per barrel sold increased 45% from $11.20 for the nine months ended September 30, 2017 to $16.25 for the nine months ended September 30, 2018. This was due to the effects of an increase in the average per barrel sold sales price, partially offset by increased crude oil and feedstock prices during the current year-to-date period. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments, asset impairment charges or depreciation and amortization. See “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 3 of Part I of this Form 10-Q for a reconciliation to the income statement of sales prices of products sold and cost of products purchased.

Operating Expenses

Operating expenses, exclusive of depreciation and amortization, decreased 1% from $946.3 million for the nine months ended September 30, 2017 to $933.7 million for the nine months ended September 30, 2018 due principally to lower purchased fuel costs, net of higher repair and maintenance costs as a result of a fire and resulting damage at our Woods Cross Refinery in March 2018. Also contributing to the decrease was the current year reclassification to cost of products sold of transportation costs that were classified as operating expenses during 2017.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased 10% from $185.3 million for the nine months ended September 30, 2017 to $204.5 million for the nine months ended September 30, 2018 due principally to higher legal and professional fees and salary costs. Additionally, we incurred $3.6 million in integration costs of our PCLI business during the nine months ended September 30, 2018 compared to $23.5 million in direct acquisition and integration costs during the same period of 2017.

Depreciation and Amortization Expenses

Depreciation and amortization increased 6% from $304.2 million for the nine months ended September 30, 2017 to $323.6 million for the nine months ended September 30, 2018. This increase was due principally to depreciation and amortization attributable to capitalized improvement projects and capitalized refinery turnaround costs.

Long-lived Asset Impairment
During the nine months ended September 30, 2017, we recorded a $19.2 million long-lived asset impairment charge resulting from management's plan to cease further expansion of our Woods Cross Refinery to add lubricants production.

Interest Income
Interest income for the nine months ended September 30, 2018 was $10.7 million compared to $2.1 million for the nine months ended September 30, 2017. This increase was due to higher interest rates and higher cash balances during the current year-to-date period.

Interest Expense
Interest expense was $97.4 million for the nine months ended September 30, 2018 compared to $85.5 million for the nine months ended September 30, 2017. This increase was due to interest attributable to higher debt levels and market interest rate increases during the current year relative to the same period of 2017. For the nine months ended September 30, 2018 and 2017, interest expense included $53.2 million and $41.4 million, respectively, in interest costs attributable to HEP operations.

Loss on Early Extinguishment of Debt
For the nine months ended September 30, 2017, a $12.2 million loss was recorded upon HEP's redemption of its $300 million aggregate principal amount of 6.5% senior notes maturing March 2020 at a cost of $309.8 million.

Gain on Foreign Currency Transactions
Remeasurement adjustments resulting from the conversion of the intercompany financing structure on our PCLI acquisition from local currencies to the U.S. dollar resulted in a $5.5 million gain for the nine months ended September 30, 2018, and a $19.5 million gain for the nine months ended September 30, 2017. The $5.5 million gain for the nine months ended September 30, 2018 consists of a $18.5 million gain on foreign exchange forward contracts (utilized as an economic hedge), net of a $13.0 million remeasurement loss on our intercompany financing structure.

Gain on Foreign Currency Swap Contracts
During the nine months ended September 30, 2017, we recorded a $24.5 million gain on currency swap contracts that effectively fixed the conversion rate on $1.125 billion Canadian dollars (the PCLI purchase price), which were settled on February 1, 2017, in connection with the closing of the PCLI acquisition.

Income Taxes
For the nine months ended September 30, 2018, we recorded income tax expense of $318.7 million compared to $173.6 million for the nine months ended September 30, 2017. This increase was due principally to higher pre-tax income during the nine months ended September 30, 2018 compared to the same period of 2017. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were 23.9% and 34.9% for the nine months ended September 30, 2018 and 2017, respectively. The Tax Cuts and Jobs Act was enacted on December 22, 2017, reducing the U.S. federal tax rate from 35% to 21%.

LIQUIDITY AND CAPITAL RESOURCES

HollyFrontier Credit Agreement
We have a $1.35 billion senior unsecured revolving credit facility maturing in February 2022 (the "HollyFrontier Credit Agreement"). The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the nine months ended September 30, 2018, there was no activity under the HollyFrontier Credit Agreement. At September 30, 2018, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling $2.4 million under the HollyFrontier Credit Agreement.

HEP Credit Agreement
HEP has a $1.4 billion senior secured revolving credit facility maturing in July 2022 (the "HEP Credit Agreement") and is available to fund capital expenditures, investments, acquisitions, distribution payments, working capital and for general partnership purposes. It is also available to fund letters of credit up to a $50 million sub-limit and has a $300 million accordion. During the nine months ended September 30, 2018, HEP received advances totaling $256.0 million and repaid $347.0 million under the HEP Credit Agreement. At September 30, 2018, HEP was in compliance with all of its covenants, had outstanding borrowings of $921.0 million and no outstanding letters of credit under the HEP Credit Agreement.

See Note 9 "Debt" in the Notes to Consolidated Financial Statements for additional information on our debt instruments.

HEP Common Unit Continuous Offering Program

In May 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of $200 million. During the nine months ended September 30, 2018, HEP issued 171,246 common units under this program, providing $5.2 million in gross proceeds. As of September 30, 2018, HEP has issued 2,413,153 units under this program, providing $82.3 million in gross proceeds.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP's credit facility may be reborrowed from time to time.

HEP Private Placement Agreement

On January 25, 2018, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,700,000 HEP common units, representing limited partner interests, at a price of $29.73 per common unit. The private placement closed on February 6, 2018, at which time HEP received proceeds of $110.0 million, which were used to repay indebtedness under the HEP Credit Agreement.

Liquidity

We believe our current cash and cash equivalents, along with future internally generated cash flow and funds available under our credit facilities, will provide sufficient resources to fund currently planned capital projects and our liquidity needs for the foreseeable future. In addition, components of our growth strategy include construction of new refinery processing units and the expansion of existing units at our facilities and selective acquisition of complementary assets for our refining operations intended to increase earnings and cash flow.

As of September 30, 2018, our cash and cash equivalents totaled $1,075.7 million. We consider all highly-liquid instruments with a maturity of three months or less at the time of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates market value. These primarily consist of investments in conservative, highly-rated instruments issued by financial institutions, government and corporate entities with strong credit standings and money market funds.

In September 2018, our Board of Directors approved a $1 billion share repurchase program, which replaced all existing share repurchase programs, authorizing us to repurchase common stock in the open market or through privately negotiated transactions. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by the Board of Directors. As of September 30, 2018, we had remaining authorization to repurchase up to $949.3 million under this stock repurchase program. In addition, we are authorized by our Board of Directors to repurchase shares in an amount sufficient to offset shares issued under our compensation programs.

Cash and cash equivalents increased $444.9 million for the nine months ended September 30, 2018. Net cash provided by operating activities of $1,129.9 million exceeded net cash used by financing and investing activities of $423.4 million and $259.2 million, respectively.

Cash Flows – Operating Activities

Nine Months Ended September 30, 2018 Compared to Nine Months Ended September 30, 2017

Net cash flows provided by operating activities were $1,129.9 million for the nine months ended September 30, 2018 compared to $785.4 million for the nine months ended September 30, 2017, an increase of $344.5 million. Net income for the nine months ended September 30, 2018 was $1,013.9 million, an increase of $689.9 million compared to $324.0 million for the nine months ended September 30, 2017. Non-cash adjustments to net income consisting of depreciation and amortization, long-lived asset impairment charges, lower of cost or market inventory valuation adjustment, earnings of equity method investments, inclusive of distributions, gain / loss on sale of assets, loss on extinguishment of debt, deferred income taxes, equity-based compensation expense and fair value changes to derivative instruments totaled $256.4 million for the nine months ended September 30, 2018 compared to $433.8 million for the same period in 2017. Adjusted for non-cash items, changes in working capital decreased operating cash flows by $33.5 million for the nine months ended September 30, 2018 and increased operating cash flows by $134.9 million for the nine months ended September 30, 2017. Additionally, for the nine months ended September 30, 2018, turnaround expenditures increased to $114.6 million from $111.5 million from the same period of 2017.

Cash Flows – Investing Activities and Planned Capital Expenditures

Nine Months Ended September 30, 2018 Compared to Nine Months Ended September 30, 2017
Net cash flows used for investing activities were $259.2 million for the nine months ended September 30, 2018 compared to $637.3 million for the nine months ended September 30, 2017, a decrease of $378.1 million. Current year investing activities reflect a net cash outflow of $54.1 million upon the acquisition of Red Giant Oil, and prior year investing activities reflect a net cash outflow of $870.6 million upon the acquisition of PCLI. Cash expenditures for properties, plants and equipment for the first nine months of 2018 increased to $209.1 million from $193.1 million for the same period in 2017. These include HEP capital expenditures of $41.1 million and $30.7 million for the nine months ended September 30, 2018 and 2017, respectively. Also for the nine months ended September 30, 2017, we invested $41.6 million, in marketable securities and received proceeds of $465.7 million, from the sale or maturity of marketable securities.

Planned Capital Expenditures

HollyFrontier Corporation
Each year our Board of Directors approves our annual capital budget, which includes specific projects that management is authorized to undertake. Additionally, when conditions warrant or as new opportunities arise, additional projects may be approved. The funds appropriated for a particular capital project may be expended over a period of several years, depending on the time required to complete the project. Therefore, our planned capital expenditures for a given year consist of expenditures appropriated in that year's capital budget plus expenditures for projects appropriated in prior years which have not yet been completed. During 2018, we expect to spend approximately $475.0 million to $530.0 million in cash for capital projects and refinery turnarounds appropriated in 2018 and prior years. Refinery turnaround spending is amortized over the useful life of the turnaround. Our expected capital and turnaround cash spending for 2018 is as follows:

	Expected Cash Spending Range		
	(In millions)		
Type:			
Capital	$ 240.0	-	$ 270.0
Turnarounds	235.0	-	260.0
Total	$ 475.0	-	$ 530.0

The refining industry is capital intensive and requires on-going investments to sustain our refining operations. This includes replacement of, or rebuilding, refinery units and components that extend the useful life. We also invest in projects that improve operational reliability and profitability via enhancements that improve refinery processing capabilities as well as production yield and flexibility. Our capital expenditures also include projects related to environmental, health and safety compliance and include initiatives as a result of federal and state mandates.

A significant portion of our current capital spending is associated with compliance-oriented capital improvements. This spending is required due to existing consent decrees (for projects including FCC unit flue gas scrubbers and tail gas treatment units), federal fuels regulations (particularly Tier3, which mandates a reduction in the sulfur content of blended gasoline), refinery waste water treatment improvements and other similar initiatives. Our refinery operations and related emissions are highly regulated at both federal and state levels, and we invest in our facilities as needed to remain in compliance with these standards. Additionally, when faced with new emissions or fuels standards, we seek to execute projects that facilitate compliance and also improve the operating costs and / or yields of associated refining processes.

HEP

Each year the Holly Logistic Services, L.L.C. board of directors approves HEP's annual capital budget, which specifies capital projects that HEP management is authorized to undertake. Additionally, at times when conditions warrant or as new opportunities arise, special projects may be approved. The funds allocated for a particular capital project may be expended over a period in excess of a year, depending on the time required to complete the project. Therefore, HEP's planned capital expenditures for a given year consist of expenditures approved for capital projects included in its current year capital budget as well as, in certain cases, expenditures approved for capital projects in capital budgets for prior years. HEP is forecasting to spend $8.0 million for maintenance capital expenditures, $5.0 million to $10.0 million for reimbursable capital expenditures and approximately $45.0 million to $55.0 million for expansion capital expenditures in 2018. HEP expects the majority of the expansion capital budget to be invested in refined product pipeline expansions, crude system enhancements, new storage tanks and enhanced blending capabilities at its racks. In addition to the capital budget, HEP may spend funds periodically to perform capital upgrades or additions to its assets where a customer reimburses HEP for such costs. The upgrades or additions would generally benefit the customer over the remaining live of the related service agreements.

Cash Flows – Financing Activities

Nine Months Ended September 30, 2018 Compared to Nine Months Ended September 30, 2017

Net cash flows used for financing activities were $423.4 million for the nine months ended September 30, 2018 compared to $230.5 million for the nine months ended September 30, 2017, an increase of $193.0 million. During the nine months ended September 30, 2018, we purchased $177.7 million in common stock and paid $175.9 million in dividends. Also during this period, HEP received $256.0 million and repaid $347.0 million under the HEP Credit Agreement, received $114.9 million in net proceeds from the issuance of its common units and paid distributions of $93.1 million to noncontrolling interests. During the nine months ended September 30, 2017, we received $26.0 million and repaid $26.0 million under the HollyFrontier Credit Agreement and paid $176.5 million in dividends. Also during this period, HEP received $628.0 million and repaid $431.0 million under the HEP Credit Agreement, received $101.8 million in net proceeds from the issuance of an additional $100 million aggregate principal amount of HEP 6.0% senior notes, paid $309.8 million upon the redemption of HEP's 6.5% senior notes, received $52.3 million in proceeds from the issuance of common units and paid distributions of $81.8 million to noncontrolling interests.

Contractual Obligations and Commitments

HollyFrontier Corporation

There were no significant changes to our long-term contractual obligations during the nine months ended September 30, 2018.

HEP

During the nine months ended September 30, 2018, HEP repaid net borrowings of $91.0 million resulting in $921.0 million of outstanding borrowings under the HEP Credit Agreement at September 30, 2018. There were no other significant changes to HEP's long-term contractual obligations during this period.

CRITICAL ACCOUNTING POLICIES

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities as of the date of the financial statements. Actual results may differ from these estimates under different assumptions or conditions.

Our significant accounting policies are described in "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Policies" in our Annual Report on Form 10-K for the year ended December 31, 2017. Certain critical accounting policies that materially affect the amounts recorded in our consolidated financial statements include the use of the last-in, first-out ("LIFO") method of valuing certain inventories, assessing the possible impairment of certain long-lived assets and goodwill, and assessing contingent liabilities for probable losses.

Inventory Valuation: Inventories related to our refining operations are stated at the lower of cost, using the LIFO method for crude oil and unfinished and finished refined products, or market. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. An actual valuation of inventory under the LIFO method is made at the end of each year based on the inventory levels at that time. Accordingly, interim LIFO calculations are based on management's estimates of expected year-end inventory levels and are subject to the final year-end LIFO inventory valuation.

At September 30, 2018, our lower of cost or market inventory valuation reserve was $30.9 million. This amount, or a portion thereof, is subject to reversal as a reduction to cost of products sold in subsequent periods as inventories giving rise to the reserve are sold, and a new reserve is established.

Inventories consisting of process chemicals, materials and maintenance supplies and RINs are stated at the lower of weighted-average cost or net realizable value. Inventories of our Petro-Canada Lubricants business are stated at the lower of cost, using the FIFO method, or net realizable value.

Goodwill and Long-lived Assets: As of September 30, 2018, our goodwill balance was $2.3 billion, with goodwill assigned to our Refining, Lubricants and Specialty Products and HEP segments of $1.7 billion, $0.2 billion and $0.3 billion, respectively. Goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired and liabilities assumed. Goodwill is not subject to amortization and is tested annually or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. Our goodwill impairment testing first entails a comparison of our reporting units fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

Our long-lived assets principally consist of our refining assets that are organized as refining asset groups and the assets of our Lubricants and Specialty Products business. The refinery asset groups also constitute our individual refinery reporting units that are used for testing and measuring goodwill impairments. Our long-lived assets are evaluated for impairment by identifying whether indicators of impairment exist and if so, assessing whether the long-lived assets are recoverable from estimated future undiscounted cash flows. The actual amount of impairment loss measured, if any, is equal to the amount by which the asset group's carrying value exceeds its fair value.

We performed our annual goodwill impairment testing as of July 1, 2018 and determined there was no impairment of goodwill attributable to our reporting units.

Contingencies

We are subject to proceedings, lawsuits and other claims related to environmental, labor, product and other matters. We are required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of probable losses. A determination of the amount of reserves required, if any, for these contingencies is made after careful analysis of each individual issue. The required reserves may change in the future due to new developments in each matter or changes in approach such as a change in settlement strategy in dealing with these matters.

RISK MANAGEMENT

We use certain strategies to reduce some commodity price and operational risks. We do not attempt to eliminate all market risk exposures when we believe that the exposure relating to such risk would not be significant to our future earnings, financial position, capital resources or liquidity or that the cost of eliminating the exposure would outweigh the benefit.

Commodity Price Risk Management

Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps, forward purchase and sales and futures contracts to mitigate price exposure with respect to our inventory positions, natural gas purchases, sales prices of refined products and crude oil costs.

Foreign Currency Risk Management

We are exposed to market risk related to the volatility in foreign currency exchange rates. We periodically enter into derivative contracts in the form of foreign exchange forward and foreign exchange swap contracts to mitigate the exposure associated with fluctuations on intercompany notes with our foreign subsidiaries that are not denominated in the U.S. dollar.

As of September 30, 2018, we have the following notional contract volumes related to all outstanding derivative contracts used to mitigate commodity price risk:

		Notional Contract Volumes by Year of Maturity				
Contract Description	**Total Outstanding Notional**	**2018**	**2019**	**2020**	**2021**	**Unit of Measure**
Natural gas price swaps - long	5,850,000	450,000	1,800,000	1,800,000	1,800,000	MMBTU
Crude oil price swaps (basis spread) - long	4,388,000	—	1,460,000	2,928,000	—	Barrels
NYMEX futures (WTI) - short	2,303,000	2,102,000	201,000	—	—	Barrels
WTI and sub-octane gasoline crack spread swaps - short	400,000	400,000	—	—	—	Barrels
Forward gasoline contracts - long	25,000	25,000	—	—	—	Barrels
Foreign currency forward contracts	$ 446,361,369	$ 113,632,223	$ 332,729,146	—	—	U.S. Dollar

The following sensitivity analysis provides the hypothetical effects of market price fluctuations to the commodity positions hedged under our derivative contracts:

	Estimated Change in Fair Value at September 30,	
Commodity-based Derivative Contracts	**2018**	**2017**
	(In thousands)	
Hypothetical 10% change in underlying commodity prices	$ 14,837	$ 7,360

Interest Rate Risk Management

The market risk inherent in our fixed-rate debt is the potential change arising from increases or decreases in interest rates as discussed below.

For the fixed rate HollyFrontier Senior Notes and HEP Senior Notes, changes in interest rates will generally affect fair value of the debt, but not earnings or cash flows. The outstanding principal, estimated fair value and estimated change in fair value (assuming a hypothetical 10% change in the yield-to-maturity rates) for this debt as of September 30, 2018 is presented below:

	Outstanding Principal	**Estimated Fair Value**	**Estimated Change in Fair Value**
		(In thousands)	
HollyFrontier Senior Notes	$ 1,000,000	$ 1,065,980	$ 31,244
HEP Senior Notes	$ 500,000	$ 512,840	$ 13,824

For the variable rate HEP Credit Agreement, changes in interest rates would affect cash flows, but not the fair value. At September 30, 2018, outstanding borrowings under the HEP Credit Agreement were $921.0 million. A hypothetical 10% change in interest rates applicable to the HEP Credit Agreement would not materially affect cash flows.

Our operations are subject to hazards of petroleum processing operations, including fire, explosion and weather-related perils. We maintain various insurance coverages, including business interruption insurance, subject to certain deductibles. We are not fully insured against certain risks because such risks are not fully insurable, coverage is unavailable, or premium costs, in our judgment, do not justify such expenditures.

Financial information is reviewed on the counterparties in order to review and monitor their financial stability and assess their ongoing ability to honor their commitments under the derivative contracts. We have not experienced, nor do we expect to experience, any difficulty in the counterparties honoring their commitments.

We have a risk management oversight committee consisting of members from our senior management. This committee oversees our risk enterprise program, monitors our risk environment and provides direction for activities to mitigate identified risks that may adversely affect the achievement of our goals.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

See “Risk Management” under “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles

Reconciliations of earnings before interest, taxes, depreciation and amortization (“EBITDA”) to amounts reported under generally accepted accounting principles in financial statements.

Earnings before interest, taxes, depreciation and amortization, which we refer to as EBITDA, is calculated as net income attributable to HollyFrontier stockholders plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization. EBITDA is not a calculation provided for under GAAP; however, the amounts included in the EBITDA calculation are derived from amounts included in our consolidated financial statements. EBITDA should not be considered as an alternative to net income or operating income as an indication of our operating performance or as an alternative to operating cash flow as a measure of liquidity. EBITDA is not necessarily comparable to similarly titled measures of other companies. EBITDA is presented here because it is a widely used financial indicator used by investors and analysts to measure performance. EBITDA is also used by our management for internal analysis and as a basis for financial covenants.

Set forth below is our calculation of EBITDA.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(In thousands)			
Net income attributable to HollyFrontier stockholders	$ 342,466	$ 272,014	$ 956,064	$ 284,313
Add income tax expense	116,258	158,386	318,742	173,593
Add interest expense	32,399	28,731	97,446	85,534
Subtract interest income	(5,136)	(1,074)	(10,660)	(2,069)
Add depreciation and amortization	108,885	102,884	323,605	304,206
EBITDA	$ 594,872	$ 560,941	$ 1,685,197	$ 845,577

Reconciliations of refinery operating information (non-GAAP performance measures) to amounts reported under generally accepted accounting principles in financial statements.

Refinery gross margin and net operating margin are non-GAAP performance measures that are used by our management and others to compare our refining performance to that of other companies in our industry. We believe these margin measures are helpful to investors in evaluating our refining performance on a relative and absolute basis. Refinery gross margin per produced barrel sold is total refining segment revenues less total refining segment cost of products sold, exclusive of lower of cost or market inventory valuation adjustments, divided by sales volumes of produced refined products sold. Net operating margin per barrel sold is the difference between refinery gross margin and refinery operating expenses per produced barrel sold. These two margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments or depreciation and amortization. Each of these component performance measures can be reconciled directly to our consolidated statements of income. Other companies in our industry may not calculate these performance measures in the same manner.

Below are reconciliations to our consolidated statements of income for refinery net operating and gross margin and operating expenses, in each case averaged per produced barrel sold. Due to rounding of reported numbers, some amounts may not calculate exactly.

Reconciliation of average refining segment net operating margin per produced barrel sold to refinery gross margin to total sales and other revenues

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(Dollars in thousands, except per barrel amounts)			
Consolidated				
Net operating margin per produced barrel sold	$ 13.05	$ 8.27	$ 10.10	$ 5.04
Add average refinery operating expenses per produced barrel sold	6.36	5.78	6.15	6.16
Refinery gross margin per produced barrel sold	19.41	14.05	16.25	11.20
Times produced barrels sold (BPD)	447,770	463,750	455,640	441,960
Times number of days in period	92	92	273	273
Refining segment gross margin	799,592	599,443	2,021,333	1,351,337
Add (subtract) rounding	(16)	(43)	(507)	206
Total refining segment gross margin	799,576	599,400	2,020,826	1,351,543
Add refining segment cost of products sold	3,572,593	2,774,722	10,179,509	7,949,813
Refining segment sales and other revenues	4,372,169	3,374,122	12,200,335	9,301,356
Add lubricants and specialty products segment sales and other revenues	475,886	413,074	1,388,415	1,178,343
Add HEP segment sales and other revenues	125,784	110,364	373,428	325,141
Subtract corporate, other and eliminations	(203,040)	(178,313)	(591,716)	(546,246)
Sales and other revenues	$ 4,770,799	$ 3,719,247	$ 13,370,462	$ 10,258,594

Reconciliation of average refining segment operating expenses per produced barrel sold to total operating expenses

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
	(Dollars in thousands, except per barrel amounts)			
Consolidated				
Average refinery operating expenses per produced barrel sold	$ 6.36	$ 5.78	$ 6.15	$ 6.16
Times produced barrels sold (BPD)	447,770	463,750	455,640	441,960
Times number of days in period	92	92	273	273
Refinery operating expenses	261,999	246,604	764,997	743,235
Add (subtract) rounding	11	(195)	(582)	258
Total refining segment operating expenses	262,010	246,409	764,415	743,493
Add lubricants and specialty products segment operating expenses	40,288	59,726	125,101	154,795
Add HEP segment operating expenses	35,995	36,061	106,731	102,773
Subtract corporate, other and eliminations	(21,097)	(19,919)	(62,548)	(54,797)
Operating expenses (exclusive of depreciation and amortization)	$ 317,196	$ 322,277	$ 933,699	$ 946,264

Item 4. Controls and Procedures

Evaluation of disclosure controls and procedures. Our principal executive officer and principal financial officer have evaluated, as required by Rule 13a-15(b) under the Securities Exchange Act of 1934 (the “Exchange Act”), our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e)) under the Exchange Act as of the end of the period covered by this Quarterly Report on Form 10-Q. Our disclosure controls and procedures are designed to provide reasonable assurance that the information we are required to disclose in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure and is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms. Based upon the evaluation, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of September 30, 2018.

Changes in internal control over financial reporting. There have been no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during our last fiscal quarter that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

In the ordinary course of business, we may become party to legal, regulatory or administrative proceedings or governmental investigations, including environmental and other matters. Damages or penalties may be sought from us in some matters and certain matters may require years to resolve. While the outcome and impact of these proceedings and investigations on us cannot be predicted with certainty, based on advice of counsel, management believes that the resolution of these proceedings and investigations through settlement or adverse judgment will not either individually or in the aggregate have a material adverse effect on our financial condition, results of operations or cash flows.

Environmental Matters

We are reporting the following proceedings to comply with SEC regulations which require us to disclose proceedings arising under federal, state or local provisions regulating the discharge of materials into the environment or protecting the environment if we reasonably believe that such proceedings may result in monetary sanctions of $100,000 or more. Our respective subsidiaries have or will develop corrective action plans regarding these disclosures that will be implemented in consultation with the respective federal and state agencies. It is not possible to predict the ultimate outcome of these proceedings, although none are currently expected to have a material effect on our financial condition, results of operations or cash flows.

Cheyenne

HollyFrontier Cheyenne Refining LLC (“HFCR”) has been engaged in discussions with the Wyoming Department of Environmental Quality (“WDEQ”) relating to Notices of Violations issued in late 2016 and 2018 for possible violations of air quality standards related to operation of certain refinery units at the Cheyenne Refinery in 2016 and 2017. HFCR and the WDEQ are working towards settlement of these matters.

El Dorado

HollyFrontier El Dorado Refining LLC (“HFEDR”) is engaged in discussions with, and has responded to document requests from, the EPA and the U.S. Department of Justice (“DOJ”) regarding potential Clean Air Act violations relating to flaring devices and other equipment at the refinery. Topics of the discussions include (a) three information requests for activities occurring January 1, 2009 through May 31, 2014 and a September 2017 incident, (b) Risk Management Program compliance issues relating to a November 2014 inspection and (c) a Notice of Violation issued by the EPA in August 2017. HFEDR will continue to work with the EPA and DOJ to resolve these matters.

Tulsa

HollyFrontier Tulsa Refining LLC (“HFTR”) operates under two Consent Decrees with the EPA and the Oklahoma Department of Environmental Quality (“ODEQ”). On December 13, 2017, during a meeting between the parties, ODEQ proposed stipulated penalties related to violations of the two Consent Decrees. The violations relate to Clean Air Act regulated fuel gas and flare operations. HFTR is currently negotiating with the ODEQ and the EPA to resolve these matters.

Other

We are a party to various other litigation and proceedings that we believe, based on advice of counsel, will not either individually or in the aggregate have a materially adverse impact on our financial condition, results of operations or cash flows.

Item 1A. Risk Factors

There have been no material changes in our risk factors as previously disclosed in Part 1, “Item 1A. Risk Factors” of our Annual Report on Form 10-K for the fiscal year ended December 31, 2017. You should carefully consider the risk factors discussed in our 2017 Form 10-K, which could materially affect our business, financial condition or future results. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition or future results.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

(c) Common Stock Repurchases Made in the Quarter

Under our common stock repurchase programs, repurchases are being made from time to time in the open market or privately negotiated transactions based on market conditions, securities law limitations and other factors. The following table includes repurchases made under these programs during the third quarter of 2018.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs
July 2018	155,000	$ 69.91	155,000	$ 112,867,060
August 2018	675,000	$ 70.70	675,000	$ 65,147,830
September 2018 (1)	1,030,000	$ 70.41	1,030,000	$ 949,330,686
Total for July to September 2018	1,860,000		1,860,000	

(1) On September 13, 2018, our Board of Directors approved a $1 billion share repurchase program, which replaced all existing share repurchase programs, including $43.3 million remaining under the previously existing $1 billion share repurchase program. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by the Board of Directors.

Item 6. Exhibits

The Exhibit Index on page 58 of this Quarterly Report on Form 10-Q lists the exhibits that are filed or furnished, as applicable, as part of the Quarterly Report on Form 10-Q.

Exhibit Index

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of HollyFrontier Corporation (incorporated by reference to Exhibit 3.1 of Registrant’s Current Report on Form 8-K filed July 8, 2011, File No. 1-03876).
3.2	Amended and Restated By-Laws of HollyFrontier Corporation (incorporated by reference to Exhibit 3.1 of Registrant’s Current Report on Form 8-K filed February 20, 2014, File No. 1-03876).
31.1*	Certification of Chief Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Chief Financial Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Chief Executive Officer under Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Chief Financial Officer under Section 906 of the Sarbanes-Oxley Act of 2002.
101+	The following financial information from HollyFrontier Corporation’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Income, (iii) Consolidated Statements of Comprehensive Income, (iv) Consolidated Statements of Cash Flows, and (v) Notes to the Consolidated Financial Statements.

* Filed herewith.
** Furnished herewith.
\+ Filed electronically herewith.

SIGNATURES

Pursuant to the requirements of the Securities and Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

HOLLYFRONTIER CORPORATION

(Registrant)

Date: October 31, 2018

/s/ Richard L. Voliva III

Richard L.Voliva III

Executive Vice President and
Chief Financial Officer
(Principal Financial Officer)

Date: October 31, 2018

/s/ J. W. Gann, Jr.

J. W. Gann, Jr.

Vice President, Controller and
Chief Accounting Officer
(Principal Accounting Officer)

Exhibit 31.1

CERTIFICATION

I, George J. Damiris, certify that:

1. I have reviewed this quarterly report on Form 10-Q of HollyFrontier Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of registrant’s board of directors (or persons performing the equivalent functions):
    a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
    b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting

October 31, 2018

/s/ George J. Damiris

George J. Damiris

Chief Executive Officer and President

Exhibit 31.2

CERTIFICATION

I, Richard L. Voliva III, certify that:

1. I have reviewed this quarterly report on Form 10-Q of HollyFrontier Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's most recent fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: October 31, 2018

/s/ Richard L. Voliva III

Richard L. Voliva III

Executive Vice President and Chief Financial Officer

Exhibit 32.1

**CERTIFICATION OF CHIEF EXECUTIVE
OFFICER UNDER SECTION 906 OF THE
SARBANES OXLEY ACT OF 2002, 18 U.S.C. § 1350**

In connection with the accompanying report on Form 10-Q for the quarterly period ended September 30, 2018 and filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, George J. Damiris, Chief Executive Officer of HollyFrontier Corporation (the "Company") hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 31, 2018

/s/ George J. Damiris

George J. Damiris
Chief Executive Officer and President

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER UNDER SECTION 906 OF THE SARBANES OXLEY ACT OF 2002, 18 U.S.C. § 1350

In connection with the accompanying report on Form 10-Q for the quarterly period ended September 30, 2018 and filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Richard L. Voliva III, Chief Financial Officer of HollyFrontier Corporation (the “Company”) hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 31, 2018

/s/ Richard L. Voliva III

Richard L. Voliva III
Executive Vice President and Chief Financial Officer

RCRA PART A APPLICATION

United States Environmental Protection Agency
RCRA SUBTITLE C SITE IDENTIFICATION FORM

1. Reason for Submittal (Select only one.)

☐	Obtaining or updating an EPA ID number for an on-going regulated activity that will continue for a period of time. (Includes HSM activity)
☐	Submitting as a component of the Hazardous Waste Report for __________ (Reporting Year)
	☐ Site was a TSD facility and/or generator of > 1,000 kg of hazardous waste, > 1 kg of acute hazardous waste, or > 100 kg of acute hazardous waste spill cleanup in **one or more months of the reporting year** (or State equivalent LQG regulations)
☐	Notifying that regulated activity is no longer occurring at this Site
☐	Obtaining or updating an EPA ID number for conducting Electronic Manifest Broker activities
☑	Submitting a new or revised Part A Form as part of a Part B Renewal Application

2. Site EPA ID Number

O	K	D	0	5	8	0	7	8	7	7	5

3. Site Name

HollyFrontier Tulsa Refining LLC

4. Site Location Address

Street Address **1700 South Union Ave.**		
City, Town, or Village **Tulsa**		County **Tulsa**
State **OK**	Country **U.S.**	Zip Code **74107**

5. Site Mailing Address ☐ Same as Location Address

Street Address **P.O. Box 21001**		
City, Town, or Village **Tulsa**		
State **OK**	Country **U.S.**	Zip Code **74121**

6. Site Land Type

☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

7. North American Industry Classification System (NAICS) Code(s) for the Site (at least 5-digit codes)

A. (Primary) **324110**	C.
B.	D.

8. Site Contact Information

☑ Same as Location Address

First Name **Steve**	MI	Last Name **Moyer**
Title **Environmental Manager**		
Street Address **1700 South Union Ave.**		
City, Town, or Village **Tulsa**		
State **OK**	Country **U.S.**	Zip Code **74107**
Email **steve.moyer@hollyfrontier.com**		
Phone **918-588-1197**	Ext	Fax

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner

☑ Same as Location Address

Full Name HollyFrontier Tulsa Refining LLC		Date Became Owner (mm/dd/yyyy) 6/1/2009
Owner Type ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other		
Street Address 1700 South Union Ave.		
City, Town, or Village Tulsa		
State OK	Country **U.S.**	Zip Code 74107
Email Skipp.kistler@hollyfrontier.com		
Phone 918-594-6000	Ext	Fax
Comments		

B. Name of Site's Legal Operator

☑ Same as Location Address

Full Name HollyFrontier Tulsa Refining LLC		Date Became Operator (mm/dd/yyyy) 6/1/2009
Operator Type ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other		
Street Address **1700 South Union Ave.**		
City, Town, or Village **Tulsa**		
State **OK**	Country **U.S.**	Zip Code **74107**
Email Skipp.kistler@hollyfrontier.com		
Phone **918-594-6000**	Ext	Fax
Comments		

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities

☑ Y ☐ N		1. Generator of Hazardous Waste—If "Yes", mark only one of the following—a, b, c
☑	a. LQG	-Generates, in any calendar month (includes quantities imported by importer site) 1,000 kg/mo (2,200 lb/mo) or more of non-acute hazardous waste; or - Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lb/mo) of acute hazardous waste; or - Generates, in any calendar month or accumulates at any time, more than 100 kg/mo (220 lb/mo) of acute hazardous spill cleanup material.
☐	b. SQG	100 to 1,000 kg/mo (220-2,200 lb/mo) of non-acute hazardous waste and no more than 1 kg (2.2 lb) of acute hazardous waste and no more than 100 kg (220 lb) of any acute hazardous spill cleanup material.
☐	c. VSQG	Less than or equal to 100 kg/mo (220 lb/mo) of non-acute hazardous waste.
If "Yes" above, indicate other generator activities in 2 and 3, as applicable.		
☐ Y ☑ N		2. Short-Term Generator (generates from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.
☐ Y ☑ N		3. Mixed Waste (hazardous and radioactive) Generator
☐ Y ☑ N		4. Treater, Storer or Disposer of Hazardous Waste—Note: A hazardous waste Part B permit is required for these activities.
☐ Y ☑ N		5. Receives Hazardous Waste from Off-site
☐ Y ☑ N		6. Recycler of Hazardous Waste
☐		a. Recycler who stores prior to recycling
☐		b. Recycler who does not store prior to recycling
☐ Y ☑ N		7. Exempt Boiler and/or Industrial Furnace—If "Yes", mark all that apply.
☐		a. Small Quantity On-site Burner Exemption
☐		b. Smelting, Melting, and Refining Furnace Exemption

B. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g. D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D024	D039	F037	K169	U057	U189
D002	D025	D040	F038	K171	U154	U196
D006	D026	F001	K050	P105	U159	U210
D009	D028	F002	K051	P120	U161	U220
D018	D030	F006	K052	U019	U188	

C. Waste Codes for State Regulated (non-Federal) Hazardous Wastes. Please list the waste codes of the State hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

11. Additional Regulated Waste Activities (NOTE: Refer to your State regulations to determine if a separate permit is required.)

A. Other Waste Activities

☐ Y ☑ N		1. Transporter of Hazardous Waste—If "Yes", mark all that apply.
	☐	a. Transporter
	☐	b. Transfer Facility (at your site)
☐ Y ☑ N		2. Underground Injection Control
☐ Y ☑ N		3. United States Importer of Hazardous Waste
☐ Y ☑ N		4. Recognized Trader—If "Yes", mark all that apply.
	☐	a. Importer
	☐	b. Exporter
☐ Y ☑ N		5. Importer/Exporter of Spent Lead-Acid Batteries (SLABs) under 40 CFR 266 Subpart G—If "Yes", mark all that apply.
	☐	a. Importer
	☐	b. Exporter

B. Universal Waste Activities

☑ Y ☐ N		1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) - If "Yes" mark all that apply. Note: Refer to your State regulations to determine what is regulated.
	☑	a. Batteries
	☐	b. Pesticides
	☑	c. Mercury containing equipment
	☑	d. Lamps
	☐	e. Other (specify) ____________
	☐	f. Other (specify) ____________
	☐	g. Other (specify) ____________
☐ Y ☑ N		2. Destination Facility for Universal Waste Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities

☐ Y ☑ N		1. Used Oil Transporter—If "Yes", mark all that apply.
	☐	a. Transporter
	☐	b. Transfer Facility (at your site)
☐ Y ☑ N		2. Used Oil Processor and/or Re-refiner—If "Yes", mark all that apply.
	☐	a. Processor
	☐	b. Re-refiner
☐ Y ☑ N		3. Off-Specification Used Oil Burner
☐ Y ☑ N		4. Used Oil Fuel Marketer—If "Yes", mark all that apply.
	☐	a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
	☐	b. Marketer Who First Claims the Used Oil Meets the Specifications

12. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR 262 Subpart K.

☐ Y ☑ N		A. Opting into or currently operating under 40 CFR 262 Subpart K for the management of hazardous wastes in laboratories—If "Yes", mark all that apply. Note: See the item-by-item instructions for definitions of types of eligible academic entities.
	☐	1. College or University
	☐	2. Teaching Hospital that is owned by or has a formal written affiliation with a college or university
	☐	3. Non-profit Institute that is owned by or has a formal written affiliation with a college or univer-
☐ Y ☑ N		B. Withdrawing from 40 CFR 262 Subpart K for the management of hazardous wastes in laboratories.

13. Episodic Generation

☐ Y ☑ N	Are you an SQG or VSQG generating hazardous waste from a planned or unplanned episodic event, lasting no more than 60 days, that moves you to a higher generator category. If "Yes", you must fill out the Addendum for Episodic Generator.

14. LQG Consolidation of VSQG Hazardous Waste

☐ Y ☑ N	Are you an LQG notifying of consolidating VSQG Hazardous Waste Under the Control of the Same Person pursuant to 40 CFR 262.17(f)? If "Yes", you must fill out the Addendum for LQG Consolidation of VSQGs hazardous waste.

15. Notification of LQG Site Closure for a Central Accumulation Area (CAA) (optional) OR Entire Facility (required)

☐ Y ☑ N	LQG Site Closure of a Central Accumulation Area (CAA) or Entire Facility.
	A. ☐ Central Accumulation Area (CAA) or ☐ Entire Facility
	B. Expected closure date: ____________ mm/dd/yyyy
	C. Requesting new closure date: ____________ mm/dd/yyyy
	D. Date closed : ____________ mm/dd/yyyy ☐ 1. In compliance with the closure performance standards 40 CFR 262.17(a)(8) ☐ 2. Not in compliance with the closure performance standards 40 CFR 262.17(a)(8)

16. Notification of Hazardous Secondary Material (HSM) Activity

☑ Y ☐ N	A. Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 260.30, 40 CFR 261.4(a)(23), (24), or (27)? If "Yes", you must fill out the Addendum to the Site Identification Form for Managing Hazardous Secondary Material.
☐ Y ☑ N	B. Are you notifying under 40 CFR 260.43(a)(4)(iii) that the product of your recycling process has levels of hazardous constituents that are not comparable to or unable to be compared to a legitimate product or intermediate but that the recycling is still legitimate? If "Yes", you may provide explanation in Comments section. You must also document that your recycling is still legitimate and maintain that documentation on site.

17. Electronic Manifest Broker

☐ Y ☑ N	Are you notifying as a person, as defined in 40 CFR 260.10, electing to use the EPA electronic manifest system to obtain, complete, and transmit an electronic manifest under a contractual relationship with a hazardous waste generator?

EPA ID Number | O | K | D | 0 | 5 | 8 | 0 | 7 | 8 | 7 | 7 | 5 | OMB# 2050-0024; Expires 05/31/2020

18. Comments (include item number for each comment)

19. Certification I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. **Note: For the RCRA Hazardous Waste Part A permit Application, all owners and operators must sign (see 40 CFR 270.10(b) and 270.11).**

Signature of legal owner, operator or authorized representative	Date (mm/dd/yyyy)
[signature]	12-3-2018
Printed Name (First, Middle Initial Last) **Skipp Kistler**	Title **VP and Refinery Manager**
Email **Skipp.kistler@hollyfrontier.com**	

Signature of legal owner, operator or authorized representative	Date (mm/dd/yyyy)
Printed Name (First, Middle Initial Last)	Title
Email	

ADDENDUM TO THE SITE IDENTIFICATION FORM:
NOTIFICATION OF HAZARDOUS SECONDARY MATERIAL ACTIVITY

ONLY fill out this form if:

- You are located in a State that allows you to manage excluded hazardous secondary material (HSM) under 40 CFR 261.2(30), 261.4(a)(23), (24), or (27) (or state equivalent; See https://www.epa.gov/epawaste/hazard/dsw/statespf.htm for a list of eligible states; AND
- You are or will be managing excluded HSM in compliance with 40 CFR 260.30, 261.4(a)(23), (24), or (27) (or state equivalent) or have stopped managing excluded HSM in compliance with the exclusion(s) and do not expect to manage any amount of excluded HSM under the exclusion(s) for at least one year. Do not include any information regarding your hazardous waste activities in this section. Note: If your facility was granted a solid waste variance under 40 CFR 260.30 prior to July 13, 2015, your management of HSM under 40 CFR 260.30 is grandfathered under the previous regulations and you are not required to notify for the HSM management activity excluded under 40 CFR 260.30.

1. Reason for Notification (Include dates where requested)

☐ Facility will begin managing excluded HSM as of _______________ (mm/dd/yyyy).

☑ Facility is still managing excluded HSM/re-notifying as required by March 1 of each even-numbered year.

☐ Facility has stopped managing excluded HSM as of _______________ (mm/dd/yyyy) and is notifying as required.

2. Description of Excluded HSM Activity. Please list the appropriate codes (see Code List section of the instructions) and quantities, in short tons, to describe your excluded HSM activity ONLY (do not include any information regarding your hazardous wastes). Use additional pages if more space is needed.

A. Facility Code	B. Waste Code(s) for HSM	C. Estimate Short Tons of excluded HSM to be managed annually	D. Actual Short Tons of excluded HSM that was managed during the most recent odd-numbered year	E. Land-based Unit Code
01	F037, K050, K051	889,000	889,000	NA

EPA ID Number | O | K | D | 0 | 5 | 8 | 0 | 7 | 8 | 7 | 7 | 5 | OMB# 2050-0024; Expires 05/31/2020

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT PART A FORM

1. Facility Permit Contact

First Name **Steve**	MI	Last Name **Moyer**
Title **Environmental Manager**		
Email **Steve.moyer@hollyfrontier.com**		
Phone **918-588-1197**	Ext	Fax

2. Facility Permit Contact Mailing Address

Street Address **P.O. Box 21001**		
City, Town, or Village **Tulsa**		
State **Oklahoma**	Country United States	Zip Code 74121

3. Facility Existence Date (mm/dd/yyyy)

6/1/2009

4. Other Environmental Permits

A. Permit Type	B. Permit Number	C. Description

5. Nature of Business

The Refinery processes approximately 90,000 barrels a day of crude oil into fuels and more than 400 lubricant products, waxes, and aromatic oils. The approximately 800 acre Refinery historically operated three Resource Conservation and Recovery Act (RCRA)-permitted land treatment units (LTUs). Waste application ceased at all three LTUs by 1998, and the LTUs were closed in 1999. The closure certificate for these units was accepted by the Oklahoma Department of Environmental Quality (ODEQ) on August 22, 2003. The Refinery currently operates as a large quantity generator of hazardous waste, and is regulated under a RCRA Part B Post-Closure Care and Corrective Action Permit.

6. Process Codes and Design Capacities

Line Number		A. Process Code			B. Process Design Capacity (1) Amount	B. Process Design Capacity (2) Unit of Measure	C. Process Total Number of Units	D. Unit Name
1		D	8	1	16.47	B	01	East LTU
2		D	8	1	27.34	B	01	Central LTU
3		D	8	1	30.69	B	01	West LTU

7. Description of Hazardous Wastes (Enter codes for Items 7.A, 7.C and 7.D(1))

Line No.		A. EPA Hazardous Waste No.				B. Estimated Annual Qty of Waste	C. Unit of Measure	D. Processes (1) Process Codes									D. Processes (2) Process Description (if code is not entered in 7.D1))

8. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

9. Facility Drawing

All existing facilities must include a scale drawing of the facility. See instructions for more detail.

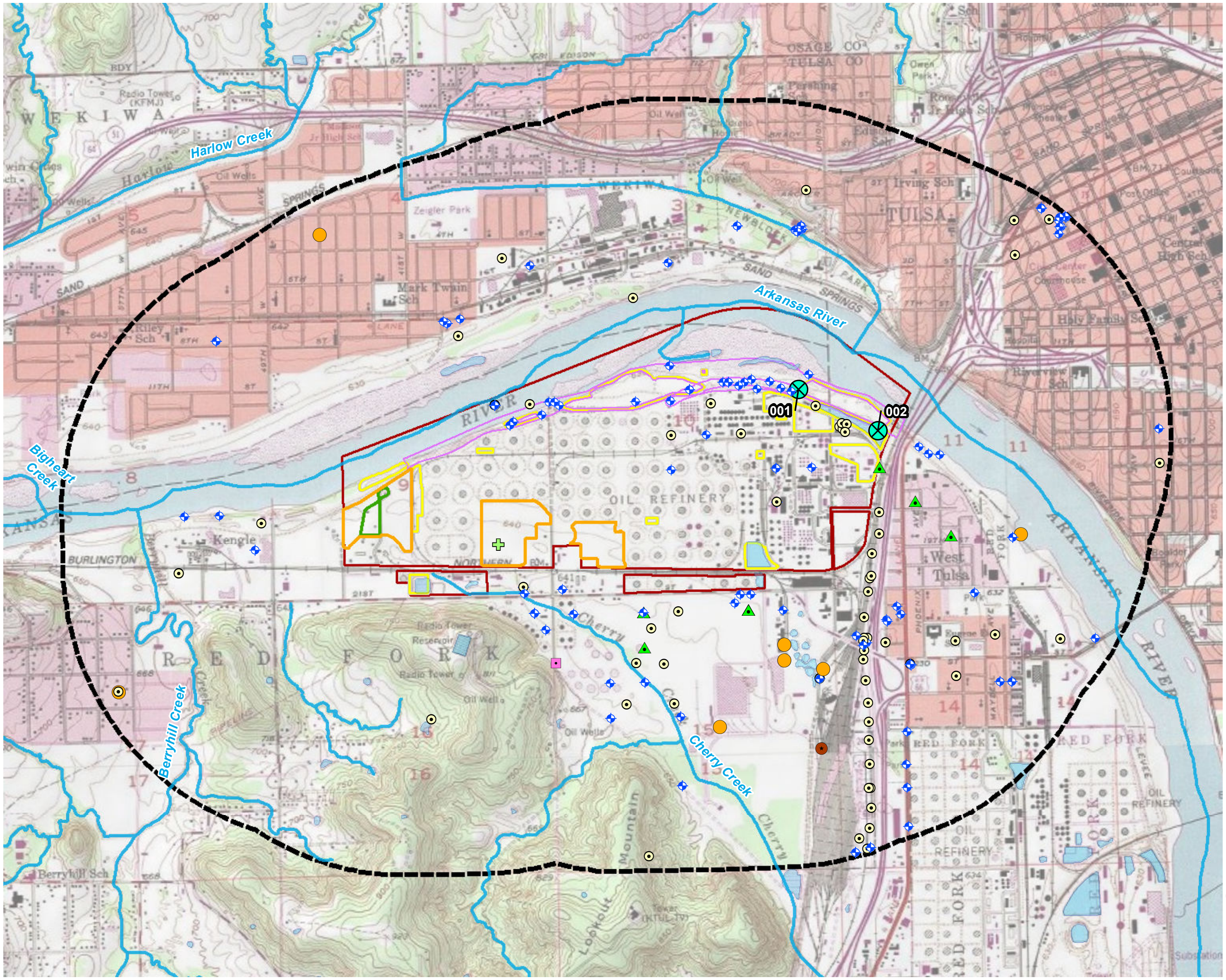
10. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas. See instructions for more detail.

11. Comments

Attachment 1 - Topographic Map
Attachment 2 - Facility Drawing
Attachment 3 - Photographs
Attachment 4 - Hazardous Waste Historically Applied to the Land Treatment Units

ATTACHMENT 1



LEGEND

- LTUs
- Non-Waste Area
- AOCs
- SWMUs
- Rivers/Streams (Source: NHD)
- Waterbodies (Source: NHD)
- Refinery Boundary
- 1 Mile Radius Around Refinery
- Outfalls

Reported Well Logs (Source:

- Monitoring Well
- Groundwater Well, Commercial
- Groundwater Well, Domestic
- Groundwater Well, Irrigation
- Groundwater Well, Observation Well
- Geotechnical Boring, Soil Evaluation
- Cathodic Protection or Anode Well, Corrosion Protection

NOTES:
1. NO UNDERGROUND INJECTION WELLS AT THE REFINERY
2. NO SPRINGS WITHIN THE 1 MILE RADIUS OF THE REFINERY
3. NO ACTIVE HAZARDOUS WASTE MANAGEMENT UNITS AT THE REFINERY
4. ARROW ON RIVERS/STREAMS DENOTES FLOW DIRECTION
5. ALL WATER USED ONSITE IS FROM THE CITY OF TULSA OR IS PURCHASED AS STEAM.

SOURCES:
1. NHD: NATIONAL HYDROGRAPHY DATASET (SEPTEMBER 2017).
2. OWRB: OKLAHOMA WATER RESOURCES BOARD (DECEMBER 2017).
3. BASE MAP: USGS 7.5 MIN QUADRANGLES (SAND SPRINGS, SAPULPA NORTH, & TULSA).

N

0 1,500 3,000 FEET

1 " = 3,000 '

1:36,000

HOLLYFRONTIER.

TRC
505 East Huntland Drive
Suite #250
Austin, TX 78752
Phone: 512.329.6080
TRC - GIS

PROJECT:

HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

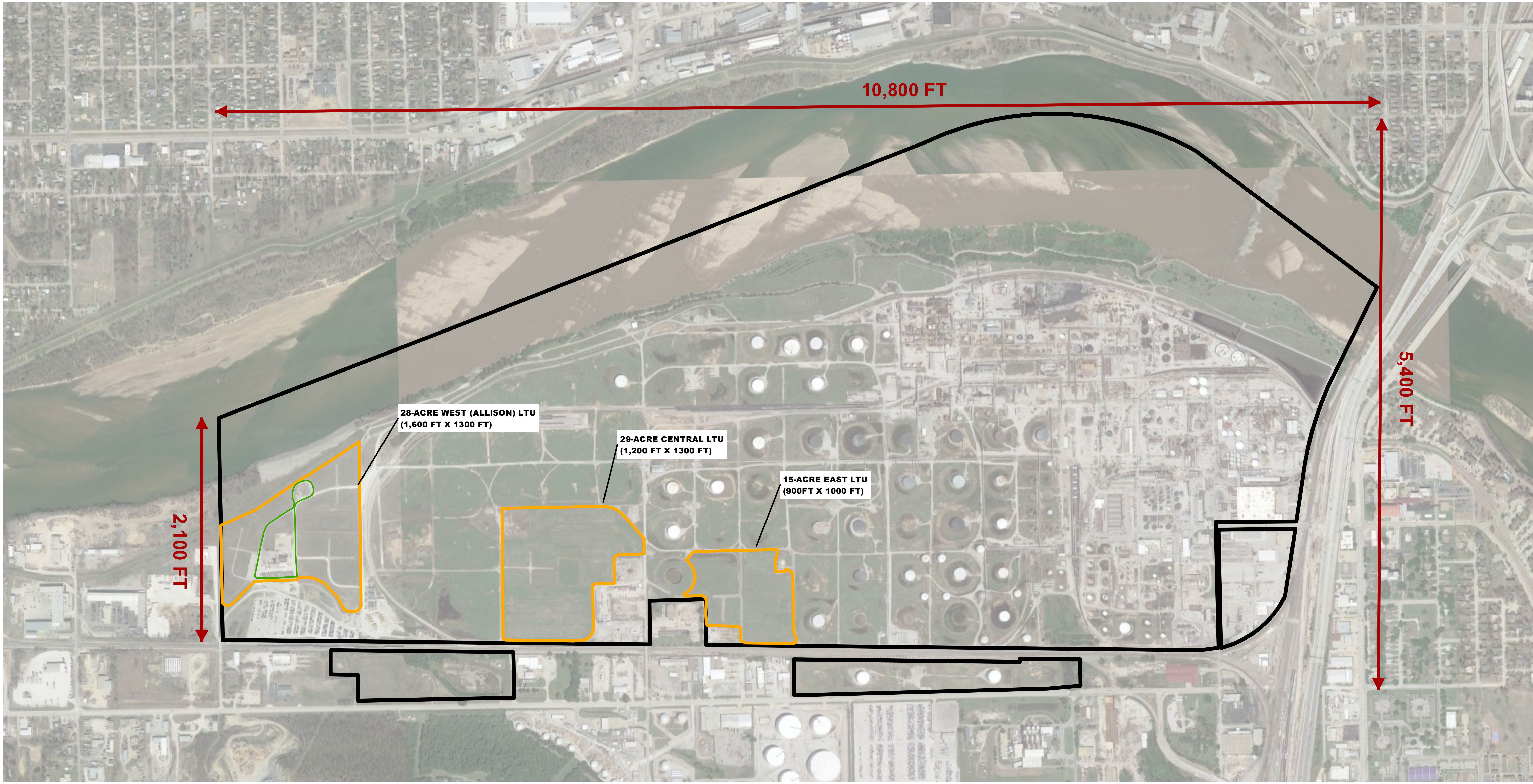
TITLE:

TOPOGRAPHIC SITE MAP

DRAWN BY:	MHORN
CHECKED BY:	MWALTHER
APPROVED BY:	KFOGARTY
DATE:	NOVEMBER 2018
PROJ. NO.:	304508
FILE:	Attch-1.mxd

ATTACHMENT 1

ATTACHMENT 2



LEGEND

REFINERY BOUNDARY

LTUs

NON-WASTE AREA

SOURCES:
PARCELS (TULSA COUNTY, 6/11/18)
BASEMAP:
GOOGLE EARTH AND THEIR DATA PARTNERS, 3/12/2018

HOLLYFRONTIER

450 900 Feet
1 " = 900 '
1:10,800

PROJECT:	HOLLYFRONTIER TULSA REFINING LLC TULSA WEST REFINERY - PERMIT NO. 058078775-PC TULSA, OKLAHOMA
TITLE:	FACILITY DRAWING
DRAWN BY: MHORN	PROJ. NO.: 304508
CHECKED BY: MWALTHER	ATTACHMENT 2
APPROVED BY: KFOGARTY	
DATE: NOVEMBER 2018	

TRC
505 East Huntland Drive, Suite 250
Austin, TX 78752
Phone: 512.329.6080
www.trcsolutions.com

FILE NO.: Attch-2.mxd

TRC - GIS

Coordinate System: NAD 1983 StatePlane Oklahoma North FIPS 3501 Feet (Foot US)
Map Rotation: 0

Plot Date: 11/27/2018, 14:53:50 PM by MHORN -- LAYOUT: ANSI B(11"x17")
Path:

ATTACHMENT 3

West Land Treatment Unit (looking east)

West Land Treatment Unit (looking southwest)

East Land Treatment Unit (looking southeast)

East Land Treatment Unit (looking southwest)

Central Land Treatment Unit (looking northwest)

Central Land Treatment Unit (looking west)

Central Land Treatment Unit (looking southwest)

Example of the signs present at all three Land Treatment Units

ATTACHMENT 4

Hazardous Wastes Historically Applied to the Land Treatment Units

Waste	Waste Code
Dissolved air flotation (DAF)	K048
Slop oil emulsion solids	K049
API separator sludge	K051
Leaded gasoline tank bottom sludge	K052
Oil/water/solids separation sludge	F037

ODEQ ADMINISTRATIVE COMPLETENESS CHECKLIST

APPLICATION REVIEW CHECKLIST LAND PROTECTION DIVISION HAZARDOUS WASTE PROGRAM OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY	Facility Name: HollyFrontier Tulsa Refining LLC ______ Facility ID No.: ______ ODEQ Permit No.: 058078775-PC ______ Reference No.: ______ Application Type: RCRA Renewal ______ Date: 12/3/2018______ (New/Modify/Renewal)	40 CFR 270 and OAC 252:200 All Permit Applications
	Administrative Reviewer: Start Date: Completion Date: Technical Reviewer: Start Date: Completion Date: Issuance Deadline:	ODEQ Form Number XXX-XXX Shaded areas for DEQ use only

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
G-0	**270.10**		**GENERAL APPLICATION REQUIREMENTS - 270.10**				
G-1	270.10(a)		**Permit application completed and signed**	Section 1			
G-2	270.10(b)		**Who applies? – When a facility is owned by one person but is operated by another person, it is the operator's duty to obtain a permit, except that the owner must also sign the permit application.**	Section 1			
G-3	270.10(c)		**Completeness – all elements included**	Section 1			
G-4	270.10(d)		**Information requirements** -- information in 270.13 and applicable sections in 270.14 through 270.29	Section 1			

Facility Name ______
Reference No. ______

A. Reviewer's Initials ______ Tracking Date ______
T. Reviewer's Initials______Tracking Date ______

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
Existing HWM facilities and interim status qualifications							
G-5	270.10(e)(1)		Must submit part A no later than: (i) 6 months after the date of publication of regulations requiring compliance with 265 or 266, or (ii) 30 days after being subject to standards in 265 or 266, whichever first occurs (iii) March 24, 1987, if a generator who generates more than 100 kg but less than 1,000 kg per month and treats, stores, or disposes on-site	Part A			The Renewal Application will include an up-to-date Part A application.
G-6	270.10(e)(2)		Extension of submittal of part A if: (i) Substantial confusion whether to file a permit application, and (ii) Such confusion is due to ambiguities in 260, 261, 265, or 266	NA			
G-7	270.10(e)(3)		Extension of submittal of part A under compliance order	NA			
G-8	270.10(e)(4)		Timely submittal of part B				
New HWM facilities							
G-9	270.10(f)(1)		No construction allowed before the submittal of parts A and B and receipt of the effective permit	NA			The Facility is not a new facility.
G-10	270.10(f)(2)		Must submit parts A and B at least 180 days before construction is expected to commence	NA			The Facility is not a new facility.
G-11	270.10(f)(3)		Construction of an incinerator of PCBs ...	NA			The Facility is not a new facility.
Updating permit applications							
G-12	270.10(g)(1)		Amendment to part A (when part B has not yet been filed) (i) File with the Regional Administrator for new wastes (ii) File with the State Director for new wastes (iii) As necessary for compliance with 270.72	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date __________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
G-13	270.10(h)		**Reapplications** - 180 days before the expiration of the existing permit	Section 1			
G-14	270.10(i)		**Recordkeeping** - for at least 3 years				
Exposure information							
G-15	270.10(j)(1)		Re: surface impoundments and landfills, submittal of part B after 8/8/85, must have information on public exposure from releases, including: (i) Potential releases associated with normal operations, including transportation (ii) Pathways of human exposure from such releases (iii) Potential magnitude and nature of human exposure from such releases	NA			The Facility does not operate hazardous waste surface impoundments or landfills.
G-16	270.10(j)(2)		If part B submitted before 8/8/85, must submit exposure information required above, (j)(1)	NA			The Facility does not operate hazardous waste surface impoundments or landfills.
G-17	270.10(k)		**Submittal of information to establish permit conditions under 270.32(b)(2) and 270.50(d)**	Entire application			The application as a whole provides the required information
SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS - 270.11							
Applications - signatures							
S-1	270.11(a)(1)		For a corporation (i) President, secretary, treasurer, or vice-president; or (ii) Manager (w/authority to sign) of a facility with more than 250 employees or annual sales of more than $25 million	Section 1			
S-2	270.11(a)(2)		For a partnership or sole proprietorship: by a general partner or proprietor	NA			
S-3	270.11(a)(3)		For a municipality, State, Federal, or other public agency (i) Chief executive officer of the agency or (ii) Senior executive officer	NA			
S-4	270.11(b)		Reports signed by a person described in (a) or an authorized representative of that person if:	Certifications			Application/facility certification is provided

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
S-5	270.11(b)(1)		A written authorization by a person described in (a)	Certifications			
S-6	270.11(b)(2)		An authorization for a position responsible for the overall operation	Certifications			
S-7	270.11(b)(3)		Submittal of a written authorization	Certifications			
S-8	270.11(c)		Change to authorization for signing reports	Certifications			
S-9	270.11(d)		Certification for signature (see cite)	Certifications			
I-1	**270.12**(a)		**CONFIDENTIALITY OF INFORMATION**: (a) "confidential business information" stamped on each page containing such information.	NA			No information is being marked "Confidential".
I-2	270.12(b)		Claims for confidentiality of the name and address of any permit applicant or permittee will be denied.	NA			No information is being marked "Confidential".
A-00	**270.13**		**CONTENTS OF PART A OF THE PERMIT APPLICATION - 270.13**	Part A Form			
		SUBCHAPTER 11	**ADDITIONAL PERMIT PROCEDURES**				
AP-1		11-1 Emergency plans relating to affected property owners	(a) Applicants for new proposed off-site TSD or disposal sites are required to prepare a separate Emergency Plan in addition to the plans required by 40 CFR 264 Subpart D. This Emergency Plan shall the criteria of 40 CFR 264 Subpart D but shall specifically relate to each parcel.	NA			HFTR is not proposing a new off-site TSD or disposal site.

Facility Name ____________________
Reference No. ____________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date __________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
AP-2		11-1(b) *For the purposes of these rules, a parcel of land owned by one or more affected property owners is a present possessory fee simple estate in land, excluding future interests.*	(1) All discrete parcels are required to be counted equally. (2) Owner required to represent the approval or disapproval of the Emergency Plan on behalf of the parcel for purposes of the OHWMA. (3) A calculation of approval or disapproval of the Emergency Plan by majority of the affected property owners is required. (4) Approval or disapproval of the Emergency Plan by an affected property owner does not signify approval or disapproval of the technical aspects of the facility.	NA			
AP-3		11-1(c)	An applicant must submit to the ODEQ the written approval of the Emergency Plan from the affected property owners.	NA			
AP-4		11-1(d)	Within forty-five days of the application, affected property owners must specify reasons for non-approval of the Emergency Plan.	NA			
AP-5		11-1(e)	Area of affected property owners is determined by measuring one-mile from the perimeter of the site as specified in the permit application.	NA			
AP-6		**11-2** **Exclusionary siting criteria**	**(a) Ground-water resources and recharge areas.**	NA			The facility is already in operation; i.e., there is no proposed new facility.
AP-7		11-2(a)(1)	**Presumption of unapprovable site.** Proposed locations lying within areas designated as unconsolidated alluvial aquifers or terrace deposit aquifers or bedrock aquifers or recharge areas as shown on Sheets 1 and 2 of "Maps Showing Principal Ground Water Resources and Recharge Areas in Oklahoma" shall be presumed to be unapprovable. Certification of notifying affected	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
AP-8		11-2(a)(2)	**Rebuttal of presumption.** The applicant may rebut the presumption by submitting hydrologic and geological data sufficient to demonstrate that the proposed location does not lie within a prohibited area.	NA			
AP-9		11-2 (a)(3)	**ODEQ reliance upon Oklahoma Geological Survey.** In determining whether a proposed location lies within a prohibited area, the ODEQ will rely upon a review by the Oklahoma Geological Survey.	NA			
AP-10		11-2 (a)(4)	**Site-specific information.** The ODEQ may require site-specific hydrological and geological information for proposed facility locations outside a designated principal ground-water resource or discharge area where there is reason to believe that the proposed location may be unsuitable due to localized ground-water conditions.	NA			
AP-11		11-2(a)(5)	**Ground-water protection plan.** In determining whether a ground-water protection plan with financial assurance is required for an on-site facility pursuant to 27A O.S.§ 2-7-111(B), the procedures used in subsections (1)-(4) of this section shall be used.	NA			
AC-0		11-2(a)(6)	**Existing facilities.** Existing facilities in these areas may continue to operate and may modify or expand their operations to the extent permitted by 27A O.S. § 2-7-111.	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
AC-1		11-2(b)	**Water wells.** The ODEQ shall not grant a permit for a new hazardous waste disposal facility proposed to be located within one-quarter mile of any public or private water supply well except private water supply wells on the applicant's property. Water supply wells that arte demonstrated by the applicant to be permanently abandoned may be plugged upon a demonstration that the applicant has the right to plug them. The applicant shall notify the ODEQ that the abandoned water wells have been plugged. If abandoned water wells are identified by the applicant during the preparation of his application or during the permit process, the applicant shall notify the ODEQ so that these wells can be included in the Class V well inventory.	NA			
AC-2		11-2(c)	**Flood plain.** No permit or modification of an existing permit which includes disposal of hazardous waste within a one- hundred-year flood plain shall be granted, except for post-closure or corrective action. For existing facilities, this modification prohibition applies only to land disposal units and to modifications of such units which would increase disposal rates or designate new areas for disposal.	NA			
AC-3		11-2(d)	**Surface water.** No permit shall be granted for a new hazardous waste disposal facility proposed to be located within one mile of the conservation pool elevation of any reservoir which supplies water for a public water supply or within one mile off any scenic river.	NA			
AC-4		11-2(e)	**Air pollution.** No permit shall be granted for a new off-site hazardous waste disposal facility proposed to be located within one mile of any public school, educational institution, nursing home, hospital or public park.	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
AC-5		11-2(f)	The Hazardous Waste Management Act also contains exclusionary siting criteria. See 27A O.S. § 2-7- 111(B) and ()C)(1) and § 2-7-114, as amended.	NA			
AC-6		11-3	**Upgrades of county roads and bridges.** The owner/operator shall submit a certificate of acceptance of the completed upgrades by the appropriate board(s) of county commissioners or the Oklahoma Department of Transportation, as appropriate, pursuant to 27A O.S. § 2-7-115(B)(2).	NA			
GENERAL REQUIREMENTS FOR CONTENTS OF PART B APPLICATION - 270.14				NA			
General Information							
B-1	270.14(b)(1)		General description of the facility	Section 1			
B-2	270.14(b)(2)		Chemical and physical analyses of hazardous wastes	NA			This information is not required to be provided in a PCC Permit Application.
B-3	270.14(b)(3)		A copy of waste analysis plan	NA			This information is not required to be provided in a PCC Permit Application.
B-4	270.14(b)(4)		A description of security measures	Section 2			Information to be included as applicable to the closed LTUs.
B-5	270.14(b)(5)		A copy of the general inspection schedule	Section 3			Information to be included as applicable to the closed LTUs.
B-6	270.14(b)(6)		Justification of requests for a waiver of preparedness and prevention	Section 4			Preparedness and prevention information specified in 40 CFR 264 will be provided.
B-7	270.14(b)(7)		A copy of the contingency plan	NA			This information is not required to be provided in a PCC Permit Application; however, the application will include 40 CFR 264 Subpart C preparedness and prevention information.

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
B-8	270.14(b)(8)		Safety procedures, equipment, construction to prevent: (i) Hazard in unloading operations (ii) Runoff from HW areas (iii) Contamination of water supplies (iv) Effects of equipment/power failure (v) Exposure of personnel to HW (vi) Releases to atmosphere	NA			This information is not required to be provided in a PCC Permit Application.
B-9	270.14(b)(9)		Prevention of accidental ignition, reaction of ignitable, reactive or incompatible wastes	NA			This information is not required to be provided in a PCC Permit Application.
B-10	270.14(b)(10)		Traffic pattern information	NA			This information is not required to be provided in a PCC Permit Application.
B-11	270.14(b)(11)		Facility location information (i) Identification of political jurisdiction (ii) Compliance with seismic standard (if located in areas listed in 264 appendix VI) (A) No faults within 3,000 ft, data based from: (1) Published geologic studies (2) Aerial reconnaissance of a 5-mile radius (3) Aerial analysis of a 3,000-foot radius (4) f needed, reconnaissance walking within 3,000-foot radius (B) Faults … (iii) Identification of 100-year floodplain (iv) Requirements if located within 100-year floodplain ... (v) Compliance schedule for existing facilities NOT in compliance with 264.18(b)	Section 1			
B-12	270.14(b)(12)		Training programs in compliance with 264.16	NA			This information is not required to be provided in a PCC Permit Application.
B-13	270.14(b)(13)		A copy of the closure plan and, if applicable, post-closure plan	Section 5			A summary of the closure process followed for the LTUs will be included in the PCC Plan.
B-14	270.14(b)(14)		Documentation filed (required under 264.119) for closed units	NA			Certification of closure for the LTUs was accepted by ODEQ on August 22, 2003

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials _________ Tracking Date _________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
B-15	270.14(b)(15)		Closure estimates (required under 264.142) and financial assurance (required under 264.143)	NA			This information is not required to be provided in a PCC Permit Application.
B-16	270.14(b)(16)		The most recent post-closure estimates (required under 264.144) and financial assurance (required under 264.145), where applicable	Section 6			
B-17	270.14(b)(17)		Insurance policy or other documentation in compliance with 264.147, where applicable	NA			This information is not required to be provided in a PCC Permit Application.
B-18	270.14(b)(18)		Coverage by a State financial mechanism in compliance with 264.149 and 264.150, where appropriate	NA			
B-19	270.14(b)(19)		A 1" = 200 ft topographic map with contours showing 1000 ft around the facility and: (i) Map scale and date (ii) 100-year floodplain (iii) Surface waters (iv) Surrounding land uses (v) Wind rose (vi) Orientation of the map (vii) Legal boundaries of the facility (viii) Access control (ix) Injection and withdrawal wells both on and off- site (x) Buildings, structures (xi) Barriers for drainage or flood control (xii) Location of operational units	Section 1, Figure 1-1			
B-20	270.14(b)(21)		Notice of approval of petition for extension for land disposal facilities, if applicable	NA			
Additional information							
B-21	270.14(c)(1)		A summary of groundwater monitoring data during interim status (under 265.90 - 94), where applicable	NA			Facility is not in interim status, and groundwater data is provided in semiannual monitoring reports.
B-22	270.14(c)(2)		Identification of the uppermost aquifer, hydraulically connected aquifers, flow direction and rate, and basis for such identification	Section 7			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
B-23	270.14(c)(3)		On the topo map, a delineation of the waste management area, property boundary, the proposed point of compliance (264.95), proposed GW monitoring wells (264.97), and info from 270.14(c)(2)	Section 8, Figure 8-1			
B-24	270.14(c)(4)		Description of any plume of contamination from a regulated unit: (i) The extent of the plume on the topo map (ii) Identification of concentrations of constituents in Appendix IX of 264	Section 8, Figure 8-3, Figure 8-4			
B-25	270.14(c)(5)		A detailed GW monitoring program with engineering report (264.97)	Section 8			
B-26	270.14(c)(6)		If a hazardous constituent has <u>not been detected</u> at time of application, establish a <u>detection monitoring program</u> (264.98): (i) Indicator parameters, waste constituents (ii) A proposed groundwater monitoring system (iii) Background values (iv) Proposed sampling, analysis, and statistical procedures	Section 8			
B-27	270.14(c)(7)		If a hazardous constituent has <u>been detected</u> at time of application, establish a <u>compliance monitoring program</u> (264.99): (i) A description of wastes previously handled (ii) A characterization of the contaminated GW (iii) A list of hazardous constituents (264.97 & 264.99) (iv) Proposed concentration limits (264.94(a)) or justification for alternate limits (v) A proposed GW monitoring system (vi) Proposed sampling, analysis, and statistical procedures (vii) A proposed Engineering Feasibility Plan for corrective action	Section 8			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
B-28	270.14(c)(8)		If hazardous constituents have exceeded concentration limits (Table 1, 264.94) or background values, establish a corrective action program (264.100): (i) A characterization of contaminated GW (ii) Concentration limits (264.94) (iii) A detailed corrective action program and engineering report (iv) Demonstration of adequacy of the corrective program	Section 8			
Information on SWMUs							
B-29	270.14(d)(1)		Information requirements for SWMUs: (i) Location of the unit on the topo map (ii) Designation of type of unit (iii) Dimensions and structural description (iv) When the unit was operated (v) Specification of all wastes at the unit	Section 9			
B-30	270.14(d)(2)		Information on HW release from each SWMU	Section 9			
B-31	270.14(d)(3)		Results of sampling and analysis of groundwater, land surface, and subsurface strata, surface water or air to determine if an RFA is needed	Section 9			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR CONTAINERS - 270.15 Except as otherwise provided in 264.170, the following additional information must be provided:				NA			HFTR does not manage hazardous waste in containers subject to RCRA TSDF permitting requirements.
C-1	270.15(a)		Description of the containment system in compliance with 264.175	NA			
C-2	270.15(a)(1)		Basic design parameters, dimensions, and materials of construction	NA			
C-3	270.15(a)(2)		Showing of how design promotes drainage or keeps containers from contacting standing liquid.	NA			
C-4	270.15(a)(3)		Capacity of the containment system relative to the number and volume of containers stored	NA			
C-5	270.15(a)(4)		Provisions for preventing or managing run-on	NA			

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
C-6	270.15(a)(5)		Showing of how accumulated liquids can be analyzed and removed to prevent overflow	NA			
C-7	270.15(b)		For storage areas with containers that do not contain free liquid, a showing of compliance with 264.175(c)	NA			
C-8	270.15(b)(1)		Test procedures and results or documentation to show wastes do not contain free liquids	NA			
C-9	270.15(b)(2)		Description of storage area design and operation to drain/remove liquid or keep containers from contacting standing liquids	NA			
C-10	270.15(c)		Sketches, drawings, or data to show compliance with 264.176 (ignitable reactive wastes) and 264.177(c) (incompatible wastes)	NA			
C-11	270.15(d)		Procedures in compliance with 264.177(a) & (b) and 264.17(b) & (c) for storing of incompatible wastes	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR TANK SYSTEMS - 270.16 Except as otherwise provided in 264.190, the following additional information must be provided:				NA			HFTR does not manage hazardous waste in tanks subject to RCRA TSDF permitting requirements.
T-1	270.16(a)		A written assessment by an independent P.E. to certify the structural integrity and suitability for handling of hazardous wastes of each tank system as req. under 264.191 & 192 - 270.16(a)	NA			
T-2	270.16(b)		Dimensions and capacity of each tank	NA			
T-3	270.16(c)		Description of feed systems, safety cutoff, bypass systems, and pressure controls	NA			
T-4	270.16(d)		A diagram of piping, instrumentation, and process flow for each tank system	NA			
T-5	270.16(e)		A description of corrosion protection system as required under 264.192(a)(3)(ii)	NA			
T-6	270.16(f)		For new tank systems, a description of how the tank system(s) will be installed in compliance with 264.192(b),(c),(d),(e)	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
T-7	270.16(g)		Detailed plans and description of the secondary containment system in compliance with 264.193(a), (b), (c), (d), (e), (f)	NA			
Variance from the requirements of 264.193							
T-8	270.16(h)(1)		Detailed plans and engineering and hydrogeologic reports showing alternative safeguards	NA			
T-9	270.16(h)(2)		A detailed assessment of hazards in event of release	NA			
T-10	270.16(i)		Description of spill and overflow prevention as required under 264.194(b)	NA			
T-11	270.16(j)		Description of operating procedures, tank system design, facility design for Ignitable/Reactive and incompatible wastes as required under 264.198, 199	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR SURFACE IMPOUNDMENTS - 270.17 Except as otherwise provided in 264.1, must provide the following information:				NA			HFTR does not manage hazardous waste in surface impoundments subject to RCRA TSDF permitting requirements.
SI-1	270.17(a)		A list of hazardous wastes to be placed in each impoundment	NA			
SI-2	270.17(b)		Detailed plans and engineering report on design, construction, operations, and maintenance as required in 264.19, 221, 222, 223, addressing:	NA			
SI-3	270.17(b)(1)		The liner system	NA			
SI-4	270.17(b)(2)		The double liner and leak detection, collection, and removal system as req. under 264.221(c)	NA			
SI-5	270.17(b)(3)		If the leak detection system is in the saturated zone, detailed plans and engineering report on the leak detection design and operation, and the location of the saturated zone in relation to the leak detection system	NA			
SI-6	270.17(b)(4)		The construction quality assurance plan (CQA) if required under 264.19	NA			
SI-7	270.17(b)(5)		Proposed action leakage rate and response action plans if required under 264.222 & 223	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials _________ Tracking Date _________
T. Reviewer's Initials__________Tracking Date __________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SI-8	270.17(b)(6)		Prevention of overtopping	NA			
SI-9	270.17(b)(7)		Structural integrity of dikes	NA			
SI-10	270.17(c)		The inspection program for each surface impoundment including double liner system, leak detection system, cover system, and appurtenances for control of overtopping as req. under 264.226(a),(b),(d) submitted under 270.14(b)(5)	NA			
SI-11	270.17(d)		A certification by a qualified engineer on the structural integrity of the dikes as req. under 264.226(c)	NA			
SI-12	270.17(e)		The procedure to remove a surface impoundment from service as req. under 264.227(b), (c) submitted under 270.14(b)(7)	NA			
SI-12	270.17(f)		Procedure to remove hazardous waste residues and contaminated materials at closure as req. under 264.228(a)(1). For non-removed wastes, must comply with 264.228(a)(2) and (b). This information be submitted in closure and post-closure plan under 270.14(b)(13)	NA			
SI-13	270.17(g)		Compliance with 264.229 for I/R wastes	NA			
SI-14	270.17(h)		Compliance with 264.230 for incompatible wastes	NA			
SI-15	270.17(i)		A waste management plan for F020 through F027 as req. under 264.231. Must address:	NA			
SI-16	270.17(i)(1)		The volume, physical and chemical characteristics including migration potential to the environment	NA			
SI-17	270.17(i)(2)		The attenuative properties of the underlying and surrounding soils	NA			
SI-18	270.17(i)(3)		The mobilizing properties of co-disposed materials	NA			
SI-19	270.17(i)(4)		The effectiveness of additional treatment, design, or monitoring techniques	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR WASTE PILES - 270.18 Except as otherwise provided in 264.1, the following information must be provided:				NA			HFTR does not manage hazardous waste in waste piles subject to RCRA TSDF permitting requirements.

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
W-1	270.18(a)		**A list of hazardous wastes**	NA			
W-2	270.18(b)		**If an exemption is sought, compliance with 264.90(b)(2) and 264.250(c)**	NA			
W-3	270.18(c)		**Detailed plans and engineering reports on the design, construction, operation, and maintenance as req. under 264.19, 251, 252, and 253, addressing:**	NA			
W-4	270.18(c)(1)		(i) The liner system as req. under 264.251(a) (ii) The double liner and leak detection, collection, and removal system (LCRS) as req. under 264.251(c) (iii) If the leak detection system is in the saturated zone, detailed plans and engineering report on the leak detection design and operation, and the location of the saturated zone in relation to the leak detection system (iv) The construction quality assurance plan as req. under 264.19 (v) The proposed action leakage rate and response action plan as req. under 264.252 and 264.253	NA			
W-5	270.18(c)(2)		Control of run-on	NA			
W-6	270.18(c)(3)		Control of run-off	NA			
W-7	270.18(c)(4)		Management of run-on/run-off collection and holding units	NA			
W-8	270.18(c)(5)		Control of wind dispersion	NA			
W-9	270.18(d)		The inspection program for each waste pile including double liner system, LCRS, cover system, and appurtenances for control of run-on and run-off as req. under 264.254(a), (b), (c)	NA			
W-10	270.18(e)		If treatment is carried out on the pile, details of the process, equipment, and nature and quality of residue	NA			
W-11	270.18(f)		Compliance with 264.256 for I/R wastes	NA			
W-12	270.18(g)		Compliance with 264.257 for incompatible wastes	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
W-13	270.18(h)		Closure plan as req. under 264.258(a) or 264.310(a)	NA			
W-14	270.18(i)		A waste management plan for F020 through F027 as req. under 264.259	NA			
W-15	270.18(i)(1)		The volume, physical, and chemical characteristics of the wastes and the potential to migrate to the environment	NA			
W-16	270.18(i)(2)		The attenuative properties of soils	NA			
W-17	270.18(i)(3)		The mobilizing properties of the co-disposed materials	NA			
W-18	270.18(i)(4)		The effectiveness of additional treatment, design, or monitoring techniques	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR INCINERATORS - 270.19 Except as otherwise provided in 264.340, must fulfill the following (a), (b), or (c)				NA			HFTR does not manage hazardous waste in incinerators subject to RCRA TSDF permitting requirements.
IN-1	270.19(a)		Seeking an exemption under 264.340(b) or (c) (ignitable, corrosive, or reactive)	NA			
IN-2	270.19(a)(1)		Documentation waste listed in 261 subpart D, solely because ignitable (Hazard Code I) or corrosive (Hazard Code C) or both, or	NA			
IN-3	270.19(a)(2)		Documentation that waste listed in 261 subpart D, solely because reactive (Hazard Code R) for characteristics other than those listed in 261.23(a)(4) and (5) and will not be burned with other HW, or	NA			
IN-4	270.19(a)(3)		Documentation that waste hazardous solely for the characteristic of ignitability, corrosivity, or both, or	NA			
IN-5	270.19(a)(4)		Documentation that waste hazardous solely for the characteristics of reactivity listed in 261.23(a)(1),(2),(3),(6),(7), or (8) and will not be burned with other HW, or	NA			
IN-6	270.19(b)		Trial burn plan or results as req. under 270.62	NA			
In lieu of a trial burn							NA

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
IN-7	270.19(c)(1)		Waste analysis, including: (i) Heat value (ii) Viscosity or physical form (iii) Organic constituents listed in 261, appendix VIII (test methods referenced in 261, appendix III) (iv) Quantification of constituents (see test methods by reference in 270.6) (v) Quantification of constituents designated as POHC's as req. under 264.343	NA			
IN-8	270.19(c)(2)		Detailed engineering description of the incinerator, including: (i) Manufacturer's name and model (ii) Type of incinerator (iii) Dimensions (linear and x-section area) (iv) Auxiliary fuel system (type/feed) (v) Capacity of prime mover (vi) Automatic cutoff system (vii) tack gas and pollution control monitoring systems (viii)zzle and burner design (ix) Construction materials (x) Temperature, pressure, and flow indicating devices and control devices	NA			
IN-9	270.19(c)(3)		A description and analysis (specifying POHC's) of the waste to be burned. Include data in (c)(1)	NA			
IN-10	270.19(c)(4)		The design and operating conditions of the incinerator compared with those of trial burns	NA			
IN-11	270.19(c)(5)		Results of trial burns, including: (i) Sampling and analysis techniques to calculate performance standards in 264.343 (ii) Methods and results of temperatures, feed rates, CO, combustion gas velocity	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
IN-12	270.19(c)(6)		The expected operation information in compliance with 264.343 and 345 including: (i) CO in the exhaust (ii) Waste feed rate (iii) Combustion zone temperature (iv) Combustion gas velocity (v) Stack gas volume, flow rate, and temperature (vi) Residence time (vii) Hydrochloric acid removal efficiency (viii)Fugitive emissions and control procedures (ix) Feed cut-off limits based on operating	NA			
IN-13	270.19(c)(7)		Supplemental information necessary to achieve the purposes of this paragraph	NA			
IN-14	270.19(c)(8)		Waste analysis data (permit POHC's)	NA			
Approval of permit without a trial burn if:							
IN-15	270.19(d)(1)		Wastes are sufficiently similar	NA			
IN-16	270.19(d)(2)		Incinerator units are sufficiently similar and data from other trial burns are adequate to specify (under 264.345) operating conditions will meet performance standards (under 264.343)	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR LAND TREATMENT FACILITIES - 270.20 Except as provided in 264.1, must provide the following information:				Sections 1 and 5			The LTUs at the facility are in PCC. To address the items below, a summary of the historical LTU operation is included and/or references to historical documents is provided, as appropriate.
LT-1	270.20(a)		Plans to conduct a treatment demonstration as req. under 264.272, must include:	Section 1, Section 5			
LT-2	270.20(a)(1)		Wastes for demonstration and their hazardous constituents	Section 1, Section 5			
LT-3	270.20(a)(2)		Data sources to be used to make demonstration	Section 1, Section 5			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LT-4	270.20(a)(3)		Specific lab or field test: (i) Type of test (ii) Materials and methods, inc. analytical procedures (iii) Expected time of completion (iv) Simulated characteristics: treatment zone, climatic conditions, and operating	Section 1, Section 5			
LT-5	270.20(b)		Description of land treatment program as req. under 264.271, must include:	Section 1, Section 5			
LT-6	270.20(b)(1)		Wastes to be treated	Section 1, Section 5			
LT-7	270.20(b)(2)		Design measures and operating practices as req. under 264.273(a), including: (i) Application method and rate (ii) Measures to control soil pH (iii) Enhancement of microbial or chemical reactions (iv) Control of moisture content	Section 1, Section 5			
LT-8	270.20(b)(3)		Monitoring unsaturated zone: (i) Sampling equipment, procedures, and frequency (ii) Procedures for selecting sampling locations (iii) Analytical procedures (iv) Chain of custody (v) Procedures for establishing background values (vi) Statistical methods for interpreting results (vii) Justification for selecting principal hazardous constituents under 264.278(a) criteria	Section 5			
LT-9	270.20(b)(4)		List of hazardous constituents derived from or in wastes based on analytical procedures in 264.13	Section 5			
LT-10	270.20(b)(5)		Dimensions of the treatment zone	Section 5			
LT-11	270.20(c)		Description of the design, construction, operations, and maintenance as req. under 264.273, must include:	Section 5, Appendix 5.1			
LT-12	270.20(c)(1)		Control of run-on	Section 5			
LT-13	270.20(c)(2)		Collection and control of run-off	Section 5			
LT-14	270.20(c)(3)		Minimization of run-off of hazardous constituents from the treatment zone	Section 5			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LT-15	270.20(c)(4)		Management of collection and holding facilities associated with run-on and run-off control systems	Section 5			
LT-16	270.20(c)(5)		Periodic inspection as included in 270.14(b)(5)	Section 5			
LT-17	270.20(c)(6)		Control of wind dispersal of particulate matter	Section 5			
LT-18	270.20(d)		Description of the demonstration as req. under 264.276(a) if food-chain crops are to be grown in the treatment zone, including:	NA			
LT-19	270.20(d)(1)		Characteristics of the food-chain crop for which the demonstration will be made	NA			
LT-20	270.20(d)(2)		Characteristics of the waste, treatment zone, and waste application method and rate	NA			The LTUs are closed.
LT-21	270.20(d)(3)		Procedures for crop growth, sample collection, sample analysis, and data evaluation	NA			
LT-22	270.20(d)(4)		Characteristics of the comparison crop including the location and conditions	NA			
LT-23	270.20(e)		Compliance with requirements under 264.276(b) if food- chain crops are to be grown and cadmium is present	NA			
LT-24	270.20(f)		Description of the vegetative cover and its post-closure care as req. under 264.280(a)(8) and (c)(2). Submittal under 270.14(b)(13)	Section 5			A description of the LTU cover will be included in the PCC Plan.
LT-25	270.20(g)		Compliance with 264.281 if I/R wastes will be placed in the treatment zone	NA			The LTUs are closed.
LT-26	270.20(h)		Compliance with 264.282 if incompatible wastes will be placed in the treatment zone	NA			The LTUs are closed.
LT-27	270.20(i)		Waste management plan for F020 through F027 and description of the design, construction, operations, and maintenance as req. under 264.283. Must	NA			The LTUs are closed.
LT-28	270.20(i)(1)		Volume, physical, and chemical characteristics, including the potential to migrate to the	NA			The LTUs are closed.
LT-29	270.20(i)(2)		Attenuative characteristics of the soils	NA			The LTUs are closed.

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LT-30	270.20(i)(3)		Mobilizing properties of co-disposed materials	NA			The LTUs are closed.
LT-31	270.20(i)(4)		Effectiveness of additional treatment, design, or monitoring techniques.	NA			The LTUs are closed.
SPECIFIC PART B INFORMATION REQUIREMENTS FOR LANDFILLS - 270.21 Except as otherwise provided in 264.1, the following information must be provided:				NA			HFTR does not manage hazardous waste in landfills subject to RCRA TSDF permitting requirements. Historical SWMUs where waste was left in place are referred to as "landfills" and are being addressed under the Corrective Action Program.
LF-1	270.21(a)		List of hazardous wastes	NA			
LF-2	270.21(b)		Plans and engineering report on the design, construction, operations, and maintenance as req. under 264.19, 301, 302, and 303, addressing:	NA			
LF-3	270.21(b)(1)		(i) the liner system as req. under 264.301(a) or an exemption as req. under 264.301(b) (ii) The double liner and leachate detection, collection, and removal as req. under 264.301(c) or an exemption as req. under 264.301(d),(e), or (f) (iii) Plans and engineering report if the leak detection is located in the saturated zone (iv) The construction quality assurance plan as req. under 264.19 (v) The proposed action leakage rate (264.302) and response action plan (264.303)	NA			
LF-4	270.21(b)(2)		Control of run-on	NA			
LF-5	270.21(b)(3)		Control of run-off	NA			
LF-6	270.21(b)(4)		Management of collection and holding facilities associated with run-on and run-off control systems	NA			
LF-7	270.21(b)(5)		Control of wind dispersal	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
LF-8	270.21(c)		Inspection of each landfill, including the double liner system, LCRS, leak detection, cover system, appurtenances for control of run-on and run-off as req. under 264.303(a),(b) and (c). This information to be submitted under 270.14(b)(5)	NA			
LF-9	270.21(d)		Description of the proposed inspection of each landfill, including the liner and cover systems as req. under 264.303(a),and (b). Inspection plan to be submitted under 270.14(b)(5)	NA			
LF-10	270.21(e)		Plans and engineering report on the final cover at closure as req. under 264.310(a), and maintenance and monitoring after closure as req. under 264.310(b). This information be submitted under 270.14(b)(13)	NA			
LF-11	270.21(f)		If I/R wastes to be landfilled, explanation of compliance with 264.312	NA			
LF-12	270.21(g)		If incompatible wastes to be landfilled, explanation of compliance with 264.313	NA			
LF-13	270.21(i)		If containers of HW are to be landfilled, explanation of compliance with 264.315 or 316	NA			
LF-14	270.21(j)		Waste management plan for F020 through F027 and description of the design, construction, operations, and maintenance as req. under 264.317. Must	NA			
LF-15	270.21(j)(1)		Volume, physical and chemical characteristics, and potential to migrate to the environment	NA			
LF-16	270.21(j)(2)		Attenuative properties of soils	NA			
LF-17	270.21(j)(3)		Mobilizing properties of co-disposed materials	NA			
LF-18	270.21(j)(4)		Effectiveness of additional treatment, design, and monitoring techniques	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR BOILERS AND INDUSTRIAL FURNACES - 270.22				NA			HFTR does not manage hazardous waste in boilers or industrial furnaces subject to RCRA TSDF permitting requirements.
Trial burns							

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials _________ Tracking Date _________
T. Reviewer's Initials__________Tracking Date __________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
BF-1	270.22(a)(1)		*General*. Subject to standards by 266.104, 105, 106, and 107 and plan and results of a trial burn as req. under 270.66 (i) Waiver of trial burn under 266.104 through 107 and (a)(2) through (5) of this section (ii) Submittal of data in lieu of a trial burn as prescribed in (a)(6) of this section	NA			
BF-2	270.22(a)(2)		*Waiver of trial burn for DRE* (i) Boilers operated under special operating requirements by 266.110 (ii) Boilers and industrial furnaces burning low risk waste provided by 266.104(a)(5) and 266.109(a), must submit: (A) Documentation that the device is operated as req. under 266.109(a)(1) (B) Results of analyses of each waste to be burned, documenting non-metal compounds in appendix VIII of 261. Identification and basis for constituents excluded from the analysis. Analysis techniques in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (see 260.11) (C) Documentation of firing rates and calculations of worst-case emission rates for each constituent in (a)(2)(ii)(B) using procedures in 266.109(a)(2)(ii) (D) Results of dispersion modeling for emissions in (a)(2)(ii)(C) using procedures in 266.106(h). Director is to approve the modeling or recommend an alternate method (E)Documentation that the maximum annual average ground level concentration of each constituent in (a)(2)(ii)(B) in conformance with (a)(2)(ii)(D) does not exceed the allowable ambient level in appendices IV or V of 266. For levels not established, use 0.1 micrograms per cubic meter.	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
BF-3	270.22(a)(3)		*Waiver of trial burn for metals* Under Tier I (or adjusted Tier I) metals feed rate screening limits by 266.106(b) and (e), must submit: (i) Feed rate of HW and other fuels, and industrial furnace feed stocks (ii) Concentration of each metal controlled by 266.106(b) or (e), and calculations of the total feed rate (iii) Documentation that Tier I feed rate screening limits by 266.106(b) or (e) will not be exceeded during the averaging period (iv) Determination of the terrain-adjusted effective stack height, good engineering practice stack height, terrain type, and land use by 266.106(b)(3) through (5) (v) Documentation of compliance with 266.106(b)(6) for multiple stacks (vi) Documentation of no failure of criteria in 266.106(b)(7) for eligibility to comply with screening limits (vii) Sampling and metals analysis plan for the HW, other fuels, and industrial furnace feed stocks	NA			
BF-4	270.22(a)(4)		*Waiver of trial burn for particulate matter* Under the low risk waste by 266.109(b), must submit documentation supporting conformance with (a)(2)(ii) and (a)(3)	NA			

Facility Name ______________________ Reference No. ______________________	A. Reviewer's Initials __________ Tracking Date __________ T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
BF-5	270.22(a)(5)		*Waiver of trial burn for HCl and Cl_2* Under the Tier I (or adjusted Tier I) feed rate screening limits by 266.107(b)(1) and (e), must submit: (i) Feed rate of HW and other fuels, and industrial furnace feed stocks (ii) Levels of total chloride and chlorine and calculations of the total feed rate (iii) Documentation that Tier I feed rate screening limits by 266.107(b) or (e) will not be exceeded during the averaging period (iv) Determination of the terrain-adjusted effective stack height, good engineering practice stack height, terrain type, and land use by 266.107(b)(3) (v) Documentation of compliance with 266.107(b)(4) for multiple stacks (vi) Documentation of no failure of criteria in 266.107(b)(3) for eligibility to comply with screening limits (vii) Sampling and analysis plan for total chloride and chlorine for the HW, other fuels, and industrial furnace feed stocks	NA			
BF-6	270.22(a)(6)		*Data in lieu of trial burn* Providing information required by 270.66 from previous compliance testing in conformance with 266.103, or from trial burns of similar devices burning similar wastes under similar conditions in conformance with 266.102(c). In addition, submit: (i) For a waiver of any trial burn: (A) A description and analysis of the HW to be burned compared with HW of the compliance testing (B) The design and operating conditions of the furnace compared with that of the comparative burn (C) Supplemental information (ii) For a waiver of the DRE trial burn - basis for selection of POHCs used in comparative burns in compliance with DRE standard in 266.104(a). The analysis should specify constituents in appendix VIII of 261	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
Alternate HC limit (under 266.104(f)) for industrial furnaces with organic matter in raw materials, submit:							
BF-7	270.22(b)(1)		Documentation of design and operation to minimize HC emissions	NA			
BF-8	270.22(b)(2)		Baseline flue gas HC (and CO) concentration and levels under normal conditions when burning and not burning HW	NA			
BF-9	270.22(b)(3)		Test burn protocol	NA			
BF-10	270.22(b)(4)		Trial burn plan to: (i) Demonstrate flue gas HC (and CO) when burning HW do not exceed the base line (ii) Identify the types and concentrations of organic compounds listed in appendix VIII of 261 emitted when burning HW	NA			
BF-11	270.22(b)(5)		Plan to monitor over time changes in the operation to reduce the baseline and procedures to periodically confirm the base line	NA			
BF-12	270.22(b)(6)		Other necessary information	NA			
BF-13	270.22(c)		*Alternate metals implementation approach* (under 266.106(f)) in compliance with 266.106(c) or (d). How the approach is to be implemented and monitored	NA			
BF-14	270.22(d)		*Automatic waste feed cutoff system* including pre-alarm systems	NA			
BF-15	270.22(e)		*Direct transfer* submit information to conform with 266.111	NA			
BF-16	270.22(f)		*Residues* submit information to conform with 266.112	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR MISCELLANEOUS UNITS - 270.23 Except as otherwise provided in 264.600, the following information must be provided:				NA			HFTR does not manage hazardous waste in miscellaneous units' subject to RCRA TSDF permitting requirements.
M-1	270.23(a)		Description of the unit:	NA			

Facility Name ____________________
Reference No. ____________________

A. Reviewer's Initials _________ Tracking Date _________
T. Reviewer's Initials_________Tracking Date _________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
M-2	270.23(a)(1)		Physical characteristics, materials of construction, and dimensions of the unit	NA			
M-3	270.23(a)(2)		Plans and engineering reports on the location, design, construction, operations, maintenance, monitoring, inspection, and closure to comply with 264.601 and 602	NA			
M-4	270.23(a)(3)		Plans to comply with post-closure requirements of 264.603, if applicable	NA			
M-5	270.23(b)		Detailed hydrologic, geologic, and meteorologic assessments and land-use maps in compliance with 264.601	NA			
M-6	270.23(c)		Information on the potential exposure to humans or the environment, the potential magnitude and nature of such exposures	NA			
M-7	270.23(d)		Report on effectiveness of the treatment	NA			
M-8	270.23(e)		Any additional information to comply with 264.601	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR PROCESS VENTS - 270.24 Except as otherwise provided in 264.1, process vents subject to subpart AA of 264 must provide the following information:				NA			This information is not required to be provided in a PCC Permit Application.
V-1	270.24(a)		For facilities that can not timely comply with 264 subpart AA, implementation schedule as specified in 264.1033(a)(2)	NA			
V-2	270.24(b)		Documentation of compliance with 264.1032, including:	NA			
V-3	270.24(b)(1)		Data on all affected process vents, their annual throughput and operating hours, the individual and total emission rate, and their locations.	NA			
V-4	270.24(b)(2)		Data on vent emissions and emission reductions	NA			
V-5	270.24(b)(3)		Data used in determination if a process vent is subject to 264.1032	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
V-6	270.24(c)		When use a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, and use test data to determine the organic removal efficiency or the total organic compound concentration, submit a performance test plan as specified in 264.1035(b)(3)	NA			
V-7	270.24(d)		Documentation of compliance with 264.1033, including:	NA			
V-8	270.24(d)(1)		List of references and sources to prepare the documentation	NA			
V-9	270.24(d)(2)		Records, including dates, of each compliance test as req. by 264.1033(k)	NA			
V-10	270.24(d)(3)		Design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams (260.11) or other acceptable engineering texts presenting basic control device design information. Must address the vent stream characteristics and control device operation parameters as specified in 264.1035(b)(4)(iii)	NA			
V-11	270.24(d)(4)		A statement signed and dated, certifying that the operating parameters in design represent the conditions when the HW management unit would be operating at the highest capacity.	NA			
V-12	270.24(d)(5)		A statement signed and dated, certifying that the control device is designed to operate at a minimum 95 weight percent efficiency unless the total organic emission limits of 264.1032(a) can be attained by a control device involving vapor recovery less than 95 weight percent efficiency	NA			
SPECIFIC PART B INFORMATION REQUIREMENTS FOR EQUIPMENT - 270.25 Except as otherwise provided in 264.1, equipment subject to subpart BB of 264, must provide the following information:				NA			This information is not required to be provided in a PCC Permit Application.
For each piece of equipment subject to 264 subpart BB:							
E-1	270.25(a)(1)		Equipment ID and HW management unit ID	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
E-2	270.25(a)(2)		Location within the facility	NA			
E-3	270.25(a)(3)		Type of equipment	NA			
E-4	270.25(a)(4)		Percent by weight total organics	NA			
E-5	270.25(a)(5)		Hazardous waste state at equipment	NA			
E-6	270.25(a)(6)		Compliance method (e.g., monthly leak detection and repair or dual mechanical seals)	NA			
E-7	270.25(b)		For facilities that can not timely comply with 264 subpart BB, an implementation schedule as specified in 264.1033(a)(2)	NA			
E-8	270.25(c)		When use a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, and use test data to determine the organic removal efficiency or the total organic compound concentration, submit a performance test plan as specified in 264.1035(b)(3)	NA			
E-9	270.25(d)		Documentation of compliance with 264.1052 through 1059 containing records req. under 264.1064	NA			
E-10	270.25(e)		Documentation of compliance with 264.1060, including:	NA			
E-11	270.25(e)(1)		References and sources to prepare the documentation	NA			
E-12	270.25(e)(2)		Records and dates of compliance test as req. under 264.1033(j)	NA			
E-13	270.25(e)(3)		Design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams (260.11) or other acceptable engineering texts presenting basic control device design information. Must address the vent stream characteristics and control device operation parameters as specified in 264.1035(b)(4)(iii)	NA			

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
E-14	270.25(e)(4)		A statement signed and dated, certifying that the operating parameters in design represent the conditions when the HW management unit would be operating at the highest capacity.	NA			
E-15	270.25(e)(5)		A statement signed and dated, certifying that the control device is designed to be operated at a minimum 95 weight percent efficiency	NA			
SPECIAL PART B INFORMATION REQUIREMENTS FOR DRIP PADS - 270.26 Except as otherwise provided in 264.1, the following information must be provided:				NA			HFTR does not manage hazardous waste in drip pads subject to RCRA TSDF permitting requirements.
D-1	270.26(a)		List of hazardous wastes	NA			
D-2	270.26(b)		Plans and engineering report as required by 264.90(b)(2) if an exemption is sought (264 subpart F, 264.90)	NA			
D-3	270.26(c)		Plans and engineering report on the design, construction, operations, and maintenance as req. under 264.573 including as-built drawings and specs. Must address requirements of 264.571,	NA			
D-4	270.26(c)(1)		Design characteristics	NA			
D-5	270.26(c)(2)		Liner system	NA			
D-6	270.26(c)(3)		Leakage detection system, including detection of failure or fluid accumulation	NA			
D-7	270.26(c)(4)		Maintenance practices	NA			
D-8	270.26(c)(5)		Collection system	NA			
D-9	270.26(c)(6)		Control of run-on	NA			
D-10	270.26(c)(7)		Control of run-off	NA			
D-11	270.26(c)(8)		Removal interval of drippage/materials from the collection system and a statement demonstrating such interval be sufficient to prevent overflow	NA			
D-12	270.26(c)(9)		Procedures and documentation of cleaning the drip pad once every 7 days	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials __________ Tracking Date __________
T. Reviewer's Initials__________Tracking Date ___________

ITEM	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
D-13	270.26(c)(10)		Operating practices and procedures to ensure the tracking of HW and the minimization of waste off the drip pad	NA			
D-14	270.26(c)(11)		Procedures to ensure that treated woods are held on the drip pad until the cessation of drippage, including recordkeeping practices	NA			
D-15	270.26(c)(12)		Provisions to ensure the collection and holding units are emptied or managed ASAP after storms	NA			
D-16	270.26(c)(13)		If treatment is at the drip pad, state the equipment used, and the nature and quality of residuals	NA			
D-17	270.26(c)(14)		Description of the inspection of each drip pad, including appurtenances for control of run-on and run- off, to meet 264.573	NA			
D-18	270.26(c)(15)		A certification by a P.E. that the drip pad design meets 264.573(a) through (f)	NA			
D-19	270.26(c)(16)		Removal of residues/contaminants at closure to meet 264.575(a). Compliance plan as req. under 264.310(a) and (b) for non-removal waste after closure. This information should be included in the closure and post- closure plans under 270.14(b)(13)	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials _________ Tracking Date _________
T. Reviewer's Initials__________Tracking Date __________

APPLICATION REVIEW CHECKLIST **LAND PROTECTION DIVISION HAZARDOUS WASTE PROGRAM** **OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**	Facility Name: Holly Frontier Tulsa Refining LLC Facility ID No.: ODEQ Permit No.: 058078775-PC Reference No.: RCRA Renewal_______ Application Type:			40 CFR 264 Subpart M LAND TREATMENT
	Administrative Reviewer: Technical Reviewer: Issuance Deadline:	Start Date: Start Date:	Completion Date: Completion Date:	ODEQ Form Number XXX - XXX
				Shaded areas for ODEQ use only

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
APPLICABILITY - 264.270 To all facilities that treat or dispose of hazardous wastes in land treatment units (LTUs), except as 264.1 provides otherwise				NA			The LTUs are closed and in PCC.
TREATMENT PROGRAM - 264.271				NA			The LTUs are closed and in PCC.
LTU 1	264.271(a)		**Hazardous constituents in/on the treatment zone must be degraded, transformed, or immobilized within the treatment zone.** The Agency will specify the elements of the treatment program to include:	NA			The LTUs are closed and in PCC.

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 2	264.271(a)(1)		Wastes that are capable of being treated based on a demonstration under 264.272;	NA			The LTUs are closed and in PCC.
LTU 3	264.271(a)(2)		Design and operations to maximize the success of degradation, transformation, and immobilization processes in accordance with 264.273(a); and	NA			The LTUs are closed and in PCC.
LTU 4	264.271(a)(3)		Unsaturated zone monitoring as required in 264.278	NA			The LTUs are closed and in PCC.
LTU 5	264.271(b)		**The Agency will specify the hazardous constituents (Appendix VIII of 261 of this chapter) that must be degraded, transformed, or immobilized.**	NA			The LTUs are closed and in PCC.
LTU 6	264.271(c)		**The Agency will specify the vertical and horizontal dimensions of the treatment zone.** The treatment zone is the portion of the unsaturated zone below and including the land surface in which treatment conditions are to be maintained. Its maximum depth must be:	NA			The LTUs are closed and in PCC.
LTU 7	264.271(c)(1)		No more than 1.5 meters (5 feet) from the initial soil surface; and	NA			The LTUs are closed and in PCC.
LTU 8	264.271(c)(2)		More than 1 meter (3 feet) above the seasonal high-water table.	NA			The LTUs are closed and in PCC.
TREATMENT DEMONSTRATION - 264.272				NA			The LTUs are closed and in PCC.
LTU 9	264.272(a)		**Prior to application of waste, the facility must demonstrate the hazardous constituents of each waste can be completely degraded, transformed, or immobilized in the treatment zone.**	NA			The LTUs are closed and in PCC.

Facility Name ___________________________
Reference No. ___________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 10	264.272(b)		**The facility may used field tests, laboratory analyses, available data, or operating data.** **The facility must obtain a permit under 270.63 if it conducts field tests or laboratory analyses to make demonstration req. Under paragraph (a) of this section.** The Agency will specify the testing, analytical, design, and operating requirements to meet paragraph (c) of this section.	NA			The LTUs are closed and in PCC.
LTU 11	264.272(c)		**Any field test or laboratory analysis conducted under paragraph (a) of this section must:**	NA			The LTUs are closed and in PCC.
LTU 12	264.272(c)(1)		Accurately simulate the characteristics and operating conditions including: (i) The characteristics of the waste; (ii) The climate; (iii) The topography of the surrounding area; (iv) The characteristics of the soil in the treatment zone (including depth); and (v) The operating practices.	NA			The LTUs are closed and in PCC.
LTU 13	264.272(c)(2)		Show that hazardous constituents to be tested will be completely degraded, transformed, or immobilized in the treatment zone.	NA			The LTUs are closed and in PCC.

Facility Name ____________________________
Reference No. ____________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 14	264.272(c)(3)		Be conducted in a manner that protects human health and the environment considering: (i) The characteristics of the waste to be tested; (ii) The operating and monitoring measures taken during testing; (iii) The test duration; (iv) The volume of waste used in the test; (v) In field tests, the potential for migration of hazardous constituents to groundwater or surface water.	NA			The LTUs are closed and in PCC.
DESIGN AND OPERATING REQUIREMENTS - 264.273 The Agency will specify how the facility will design, construct, operate, and maintain the land treatment unit in compliance with this section.				NA			The LTUs are closed and in PCC.
LTU 15	264.273(a)		**The facility must design, construct, operate, and maintain the unit to:** **maximize the degradation, transformation and immobilization of hazardous constituents in the treatment zone; and** **be in accord with all design and operating conditions that were used the demonstration under 264.272.** The Agency will specify in the permit:	NA			The LTUs are closed and in PCC.
LTU 16	264.273(a)(1)		The rate and method of waste application to the treatment zone;	NA			
LTU 17	264.273(a)(2)		Measures to control soil pH;	NA			
LTU 18	264.273(a)(3)		Measures to enhance microbial or chemical reactions; and	NA			

Facility Name ___________________________
Reference No. ___________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete Yes/No/NA	Technically Complete Yes/No/NA	Remarks
LTU 19	264.273(a)(4)		Measures to control the moisture content of the treatment zone.	NA			
LTU 20	264.273(b)		**The facility must design, construct, operate, and maintain the treatment zone to minimize run-off during the active life.**	NA			The LTUs are closed and in PCC.
LTU 21	264.273(c)		**The facility must design, construct, operate, and maintain a run-on control system to prevent flow onto the treatment zone during peak discharge (at least a 25-year storm).**	NA			The LTUs are closed and in PCC.
LTU 22	264.273(d)		**The facility must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume from a 24-hour, 25-year storm.**	NA			The LTUs are closed and in PCC.
LTU 23	264.273(e)		**Collection facilities of the run-on and run-off systems must be emptied or managed expeditiously after each storm to maintain the design capacity of the system.**	NA			The LTUs are closed and in PCC.
LTU 24	264.273(f)		**The facility must control wind dispersal.**	NA			The LTUs are closed and in PCC.
LTU 25	264.273(g)		**The facility must inspect the unit after each storm and weekly to detect:**	NA			The LTUs are closed and in PCC.
LTU 26	264.273(g)(1)		Deterioration, malfunctions, or improper operation of run-on and run-off systems; and	NA			
LTU 27	264.273(g)(2)		Improper functioning of wind dispersal control measures.	NA			
[Reserved] - 264.274 - 264.275 **Food-Chain Crops - 264.276** The Agency may allow growing food-chain crops in/on the treatment zone only if the facility satisfies the conditions of this section. The Agency will specify the specific food-chain crops that may be grown.				NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.

Facility Name ____________ Reference No. ____________	A. Reviewer's Initials ________ Tracking Date ________ T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 28	264.276(a)(1)		The facility must demonstrate prior to planting no risk to human health by growing such crops in/on the treatment zone. Must demonstrate that hazardous constituents other than cadmium: (i) Will not be transferred to the food or the crop by plant uptake or direct contact, and will not be ingested by food-chain animals; or (ii) Will not occur in greater concentrations in the crops grown on the treatment zone than crops grown on untreated soils under similar conditions in the same regions	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.
LTU 29	264.276(a)(2)		The facility must make the demonstration prior to the planting of crops for all constituents in appendix VIII of 261 that are expected to be in, or derived from, waste placed in/on the treatment zone.	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.
LTU 30	264.276(a)(3)		In making demonstration, the facility may use field tests, greenhouse studies, available data, or operating data (existing units), and must: (i) Base the demonstration on conditions similar to those present in the treatment zone including soil characteristics, specific wastes, application rates and methods, and crops; and (ii) Describe the procedures used in conducting any tests including sample selection criteria, sample size, analytical methods, and statistical procedures.	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.
LTU 31	264.276(a)(4)		The facility must obtain a permit for conducting field tests or greenhouse studies for the demonstration.	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.
LTU 32	264.276(b)		If the wastes contain cadmium, the facility must comply with the following conditions:	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.

Facility Name ___________________________
Reference No. ___________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 33	264.276(b)(1)		(i) The pH of the waste and soil mixture must be 6.5 or greater when applied, except waste with cadmium concentration at 2 mg/kg (dry weight) or less; (ii) The annual application of cadmium must not exceed 0.5 kg/ha for production of tobacco, leafy vegetables, or root crops for human consumption. For other food chain crops, the annual application of cadmium must not exceed: Present to 6/30/84 .... 2.0 kg/ha 7/1/84 to 12/31/86 .... 1.25 kg/ha Beginning 1/1/87 .... 0.5 kg/ha (iii) The cumulative application of cadmium must not exceed 5 kg/ha if the waste and soil mixture has a pH of less than 6.5; and (iv) If the waste and soil mixture has or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium must not exceed: 5 kg/ha if soil cation exchange capacity (CEC) is less than 5 meq/100g; 10 kg/ha if soil CEC is 5-15 meq/100g; 20 kg/ha if soil CEC is greater then 15 meq/100g; or	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.

Facility Name ____________________________
Reference No. ____________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
LTU 34	264.276(b)(2)		(i) Animal feed must be the only food-chain crop produced; (ii) The pH of the waste and soil mixture must be 6.5 or greater at the time of application or planting, whichever later, and this pH level must be maintained during growth; (iii) There must be an operating plan demonstrating how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe safeguards against possible health hazards from cadmium entering the food chain, which may result from alternative land uses; and (iv) Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food-chain crops must not be grown except in compliance with paragraph (b)(2) of this section.	NA			The LTUs are closed and in PCC. Food chains crops have not been, and are not currently, grown on the LTUs.
[Reserved] - 264.277 **Unsaturated Zone Monitoring - 264.278** A facility subject to this subpart must establish an unsaturated zone monitoring program to discharge the following responsibilities:				NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 35	264.278(a)		**The facility must monitor the soil and soil pore liquid to determine whether hazardous constituents migrate out of the treatment zone.**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 36	264.278(a)(1)		The Agency will specify the hazardous constituents to be monitored under 264.271(b).	NA			

Facility Name ____________________________
Reference No. ____________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete Yes/No/NA	Technically Complete Yes/No/NA	Remarks
LTU 37	264.278(a)(2)		The Agency may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents under 264.271(b).	NA			
LTU 38	264.278(b)		**The facility must monitor the unsaturated zone using soil core and soil pore liquid monitoring using devices ssuch as lysimeters.** **The monitoring system must consist of sufficient sampling points at appropriate locations and depths to yield samples that:**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 39	264.278(b)(1)		Represent the quality of unaffected background soil-pore liquid quality and chemical make up of the soil; and	NA			
LTU 40	264.278(b)(2)		Indicate the quality of soil-pore liquid and the chemical make up of the soil below the treatment zone.	NA			
LTU 41	264.278(c)		**The facility must establish background value for each monitored hazardous constituent under paragraph (a) of this section.** **The permit will specify a value or procedures to be used to calculate background values.**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 42	264.278(c)(1)		Background soil values may be based on a one-time sampling at a background plot having characteristics similar to the treatment zone.	NA			
LTU 43	264.278(c)(2)		Background soil-pore liquid values must be based on at least quarterly sampling for one year at a background plot similar to the treatment zone.	NA			
LTU 44	264.278(c)(3)		The facility must express all background values in a form necessary for the determination of statistically significant increases under paragraph (f) of this section.	NA			

Facility Name ____________________________
Reference No. ____________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 45	264.278(c)(4)		To determine background values, the facility must use an unsaturated zone monitoring system in compliance with paragraph (b)(1) of this section.	NA			
LTU 46	264.278(d)		**The facility must conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone.** **The Agency will specify the frequency and timing.** **The facility must express the results of the monitoring in a form necessary for the determination of statistically significant increases under paragraph (f) of this section.**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 47	264.278(e)		**The facility must use consistent sampling and analysis procedures that are designed to provide a reliable indication of soi-pore liquid quality and chemical make up of the soil below the treatment zone.** At the minimum, the facility must implement procedures and techniques for:	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 48	264.278(e)(1)		Sample collection;	NA			
LTU 49	264.278(e)(2)		Sample preservation and shipment;	NA			
LTU 50	264.278(e)(3)		Analytical procedures; and	NA			
LTU 51	264.278(e)(4)		Chain of custody control.	NA			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 52	264.278(f)		**The facility must determine whether there is a statistically significant change over the background for any hazardous constituent under paragraph (a) of this section below the treatment zone each time the monitoring is conducted under paragraph (d) of this section.**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 53	264.278(f)(1)		In determining a statistically significant increase, the facility must compare the value of each constituent under paragraph (d) of this section to the background value.	NA			
LTU 54	264.278(f)(2)		The facility must determine whether there is a statistically significant increase below the treatment zone within a reasonable period after sampling. The Agency will specify the time period in the permit.	NA			
LTU 55	264.278(f)(3)		The facility must use a statistical procedure that provides reasonable confidence that migration from the treatment zone will be identified. The Agency will specify a statistical procedure in the permit that: (i) Is appropriate to establish background values; and (ii) Provides a balance between false identification of and failure to identify migration from the treatment zone.	NA			
LTU 56	264.278(g)		**If there is a statistically significant increase of hazardous constituents below the treatment zone, the facility must:**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 57	264.278(g)(1)		Notify the Agency in writing within 7 days. The notification must indicate what constituents.	NA			
LTU 58	264.278(g)(2)		Submit a permit modification application, within 90 days, to modify the operating practices to maximize the success of degradation, transformation, or immobilization processes in the treatment zone.	NA			

Facility Name ___________________________
Reference No. ___________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete Yes/No/NA	Technically Complete Yes/No/NA	Remarks
LTU 59	264.278(h)		**If there is a statistically significant increase of hazardous constituents below the treatment zone, the facility may demonstrate that the increase is from other sources or from error in sampling, analysis, or evaluation.** **Making a demonstration does not relieve the facility from the requirement of submitting a permit modification unless the demonstration is approved by the Agency.** In making a demonstration, the facility must:	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 60	264.278(h)(1)		Notify the Agency in writing within 7 days that the facility intends to make a demonstration;	NA			
LTU 61	264.278(h)(2)		Submit a report, within 90 days, demonstrating that the increase is from other sources or from error in sampling, analysis, or evaluation;	NA			
LTU 62	264.278(h)(3)		Submit a permit modification application, within 90 days, to make appropriate changes to the monitoring program; and	NA			
LTU 63	264.278(h)(4)		Continue to monitor in accordance with the program established under this section.	NA			
Record Keeping - 264.279 The facility must include hazardous waste application dates and rates in the operating record under 264.73							Historical operating records are maintained at the facility
Closure and Post-closure Care - 264.280							
LTU 64	264.280(a)		**During the closure period, the facility must:**	NA			The LTUs are closed and in PCC. Closure certification was accepted by ODEQ August 22, 2003.
LTU 65	264.280(a)(1)		Continue all operations under 264.273(a), except measures inconsistent with paragraph (a)(8) of this section;	NA			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 66	264.280(a)(2)		Continue all operations to minimize run-off under 264.273(b);	NA			
LTU 67	264.280(a)(3)		Maintain the run-on control system under 264.273(c);	NA			
LTU 68	264.280(a)(4)		Maintain the run-off management system under 264.273(d);	NA			
LTU 69	264.280(a)(5)		Control wind dispersal if required under 264.273(f);	NA			
LTU 70	264.280(a)(6)		Continue to comply with regulations concerning growth of food-chain crops under 264.276;	NA			
LTU 71	264.280(a)(7)		Continue unsaturated zone monitoring (264.278), except soil-pore liquid monitoring may be terminated 90 days after the last application; and	NA			
LTU 72	264.280(a)(8)		Establish a vegetative cover on closed portion. The cover must be capable of growing without extensive maintenance.	NA			
LTU 73	264.280(b)		**To comply with 264.115, when closure is completed, facility may submit a certification by an independent soil scientist (instead of engineer) which identifies closure in accordance with the closure plan.**	NA			Closure certification was accepted by ODEQ August 22, 2003.
LTU 74	264.280(c)		**During the post-closure care period, the facility must:**	NA			Information required under 40 CFR 264.280(c) is provided in the PCC Plan.
LTU 75	264.280(c)(1)		Continue all operations to enhance treatment that are consistent with other post-closure care activities;	Section 5			
LTU 76	264.280(c)(2)		Maintain a vegetative cover over closed portions;	Section 5			
LTU 77	264.280(c)(3)		Maintain the run-on control system under 264.273(c);	Section 5			
LTU 78	264.280(c)(4)		Maintain the run-off management system under 264.273(d);	Section 5			
LTU 79	264.280(c)(5)		Control wind dispersal if required under 264.273(f);	Section 5			
LTU 80	264.280(c)(6)		Continue to comply with regulations concerning growth of food-chain crops under 264.276;	Section 5			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 81	264.280(c)(7)		Continue unsaturated zone monitoring (264.278), except soil-pore liquid monitoring may be terminated 90 days after the last application; and	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 82	264.280(d)		**The facility is not subject to paragraphs (a)(8) and (c) of this section if hazardous constituents in the treatment zone soil do not exceed background value using statistics in paragraph (d)(3) of this section.** **The facility may submit such demonstration at any time during the closure and post-closure care periods.** For the purposes of this paragraph:	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
LTU 83	264.280(d)(1)		The facility must establish background soil values and determine whether there is a statistically significant increase for all hazardous constituents in the permit under 264.271(b). (i) Background soil values may be based on one-time sampling of a background plot having characteristics similar to those of the treatment zone. (ii) The facility must express background and hazardous constituent values in statistical form to determine increase under paragraph (d)(3) of this section.	NA			
LTU 84	264.280(d)(2)		The facility must take sufficient sampling points at appropriate location and depth that have not been affected by the treatment zone.	NA			

Facility Name ______________________
Reference No. ______________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
LTU 85	264.280(d)(3)		In determining a statistically significant increase, the facility must compare the value of each constituent in the treatment zone to the background value using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The facility must use a statistical procedure that: (i) Is appropriate to establish background values; and (ii) Provides a balance between false identification of and failure to identify presence in the treatment zone.	NA			
LTU 86	264.280(e)		**The facility is not subject to Subpart F** **if the facility satisfies paragraph (d) of this section and** **if unsaturated zone monitoring under 264.278 indicates that hazardous constituents have not migrated beyond the treatment zone during the active life.**	NA			With ODEQ's approval, soil pore liquid monitoring was ceased in 2003 and soil-core sampling ceased in 2006.
SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE (IR) WASTE - 264.281 The facility must not apply IR waste to the treatment zone unless the waste and the treatment zone meet 40 CFR 268, and:				NA			The LTUs are closed and in PCC.
LTU 87	264.281(a)		**The waste is immediately incorporated into the soil so that:**	NA			
LTU 88	264.281(a)(1)		The resulting waste, mixture, or dissolution no longer meets IR definition under 261.21 or 261.23; and	NA			
LTU 89	264.281(a)(2)		264.17(b) is complied with; or	NA			
LTU 90	264.281(b)		**The waste is managed to be no longer IR.**	NA			

Facility Name ____________________________
Reference No. ____________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
[LTU 91] **Special Requirements for Incompatible Wastes - 264.282** The facility must not place incompatible wastes and materials (appendix V for examples) in the same treatment zone, unless 264.17(b) is complied with.				NA			The LTUs are closed and in PCC.
Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027 - 264.283				NA			The LTUs are closed and in PCC.
LTU 92	264.283(a)		**Hazardous wastes F020 through F027 (except F024 and F025) must not be placed in land treatment unit without the Agency approval.** The factors to be considered are:	NA			
LTU 93	264.283(a)(1)		The volume, physical, and chemical characteristics of the wastes, including the potential to migrate to the environment;	NA			
LTU 94	264.283(a)(2)		The attenuative properties of soils or other materials;	NA			
LTU 95	264.283(a)(3)		The mobilizing properties of other materials co-disposed with theses wastes; and	NA			
LTU 96	264.283(a)(4)		The effectiveness of additional treatment, design, or monitoring techniques.	NA			
LTU 97	264.283(b)		**The Agency may determine additional design, operating, and monitoring requirements are necessary to be protective of human health and the environment.**	NA			

Facility Name ______________________________
Reference No. ______________________________

A. Reviewer's Initials ________ Tracking Date ________

T. Reviewer's Initials ________ Tracking Date ________

NOTE: Before starting Review, first answer Rows 35 (Fees) and 40 (Landowner Affidavit).

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
	OAC 252:205 - HAZARDOUS WASTE RULES				
1	**Buffer zones**	**OAC 252:205-9-3**			
2		**(a)**	**Land treatment unit**: No treatment, storage or disposal within 50' of site perimeter. No treatment, storage, or disposal in **surface impoundment, waste pile, or landfill** within 200' of site perimeter.	NA	The LTUs are closed and in PCC.
3	**Provisions for on-site inspectors**	**OAC 252:205-9-4**	DEQ may include provisions for full-time inspector in permit conditions of commercial TSDs.	NA	NA - The Refinery does not accept hazardous wastes from off-site generators for management as a commercial TSD.
4	**Additional Closure Requirements**	**OAC 252:205-9-5(a)**	The provisions of 40 CFR 264 or 265, Subparts G and H, shall apply to all areas where hazardous waste is handled, not just permitted units.	Section 9	
5		**(b)**	The closure cost estimate may not incorporate any value that may be realized by the sale of recycled products.	Section 6, Table 6-1	
6	**Additional waste analysis requirements**	**OAC 252:205-9-6(a)**	Prior to receipt of HW the TSD must obtain detailed chemical and physical analysis of waste sample.	NA	NA - The Refinery does not accept hazardous wastes from off-site generators.
7		**(b)**	Receipt of industrial waste by TSD o/o must include records in the facility operating record as follows: (1) Information regarding the chemical and physical nature of the waste which reasonably, considering the source, establishes that the waste does not exhibit any characteristic of hazardous waste as described by 40 CFR 261, Subpart C. This information may include laboratory analyses, material safety data sheets, and analysis of raw materials, feedstocks, and process descriptions; and (2) An affidavit by the original waste generator stating that the waste does not include any listed waste	NA	NA - The Refinery does not accept hazardous wastes from off-site generators.

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
8	**Emergency plans relating to affected property owners**	**OAC 252:205-11-1(a)**	In addition to plans required by 40 CFR 264 Subpart D, new off-site TSD applicants shall prepare a separate Emergency Plan. (Specifications and procedures may be found in 252:205-11-1(b) through (e).)	NA	NA - The Refinery is not a new off-site TSD.
9	**Exclusionary siting criteria**	**OAC 252:205-11-2**			
10	**Groundwater resources and recharge areas**	**(a)**	(1) **Presumption of unapprovable site:** DEQ shall presume proposed location is unapprovable if it lies wholly or partially within an area designated as an actual or potential unconsolidated alluvial aquifer or terrace deposit aquifer or bedrock aquifer or recharge area as shown on described OGS maps.	NA	NA - The Refinery is not a new TSD.
11			(2) **Rebuttal of presumption**: Applicant may rebut presumption by submitting site-specific hydrological and geological data.	NA	NA - The Refinery is not a new TSD.
12			(3) **DEQ reliance upon Oklahoma Geological Survey**: DEQ shall request review and conclusions by Oklahoma Geological Survey when making determination whether a proposed location is within a prohibited area.	NA	NA - The Refinery is not a new TSD.
13			(4) **Site-Specific Information**: DEQ may require site-specific hydrological and geological information for proposed facility locations outside designated principal groundwater resource or recharge area where reason to believe proposed location may be unsuitable due to localized groundwater conditions.	NA	NA - The Refinery is not a new TSD.
14			(5) **Groundwater protection plan**: In determining whether a groundwater protection plan with financial assurance is required for an on-site facility, the procedures used in subsection (1)-(4) of this section shall be used.	NA	NA - The Refinery is not a new TSD.
15			(6) **Existing facilities**. Existing facilities in these areas may continue to operate and modify or expand operations to extent permitted.	NA	NA - The Refinery is not a new TSD.
16	**Water wells**	**(b)**	DEQ shall not grant permit for new HW disposal facility located within one-quarter mile of any public or private water supply well except private water supply wells on applicant's property. Water wells permanently abandoned may be plugged if applicant has the right to do so. Applicant shall notify DEQ that abandoned wells have been plugged. If abandoned water wells are identified during preparation of application or during permit process, applicant shall notify DEQ so wells can be included in Class V well inventory.	NA	NA - The Refinery is not a new TSD.

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
17	**Flood plain**	**(c)**	No permit or modification of existing permit granted if disposal facility is within one-hundred year flood plain, except for post-closure, corrective action or remedial activities conducted under DEQ direction.	NA	NA - The Refinery is not requesting to increase disposal rates or to designate new disposal areas.
18	**Surface water**	**(d)**	No permit granted for a new HW disposal facility located within one mile of conservation pool elevation of any reservoir which supplies water for public water supply or within one mile of scenic river.	NA	NA - The Refinery is not a new TSD.
19	**Air pollution**	**(e)**	No permit granted for a new off-site facility located within one mile of public school, educational institution, nursing home, hospital, or park.	NA	NA - The Refinery is not a new TSD.
20	**Upgrades of county roads and bridges**	**OAC 252:205-11-3**	Owner/operator shall submit certificate of acceptance of completed upgrades by appropriate board(s) of county commissioners or ODOT as appropriate, per 27A O.S. § 2-7-115(B)(2), which specifies: (B) The Department shall not issue a permit for any new hazardous waste facility unless: (2) The applicant has agreed to upgrade or pay for the upgrading of the roads and bridges to the reasonable measures determined by the appropriate board of county commissioners or to the design standards established by the Oklahoma Department of Transportation for industrial access roads. The Department shall not authorize the operation of the facility until the necessary upgrades to the roads and bridges have been made.	NA	NA - The Refinery is not a new TSD.
21	**Federal rules**	**OAC 252:205-19-2**	Off-site recycling facilities must comply with provisions of 40 CFR 264: (1) Subpart B - General Facility Standards; (2) Subpart C - Preparedness & Prevention; (3) Subpart D - Contingency Plan & Emergency Procedures; (4) Subpart E - Manifest System, Recordkeeping & Reporting; (5) Subpart G - Closure & Post-Closure; (6) Subpart H- Financial Requirements; (7) Subpart I - Use & Management of Containers; (8) Subpart J - Tank Systems.	NA	NA - The Refinery is not an off-site recycling facility.

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 5	264.90(b)(2)		The facility operates a unit which the Agency finds: (i) Is an engineered structure, (ii) Does not receive or contain liquid waste or waste containing free liquids, (iii) Is designed and operated to exclude liquid, precipitation, run-on and run-off, (iv) Has both inner and outer layers of containment enclosing the waste, (v) Has a leak detection system built into each containment layer, (vi) The facility will continue to operate and maintain these leak detection systems during the active life, and closure and post-closure care periods, and (vii) To a reasonable degree of certainty, will not allow hazardous constituents to migrate out of the outer containment layer prior to the end of the post-closure care period; or	NA			NA - The Refinery does not meet the requirements for this exemption.
SWMU 6	264.90(b)(3)		The Agency finds, pursuant to 264.280(d), that the treatment zone of a land treatment unit (regulated unit) does not contain hazardous constituents above background (statistically significant), and if an unsaturated zone monitoring program meeting 264.278 has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life. An exemption under this paragraph only applies for the post-closure care period; or	Section 5			The refinery is submitting, under a separate cover, a work plan for demonstration that the LTUs have met their performance objectives and can have the PCC period reduced or terminated.
SWMU 7	264.90(b)(4)		The Agency finds no potential migration of liquid from a regulated unit to the uppermost aquifer. This demonstration must be certified by a qualified geologist or geotechnical engineer. Prediction must be based on the maximum rate of liquid migration; or	NA			NA - The Refinery does not meet the requirements for this exemption.
SWMU 8	264.90(b)(5)		The facility designs and operates a pile in compliance with 264.250(c)	NA			NA - The Refinery does not operate a pile.
SWMU 9	264.90(c)		The regulations under this subpart apply during the active life and closure periods. After closure, the regulations in this subpart:	Section 8			Note that under the 2009 Permit, as allowed by 40 CFR 264.90(f), the Refinery addresses groundwater monitoring, detection, and corrective action requirements of 40 CFR 264.91 - 264.100 under a Facility Wide Groundwater Monitoring Program.
SWMU 10	264.90(c)(1)		Do not apply if the unit is clean closed, or closed to an acceptable health risk level;	Section 8			

Facility Name _______________
Reference No. ________________

A. Reviewer's Initials__________ Tracking Date__________
T. Reviewer's Initials__________ Tracking Date__________

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
22	**Replacement of Recycling Units**	**OAC 252:205-19-3**			
23		**(a)**	Owner or operator may replace recycling units not required to be permitted, with functionally equivalent units not more than 10% difference in capacity with DEQ approval.	NA	NA - The Refinery is not an off-site recycling facility.
24		**(b)**	Must apply for permit modification to increase capacity of recycling units or to add new or different recycling units.	NA	NA - The Refinery is not an off-site recycling facility.
25	**Agency Note**		The application for permit modification is a Tier I in accordance with 252:4-7-52 and a Class I in accordance with 40 CFR 270.42	NA	NA - The Refinery is not an off-site recycling facility.
26	**Operating record**	**OAC 252:205-19-4**			
27	**Operating record required**	**(a)**	Facility must keep written operating record at facility.	NA	NA - The Refinery is not an off-site recycling facility.
28	**Content**	**(b)**	To be recorded and maintained in operating record: (1) Description/quality of each HW received; (2) Method(s) and date(s) of treatment, storage, recycling of each HW received; (3) Location of all HW within facility; (4) Quantity of HW at each location, including cross-referencing to specific manifest document numbers if applicable; (5) Complete documentation of fate of all HW received from off-site or generated on-site.	NA	NA - The Refinery is not an off-site recycling facility.
29	**Processed hazardous waste to be recycled**	**OAC 252:205-19-7**	Demonstration to DEQ that units containing HW processed for recycling have demonstrable market and no longer contain hazardous constituents, are not required to obtain permit for those units, but must comply with 252:205-19-1(b) and 19-4.	NA	NA - The Refinery is not an off-site recycling facility.
30	**Mobile units**	**OAC 252:205-19-15**			
31	**Applicability**	**(a)**	Does the facility have mobile recycling units generating in excess of 1000 kilograms of HW in a month? Requirements don't apply when: (1) recycling is performed at generator's site; (2) generator retains responsibility for proper management of waste; (3) no waste generated by other person is brought onto site for treatment by the unit; (4) generator and recycler meet all requirements for HW management.	NA	NA - The Refinery does not operate mobile recycling units.

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
32	**Permits**	**(b)**	Mobile recycling units Subject to Part 3 shall obtain Recycling Permit for Mobile Unit. Applications shall include application fee and three copies of the following: (1) Detailed description of proposed recycling unit(s) including flow diagrams and engineering design drawings, specifying the exact equipment necessary for unit(s) to perform as specified. (2) Amount and nature of waste streams able to be processed and amount/nature of waste streams expected from operation of proposed unit(s); (3) Description and quantification of releases to air, sewer, water, or ground that result from operation of proposed unit(s); (4) Description of procedures used to decontaminate unit, including disposal of contaminated residuals, after completion of on-site processing; (5) Evidence of compliance with personnel training requirements equivalent to 40 CFR 265.16 (6) Generic contingency and safety plan which meets applicable provision of 40 CFR 265, Subparts C and D.	NA	NA - The Refinery does not operate mobile recycling units.
33	**Tank and Container Recyclers - Applicability**	**OAC 252:205-19-29 (c)**	This part does not apply to: (1) Facilities permitted pursuant to 40 CFR 264; (2) Facilities which only receive containers or tanks for filling with product or waste without on-site cleaning or reconditioning; or, (3) Companies, their affiliates and subsidiaries which receive back only their own containers and, as applicable: (A) Remove residues of unused commercial chemical product for use at their facilities; (B) Remove residues and manage such residues and wash wastes as hazardous or non-hazardous solid waste as determined per 40 CFR 261; or, (C) Treat removed residues and wash wastes in units permitted pursuant to sections 402 and 307(b) of the Clean Water Act.	NA	NA - The Refinery does not receive tanks or containers from off-site for cleaning or reconditioning.

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
34	**Treatment, storage, off-site recycling, and disposal facility fees**	**OAC 252:205-21-4**			
35	**Permit fees**	**(a)**	(1) New permit application fees listed in Appendix B. (2) Renewal and post closure application fees are 1/2 of the fees listed in Appendix B, subject to statutory minimum. (3)Fees for re-submission of application are minimum amount established by 27A O.S. § 2-7-119(B). Re-submission occurs when DEQ requests applicant to provide additional information to make application complete, constituting substantial recomposition of the application. (4) Fees for Tier 3 modification are application fees listed in Appendix B. (5) Application fees for off-site recycling facility is statutory minimum established for permit applications by 27A O.S. § 2-7-119(B).	Cover letter	
	OAC 252:4 RULES OF PRACTICE AND PROCEDURE				
36	**Filing an application**	**OAC 252:4-7-4.**	What Tier is the application? (a) Tier I (b) Tier II (c) Tier III	Section 1	Per OAC 252:4-7-53, this Renewal Application is a Tier II application.
37	**Fees**	**OAC 252:4-7-5.**	Fees shall be submitted with application.	Cover Letter	
38	**Notices**	**OAC 252-4-7-13**			
39	**Statutory requirements for notice**	**(a)**	Uniform Env. Permitting Act requires applicant to give notice in accordance with 27A O.S. § 2-14-301, which includes: (A) Upon filing a Tier II or III application with the Department, the applicant shall publish notice of the filing as legal notice in one newspaper local to the proposed new site or existing facility. The publication shall identify locations where the application may be reviewed, including a location in the county where the proposed new site or existing facility is located. (B) For Tier III applications: notice of a thirty-day opportunity to request, or give the date, time and place for, a process meeting on the permitting process. If the Department receives timely request and determines that a significant degree of public interest in the application exists, it shall schedule and hold such meeting.	Section 1	
40	**Notice to landowner**	**(b)**	Applicant shall certify by affidavit that they own the real property, have a current lease or easement for accomplishing permitted purpose or have provided legal notice to landowner.	Section 1	

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
41	**Notice content**	**(c)**	Applicant shall provide draft notice, for approval prior to publication. All published legal notice(s) shall contain: (1) Applicant Name and address; (2) Name, address and legal description of site, facility and/or activity; (3) Purpose of notice; (4) Type of permit or permit action being sought; (5) Description of activities to be regulated; (6) Locations where application may be reviewed; (7) Names, addresses and phone numbers of contact persons for DEQ and applicant; (8) Description of public participation opportunities and time period for comments and requests; (9) Any other information required by DEQ rules.	Section 1	
42	**Proof of publication**	**(d)**	Within 20 days after date of publication, did applicant provide a written affidavit of publication for each published notice? In case of mistake in published notice, a legal notice of correction or republication of entire notice, is required.	Section 1	
43	**Additional notice.**	**(f)**	(1) Applicants for NPDES, RCRA or UIC permits are subject to additional notice provisions of federal requirements adopted by reference as DEQ rules. (See 40 CFR 124.10, 124.30, and 270.42.)	Section 1	
	OKLAHOMA HAZARDOUS WASTE MANAGEMENT ACT - 27A § O.S.2-7-101 *et.seq.*				
44	**Issuance, Renewal or Transference of Permit for Certain Persons**	**27A § O.S.2-7-109.**			
45		**(A)(1)**	Is the applicant in substantial compliance with all orders and judgments regarding hazardous waste handling?		Yes

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
46		**(A)(2) & (3)**	Has the applicant or an affiliate evidenced a reckless disregard for public health and/or the environment?	NA	NA - There is no evidence against the applicant in reference to a reckless disregard for public health and/or the environment.
47		**(B)(1) & (2)**	Has a disclosure statement, OR, the appropriate SEC forms been filed?	Upfront documents	
48		**(D)**	Has the applicant properly signed and certified the application?		Yes
49	**Disposal of Liquid Hazardous Waste - Prohibited Disposal**	**27A § O.S.2-7-110**			
50		**(A)**	If there are surface impoundments, do they receive only wastes generated by the owners?	NA	NA - The Refinery is not applying for a permit to manage liquid wastes in a surface impoundment.
51		**(B)**	Except as otherwise specifically provided by law, the disposal of any liquid hazardous waste in a landfill or in a surface impoundment is prohibited.	NA	NA - The Refinery is not applying for a permit to manage liquid wastes in a surface impoundment or landfill.
52	**Prohibited Disposal**	**27A § O.S.2-7-111**			
53		**(A)**	Plowing of hazardous waste into the soil surface is prohibited, except pursuant to an approved DEQ Plan. The site used for such disposal shall not be subject to flooding or estensive erosion.	NA	NA - The land treatment units at the Refinery are in PCC.
54		**(B)**	A hazardous waste facility for on-site treatment, recycling or storage shall not be sited in or over a principal groundwater resource or recharge area as determined in writing by the Oklahoma Geological Survey, except pursuant to a plan approved by the Department. The plan shall contain such design criteria and groundwater monitoring provisions as deemed necessary by the Department to protect the quality of said principal groundwater resource or recharge area. The plan shall also provide for the establishment and maintenance of a bond or other financial assurance in a form and amount acceptable to the Department, specifically for the purpose of assuring both immediate response and containment and comprehensive remediation as directed by the Department in the event of a release to soil or water of any hazardous waste or hazardous waste constituent. (Verify on the Maps)	NA	NA - The Refinery is not a new facility.

STATE CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

TREATMENT, STORAGE, DISPOSAL AND RECYCLING REQUIREMENTS

RCRA I.D. No. OKD050877885-PC

Facility Name HollyFrontier Tulsa Refining, LLC, West Refinery

Row	Section and Requirement	Reference	Review Consideration	Location in Application, or "N/A"	Comment, Explanation of "N/A", or See Attached Comment Number
55		**(C)(2)(a)**	If this is a new commercial facility: (1) Is there an Emergency Plan? (2) Has the DEQ approved the Plan? (3) Have the surrounding Property Owners approved the Plan?	NA	NA - The Refinery is not a new facility.
56		**(C)(2)(b)**	If this is an existing facility proposing to receive hazardous waste from off-site: (1) Is there an Emergency Plan? (2) Has the DEQ approved the Plan? (3) Have the surrounding Property Owners approved the Plan?	NA	NA - The Refinery does not accept hazardous waste from off-site.
57		**(C)(2)(c)**	If the facility is located within the city limits of any incorporated city or town, has a copy of the Plan been supplied to the City? (City has 60 days to review.)	NA	NA - The Refinery does not accept hazardous waste from off-site.
58	**Disposal Site Criteria**	**27A § O.S.2-7-112**	(1) Has the design and testing for the facility been conducted under the supervision of a professional engineer, registered in Oklahoma? (2) Is the application sealed by that PE?	NA	NA - The Refinery is not applying for construction of a hazardous waste facility.
59	**New hazardous waste facilities within eight miles of corporate limits - Exemptions**	**27A § O.S.2-7-114.**	If this is a new off-site facility for land disposal or incineration, is it located more than **eight (8) miles** outside of the corporate limits of an incorporated city or town? (If "YES" talk to Supervisor.)	NA	NA - The Refinery is neither a new facility, nor does it accept off-site hazardous wastes.
60	**Requirements on the DEQ**	**27A § O.S.2-7-115**	(C)(1) Has the Department notified boards of county commissioners by certified mail, return receipt requested, of the proposed waste site? (Said boards of county commissioners shall have forty-five (45) days from receipt of such notice to review the county road classification plan and respond to the Department. The finding of each board of county commissioners shall be sent to the Department by certified mail, return receipt requested.) (2) Has the Board(s) responded? (Failure to respond within such forty-five-day response period shall constitute a finding that the roads and bridges can be used without substantial detriment and preclude the board of county commissioners failing to respond from raising the suitability of use of roads and bridges of the county as set out in subsections A and B of this section at a later date.)	NA	NA - The Refinery is not a new facility.

Revised 2/01

APPLICATION REVIEW CHECKLIST LAND PROTECTION DIVISION HAZARDOUS WASTE PROGRAM OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY	Facility Name: HollyFrontier Tulsa Refining LLC Facility ID No.:______________ ODEQ Permit No.: **058078775-PC** Reference No.: _______ Application Type:___Renewal____Date: __December 3, 2018_____________ (New/Modify/Renewal)	40 CFR 264 Subpart F RELEASES FROM SOLID WASTE MANAGEMENT UNITS
	Administrative Reviewer: Start Date: Completion Date: Technical Reviewer: Start Date: Completion Date: Issuance Deadline:	ODEQ Form Number XXX - XXX Shaded areas for ODEQ use only

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE YES/NO/NA	TECHNICALLY COMPLETE YES/NO/NA	REMARKS
APPLICABILITY - 264.90							
SWMU 1	264.90(a)(1)		Applicable to facilities that treat, store, or dispose of hazardous waste, except as provided in paragraph (b) of this section. The facility must satisfy paragraph (a)(2) of this section for all wastes placed in solid waste management units (SWMUs).	Section 9			
SWMU 2	264.90(a)(2)		All SWMUs must comply with 264.101. A surface impoundment, waste pile, and land treatment unit or landfill that receives wastes after 7/26/82 (hereinafter referred to as a "regulated unit") must comply with 264.91 through 264.100 in lieu of 264.101 for detecting, characterizing and responding to releases to the uppermost aquifer. The financial responsibility of 264.101 applies to regulated units.	Section 8			Note that under the 2009 Permit, as allowed by 40 CFR 264.90(f), the Refinery addresses groundwater monitoring, detection, and corrective action requirements of 40 CFR 264.91 - 264.100 under a Facility Wide Groundwater Monitoring Program.
SWMU 3	264.90(b)		A regulated unit is not subject to regulation for releases into the uppermost aquifer if:	NA			NA - The Refinery does not meet the requirements for this exemption.
SWMU 4	264.90(b)(1)		The facility is exempted under 264.1; or	NA			NA - The Refinery does not meet the requirements for this exemption.

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 11	264.90(c)(2)		Apply during the post-closure care period under 264.117 if the facility conducts a detection monitoring program under 264.98; or	Section 8			Note that under the 2009 Permit, as allowed by 40 CFR 264.90(f), the Refinery addresses groundwater monitoring, detection, and corrective action requirements of 40 CFR 264.91 - 264.100 under a Facility Wide Groundwater Monitoring Program.
SWMU 12	264.90(c)(3)		Apply during the compliance period under 264.96 if the facility conducts a corrective action program under 264.99 or corrective action program under 264.100.	Section 8			
SWMU 13	264.90(d)		Apply to miscellaneous units to comply with 264.601 through 264.603	NA			NA - The Refinery does not maintain any permitted miscellaneous units.
REQUIRED PROGRAMS - 264.91							
SWMU 14	264.91(a)		The facility must conduct a monitoring and response program as follows:	NA			NA - The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
SWMU 15	264.91(a)(1)		When hazardous constituents (264.93) are detected at a compliance point (264.95), the facility must institute a compliance monitoring program under 264.99. Detected is defined as statistically significant as described in 264.98(f);	NA			See remark for 264.91(a)
SWMU 16	264.91(a)(2)		When the groundwater protection standard (264.92) is exceeded, the facility must institute a corrective action program under 264.100. Exceeded is defined as statistically significant as described in 264.99(d);	NA			See remark for 264.91(a)
SWMU 17	264.91(a)(3)		When hazardous constituents (264.93) exceed concentration limits (264.94) in groundwater between the compliance point (264.95) and the downgradient facility boundary, the facility must institute a corrective action program under 264.100; or	NA			See remark for 264.91(a)
SWMU 18	264.91(a)(4)		In all other cases, the facility must institute a detection monitoring program under 264.98.	NA			See remark for 264.91(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 19	264.91(b)		The Agency will specify in the permit, specific elements of the monitoring and response program. The Agency may include one or more of the programs in paragraph (a) of this section in the permit.	NA			See remark for 264.91(a)
GROUNDWATER PROTECTION STANDARD - 264.92 Hazardous constituents (264.93) detected in the groundwater from a regulated unit can not exceed the concentration limits (264.94) in the uppermost aquifer beyond the point of compliance (264.95) during the compliance period (264.96). The Agency will establish this groundwater protection standard in the permit when hazardous constituents have been detected in groundwater.				NA			NA - The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
HAZARDOUS CONSTITUENTS - 264.93							
SWMU 20	264.93(a)		The Agency will specify in the permit the hazardous constituents (appendix VIII of part 261) to which the groundwater protection standard applies.	NA			NA - The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
SWMU 21	264.93(b)		The Agency will exclude an appendix VIII constituent if that constituent does not pose hazard to human health of the environment. To grant an exemption, the Agency will consider the following:	NA			See remark for 264.93(a)
SWMU 22	264.93(b)(1)		Potential adverse effects on groundwater quality, considering: (i) The physical and chemical characteristics of the waste, including its potential for migration; (ii) The hydrogeological characteristics; (iii) The quantity of groundwater and the flow direction; (iv) The proximity and withdrawal rates of groundwater users; (v) The current and future uses of groundwater; (vi) The existing quality of groundwater, including sources of contamination and cumulative impact on groundwater; (vii) The potential human exposure health risks; (viii)The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; (ix) The persistence and permanence of the potential adverse effects; and	NA			See remark for 264.93(a)

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
SWMU 23	264.93(b)(2)		Potential adverse effects on hydraulically-connected surface water quality, considering: (i) The volume, physical and chemical characteristics of the waste; (ii) The hydrogeological characteristics; (iii) The quantity and quality of groundwater and the flow direction; (iv) The pattern of rainfall; (v) The proximity of the regulated unit to surface waters; (vi) The current and future uses of surface waters and any established quality standards; (vii) The existing quality of surface water, including sources of contamination and cumulative impact on surface water; (viii)The potential human exposure health risks; (ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; (x) The persistence and permanence of the potential adverse effects.	NA			See remark for 264.93(a)
SWMU 24	264.93(c)		In making any determination under paragraph (b) of this section, the Agency will consider any identification of underground sources of drinking water and exempted aquifers under 40 CFR 144.8.	NA			See remark for 264.93(a)
Concentration Limits - 264.94							
SWMU 25	264.94(a)		The Agency will specify in the permit concentration limits for hazardous constituents (264.93) in the groundwater. The concentration of a hazardous constituent:	NA			NA - The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 26	264.94(a)(1)		Must not exceed the background level at time of permit; or	NA			See remark for 264.94(a)
SWMU 27	264.94(a)(2)		Must not exceed levels in Table 1 (see at the end of the checklist) when background levels are under those in Table 1; or	NA			See remark for 264.94(a)

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
SWMU 28	264.94(a)(3)		Must not exceed an alternate limit set by the Agency under paragraph (b) of this section.	NA			See remark for 264.94(a)
SWMU 29	264.94(b)		The Agency may establish an alternate concentration limit and considering the following factors:	NA			See remark for 264.94(a)
SWMU 30	264.94(b)(1)		Potential adverse effects on groundwater quality, considering: (i) The physical and chemical characteristics of the waste, including its potential for migration; (ii) The hydrogeological characteristics; (iii) The quantity of groundwater and the flow direction; (iv) The proximity and withdrawal rates of groundwater users; (v) The current and future uses of groundwater; (vi) The existing quality of groundwater, including sources of contamination and cumulative impact on groundwater; (vii) The potential human exposure health risks; (viii)The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; (ix) The persistence and permanence of the potential adverse effects; and	NA			See remark for 264.94(a)
SWMU 31	264.94(b)(2)		Potential adverse effects on hydraulically-connected surface water quality, considering: (i) The volume, physical and chemical characteristics of the waste; (ii) The hydrogeological characteristics; (iii) The quantity and quality of groundwater and the flow direction; (iv) The pattern of rainfall; (v) The proximity of the regulated unit to surface waters; (vi) The current and future uses of surface waters and any established quality standards; (vii) The existing quality of surface water, including sources of contamination and cumulative impact on surface water; (viii)The potential human exposure health risks; (ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; (x) The persistence and permanence of the potential adverse effects.	NA			See remark for 264.94(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 32	264.94(c)		To make determination under paragraph (b) of this section about the use of groundwater, the Agency will consider any identification of underground sources of drinking water and exempted aquifers (144.8)	NA			See remark for 264.94(a)
POINT OF COMPLIANCE - 264.95							
SWMU 33	264.95(a)		The Agency will determine in the permit the point of compliance at which the groundwater protection standard (264.92) applies and monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit.	NA			NA - The Facility Wide Groundwater Monitorng Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 34	264.95(b)		The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit.	NA			See remark for 264.95(a)
SWMU 35	264.95(b)(1)		The waste management area includes liner, dike, or other barrier to contain waste in a regulated unit.	NA			See remark for 264.95(a)
SWMU 36	264.95(b)(2)		For more than one regulated unit, the waste management area is an imaginary line circumscribing the several regulated units.				See remark for 264.95(a)
COMPLIANCE PERIOD - 264.96							
SWMU 37	264.96(a)		The Agency will specify in the permit the compliance period during which the groundwater protection standard (264.92) applies. The compliance period includes the active and closure periods.	Section 8			The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 38	264.96(b)		The compliance period begins when the facility initiates the compliance monitoring programs (264.99).	Section 8			
SWMU 39	264.96(c)		If the facility is engaged in a corrective action program at the end of the compliance period in paragraph (a) of this section, the compliance period is extended until the groundwater protection standard (264.92) has not been exceeded for three consecutive years.	Section 8			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
GENERAL GROUNDWATER MONITORING REQUIREMENTS - 264.97 The facility must comply with the following requirements for any groundwater monitoring program to satisfy Detection Monitoring Program (264.98), Compliance Monitoring Program (264.99), or Corrective Action Program (264.100).							
SWMU 40	264.97(a)		The groundwater monitoring system must consist of sufficient wells at appropriate locations and depths to yields samples from the uppermost aquifer that:	Section 8			The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 41	264.97(a)(1)		Represent the quality of unaffected background water; (i) A determination of background quality may include wells that are not upgradient where: (A) Hydrogeologic conditions do not allow the facility to determine what wells are upgradient; and (B) Sampling at other wells will provide background quality that is representative or more representative than that of the upgradient wells; and	Section 8			
SWMU 42	264.97(a)(2)		Represent the quality of groundwater passing the point of compliance.	Section 8			
SWMU 43	264.97(a)(3)		Allow for the detection of contamination from the waste management area to the uppermost aquifer.	Section 8			
SWMU 44	264.97(b)		If a facility contains more than one regulated unit, separate groundwater monitoring systems are not required for each regulated unit, provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the compliance point.	Section 8			
SWMU 45	264.97(c)		All monitoring wells must be cased. This casing must be screened or perforated and packed. The annular space above the sampling depth must be sealed to prevent contamination.	Section 8			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 46	264.97(d)		The groundwater monitoring program must include consistent sampling and analysis procedures. At a minimum the program must include procedures and techniques for:	Att 8.1			The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 47	264.97(d)(1)		Sample collection;	Att 8.1			
SWMU 48	264.97(d)(2)		Sample preservation and shipment;	Att 8.1			
SWMU 49	264.97(d)(3)		Analytical procedures; and	Att 8.1			
SWMU 50	264.97(d)(4)		Chain of custody control.	Att 8.1			
SWMU 51	264.97(e)		The groundwater monitoring program must include appropriate sampling and analytical methods.	Att 8.1			
SWMU 52	264.97(f)		The ground-water monitoring program must include a determination of groundwater elevation each time groundwater is sampled.	Att 8.1			
SWMU 53	264.97(g)		In detection or compliance monitoring, data will be collected from background wells and wells at compliance points. The number and kinds of samples must be adequate to establish appropriate statistical background. Sample size shall be large enough to ensure reasonable confidence. The facility will determine the sampling procedure and interval subject to approval by the Agency. The sampling procedure shall be:	Att 8.1			
SWMU 54	264.97(g)(1)		A sequence of at least four samples to assure that an independent sample is obtained referencing the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport of contaminants, or	Att 8.1			
SWMU 55	264.97(g)(2)		An alternate sampling procedure proposed by the facility and approved by the Agency.	Att 8.1			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 56	264.97(h)		The facility will specify one of the following statistical methods which, upon approval by the Agency, will be specified in the permit. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. Where practical quantification limits (pqls) are used in any statistical procedures [(264.97(i)(5)], the pql must be proposed by the facility and approved by the Agency. Use of any of the following statistical methods must be protective of human health and the environment and must comply with performance standards outlined in paragraph (i) of this section.	Att 8.1			The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 57	264.97(h)(1)		A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean for each constituent.	Att 8.1			
SWMU 58	264.97(h)(2)		An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median for each constituent.	Att 8.1			
SWMU 59	264.97(h)(3)		A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.	Att 8.1			
SWMU 60	264.97(h)(4)		A control chart approach that gives control limits for each constituent.	Att 8.1			
SWMU 61	264.97(h)(5)		Another statistical test method submitted by the facility and approved by the Agency.	Att 8.1			
SWMU 62	264.97(i)		Any statistical method under 264.97(h) shall comply with the following performance standards:	Att 8.1			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 63	264.97(i)(1)		The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of hazardous constituents. If the distribution of hazardous constituents is shown to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.	Att 8.1			The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100. HFTR are proposing development of site-specific risk-based screening levels (RBSLs) for GW
SWMU 64	264.97(i)(2)		If an individual well comparison procedure is used to compare a constituent concentration with background or a groundwater protection standard, the test shall be done at Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.	Att 8.1			
SWMU 65	264.97(i)(3)		If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its parameter values shall be proposed by the facility and for approval by the Agency.	Att 8.1			
SWMU 66	264.97(i)(4)		If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population, shall be proposed by the facility and for approval by the Agency. These parameters will be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent.	Att 8.1			
SWMU 67	264.97(i)(5)		The statistical method shall account for data below the limit of detection with one or more statistical procedures. Any practical quantification limit (pql) approved by the Agency under 264.97(h) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved.	Att 8.1			
SWMU 68	264.97(i)(6)		If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.	Att 8.1			
SWMU 69	264.97(j)		Groundwater monitoring data collected as under paragraph (g) of this section including actual levels of constituents must be maintained in the operating record. The Agency will specify in the permit when the data must be submitted for review.	Att 8.1			

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
DETECTION MONITORING PROGRAM - 264.98							
SWMU 70	264.98(a)		The facility must monitor for indicator parameters, waste constituents, or reaction products in groundwater. The Agency will specify the parameters or constituents in the permit after considering:	NA			NA - The Facility Wide Groundwater Monitoring Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
SWMU 71	264.98(a)(1)		The types, quantities, and concentrations of constituents in wastes;	NA			See remark for 264.98(a)
SWMU 72	264.98(a)(2)		The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone;	NA			See remark for 264.98(a)
SWMU 73	264.98(a)(3)		The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and	NA			See remark for 264.98(a)
SWMU 74	264.98(a)(4)		The concentration and coefficients of variation of monitoring parameters in the groundwater background.	NA			See remark for 264.98(a)
SWMU 75	264.98(b)		The facility must install a groundwater monitoring system at the compliance point (264.95). The groundwater monitoring system must comply with 264.97(a)(2), (b), and (c).	NA			See remark for 264.98(a)
SWMU 76	264.98(c)		The facility must conduct a groundwater monitoring program for each chemical parameter and hazardous constituent pursuant to paragraph (a) of this section in acc. with 264.97(g). The facility must maintain groundwater data as measured and in form for determination of statistical significance under 264.97(h).	NA			See remark for 264.98(a)
SWMU 77	264.98(d)		The Agency will specify the frequencies for sampling and statistical testing to determine evidence of contamination for any parameter under paragraph (a) of this section in acc with 264.97(g). A sequence of at least 4 samples from each well (background and compliance) must be collected at least semi-annually.	NA			See remark for 264.98(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 78	264.98(e)		The facility must determine the groundwater flow rate and direction in the uppermost aquifer annually.	NA			See remark for 264.98(a)
SWMU 79	264.98(f)		The facility must determine statistically whether there is evidence of contamination for any chemical parameter in the permit pursuant to paragraph (a) of this section at a frequency under paragraph (d) of this section.	NA			See remark for 264.98(a)
SWMU 80	264.98(f)(1)		In determining evidence of contamination, the facility must use methods in the permit under 264.97(h). These methods must compare compliance point data and background data.	NA			See remark for 264.98(a)
SWMU 81	264.98(f)(2)		The facility must determine statistically whether there is evidence of contamination at each monitoring well at the compliance point within a reasonable period after sampling. The Agency will specify in the permit the reasonable period, after considering the statistical test and lab testing.	NA			See remark for 264.98(a)
SWMU 82	264.98(g)		If the facility determines pursuant to paragraph (f) of this section that there is evidence of contamination pursuant to paragraph (a) of this section at the compliance point, the facility must:	NA			See remark for 264.98(a)
SWMU 83	264.98(g)(1)		Notify the Agency in writing within 7 days which includes what chemical parameters;	NA			See remark for 264.98(a)
SWMU 84	264.98(g)(2)		Immediately sample all monitoring wells and determine whether constituents in appendix IX of 264 are present and the concentrations.	NA			See remark for 264.98(a)
SWMU 85	264.98(g)(3)		For any appendix IX compounds found, the facility may resample and reanalyze within one month. If the second analyses confirm the initial results, then the constituents will form the basis for compliance monitoring If the facility does not resample, the initial findings will form the basis for compliance monitoring.	NA			See remark for 264.98(a)
SWMU 86	264.98(g)(4)		Within 90 days, the facility must submit a permit modification to establish a compliance monitoring program (264.99). The application must include: (i) Concentration of any appendix IX constituent detected at each monitoring well at the compliance point; (ii) Any proposed changes to the groundwater monitoring system to meet 264.99; (iii) Any proposed changes to the monitoring frequency, sampling and analysis procedures, or statistical methods to meet 264.99 (iv) For each constituent detected at the compliance point, a proposed concentration limit under 264.94(a)(1) or (2), or alternate concentration limit under 264.94(b); and	NA			See remark for 264.98(a)

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
SWMU 87	264.98(g)(5)		Within 180 days, the facility must submit: (i) All data to justify an alternate concentration limit under 264.94(b); and (ii) An engineering feasibility plan for a corrective action plan to meet 264.100, unless: (A) All hazardous constituents identified under paragraph (g)(2) of this section are listed in Table 1 of 264.94 and their concentrations are below those in Table 1; or (B) The facility has sought an alternate concentration limit under 264.94(b).	NA			See remark for 264.98(a)
SWMU 88	264.98(g)(6)		If the facility so determines, pursuant to paragraph (f) of this section, it may demonstrate that the statistically significant difference of hazardous constituents is from a source other than a regulated unit or is from an error in sampling, analysis, or statistical evaluation, or natural variation in groundwater. The facility may make a demonstration in addition or in lieu of a permit modification under paragraph (g)(4) of this section. However, the facility is not relieved of the requirement to submit a permit modification unless the demonstration is approved. In making a demonstration, the facility must: (i) Within 7 days of the finding of contamination, notify the Agency that the facility intends to make a demonstration; (ii) Within 90 days, submit a report to demonstrate the source of contamination is other than a regulated unit, or resulted from an error; (iii) Within 90 days, submit an application for a permit modification to make any appropriate changes to detection monitoring program; and (iv) Continue to monitor.	NA			See remark for 264.98(a)
SWMU 89	264.98(h)		If the facility determines that the detection monitoring program no longer satisfies the requirements of this section, the facility must submit, within 90 days, a permit modification.	NA			See remark for 264.98(a)

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
Compliance Monitoring Program - 264.99							
SWMU 90	264.99(a)		The facility must monitor groundwater to determine whether regulated units comply with groundwater protection standard (264.92). The groundwater protection standard includes:	NA			NA - The Facility Wide Groundwater Monitorng Program is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
SWMU 91	264.99(a)(1)		A list of hazardous constituents (264.93);	NA			See remark for 264.99(a)
SWMU 92	264.99(a)(2)		Concentration limits (264.94) for each of the hazardous constituents.	NA			See remark for 264.99(a)
SWMU 93	264.99(a)(3)		The compliance point (264.95); and	NA			See remark for 264.99(a)
SWMU 94	264.99(a)(4)		The compliance period (264.96).	NA			See remark for 264.99(a)
SWMU 95	264.99(b)		The facility must install a groundwater monitoring system at the compliance point (264.95). The system must comply with 264.97(a)(2), (b), and (c).	NA			See remark for 264.99(a)
SWMU 96	264.99(c)		The Agency will specify the sampling procedures and statistical methods consistent with 264.97(g) and (h).	NA			See remark for 264.99(a)
SWMU 97	264.99(c)(1)		The facility must conduct a sampling program for each hazardous constituent (264.97(g)).	NA			See remark for 264.99(a)
SWMU 98	264.99(c)(2)		The facility must record groundwater data as measured in form to determine statistical significance (264.97(h)) for the compliance period.	NA			See remark for 264.99(a)
SWMU 99	264.99(d)		The facility must determine whether there is statistically significant evidence of increased contamination for any hazardous constituent in the permit, pursuant to paragraph (a) of this section, at a frequency under paragraph (f) under this section.	NA			See remark for 264.99(a)
SWMU 100	264.99(d)(1)		In determining an increase in contamination, the facility must use the methods in the permit under 264.97(h). The methods must compare data collected at the compliance point to a concentration limit (264.94).	NA			See remark for 264.99(a)
SWMU 101	264.99(d)(2)		The facility must determine whether there is an increase in contamination at the compliance point within a reasonable time after completion of sampling. The Agency will specify that time period in the permit after considering the statistical and sampling tests.	NA			See remark for 264.99(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 102	264.99(e)		The facility must determine the groundwater flow rate and direction in the uppermost aquifer annually.	NA			See remark for 264.99(a)
SWMU 103	264.99(f)		The Agency will specify the frequencies for sampling and statistical testing to determine evidence of contamination in acc with 264.97(g). A sequence of at least 4 samples from each well (background and compliance) must be collected at least semi-annually.	NA			See remark for 264.99(a)
SWMU 104	264.99(g)		The facility must analyze samples from the compliance point for all constituents in appendix IX of 264 annually to determine whether additional hazardous constituents are present in the uppermost aquifer and, if so, at what concentration, pursuant to 264.98(f). If additional appendix IX constituents are present, the facility may resample within 1 month and repeat the appendix IX analysis. If the second analysis confirms new constituents, the facility must report to the Agency within 7 days and add them to the monitoring list. If the facility chooses not to resample, the facility must report to the Agency initial analysis of constituents within 7 days and add them to the monitoring list.	NA			See remark for 264.99(a)
SWMU 105	264.99(h)		If the facility determines, pursuant to paragraph (d) of this section, that any concentration limits (264.94) are being exceeded at the compliance point, the facility must:	NA			See remark for 264.99(a)
SWMU 106	264.99(h)(1)		Notify the Agency in writing within 7 days indicating what concentration limits have been exceeded.	NA			See remark for 264.99(a)
SWMU 107	264.99(h)(2)		Submit a permit modification application to establish a corrective action program (264.100) within 180 days, or within 90 days if an engineering study has been submitted under 264.98(h)(5). The application must include: (i) A detailed description of corrective actions that will achieve compliance with the groundwater protection standard under paragraph (a) of this section; and (ii) A groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of this section.	NA			See remark for 264.99(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 108	264.99(i)		If the facility determines, pursuant to paragraph (d) of this section, that the concentration limits are being exceeded at the compliance point, the facility may demonstrate that a source other than a regulated unit, or an error in sampling, analysis, or statistical evaluation, or natural variation in groundwater caused the concentration limits to be exceeded. In making a demonstration, the facility must:	NA			See remark for 264.99(a)
SWMU 109	264.99(i)(1)		Within 7 days, notify the Agency that the facility intends to make a demonstration;	NA			See remark for 264.99(a)
SWMU 110	264.99(i)(2)		Within 90 days, submit a report to demonstrate a source other than the regulated unit caused the standard to be exceeded, or that the apparent noncompliance is due to error;	NA			See remark for 264.99(a)
SWMU 111	264.99(i)(3)		Within 90 days, submit an application for a permit modification to make any appropriate changes to the compliance monitoring program; and	NA			See remark for 264.99(a)
SWMU 112	264.99(i)(4)		Continue to monitor.	NA			See remark for 264.99(a)
SWMU 113	264.99(j)		If the facility determines that the compliance monitoring program no longer satisfies the requirements of this section, the facility must submit, within 90 days, a permit modification.	NA			See remark for 264.99(a)
CORRECTIVE ACTION PROGRAM - 264.100							
SWMU 114	264.100(a)		The facility must take corrective action to ensure that regulated units comply with groundwater protection standard (264.92). The groundwater protection standard includes:	Section 8			The Facility Wide Groundwater Monitoring Program and LNAPL Management Plan is described in the application in lieu of providing information specified by 40 CFR 264.91 through 264.100.
SWMU 115	264.100(a)(1)		A list of hazardous constituents (264.93);	Section 8			See remark for 264.100(a)
SWMU 116	264.100(a)(2)		Concentration limits (264.94) for each of the hazardous constituents.	Section 8			See remark for 264.100(a)
SWMU 117	264.100(a)(3)		The compliance point (264.95); and	Section 8			See remark for 264.100(a)
SWMU 118	264.100(a)(4)		The compliance period (264.96).	Section 8			See remark for 264.100(a)
SWMU 119	264.100(b)		The facility must implement a corrective action plan that prevents hazardous constituents from exceeding the concentration limits at the compliance point by removing the hazardous constituents or treating them in place. The permit will specify measures to be taken.	Section 8			See remark for 264.100(a)

ITEM #	FEDERAL REGULATIONS 40 CFR	STATE REGULATIONS OAC 252:205	GENERAL DESCRIPTION	INFO LOCATION	ADMIN. COMPLETE	TECHNICALLY COMPLETE	REMARKS
					YES/NO/NA	YES/NO/NA	
SWMU 120	264.100(c)		The facility must begin corrective action within a reasonable time after the groundwater protection standard is exceeded. The Agency will specify that time period in the permit. If the permit includes a corrective action program in addition to a compliance monitoring program, the permit will specify the commencement of the corrective action program and will operate in lieu of 264.99(i)(2).	Section 8			See remark for 264.100(a)
SWMU 121	264.100(d)		In conjunction with a corrective action program, the facility must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements of a compliance monitoring program (264.99) and must be as effective as that program in determining compliance with the groundwater protection standard (264.92) and in determining the success of a corrective action program under paragraph (e) of this section.	Section 8			See remark for 264.100(a)
SWMU 122	264.100(e)		In addition, the facility must conduct a corrective action program to remove or treat in place any hazardous constituents (264.93) that exceed concentration limits in groundwater (264.94):	Section 8			See remark for 264.100(a)
SWMU 123	264.100(e)(1)		Between the compliance point (264.95) and the downgradient boundary; and	Section 8			See remark for 264.100(a)
SWMU 124	264.100(e)(2)		Beyond the facility boundary, unless the facility demonstrates of inability to obtain permission to undertake such action. The facility is not relieved of all responsibility to clean up an offsite migration where off-site access is denied.	Section 8			See remark for 264.100(a)
SWMU 125	264.100(e)(3)		Corrective action measures must be initiated and completed within a reasonable time.	Section 8			See remark for 264.100(a)
SWMU 126	264.100(e)(4)		Corrective action measures may be terminated once the concentration of hazardous constituents (264.93) is reduced to levels below the concentration limits (264.94)	Section 8			See remark for 264.100(a)

Item #	Federal Regulations 40 CFR	State Regulations OAC 252:205	General Description	Info Location	Admin. Complete	Technically Complete	Remarks
					Yes/No/NA	Yes/No/NA	
SWMU 127	264.100(f)		The facility must continue corrective action measures during the compliance period to extent necessary to ensure that the groundwater protection standard is not exceeded. If the facility is conducting corrective action at the end of the compliance period, the facility must continue that corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The facility may terminate corrective action measures beyond the active life (inc. Closure) if the facility can demonstrate, based on groundwater monitoring program under paragraph (d) of this section, that the groundwater protection standard (264.92) has not been exceeded for a period of 3 consecutive years.	Section 8			See remark for 264.100(a)
SWMU 128	264.100(g)		The facility must report semi-annually the effectiveness of the corrective action plan.	Section 8			See remark for 264.100(a)
SWMU 129	264.100(h)		If the facility determines that the corrective action plan no longer satisfies the reqs of this section, the facility must, within 90 days, submit a permit modification.	Section 8			See remark for 264.100(a)
Corrective Action for Solid Waste Management Units (SWMUs) - 264.101							
SWMU 130	264.101(a)		A facility seeking a permit for TSD must institute corrective action for all releases of hazardous waste or HW constituents from any SWMU, regardless of time at which waste was placed in the unit.	Section 9			
SWMU 131	264.101(b)		Corrective action will be in the permit in accordance with this section and subpart of this part. The permit will contain the compliance schedules for such corrective action and financial assurances.	Section 9			
SWMU 132	164.101(c)		The facility must implement corrective actions beyond the facility boundary as necessary, unless the facility demonstrates inability to obtain permission to undertake such action. The facility is not relieved of all responsibility to clean up an offsite migration where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for such corrective action must be provided.	Section 9			

RCRA PART B APPLICATION

1 INTRODUCTION

The HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery), in Tulsa, Oklahoma (OK), currently operates under a Resource Conservation and Recovery Act (RCRA) Post-Closure and Corrective Action Permit (Permit No. 058078775-PC) issued by the Oklahoma Department of Environmental Quality (ODEQ) on June 1, 2009 (2009 Permit).

The 2009 Permit expires on June 1, 2019. Per Title 40 Part 270.10(h)(1) of the Code of Federal Regulations (40 CFR Part 270.10(h)(1)), the Refinery is required to submit a RCRA Part B Permit Renewal Application (Renewal Application) within 180 days of the expiration of the current 2009 Permit. This document provides the informational elements required under 40 CFR 270.28 and Title 252 Chapter 205 of the Oklahoma Administrative Code (OAC 252:205)[1] for that Renewal Application. Note that this Renewal Application includes Class 1, Class 1*, Class 2, and Class 3 permit modification requests, thereby making the application both a renewal and modification application. A list of major modifications to the 2009 Permit, the associated permit modification request class, and the justification is provided in Table 1-1.

1.1 Refinery Background Information

The Refinery has been in operation since 1913 as a petroleum products refinery. The Refinery processes approximately 90,000 barrels a day of crude oil into fuels and more than 400 lubricant products, waxes, and aromatic oils. The Refinery occupies approximately 850 acres and includes petroleum products processing areas, raw and bulk products storage, historical and current waste treatment areas, and other operations and storage areas.

The Refinery has been owned and operated by a number of companies throughout its history. Through various acquisitions in the Refinery's first few decades of operation, the Refinery was eventually acquired by the Sunray DX Oil Company. In 1968, Sunray DX Oil Company merged with Sunoco, Inc. (Sunoco) and the Refinery became the Sunoco Tulsa Refinery. On June 1, 2009, Holly Refining and Marketing (Holly) purchased the Refinery from Sunoco. On January 1, 2016, Holly's legal name was changed to HollyFrontier Tulsa Refining LLC (HFTR), and HFTR is the current owner and operator of the Refinery.

[1] For ease of reading in cases where federal regulations have been incorporated by reference into the Oklahoma rules, only the federal regulatory citation is referenced within this Renewal Application. The Oklahoma Administrative Code, Title 252, Chapter 205 (OAC 252:205) sections related to hazardous waste incorporate by reference federal regulations in 40 CFR Parts 124, 260 through 268, 270, 273, and 279, as revised as of July 1, 2015, including any notes and appendices therein, unless expressly provided otherwise in the OAC rules. Additional requirements of the state program, where applicable, are identified by citing the relevant OAC Title, Chapter, and section.

1.1.1 Regulatory History

The Refinery's original RCRA Operations Permit (Permit 3572041) expired in October 1998. A RCRA Post-Closure and Corrective Action Permit Application was submitted on October 31, 1998 and was revised through multiple submissions until January 30, 2007. The resulting Permit (Permit No. 058078775-PC) was issued to Sunoco, and took effect on, June 1, 2009. Transfer of the Permit to Holly was completed on June 10, 2009, and HFTR is now the Refinery owner and operator on record for the Permit. The 2009 Permit expires on June 1, 2019.

Prior to the issuance of the 2009 Permit, several matters regarding corrective action investigations, interim measures, and remediation were addressed under a 2002 Consent Order between Sunoco and the ODEQ (Case No. 02-190). These matters were completed and incorporated into the 2009 Permit. The Consent Order was terminated by the ODEQ on June 1, 2009. Details regarding the work performed under the 2002 Consent order are provided in Section 9 (Solid Waste Management Units) of this Renewal Application.

1.1.2 Historically Regulated Units

The Refinery has historically operated three RCRA-regulated land treatment units (LTUs) covering a total of approximately 72.5 acres of the Refinery property: the East LTU, the Central LTU, and the West LTU. Waste application ceased at all three LTUs by 1998, and the units were closed with a vegetative cover in 1999 (2009 Permit, Attachment #2, *Inspection and Maintenance Plan*). The closure certificate for these units was accepted by the ODEQ on August 22, 2003 (2009 Permit, Section III.B.1). All three LTUs are currently under post-closure care (PCC) and are maintained in accordance with the PCC Plan provided in Section 5 (Post-Closure Plan for Land Treatment Units) of this Renewal Application. The Refinery does not currently operate any hazardous waste management units (HWMUs) that are subject to RCRA permitting requirements.

1.1.3 Solid Waste Management Units and Areas of Concern

As a result of past Refinery operations, a total of eighteen (18) solid waste management units (SWMUs) and two areas of concern (AOCs) have been identified in various locations across the Refinery, including landfills, LTUs, storage areas, and impoundments. Over time, seven of these SWMUs (2, 3, 9, 11, 15, 17 and 18) were deleted from the Permit. With the exception of SWMU 10, the wastewater treatment system (WWTS), none of the remaining ten SWMUs were actively operating at the time of the 2009 Permit issuance (June 1, 2009). Some of the SWMUs were closed with waste in-place, some were "clean-closed" with wastes removed, while others still required remedial actions for the wastes they contained, including refinery groundwater monitoring. In addition, portions of the groundwater beneath the Refinery were impacted with petroleum hydrocarbons, including light non-aqueous phase liquids (LNAPL). Section 9 (Solid Waste Management Units) of this Renewal Application provides detailed information on the SWMUs and the AOCs at the Refinery.

HFTR is requesting in this Renewal Application that the current 2009 Permit provisions of Section III.F.1 *(Specific Condition – Continued Requirements for Previously Identified SWMU and AOC, SWMU 10 – Wastewater Treatment System)* that require written notice to the ODEQ prior to any excavations, repairs, expansions or other modifications of SWMU 10, and providing a work plan for the ODEQ's approval prior to closure, replacement, or reconstruction of any in-ground or below-ground units within the WWTS, be removed from the permit since SWMU 10 is an operating unit. The Refinery will continue to follow current health and safety protocols to ensure worker protection, proper handling to prevent any release of hazardous constituents and proper management of soil and other materials during any work in this area to protect human health and the environment. Therefore, HFTR does not feel the written notifications are necessary.

1.2 Refinery Location Information

The Refinery is located at 1700 South Union Avenue in Tulsa, OK, west of interstate Highway 244 and south of the Arkansas River. The Refinery occupies portions of Section 9, 10, and 11 of Township 19 North, Range 12 East, in Tulsa County, OK. The Arkansas River forms the northern boundary of the Refinery. The location of the Refinery is shown on Figure 1-1.

1.2.1 Seismic Requirements

The Refinery is located in Tulsa County, OK, which is not listed in 40 CFR Part 264, Appendix VI. Therefore, 40 CFR 270.14(b)(11)(ii), relating to demonstration of compliance with location standards for siting of hazardous waste management facilities near active seismic faults, does not apply.

1.2.2 Flood Plain Requirements

The 100-year flood plain and base flood elevations, based on the December 2013 Letter of Map Revision to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM Map No. 40143C0220L), are identified in Figure 1-1. Portions of the Refinery are partially located within the 100-year flood plain of the Arkansas River and Cherry Creek. However, the LTUs are in PCC with no active waste management occurring, and only a small portion of the Central LTU is nominally within the 100-year floodplain. A flood control levee, constructed by the United States Army Corps of Engineers (USACE), is also located along the northern margin of the Refinery, parallel to the river. Therefore, the additional requirements for hazardous waste management facilities operating in the 100-year flood plain (40 CFR 270.14(b)(11)(iv)) are not applicable. The Central LTU has berms surrounding the former waste application areas that prevent run-on and run-off. Additionally, all three LTUs have not had hazardous waste applied since 1998, are well vegetated which reduces run-off considerably, and therefore have a very low potential to impact other areas of the facility with residual hazardous constituents from run-off.

1.2.3 Topographic Map

Information related to the Refinery and surrounding areas within 1,000 feet of the Refinery fence line that is required to be included in the Renewal Application under 40 CFR 270.14(b)(19) is provided on a number of figures. The figures which provide each of the required information items are listed in Table 1-2.

1.2.4 Additional Information on the Topographic Map for Land Treatment Units

Additional mapping requirements for land disposal facilities specified in 40 CFR 270.14(c)(3) that apply to the closed LTUs are identified in Table 1-3.

1.3 Renewal Application Approach and Structure

Since the only permitted HWMUs are the three closed LTUs, the content of this Renewal Application is based upon 40 CFR 270.28 (Part B information for post-closure permits), and other applicable federal and state regulations in 40 CFR Parts 264 and 270, and OAC 252:205, respectively. For ease of reading in cases where the federal regulations have been incorporated by reference into the OAC, only the federal regulatory citation is referenced within the Renewal Application. Where application content is specified in the regulations but is not applicable to the Refinery (e.g., tanks, containers, incinerators) or to a PCC permit application, a statement to that effect is included in the ODEQ Completeness Checklists, which are provided after the Table of Contents in this Renewal Application package.

The Renewal Application was developed to be as straightforward as possible, while still providing the required and pertinent information for PCC and corrective action permit applications. Within the Renewal Application, the Refinery references various documents previously submitted by the Refinery to the ODEQ (e.g., semi-annual monitoring reports) as opposed to including copies as part of the application. Day-to-day details of the RCRA program and the RCRA Corrective Action Program (CAP) will be addressed via approved work plans and other reports. This convention is intended to minimize the bulk of this application and to eliminate duplication of information provided to the ODEQ. Streamlining this application and the subsequent Permit in this manner will minimize the need for, and complexity of, future Permit modifications, thereby lessening the Refinery’s and the ODEQ’s burden for managing the Permit and Permit Application without sacrificing compliance and environmental benefit.

The Part B Renewal Application is structured with an up-front introduction and background information section, which includes the required Refinery location information, followed by a series of stand-alone Plans relevant to PCC of the closed LTUs and to corrective action activities for the SWMUs, AOC, and groundwater at the Refinery. The following Sections are included in the Renewal Application:

- Section 1 – Introduction
- Section 2 – Facility Security
- Section 3 – Inspection Plan
- Section 4 – Preparedness and Prevention
- Section 5 – Post-Closure Plan for Land Treatment Units
- Section 6 – Post-Closure and Corrective Action Cost Estimates and Financial Assurance
- Section 7 – Geology and Hydrology Report
- Section 8 – Groundwater Monitoring and LNAPL Management Plan
- Section 9 – Solid Waste Management Units

In addition, HFTR plans to submit a work plan to the ODEQ to support a demonstration that the LTUs have completed their PCC period and PCC should be terminated. If this demonstration is successful, HFTR proposes to either modify this Renewal Application prior to issuance of the renewed permit or submit a Class 3 permit modification requesting termination of the PCC period for the LTUs, depending on the timing of the demonstration and its outcome.

An updated Part A Application is provided as part of this Renewal Application submittal package, as is the required signature and certification by a principal corporate official regarding the method of preparation of this Renewal Application and the accuracy and completeness of its contents. There are no new documents or changes in this Renewal Application that require certification by a qualified professional engineer (PE) or professional geologist (PG).

1.4 Public Participation

Per OAC 252:4-7-53(8), this Renewal Application is classified as a Tier II application, thereby triggering the public notice requirements under Title 27A, Part 2-14-301, of the 2014 Oklahoma Statutes (27A OK Stat § 27A-2-14-301). Per OAC 252:4-7-13(a) and 27A OK Stat § 27A-2-14-301, HFTR must publish a notice in the local newspaper, containing the information specified in OAC 252:4-7-13(c) and identifying locations where the application may be reviewed, including the location in Tulsa County where the Refinery is located. In accordance with OAC 252:4-7-13(c), HFTR will provide the ODEQ with a draft notice for review prior to publication. Within 20 days of publication, HFTR will provide documentation to the ODEQ that the appropriate notifications were completed.

As directed by the ODEQ, HFTR will send written notice to the "interested parties" mailing list maintained by the ODEQ, the adjacent landowners, and to state and local authorities. The Refinery mailing list can be found in Appendix 1.1. The adjacent landowners list and maps can be found in Appendix 1.2. The adjacent landowners and Refinery mailing lists are current as of December 3, 2018. Since HFTR owns the property on which the Refinery is located, no landowner notice under OAC 252:4-7-13(b) is required. The applicable affidavit of property ownership is provided in Appendix 1.3.

At such time as the ODEQ deems the HFTR Renewal Application to be administratively and technically complete, HTFR will issue public notice of the draft renewed and modified Permits in compliance with 40 CFR Part 124 Subparts A and B, and 40 CFR Part 270.

1.5 References

ODEQ 2009. Resource Conservation and Recovery Act Post-Closure and Corrective Action Permit for a Closed Hazardous Waste Management Facility No. 058078775-PC. Oklahoma Department of Environmental Quality. June 1, 2009.

Caldwell Environmental Associates, Inc., Norman Oklahoma, June 1999. Certification of Closure for the Hazardous Waste Land Treatment Unit at Sunoco, Inc. (R&M) Tulsa Refinery.

FEMA, 2012. Flood Insurance Rate Map. Map number 40143C0220L. Panel 0220L.

Tables

Table 1-1. Tabular Summary of Requested Modifications to the RCRA Post-Closure and Corrective Action Permit Application

Primary Reference	Change	Mod. Class	Justification (40 CFR)	Purpose
Section 1	Requesting reduction or termination of the Post-Closure Care (PCC) period for the LTUs.	3	40 CFR 270.42 Appendix I.E.3; Reduction in the post-closure care period.	HFTR has submitted an LTU work plan to the ODEQ to support a demonstration that the LTUs have completed their PCC period and PCC should be terminated.
Section 3	Changing format and content of LTU, SWMU, and Arkansas River inspection forms.	1	40 CFR 270.42 Appendix I.A.1; Administrative and informational changes.	Changes reflect current inspection procedures and revised Arkansas river inspection requirements. Changes maintain compliance with regulatory requirements
Section 3	Changing frequency of inspections along the Arkansas River from every other week to weekly.	2	40 CFR 270.42 Appendix I.B.4; Changes in frequency or content of inspection schedules.	Changes reflect ODEQ requested revisions to Arkansas River inspections (ODEQ letter dated October 31, 2018)
Section 5	Request reduction of the post-closure care period to 10 years.	3	40 CFR 270.42 Appendix I.E.3; Reduction in the post-closure care period.	Proposing that the post-closure care period be set for the duration of the renewed Permit. The post-closure period will extend concurrent with the ten (10) year period of the renewed Permit and will be re-evaluated during preparation of the next Part B Permit Renewal Application unless there is a successful demonstration to cease PCC in that time.
Section 5	Changing the boundaries of the Central LTU and the East LTU to exclude non-waste areas.	2	40 CFR 270.42 Appendix I.K.4; Other modifications of land treatment unit component specifications or standards required in the permit	Certain areas within the Central and East LTUs were included in error and did not receive land-applied wastes. Upon approval by ODEQ, HTFR will resurvey and revise the deed restrictions for the LTUs.

Table 1-1. Tabular Summary of Requested Modifications to the RCRA Post-Closure and Corrective Action Permit Application (cont.)

Primary Reference	Change	Mod. Class	Justification (40 CFR)	Purpose
Section 5	Added procedures for routine utility and maintenance activities at the closed LTUs	2	40 CFR 270.42 Appendix I.K.4; Other modifications of land treatment unit component specifications or standards required in the permit.	Allows routine activities to be managed at the closed LTUs without permit modification to ODEQ and provides consistency with the approved procedures for HFTR East LTUs, per the ODEQ approved permit modification (approved June 11, 2018).
Section 5, Section 8	Proposing sitewide risk assessment and development of new site-specific risk-based screening levels.	1*	40 CFR 270.42 Appendix I.C.3; Changes in statistical procedure for determining whether a statistically significant change in ground-water quality between upgradient and downgradient wells has occurred.	Provide the option for statistical comparison of groundwater constituent concentrations, based on approved RBSLs.
Section 8	Reduce groundwater monitoring target analyte lists.	3	40 CFR 270.42 Appendix I.C.5.a; Changes in indicator parameters, hazardous constituents, or concentration limits.	Reduce the indicator parameter list for groundwater to specific, routinely detected analytes.
Section 8	Revise monitoring network for LTUs to reflect sitewide approach: renaming interior LTU wells from point of compliance wells to program gauging wells.	2	40 CFR 270.42 Appendix I.C.4; Changes point of compliance wells.	Move towards sitewide approach to groundwater monitoring.

Table 1-1. Tabular Summary of Requested Modifications to the RCRA Post-Closure and Corrective Action Permit Application (cont.)

Primary Reference	Change	Mod. Class	Justification (40 CFR)	Purpose
Section 8	Modifying list of program gauging wells.	2	40 CFR 270.42 Appendix I.C.1.a; Changes in the number, location, depth, or design of upgradient or downgradient wells of permitted ground-water monitoring system.	Updated program gauging well list to remove obsolete, or damaged wells and reflect sitewide groundwater monitoring program.
Section 9	Request removal of notification requirements for SWMU 10 (WWTS)	1	40 CFR 270.42 Appendix I.A.1; Administrative and informational changes.	SWMU 10 previously required written notice to ODEQ prior to any excavations, repairs, expansions or other modifications of SWMU 10, and required providing a work plan for ODEQ approval prior to closure replacement or reconstruction of any in-ground or below-ground units within SWMU 10. Since the wastewater treatment system (SWMU 10) is an operating unit, HFTR proposes that concrete units within the WWTS will be inspected for cracks during routine maintenance/turnaround of the units and will be repaired as necessary.

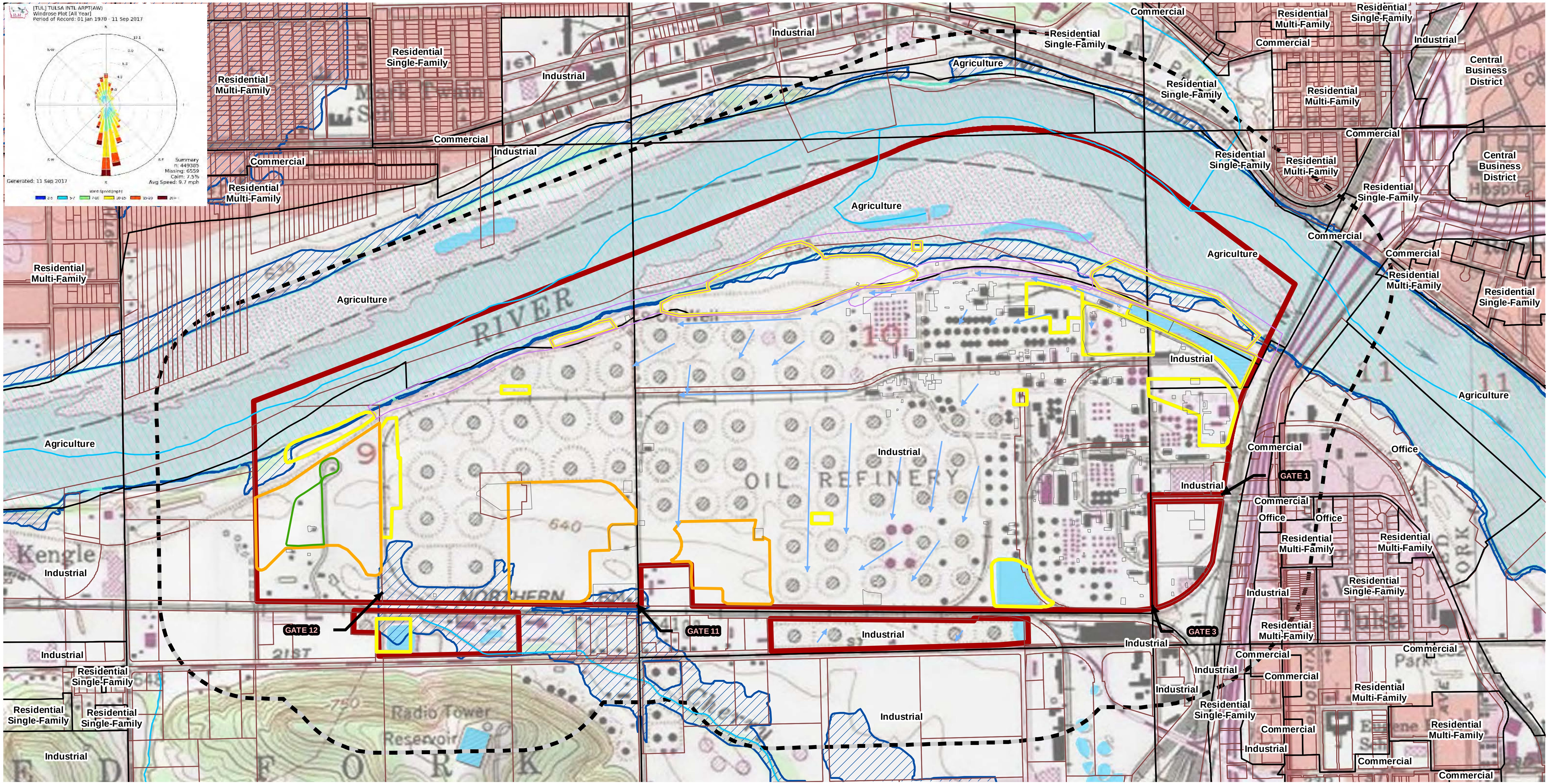
Table 1-2. Topographic Map Figures and Informational Requirements

Figure	Federal Regulation	Informational Requirements
Figure 1-1	40 CFR 270.14(b)(19)	Elevation Contours
All Figures	40 CFR 270.14(b)(19)(i)	Scale and Date
Figure 1-1	40 CFR 270.14(b)(19)(ii)	100-Year Flood Plain Area
Figure 1-1	40 CFR 270.14(b)(19)(iii)	Surface Waters
Figure 1-1	40 CFR 270.14(b)(19)(iv)	Surrounding Land Use
Figure 1-1	40 CFR 270.14(b)(19)(v)	Wind Rose
All Figures	40 CFR 270.14(b)(19)(vi)	Map Orientation
Figure 1-1, Figure 3-1	40 CFR 270.14(b)(19)(vii)	Legal Boundaries
Figure 1-1, Figure 4-1	40 CFR 270.14(b)(19)(viii)	Access Control
N/A	40 CFR 270.14(b)(19)(ix)	Injection and Withdrawal Wells (On-Site and Off-Site)
Figure 1-1, Figure 3-1	40 CFR 270.14(b)(19)(x)	Buildings and Other Structures
Figure 1-1	40 CFR 270.14(b)(19)(xi)	Drainage and Flood Control Barriers
Figure 1-1, Figure 3-1	40 CFR 270.14(b)(19)(xii)	Location of Treatment, Storage, or Disposal Unit(s) and Decontamination Areas
Figure 1-1, Figure 3-1	40 CFR 270.14(d)(1)(i)	Location of Solid Waste Management Units on Topographic Map

Table 1-3. Additional Map Information Requirements for Land Treatment Units

Figure	Federal Regulation	Informational Requirements
Figure 7-1	40 CFR 270.14(c)(2)	Uppermost Aquifer and Hydraulically Connected Aquifers Beneath Refinery Property (Note that no hydraulically connected aquifers are known to be present beneath the Refinery property.)
Figure 7-2, Figure 7-3	40 CFR 270.14(c)(2)	Groundwater Flow Direction and Rate (rate discussed in Section 7 text of this Renewal Application).
Figure 8-1	40 CFR 270.14(c)(3)	Point of Compliance Location on a Topographic Map
Figure 8-1	40 CFR 270.14(c)(3)	Location of Groundwater Monitoring Wells on a Topographic Map
Figure 1-1	40 CFR 270.14(c)(3)	Waste Management Areas on a Topographic Map
Figure 1-1	40 CFR 270.14(c)(3)	Property Boundaries on a Topographic Map
Figure 8-3	40 CFR 270.14(c)(4)(i)	Extent of any Groundwater Contaminant Plume on a Topographic Map

Figures



LEGEND

- REFINERY BOUNDARY
- 1000 FT BUFFER
- BUILDINGS
- LTUs
- NON-WASTE AREA
- AOCs
- SWMUs
- CITY OF TULSA ZONING
- COUNTY PARCELS
- 100-YEAR-FLOOD-PLAIN
- FLOODWAY
- SURFACE WATERBODIES
- DISCHARGE PATH
- STREAMS

SOURCES:
FLOODPLAINS (FEMA, 8/23/18); SURFACE WATERS AND STREAMS (NATIONAL HYDROGRAPHY DATASET, 2018);
WINDROSE (IOWA ENVIRONMENTAL MESONET, 9/11/2018):
PARCELS (TULSA COUNTY, 6/11/18);
ZONING LANDUSE (CITY OF TULSA 11/13/17).
USGS TOPOGRAPHIC BASEMAP 24K, SAND SPRINGS, OK (1984).

HOLLYFRONTIER

N

500 1,000 Feet

1 " = 1,000 '
1:12,000

PROJECT:
HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

TITLE:
TOPOGRAPHIC MAP

DRAWN BY:	MHORN	PROJ. NO.:	304508
CHECKED BY:	MWALTHER		
APPROVED BY:	KFOGARTY	**FIGURE 1-1**	
DATE:	NOVEMBER 2018		

TRC

505 East Huntland Drive, Suite 250
Austin, TX 78752
Phone: 512.329.6080
www.trcsolutions.com

FILE NO.: 1-1.mxd

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane Oklahoma North FIPS 3501 Ft US (Foot US)
Map Rotation: 0

Plot Date: 11/27/2018, 14:34:59 PM by MHORN -- LAYOUT: ANSI B(11"x17")
Path:

Appendices

1.1 Refinery Mailing List
1.2 Adjacent Landowners
1.3 Affidavit of Property Ownership

APPENDIX 1.1 – REFINERY MAILING LIST

Refinery Mailing List

Oklahoma Corp. Commission
Jim Thorpe Bldg.
2101 N. Lincoln Blvd #129
Oklahoma City, OK 73105

Oklahoma Geological Survey
Sarkeys Energy Center
100 E. Boyd, Room N-131
Norman, OK 73019-0628

State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

OK Water Resources Board
3800 N. Classen Blvd
Oklahoma City, Ok 73118

Oklahoma Wildlife Conservation
1801 N. Lincoln Blvd
Oklahoma City, OK 73105

City of Tulsa City Council Office
175 E. 2nd St.
4th Floor
Tulsa, OK 74103

Director
US Geological Survey
202 NW 66th St. Suite 7
Oklahoma City, OK 73116

Conservation Commission 2800
Lincoln Blvd., Suite 160
Oklahoma City, OK 73105-4210

ODEQ Regional Office at Tulsa
9933 E 16th St.
Tulsa, OK 74128

Regional Administrator (6A)
US EPA Region VI
1445 Ross Avenue
Dallas, TX 75202-2733

Wren Stenger Dir. Multimedia
Div. (6H) US EPA Region VI
1445 Ross Avenue Dallas, TX
75202-2733

Field Supervisor
US Fish & Wildlife Service
9014 E 21st St.
Tulsa, Oklahoma 74129-1428

US Corps of Engineers Public
Affairs Office
1645 S. 101 E. Ave.
Tulsa, OK 74128-4609

Bureau of Land Management
201 Stephenson Parkway, Suite
1200, Norman, Oklahoma 73072

U.S Department of Ag.
NRCS Oklahoma
100 USDA Suite 206
Stillwater, OK 74074-2655

Tara Baker,
Chairperson Sierra Club
P 0 Box 60644
Oklahoma City, OK 73146

Oklahoma Archeological Society
111 East Chesapeake, Rm 102
Norman, OK 73019-5111

County of Tulsa
County Commissioner Office 500
S. Denver
Tulsa, OK 74103

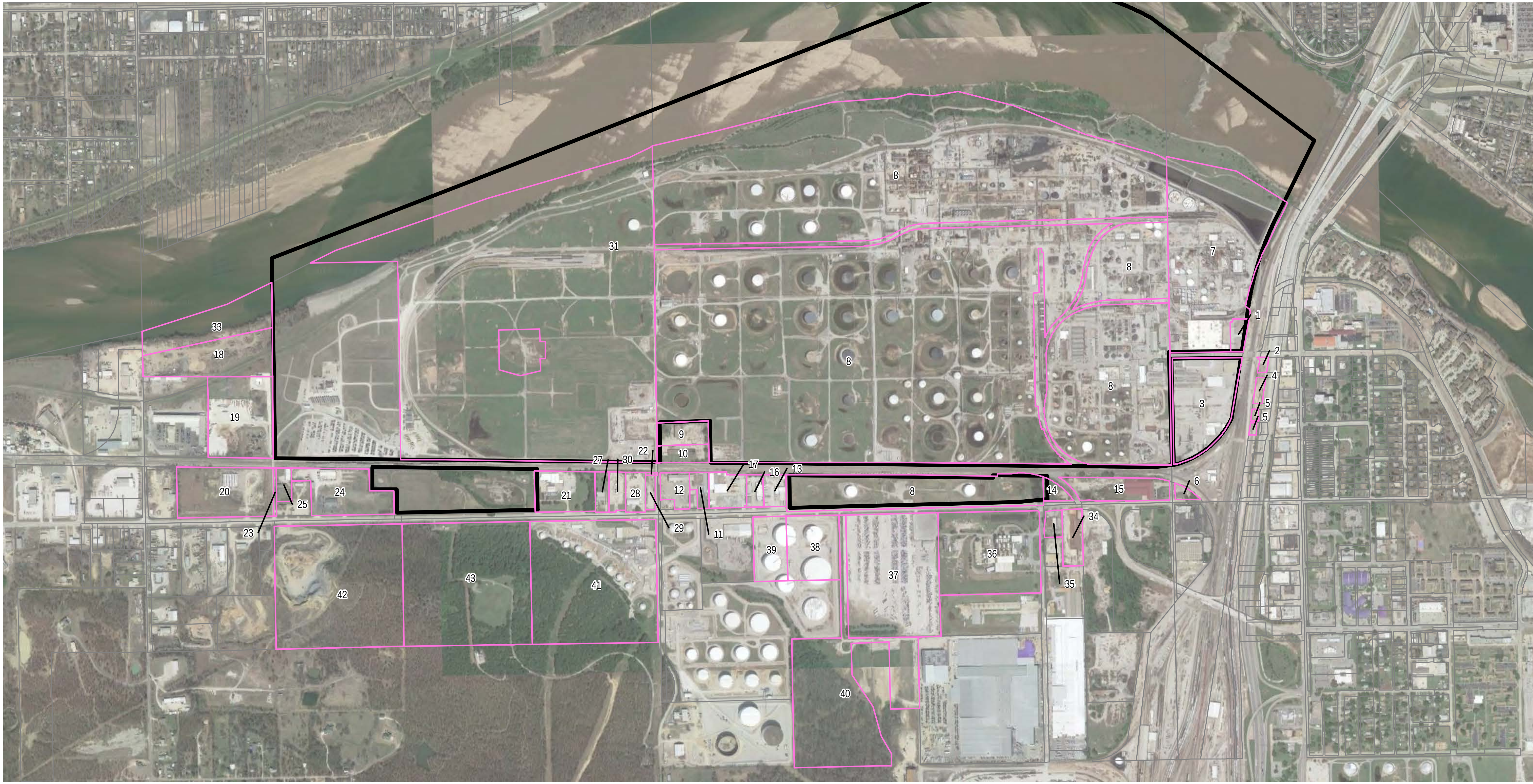
APPENDIX 1.2 – ADJACENT LANDOWNERS

Map No.	PAR_TYPE	ACCOUNTNO	PROP_ADD	OWNER	MAIL_ADD3	MAIL_ADD4	MAIL_ADD5	MAIL_ADD6
2	RAIL	R46425921108020		TULSA SAPULPA UNION RR CO	701 E DEWEY		SAPULPA OK	740664427
4	RAIL	R35500921105290		TULSA SAPULPA	701 E DEWEY		SAPULPA OK	740664427
5	RAIL	R35500921105450		TULSA SAPULPA	701 E DEWEY		SAPULPA OK	740664427
6	PARCEL	R35500921105700	1625 W 21 ST S	FLINT RESOURCES COMPANY LLC	PO BOX 490		TULSA OK	741010490
9	PARCEL	R99210921050310	1915 S 33 AV W	A B C COATING INC	P O BOX 9693		TULSA OK	741570693
10	PARCEL	R99210921050710	1921 S 33 AV W	A B C COATING	PO BOX 9693		TULSA OK	741570693
11	PARCEL	R99210921051410	3209 W 21 ST S	ECONOMASTERS, LLC	3209 W 21ST ST		TULSA OK	741073463
12	PARCEL	R99210921050010	3209 W 21 ST S	ECONOMASTERS LLC	3209 W 21ST ST		TULSA OK	741073463
13	PARCEL	R99210921051260	2835 W 21 ST S	D & G BUILDING LLC	2835 W 21ST ST S		TULSA OK	741070000
14	PARCEL	R99210921051910	1803 W 21 ST S	ROGERS GALVANIZING CO	C/O AZZ INC	3100 W 7TH ST STE 500	FORT WORTH TX	76107
15	PARCEL	R99210921052010	2020 S UNION AV W	PEDERNAL PROPERTIES LLC	1624 W 21ST ST.		TULSA OK	74107
16	PARCEL	R99210921050910	2929 W 21 ST S	NEWHILL TECHNOLOGIES LLC	PO BOX 9247		TULSA OK	74157
17	PARCEL	R99210921052960	2959 W 21 ST S	EMERGENCY POWER SYSTEMS	2959 W 21ST ST		TULSA OK	74107
18	PARCEL	R99209920925600		S & T MORGAN INVESTMENTS LLC	1800 S 49TH WEST AVE		TULSA OK	741072202
19	PARCEL	R99209920922200	1824 S 44 AV W	PATTERSON, CHARLES & TRACIE	3305 S 65TH WEST AVE		TULSA OK	741074026
20	PARCEL	R99209920923520	4727 W 21 ST S	PLAINS LPG SERVICES LP	P O BOX 4648		HOUSTON TX	772104648
21	PARCEL	R99209920921600	3535 W 21 ST S	NEXEO SOLUTIONS, LLC	3 WATERWAY SQUARE PL STE 1000		THE WOODLANDS TX	77380
22	PARCEL	R99209920936395		TULSA COUNTY	500 S DENVER RM 302		TULSA OK	74103
23	PARCEL	R99209920935535		BOARD OF COUNTY COMMISSINERS,	500 S DENVER		TULSA OK	74103
24	PARCEL	R99209920934600	4333 W 21 ST S	TCI SERVICES INC	4333 W 21ST ST		TULSA OK	74107
25	PARCEL	R99209920935570	1923 S 44 AV E	ENOS, JON STEVEN	PO BOX 94		TULSA OK	74101
27	PARCEL	R99209920936400	3437 W 21 ST S	TWENTY-ONE WEST INC	1700 SOUTHWEST BLVD		TULSA OK	74107
28	PARCEL	R99209920936000	3315 W 21 ST S	DOWNING, JIMMY & GERALDINE FAMILY	6127 W 33RD ST		TULSA OK	741074116
29	PARCEL	R99209920936300		WILLIAMS BROS PIPE LINE CO	321 S BOSTON		TULSA OK	741033306
30	PARCEL	R99209920936200	3437 W 21 ST S	CORNELIUS ENERGY PARTNERS LLC	21301 W 191ST ST		KELLYVILLE OK	74309
33	PARCEL	R99209920924700		ANDERSON-WHITE, ANTOINETTE	4375 S 217TH WEST AVE		SAND SPRINGS OK	740634797
34	PARCEL	R99215921506920	1800 W 21 ST S	ROGERS GALVANIZING CO	C/O AZZ INC	3100 W 7TH ST STE 500	FORT WORTH TX	76107
35	PARCEL	R99215921505600	2020 W 21 ST S	ROGERS GALVANIZING CO	C/O AZZ INC	3100 W 7TH ST STE 500	FORT WORTH TX	76107
36	PARCEL	R99215921516700	2122 S YUKON AV W	WBH GENERATING CO LLC	2122 S YUKON AVE		TULSA OK	741072701
37	PARCEL	R99215921508420	2408 W 21 ST S	COPART OF OKLAHOMA INC	14185 DALLAS PARKWAY STE 300		DALLAS TX	75254
38	PARCEL	R99215921522720		MAGELLAN AMMONIA PIPELINE LP	C/O BECKY SPENCE	PO BOX 22186 MD-28	TULSA OK	741262186
39	PARCEL	R99215921528910	3132 W 21 ST S	MAGELLAN PIPELINE COMPANY LP	ATTN: MIKE EASTERWOOD	P.O. BOX 22186	TULSA OK	74121
40	PARCEL	R99215921511270	2700 W 21 ST S	AAON INC	2425 S YUKON		TULSA OK	74107
41	PARCEL	R99216921600010	2120 S 33 AV W	WILLIAMS BROS PIPE LINE CO	PO BOX 870849		MESQUITE TX	75187
42	PARCEL	R99216921615210		DA-FLAME INC	820 WEST SKELLY DRIVE		TULSA OK	74107
43	PARCEL	R99216921603790		CITY OF TULSA	175 E 2ND ST STE 260		TULSA OK	74103

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane Oklahoma North FIPS 3501 Ft US (Foot US)
Map Rotation: 0

Plot Date: 11/26/2018, 14:50:40 PM by MHORN -- LAYOUT: ANSI B(11"x17")
Path:



LEGEND

REFINERY BOUNDARY

COUNTY PARCELS

ADJACENT PARCELS

SOURCES:
PARCELS (TULSA COUNTY, 6/11/18)
BASEMAP:
GOOGLE EARTH AND THEIR DATA PARTNERS, 3/12/2018

HOLLYFRONTIER

N

500 1,000
Feet

1 " = 1,000 '
1:12,000

PROJECT:
HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

TITLE:
PARCEL LOCATION MAP

DRAWN BY:	MHORN	PROJ. NO.:	
CHECKED BY:	MWALTHER	**FIGURE 1**	
APPROVED BY:			
DATE:	NOVEMBER 2018		

TRC

505 East Huntland Drive, Suite 250
Austin, TX 78752
Phone: 512.329.6080
www.trcsolutions.com

FILE NO.: 1.A-1_AdjLandowner.mxd

APPENDIX 1.3 – AFFIDAVIT OF PROPERTY OWNERSHIP

DEQ LANDOWNER NOTIFICATION AFFIDAVIT

Tier I, II or III permit applicants must provide notice to the landowner(s). The basis for this requirement is Title 27A of the Oklahoma Statutes, Supplement 1996, § 2-14-103(9), as described in OAC 252:4-7-13 (b).

Please note that you MUST fill out and return this affidavit even if you don't have to give any landowner notice.

A	NOTICE TO THE LANDOWNER(S) IS NOT REQUIRED because: (check one)
	My application does not involve any land.
X	My application involves only land owned by me (or applicant business).
	I have a current lease given to accomplish the permitted purpose.
	I have a current easement given to accomplish the permitted purpose.

OR

B	NOTICE TO THE LANDOWNER(S) IS REQUIRED because the land is owned by someone other than myself or the applicant business AND I HAVE NOTIFIED the following (check one):		
	Landowner(s)		Lessor or Administrator or Executor of the land
METHOD OF DELIVERY (check one):			
	Actual notice, for which I have a signed and dated receipt		
	Service by Sheriff or private process server, for which I have an affidavit		
	Service by certified mail, restricted delivery, for which I have a signed return receipt		
	Legal publication, for which I have an affidavit of publication from the newspaper, because the landowners could not be located through due diligence		

LANDOWNER AFFIDAVIT CERTIFICATION			
I, as the applicant or an authorized representative of the applicant, hereby certify that I own the real property, have a current lease or easement which is given to accomplish the permitted purpose (per Option A above), or have provided legal notice to the landowner(s) (per Option B above) about the permit application for the facility described below.			
Company Name	HollyFrontier Tulsa Refining LLC	Facility Name	West Refinery
Facility Address or Legal Description	1700 S. Union Avenue, Tulsa, Oklahoma 74107		
Responsible Official (signature)	Skipp Kistler	Date Signed	12-3-2018
Responsible Official (typed)	Skipp Kistler	Title	Refinery Manager

If the landowner notice applies to your application (Option B above) you can send the following form to them as your notice:

- -

NOTICE TO LANDOWNER OF FILING

Dear Landowner: (Name) ______________________________

(Applicant name) ______________________ has filed a permit application with the Oklahoma Department of Environmental Quality for (Facility Name) ______________________ facility.

This application involves the land owned by you located at:

Address or Legal Description: ______________________________

____

Signed: ______________________ Date: ______________

2 SECURITY

The HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery) has developed a set of security policies and procedures to prevent the accidental or unknowing entry of persons or livestock inside the boundaries of the Refinery, and to ensure the safety of both the Refinery and its employees. To restrict access to the Refinery property, HFTR maintains a perimeter fence posted with warning signs. In addition, security guards patrol the Refinery 24 hours per day and control access to gated entrances. The Refinery security procedures fulfill the requirements of Title 40 Part 264.14(b) and (c) of the Code of Federal Regulations (40 CFR 264.14(b) and (c)). The Land Treatment Units (LTUs) are in post-closure care and not active units, therefore modified signage as described in Section 2.3 is appropriate.

2.1 24-Hour Surveillance System

The main gate security office is staffed 24 hours per day, 365 days per year. Security guards patrol the Refinery and ensure against vandalism and unauthorized entry into the Refinery. The security office staff monitor in-plant radio communication, provide notification for Refinery emergency response personnel and community response organizations, monitor National Weather Service radio, and notify on-call personnel of emergencies. The Refinery is well lit to ensure that incidental releases, spills, or leaks can be detected during hours of darkness.

2.2 Barrier and Controlled Entry

The Refinery is surrounded by a 6-foot chain link fence that is topped with barbed wire. The primary entrance gates are activated (i.e., opened and closed) electronically by a magnetic card issued to each authorized user. Gates are monitored by security guards at all times. All personnel entering the Refinery are registered by the security guards using vehicle decals or identification cards for employees and contractors, and sign-in logs for visitors. Guards are instructed to limit or deny access under certain emergencies; e.g., during flooding, severe weather, fires, or hazardous materials releases. Five (5) SWMUs are located outside of the main perimeter fencing, adjacent to the Arkansas River (SWMUs 4, 5, 6, 13, and 14). Access to this area is limited due to the presence of the River. No trespassing signs are posted in the area.

Access to the Refinery is provided at the Main Gate (Gate 1) and Truck Dock Gate. In emergency situations, the gate behind the Lube Oil Blending Truck Dock Gate (Gate 18), the gate at 33rd West Avenue (Gate 11) and the gate at 44th West Avenue (Gate 12) can be opened to provide additional Access Control Points. Gates can be seen on Figure 1-1.

2.3 Warning Signs

Warning signs posted at the gate entrances of the Refinery warn that only authorized personnel are allowed to enter the Refinery, and that entry onto the Refinery can be dangerous. These signs are visible from any approach to the Refinery and are legible at a distance of at least

25 feet. Additional signage identifying the closed LTUs and requiring authorization from the Environmental Department prior to entry to these units, is posted at the three LTUs.

3. INSPECTION PLAN

HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery) has developed a set of written typical inspection schedules for the closed Land Treatment Units (LTUs), Solid Waste Management Units (SWMUs), and the bank of the Arkansas River (the River), and has developed inspection, repair, and recordkeeping procedures in accordance with the requirements set forth in Title 40 Part 264.15 of the Code of Federal Regulations (40 CFR 264.15) for general facility inspections, and in accordance with 40 CFR 264.273 for the closed LTUs. Inspection requirements for the SWMUs and the River were established under the 2009 Permit and are assumed to continue with issuance of a renewed Permit. In accordance with 40 CFR 270.14(b)(5), HFTR is including the Inspection Plan (Plan) for the closed LTUs, the SWMUs, and the River in this Resource Conservation and Recovery Act (RCRA) Part B Permit Renewal Application (Renewal Application).

The LTUs and SWMUs will be inspected at least semi-annually and after major storm events yielding seven or more inches of precipitation within 24 hours or less[1]. Inspections of these units will focus on vegetative or other cover conditions, site appearance, security, unit deterioration, erosion, and other conditions which may be causing, or may lead to, a threat to human health and/or a release of hazardous constituents to the environment. The bank of the River will be inspected for the presence of hydrocarbon discharges every week. All inspection logs will be maintained at the HFTR Environmental Department for a minimum of three (3) years. Example inspection and repair logs for the LTUs, SWMUs, and the River are provided as Appendix 3.1 and 3.2.

3.1 Land Treatment Units

The East, Central, and West LTUs shown on Figure 3-1 are all currently in the RCRA post-closure care period. Waste operation ceased at all three LTUs by 1998. In 1999, the units were closed and seeded to establish a vegetative cover. The three LTUs are inspected semi-annually with the primary focus of the inspection on the condition of the following items:

- Adequate security;
- Vegetative cover (including fertilization, watering, mowing, and reseeding as appropriate);
- Run-on control system;
- Run-off drainage system;

[1] A major storm event is defined as yielding seven or more inches of precipitation within 24-hours (i.e., the 24-hour 25-year rain event for Tulsa, Oklahoma). Classification of the 24-hour 25-year rain event is described in *Urban Hydrology for Small Watersheds*, prepared June 1986 by the Natural Resources Conservation Service.

- Controls for wind-dispersal of hazardous waste (as necessary); and
- Compliance with any prohibitions or conditions concerning growth of food-chain crops.

3.2 Solid Waste Management Units

There are or have been eighteen (18) SWMUs located throughout the Refinery. SWMU 10 remains an active operations unit (the wastewater treatment system [WWTS]) and as such will not be inspected according to this Plan. However, concrete units within the WWTS will be inspected for cracks during routine maintenance/turnaround of the units and repaired as necessary. SWMUs 2, 3, 9, 11, 15, 17 and 18 were deleted from the Permit (Permit No. 058078775-PC effective with the last Permit issuance on June 1, 2009) and are no longer inspected. The three closed LTUs described in Section 3.1 are collectively known as SWMU 16. Inspections for SWMU 16 differ from the other SWMUs due to the nature of their former operation. Additional information regarding the Refinery's SWMUs can be found in Section 9 (Solid Waste Management Units) of this Renewal Application.

The 2009 Permit requires continued inspection for the nine (9) remaining SWMUs, shown on Figure 3-1. A description of these SWMUs is included in Table 3-1. For the SWMUs that require continued inspection HFTR will:

- Inspect and maintain a gravel, paved or vegetative cover, as applicable. Maintenance may include repairing concrete cracks, adding gravel fill in depressions, fertilization, watering, mowing, and reseeding;
- Inspect to assure adequate security requirements;
- Inspect for run-on/run-off erosion; and
- Inspect hydrocarbon removal system (if applicable).

3.3 Arkansas River

The Refinery property includes approximately 1.8 miles of shoreline along the River. Groundwater generally moves from the interior of the Refinery toward the bank of the River, and light non-aqueous phase liquid (LNAPL) is present on the groundwater table. Information regarding the source of LNAPL can be found in Section 8 of this Permit Application (Groundwater Monitoring and LNAPL Management Plan).

HFTR will conduct weekly inspections for hydrocarbon sheening along the length of the riverbank property owned by HFTR to detect the presence of hydrocarbon discharge to the River.

Inspections will be conducted during representative flow conditions[2]. The entire Riverbank Area within the property boundaries will be inspected. This includes Areas A though H, as well as the strip of riverbank located to the west of Area A. The Riverbank Area can be seen in Figure 3-1.

If hydrocarbon sheening is identified during an inspection, HFTR will undertake the following actions:

- Modify the inspection frequency at the location of the observed hydrocarbon sheen to three times per week (generally Monday, Wednesday, and Friday);
- File an initial report via email with the ODEQ's Land Protection Division (LPD) and Water Quality Division (WQD), within 24 hours of discovery of a hydrocarbon sheen;
- Commence remedial actions, as appropriate (including placement of sorbent booms);
- File monthly reports via email with the ODEQ's LPD and WQD until the hydrocarbon sheen is no longer observed during inspections; and,
- File a summary report with the ODEQ's LPD and WQD and return to weekly inspections, once the hydrocarbon sheen is no longer observed during inspections.

Note that the terms of these inspections are currently under discussion with the ODEQ. HFTR will continue to implement the inspection schedule proposed above, which reflects the information provided to HFTR on October 31, 2018, in a letter from Terry Lyhane of the ODEQ, and will modify the schedule based on any further communications with the ODEQ.

The presence of petroleum hydrocarbons and petroleum refining additives from historic industrial activities is well documented at the West Refinery in reports HFTR has provided to the ODEQ and are exempt from reporting under Section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, commonly known as CERCLA, 42 U.S.C. § 9603(a), as covered by the exclusion from the definition of "hazardous substance" in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). That is, CERCLA exempts from reporting substances covered by the "petroleum exclusion," which exempts hydrocarbons indigenous to petroleum and typical refining additives. Such constituents are also excluded from reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA), unless extremely hazardous substances (EHSs) are also released in reportable quantities (RQs).

[2] To ensure representative flow conditions during riverbank inspections, HFTR will record the River flow, water level, and wind direction/strength.

Therefore, HFTR proposes to continue the monitoring and reporting as it is currently being performed and proposed above to address petroleum hydrocarbon releases that would otherwise be exempt from reporting under CERCLA/EPCRA.

3.4 Required Repairs Following Inspection

Following inspections, if repairs of and/or remedial action(s) are necessary in response to deterioration or malfunction of equipment or structures, the actions are to be scheduled and recorded in an inspection and repair log. Appendix 3.1 contains an example inspection and repair log used by the Refinery. All inspection and repair logs will be maintained at the HFTR Environmental Department for a minimum of three (3) years.

The contents of the typical inspection and repair log identify the following:

- Date and time of the inspection;
- Name of the inspector;
- The location and description of the item requiring repair;
- The nature of any repairs or remedial actions; and
- Additional notation of observations made.

Most repairs occur immediately upon discovery. For cases in which repairs are required, measures necessary to prevent an immediate environmental or human health hazard are taken straightaway. Repairs that involve structural items may require the scheduling of outside contractors and therefore may take additional time to complete.

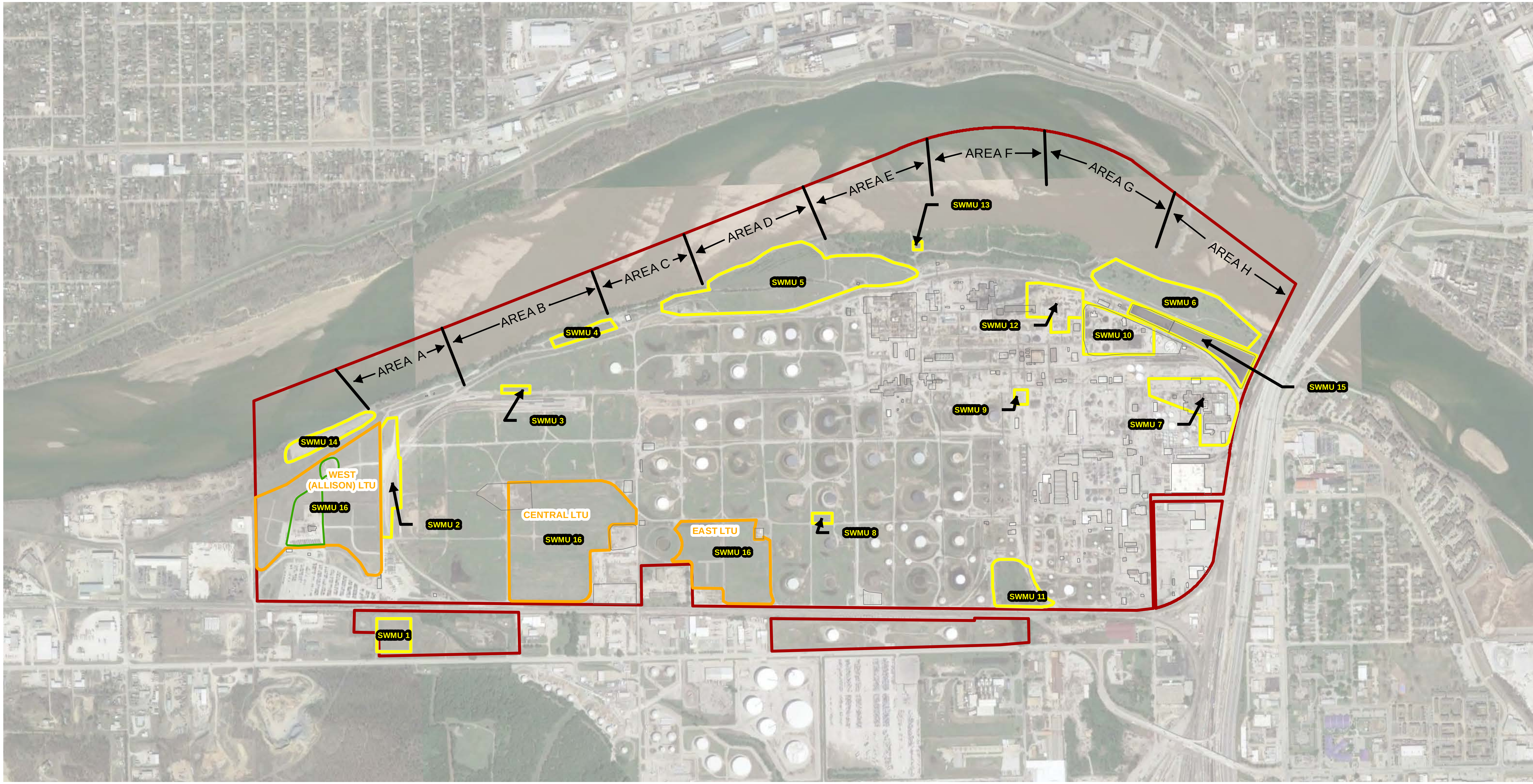
Tables

Table 3-1. Description of Solid Waste Management Units Requiring Inspection

SWMU Number	Name	Cover Material	Additional Details
1	Midco Landfill	Vegetative cover	
4	Asphalt Sludge Landfill	Vegetative cover	Passive collection trench in place
5	North Petroleum Sludge (Area D) Landfill	Vegetative cover	
6	Northeast Landfill	Vegetative cover	
7	East Landfill	Gravel/vegetative cover	
8	Scrap Metal Landfill	Vegetative cover	
12	Cat Cracker Landfill	Concrete/gravel	
13	Scrap Metal Landfill	Vegetative cover	
14	Allison Property Landfill	Riprap/Large stones	

Figures

TRC - GIS



LEGEND

- REFINERY BOUNDARY
- BUILDINGS
- LTUs
- NON-WASTE AREA
- SWMUs

SOURCES:
GOOGLE EARTH AND THEIR DATA PARTNERS, 3/12/2018

HOLLYFRONTIER

N

500 1,000 Feet

1 " = 1,000 '
1:12,000

PROJECT:
HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

TITLE:
REFINERY INSPECTION MAP

DRAWN BY:	MHORN	PROJ. NO.:	304508
CHECKED BY:	MWALTHER		
APPROVED BY:	KFOGARTY	**FIGURE 3-1**	
DATE:	NOVEMBER 2018		

TRC

505 East Huntland Drive, Suite 250
Austin, TX 78752
Phone: 512.329.6080
www.trcsolutions.com

FILE NO.: 3-1.mxd

Coordinate System: NAD 1983 2011 StatePlane Oklahoma North FIPS 3501 Ft US (Foot US)
Map Rotation: 0

Plot Date: 11/27/2018, 14:37:18 PM by MHORN -- LAYOUT: ANSI B(11"x17")
Path:

Appendices

3.1 Example Land Treatment Unit and Solid Waste Management Unit Inspection and Repair Log

3.2 Example Arkansas Riverbank Inspection Log

APPENDIX 3.1 – EXAMPLE LAND TREATMENT UNIT AND SOLID WASTE MANAGEMENT UNIT INSPECTION AND REPAIR LOG

EXAMPLE LAND TREATMENT UNIT AND SOLID WASTE MANAGEMENT UNIT INSPECTION AND REPAIR LOG

At least semi-annually and after major storm events[1] – the following should be inspected, observations recorded, and repairs made if necessary.

Inspection performed by: ________________________Date:_______________Time:________________

EAST LAND TREATMENT UNIT

1. Gravel, Paving, or Vegetative Cover Condition on Waste Application Areas ______________________
2. Run-on/Run-off Control ______________________
3. Fence Condition ______________________
4. Warning Signs ______________________

CENTRAL LAND TREATMENT UNIT

1. Gravel, Paving, or Vegetative Cover Condition on Waste Application Areas ______________________
2. Run-on/Run-off Control ______________________
3. Fence Condition ______________________
4. Warning Signs ______________________

WEST LAND TREATMENT UNIT

1. Gravel, Paving, or Vegetative Cover Condition on Waste Application Areas ______________________
2. Run-on/Run-off Control ______________________
3. Fence Condition ______________________
4. Warning Signs ______________________

SWMU 1 – MIDCO LANDFILL

1. Vegetative Cover Condition ______________________
2. Fence Condition ______________________
3. Inspect for Erosion ______________________

SWMU 4 – ASPHALT SLUDGE LANDFILL

1. Shale/Vegetative Cover Condition ______________________
2. Fence Condition ______________________
3. Inspect for Erosion ______________________

SWMU 5 – NORTH PETROLEUM SLUDGE (AREA D) LANDFILL

1. Vegetative Cover Condition ______________________
2. Fence Condition ______________________
3. Inspect for Erosion ______________________

SWMU 6 – NORTHEAST LANDFILL

1. Vegetative Cover Condition ______________________
2. Fence Condition ______________________
3. Inspect for Erosion ______________________

SWMU 7 – EAST LANDFILL

1. Gravel/Vegetative Cover Condition ____________________
2. Fence Condition ____________________
3. Inspect for Erosion ____________________

SWMU 8 – SCRAP METAL LANDFILL

1. Vegetative Cover Condition ____________________
2. Fence Condition ____________________
3. Inspect for Erosion ____________________

SWMU 12 – CAT CRACKER LANDFILL

1. Gravel/Concrete Cover Condition ____________________
2. Fence Condition ____________________
3. Inspect for Erosion ____________________

SWMU 13 – SCRAP METAL LANDFILL

1. Vegetative Cover Condition ____________________
2. Fence Condition ____________________
3. Inspect for Erosion ____________________

SWMU 14 – ALLISON PROPERTY LANDFILL

1. Stone Cover Condition ____________________
2. Fence Condition ____________________
3. Inspect for Erosion ____________________

OTHER OBSERVATIONS

____
____
____
____
____

REPAIRS

Notate the location/description of the item in need of repair, the name of the person making the repair, the nature of any repairs or remedial action and any additional observations deemed necessary.

____
____
____
____
____
____

NOTE: This inspection log and any related work orders must be maintained for at least three (3) years from the date of inspection.

[1] A major storm event is defined as yielding seven or more inches of precipitation within 24 hours or less.

APPENDIX 3.2 – EXAMPLE ARKANSAS RIVERBANK INSPECTION LOG

EXAMPLE ARKANSAS RIVERBANK INSPECTION LOG

At least every other week and after major storm events[1] – the following should be inspected, observations recorded, and follow-up actions taken if necessary.

Inspectors:____________________________ Date:________________________________ Time (Start & End):________________________

River Flow (cfs[2]):______________________ Water Level:___________________________ Change in Water Level: ____________________

Wind Direction and Strength: _________________________

Area	Location of Sheen(s)[3] within Area	GPS Coordinates	Horizontal Size of Sheen[3] (feet)	Vertical Location of Sheen[2] (feet on bank, at river surface)	Is Sheen[3] Out in River (how many feet)	Intensity (droplets, light, medium, heavy)	Unusual Characteristics	Were Photos Taken of Area	Are Sorbent Booms in Place	Was Sorbent Boom Maintenance Performed	Comments
West of A[4]											
A											
B											
C											
D											
E											
F											
G											
H											

NOTE: This inspection log and any related work orders must be maintained for at least three (3) years from the date of inspection.

[1] A major storm event is defined as yielding seven or more inches of precipitation within 24 hours or less.

[2] Cubic feet per second

[3] Hydrocarbon sheen

[4] West of Area A to the Refinery property boundary

4 PREPAREDNESS AND PREVENTION

HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery) will not seek a waiver from the requirement to provide information related to Refinery preparedness and prevention measures specified in Title 40 Part 264 (40 CFR 264), Subpart C, as allowed under 40 CFR 270.14(b)(6). This section of the Refinery's Resource Conservation and Recovery Act (RCRA) Part B Permit Renewal Application (Renewal Application) summarizes the procedures taken to prevent and prepare for hazards at the portions of the Refinery covered by the RCRA Permit (i.e., the Hazardous Waste Management Units [HWMUs], Solid Waste Management Units [SWMUs], and Areas of Concern [AOCs]).

The Refinery maintains an Emergency Response Plan (ERP) that details prevention of hazards as well as Refinery-wide procedures and equipment to be used in response to emergencies (e.g., fires and explosions, release of hazardous substances, natural or man-made disasters). Prevention of hazards and emergency response procedures at the HWMUs (i.e., the closed land treatment units [LTUs]) and SWMUs will be followed in accordance with the Refinery-wide documents.

Per 40 CFR 270.28, Part B Information Requirements for Post-Closure Permits, HFTR is not submitting a copy of the Refinery ERP in lieu of a full Contingency Plan, since that is not a requirement for a post-closure permit. Instead, HFTR has provided these requirements for Preparedness and Prevention as required by 40 CFR 264, Subpart C.

As required by 40 CFR 264.31, the Refinery is designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. The following Preparedness and Prevention Plan provides an overview of the preventative procedures and equipment available in case of a hazardous waste emergency within the Refinery. The Plan addresses the following topics[1]:

- Required emergency equipment;
- A testing and maintenance schedule for all emergency equipment;
- Employee access to communications or alarm systems; and
- Existing arrangements with local authorities.

[1] Note that a discussion of aisle space per 40 CFR 264.35 is not applicable to this Renewal Application as the Refinery does not operate any RCRA-permitted container storage units. Emergency response personnel and equipment can easily access the closed LTUs and SWMUs by Refinery roadways (see Figure 4-1). Refinery security guards and environmental department staff can provide access to fenced areas. Emergency preparedness and prevention procedures related to the Refinery's operations as a large quantity generator of hazardous waste are addressed in the Refinery's Emergency Response Plan.

4.1 Required Equipment

Per the requirements of 40 CFR 264.32, HFTR maintains equipment for internal communications, external communications, fire control, spill control, and decontamination at appropriate locations throughout the Refinery, including in areas that can provide emergency response services at the LTUs, SWMUs, and AOCs. Additional information on the emergency response equipment is provided in the subsections below.

4.1.1 Internal Communications

The Refinery internal communication systems include emergency alarms, radios, and telephones. Radios can be used to alert personnel and emergency responders. All Refinery employees are required to carry a portable radio. On-site visitors are assigned to an employee, who is then responsible for informing the visitor of any emergencies and for taking action as necessary. Two-way internal communication is possible using the Refinery's landline telephone system or cellular phones.

Refinery alarms will sound in the event of critical emergencies (including fire, spill and weather emergencies). Prior to beginning work assignments, HFTR and contractor personnel will receive training identifying emergency alarms and evacuation protocols.

4.1.2 External Communications

Communication between the Refinery and local Emergency Response Agencies is possible via personal cellular phones or the Refinery's landline phone system. Landline phones are located in all the Refinery Emergency Response Facilities.

4.1.3 Portable Fire Extinguisher, Fire Control, Spill Control, and Decontamination Equipment

The Refinery is equipped with handheld fire extinguishers placed throughout the Refinery to extinguish or control small fires, fire hydrants, on-site fire-fighting teams, fire-fighting foam and water pumps appropriate for Refinery hazards, sorbents and booms to control and clean up spills, safety showers, and hydrocarbon gas detectors. Further details of the Refinery's refinery-wide emergency procedures are included in the Refinery's ERP. It should be noted that since the LTUs are in post-closure care (PCC), there are no active hazardous waste management activities at those regulated units that have the potential to cause fires or spills.

4.1.4 Available Water Volume and Pressure

Fire hydrants supply water at appropriate pressure and volume for fire-fighting. In addition, the Refinery has fire trucks with self-contained fire water capacity. The Refinery has an on-site firewater pond for additional water supply.

4.2 Testing and Maintenance of Equipment

Refinery emergency equipment is inspected and maintained on a regular schedule to ensure proper performance in time of emergency. The typical inspection frequency for response equipment ordinarily maintained at the Refinery is detailed in Table 4-1. Note that the inspection frequencies discussed in this Renewal Application are typical inspection frequencies and may vary slightly at any time as determined by the Refinery's management and/or policy changes.

4.3 Access to Communication or Alarm System

Whenever hazardous waste is handled in any way (at non-permitted units or satellite accumulation areas), personnel involved in the operation have immediate access to internal communications systems, either directly or through visual or voice contact with other personnel with access to communication systems. This includes all employees working at the LTUs and/or SWMUs. In case of an emergency, personnel are instructed to contact the Emergency Coordinator (EC) and report the situation. The ERT, Incident Commander (IC), On-Scene Commander (OSC), or plant manager are all qualified to act as the EC. At least one person with the necessary qualifications to act as the EC is on call 24 hours per day. Employees can contact the EC via radio.

The EC then notifies the appropriate personnel that an emergency exists by means of telephone, radio, home-alert pagers, or emergency alarm. Details of the Refinery's emergency procedures are included in the Refinery's ERP.

During regular business hours the Fire Chief or Assistant Fire Chiefs have the initial responsibility to classify an event in accordance with the Emergency Classification System (located in the Refinery's ERP) and notify the on-call EC as appropriate. On off-shifts it is the responsibility of the on-shift supervisor to classify an event in accordance with the Emergency Classification System. Classification of an event into one of the three emergency categories (Unusual Events, Site Emergency, and General Emergency) determines the extent to which the Incident Command System (ICS) is activated.

For a Site Emergency, the ICS may or may not be fully activated based upon the decision of the Fire Chief (or Assistant Fire Chiefs) during regular business hours or the on-shift supervisor on off shifts. For a General Emergency, the ICS will be fully activated.

4.4 Arrangements with Local Authorities

HFTR cooperates and coordinates with Local Emergency Planning Committees (LEPC); local elected officials; police, fire, civil defense, public health professionals, environmental, hospital, and transportation officials; and representatives of industrial facilities, community groups, and the media, as needed to assist in emergency response operations at the Refinery. HFTR has shared copies of the Contingency Plan with local officials and LEPC members and maintains documentation of existing arrangements or attempts to make arrangements with LEPCs and other local emergency response organizations in the Refinery's RCRA operating record.

Tables

Table 4-1. Typical Equipment Inspection and Maintenance Schedule

Equipment Description	Inspection Frequency
Emergency Alarm	Weekly
Radio system	Weekly
Telephones	Daily
Unit Alarms	Monthly
Emergency Vehicle Equipment	Monthly
Fire Extinguishers	Monthly
Fire Hydrants	Flowed and maintained annually
Fire-Fighting Foam	Weekly and after incidents
Water Pumps	Run weekly Tested annually
Sorbents	Weekly and after incidents
Booms	Weekly and after incidents
Safety Showers	Monthly
Hydrocarbon Gas Detectors	Monthly
Fire Water Monitors	Annually

NOTE: The inspection frequencies discussed in this Renewal Application are typical inspection frequencies and may vary slightly at any time as determined by the Refinery's management and/or policy changes.

Figures

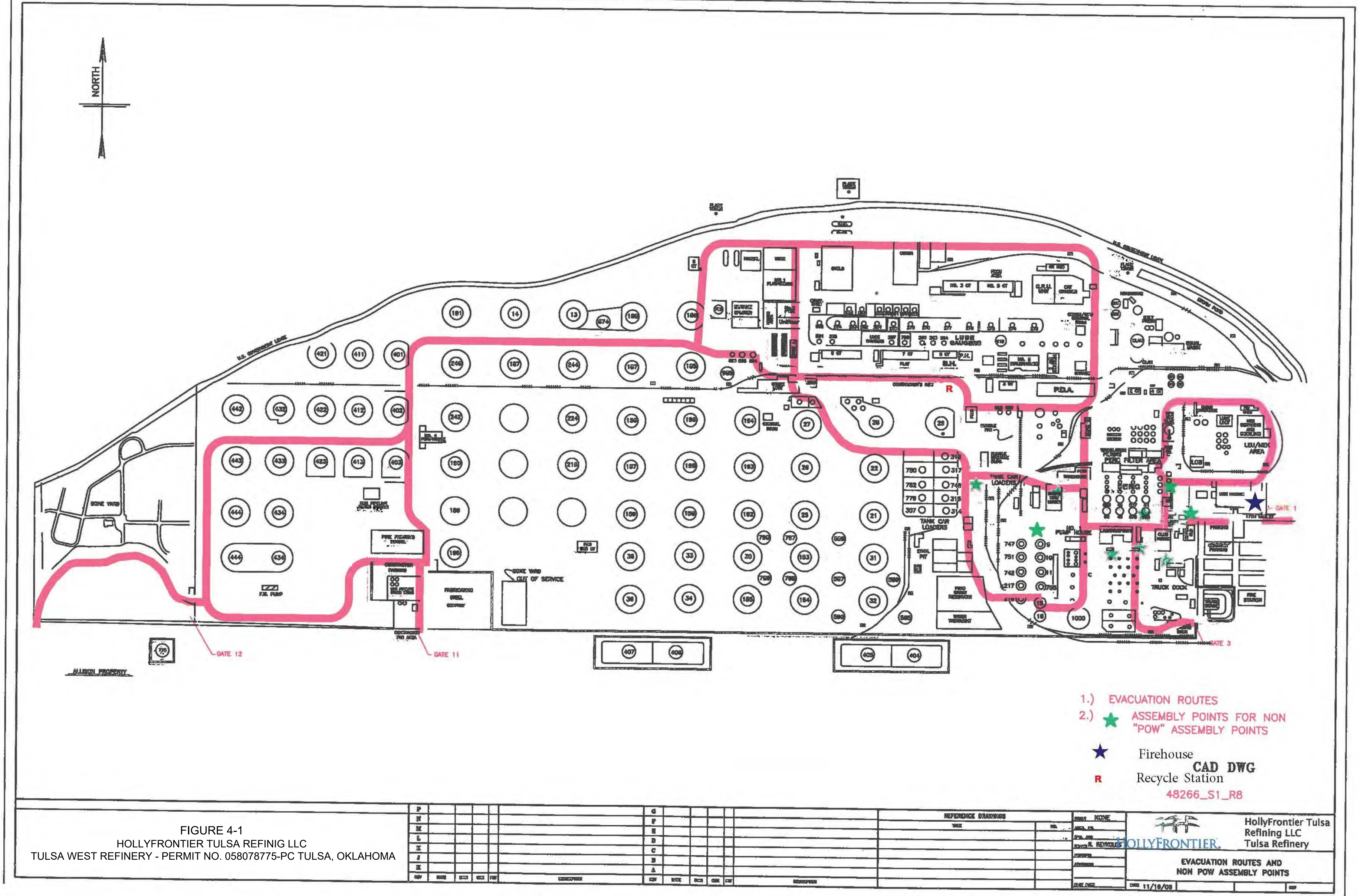


FIGURE 4-1
HOLLYFRONTIER TULSA REFINIG LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC TULSA, OKLAHOMA

5 POST-CLOSURE PLAN FOR LAND TREATMENT UNITS

The HollyFrontier Tulsa Refining LLC (HFTR) Tulsa West Refinery (the Refinery) historically operated three Resource Conservation and Recovery Act (RCRA)-permitted Land Treatment Units (LTUs) for management of hazardous and non-hazardous waste—the East LTU, the Central LTU, and the West LTU. All three LTUs were closed per Title 40 Part 264 Subpart G of the Code of Federal Regulations (40 CFR 264 Subpart G) and are currently in the post-closure care (PCC) period. The closed LTUs are also classified as a solid waste management unit (SMWU [SWMU 16]) in the Refinery's Corrective Action Program (CAP).

In accordance with 40 CFR 270.14(b)(13), HFTR is including this Post-Closure Plan in the Refinery's Part B Permit Renewal Application (Renewal Application). The Post-Closure Plan details the operating, maintenance, and monitoring activities to occur at the LTUs during the post-closure period, and includes the following information as required under 40 CFR 264.118:

- Groundwater monitoring activities and frequencies;
- Maintenance and inspection activities and the frequencies they will be performed; and
- Refinery contact information and recordkeeping procedures.

In addition, the Post-Closure Plan documents compliance with the applicable requirements of 40 CFR 264.280 for closure and PCC of LTUs. Information regarding the LTUs as SWMU 16 is provided in Section 9 (Solid Waste Management Units) of this Renewal Application.

5.1 Post-Closure Care Period

The Oklahoma Department of Environmental Quality (ODEQ) approved closure of the three LTUs on August 22, 2003, thereby initiating the PCC period. Background information regarding closure of the LTUs is provided below.

The PCC period is set by 40 CFR 264.117(a)(1) as thirty (30) years from the date of closure of the hazardous waste management unit (HWMU) (i.e., from August 23, 2003 to August 23, 2033 for the closed LTUs); however, 40 CFR 264.280(d) provides a process for facilities to request a variance to reduce or end the PCC period at any time during the PCC period. To obtain approval to cease PCC, HFTR must demonstrate that treatment zone (TZ) soils in the LTUs show no statistically significant concentrations over background levels, regional screening levels (RSLs), and/or risk-based screening levels (RBSLs) for hazardous constituents listed in the Refinery's Permit.

HFTR would like to explore the option of a reduced PCC period for the LTUs, and to that end, the Refinery will submit the LTU Post-Closure Soil Sampling Work Plan (the LTU Work Plan) to the ODEQ. The Work Plan will detail the soil sampling and analysis program, which would supplement extensive unsaturated zone data, and proposes collecting the necessary data to make a demonstration under 40 CFR 264.280(d) for a reduced PCC period.

Pending ODEQ approval of the LTU Work Plan, results from the soil investigation will be evaluated, and if no statistically significant concentrations are over background levels, RSLs and/or RSBL values for constituents of concern are detected, HFTR plans to petition ODEQ to cease PCC of the LTUs.

Pending completion of the proposed LTU soil sampling effort and possible demonstration to support ceasing PCC, HFTR proposes that the post-closure period in the renewed permit be set for the duration of the renewed Permit. The post-closure period will extend concurrent with the ten (10) year period of the renewed Permit and will be re-evaluated during preparation of the next Part B Permit Renewal Application, unless a successful demonstration to cease PCC is completed prior to that time.

5.2 Description and Location of LTUs

The Refinery historically operated three RCRA-regulated LTUs, covering a total of 72.5 acres of the Refinery property—the East LTU, the Central LTU, and the West LTU. The East LTU occupies approximately 15.37 acres and is located along the southern boundary of the Refinery to the west of SWMU 8 and to the east of the Central LTU. The Central LTU is approximately 28.74 acres and is located along the southern boundary of the Refinery between the East and West LTUs. The West LTU is approximately 28.39 acres and is located along the western boundary of the Refinery and adjacent to SWMU 2. A site location map is provided as Figure 5-1. Site geology is discussed in Section 7 (Geology and Hydrology Report) of this Renewal Application.

5.2.1 LTU History and Closure

The East LTU and Central LTU began operations in the mid-1970s and the West LTU began operations in 1985. All three units initially operated under RCRA interim status, including establishment of background values and soil-core and soil-pore liquid (unsaturated zone) monitoring, until the RCRA operating permit was issued jointly by the Oklahoma State Department of Health[1] (OSDH) and the United States Environmental Protection Agency (USEPA) on November 1, 1988 (1988 Permit). Soil-core and soil-pore liquid monitoring and groundwater monitoring were required by the 1988 Permit for eighteen Principal Hazardous Constituents (PHCs) during the operational period.

The primary hazardous wastes that were historically applied to the LTUs included dissolved air flotation float (K048), slop oil emulsion solids (K049), American Petroleum Institute separator sludge (K051), leaded gasoline tank bottom sludge (K052), and oil/water/solids separation sludge (F037). All units stopped receiving K-listed hazardous wastes by November 8, 1990, as a result of the implementation of RCRA land disposal restrictions (LDRs).

[1] Prior to the inception of the ODEQ on January 1, 1993, environmental issues were managed by the Oklahoma State Department of Health (OSDH). Responsibilities were transferred from OSDH to ODEQ as a result of Oklahoma's Environmental Quality Act which set out to consolidate widely spread environmental laws.

The establishment of LDRs for F037 ended land application of that waste stream by June 30, 1993, and similarly, waste application of D018 (Toxicity Characteristic - benzene) ceased by April 8, 1998. Non-hazardous waste application ceased on October 31, 1998.

In August 1998, Sunoco provided notice to the ODEQ of the planned closure of the LTUs. Closure activities, including tilling, continued unsaturated zone monitoring and groundwater monitoring, and vegetative cover installation were conducted from November 1, 1998, to April 30, 1999. A Closure Certification Report was submitted on June 30, 1999 (Caldwell Environmental Associates Inc., 1999), and was approved by the ODEQ on August 22, 2003.

Waste had never been applied to some areas within the boundaries of the West LTU (see Figure 5-2). Subsequent to completion of closure activities, one of the waste areas was covered with gravel and temporary trailers, power poles and an electrical panel were installed. In January 2018, HFTR submitted a Class 2 permit modification request to: clarify the LTU boundaries and harmonize LTU boundaries with LTU deed restriction boundaries; conduct maintenance activities on utility lines (i.e., electrical, gas, and hydrocarbons) crossing the LTUs either above- or below-ground; document relocation of the temporary trailers from the gravel pad per discussions with the ODEQ; and to request authorization to maintain the gravel over this waste portion of the West LTU. Yellow ropes were installed at the West LTU to provide a visual demarcation of the waste areas. The Refinery also requested authorization to conduct activities such as equipment and materials laydown, storage, placement of construction office trailers, parking, maintenance activities, and/or RCRA permit-exempt activities on portions of the LTUs where waste had not been applied (see Figure 5-2). The ODEQ approved the Class 2 modification request on June 21, 2018. ODEQ provided clarification to the June 2018 approval in a letter dated November 1, 2018; this clarification indicated that "HFTRW is approved to use the areas where waste was never applied at all three (3) LTUs for trailer placement, parking, storage, stockpiling, and/or RCRA exempt activities"; the previous approval only provided this clause for the West LTU.

As part of this Permit renewal, HFTR has researched aerial photographs of the LTU areas from 1967 to 2016 and has identified 2 additional areas where waste was never applied. The historical aerial photographs are presented in Appendix 5.1. In the Central LTU, operational facilities associated with a butane storage cavern are present in the northwest portion of the LTU, and waste was never applied to this area. Additionally, above ground pipes and pipe racks are present in the northwest portion of the East LTU, and waste was never applied in this area. As part of this Permit renewal, HFTR proposes that the boundaries of the Central and East LTUs exclude these non-waste areas, as presented on Figure 5-2. As these areas were included within the Central and East LTU boundaries in error, and did not receive land-applied wastes, HFTR proposes that this Permit renewal authorize utilization of these areas as non-regulated whether vegetated, graveled, and/or paved; and for potential Facility roadways, parking, laydown, storage, operations and maintenance staging. Existing roads within the LTUs are proposed to remain in use and will be maintained.

Following approval of this Permit renewal, HFTR will survey the redefined Central and East LTU boundaries and submit revised legal descriptions to the Tulsa County Clerk, Indian Nations Council of Government, and to the ODEQ.

5.2.2 Corrective Action for the LTUs

The three closed LTUs (also referred to as SWMU 16) are situated among existing SWMUs or areas of concern (AOCs), and therefore corrective action (e.g., any warranted investigation and remediation) at the LTUs is addressed as part of the Refinery's ongoing corrective action. Additional information regarding corrective actions at the LTUs/SWMU 16 is provided in Section 9 (Solid Waste Management Units) of this Renewal Application.

As discussed further in Section 5.3, the ODEQ has directed HFTR to follow the groundwater monitoring requirements set forth in the 2009 Permit for SWMUs (i.e., inclusion in a Refinery-wide groundwater monitoring program) rather than those requirements for groundwater monitoring programs set forth in 40 CFR 264.91 through 264.100.

5.3 Groundwater Monitoring Program

Groundwater monitoring for the three closed LTUs is incorporated into the Refinery-wide groundwater monitoring program, as allowed under the 2009 Permit. HFTR has committed to conduct groundwater monitoring across the entire Refinery, as described in Section 8 (Groundwater Monitoring and LNAPL Management Plan).

HFTR performs semi-annual groundwater monitoring, typically in the spring and fall of each calendar year. The elements of the groundwater monitoring program include:

- Semi-annual monitoring of downgradient point of compliance (POC; boundary) wells;
- Semi-annual gauging of wells for groundwater and light non-aqueous phase liquid (LNAPL) elevations;
- Annual monitoring of POC upgradient wells;
- Semi-annual reporting of gauging data and sample results; and
- Semi-annual reporting of LNAPL recovery progress, and any modifications to the LNAPL recovery systems.

Details regarding the groundwater monitoring program, including inspection and maintenance of the monitoring well network, are provided in Section 8 (Groundwater Monitoring and LNAPL Management Plan) of this Renewal Application.

5.4 Post-Closure Activities

In accordance with 40 CFR 264.280(c), the Refinery will conduct the following activities at the LTUs, as applicable, during the post-closure period:

- Continue all operations (including pH control) necessary to enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that such measures are consistent with other post-closure activities;
- Maintain the cover over the LTUs;
- Maintain the surface water run-on/run-off control and management systems;
- Control wind dispersion of hazardous waste; and
- Continue to comply with prohibitions on the growth of food chain crops.

In addition, the Refinery will continue to address groundwater monitoring for the LTUs, including inspection and maintenance of the groundwater monitoring well network, as part of the refinery-wide groundwater monitoring program (see Section 8 of this Renewal Application).

If the demonstration to cease PCC under 40 CFR 264.280(d), pending ODEQ approval at the time of submittal of this Renewal Application, is successful, these activities will be discontinued.

5.4.1 Unsaturated Zone Monitoring

Soil-pore liquid monitoring ceased following the ODEQ's acceptance of the LTU closure certification in 2003. Soil-core sampling continued through 2004 and, based on the results of previous soil-core sampling events, the Refinery petitioned the ODEQ to suspend the requirement for soil-core sampling. The ODEQ authorized suspension of soil-core sampling in 2005 and in 2006 on the grounds that "while there are relatively low levels of hazardous constituents still present in the soils, they are not at levels of concern" (December 2005 and 2006 letters from the ODEQ). In 2008, the ODEQ authorized continued suspension of the soil-core monitoring program for the remainder of the Permit term, and no requirement for soil-core monitoring is included in the 2009 Permit.

5.4.2 Inspections

At a minimum, each LTU is inspected on a semi-annual basis, or on an as-needed basis contingent upon weather conditions (e.g., after a major storm event yielding seven or more inches of precipitation within 24 hours or less). Inspection forms will be completed for each post-closure inspection. The detailed inspection program and inspection schedules for the LTUs are outlined in Section 3 (Inspection Plan) of this Renewal Application.

Any changes, concerns, or sub-standard conditions observed during the inspections will be recorded on Refinery inspection forms and brought to the attention of the Refinery Environmental Manager. The Environmental Manager will arrange to have any deficiencies corrected as soon as practicable by the Refinery maintenance staff or contractors. Completion of repairs is documented on the inspection forms. Example inspection forms are provided in Section 3 (Inspection Plan) of this Renewal Application.

5.4.3 Maintenance

5.4.3.1 LTU Maintenance

Site maintenance activities will be performed with the primary goal of maintaining the integrity of the LTUs' surface cover. A vegetative cover is maintained across the East and Central LTUs, and the West LTU cover primarily includes vegetation with limited areas covered by gravel, or pavement. Activities which could disturb the integrity of the final cover are prohibited, with the exception of approved activities such as equipment and materials laydown, storage, placement of construction office trailers, parking, maintenance activities, and/or RCRA permit-exempt activities per the approved 2018 Class 2 modification (ODEQ, 2018) on portions of the LTUs where waste had not been applied.

Routine maintenance practices to preserve the integrity of the cover include:

- Maintaining the integrity and effectiveness of the vegetative cover to correct the effects of settling, subsidence, erosion, and other events through fertilization, watering, mowing, and reseeding, as applicable;
- Mowing the vegetative cover, as necessary;
- Maintaining gravel and paved portions of cover, as necessary; and
- Completing routine repairs to the covers and engineered dike systems, as necessary, to correct and control the effects of settling, subsidence, erosion, etc.

Additional site maintenance details are provided in Section 3 (Inspection Plan) of this Renewal Application.

5.4.3.2 Utility Maintenance

Several surface and subsurface utility and/or hydrocarbon lines are known to run through portions of the LTUs, and these lines require periodic inspection and potential maintenance. These inspection and maintenance events may include disturbances of the vegetative cover and materials beneath the ground surface, including in areas where waste was historically applied.

For any excavation work to be conducted within the LTUs related to utility/hydrocarbon line maintenance, the Refinery will ensure that:

- ODEQ will be notified prior to any excavation;
- A consultant oversees the work and stops work if waste material is encountered;
- Work will be performed by Hazardous Waste Operations and Emergency Response (HAZWOPER) trained personnel;
- Excavated soil will be placed back into the excavation, to the degree feasible, and any remaining excavation will be backfilled with clean material;

- If waste or hydrocarbon-saturated soils are encountered during excavation, this material will not be replaced in the excavation;
- Any soil that cannot be replaced in the excavation will be sampled, characterized, and managed/disposed of properly;
- Surface cover will be reestablished upon project completion; and
- A summary of new activities/post-construction information in a given six-month period will be provided to the ODEQ in the semi-annual monitoring reports.

5.4.3.3 Security

Warning signs identifying the specific LTUs are posted at the three closed LTUs, requiring authorization from the Environmental Department prior to entry. Security at the Refinery is discussed in detail in Section 2 (Security) of this Renewal Application.

5.4.3.4 Record Keeping and Site Contact

The Refinery will continue post-closure care for a period of at least ten (10) years (for the duration of the Permit), or until the Refinery receives ODEQ approval to cease post-closure care activities.

During the post-closure period, the Refinery's Environmental Manager will serve as the Refinery's post-closure care contact. The contact information for the Refinery Environmental Manager is provided below:

Environmental Manager
HollyFrontier Tulsa Refining LLC
PO Box 21001
Tulsa, OK 74107
918-594-6000

This Post-Closure Plan will be amended subject to the approval of the ODEQ when operating plans or Refinery design changes affect the Post-Closure Plan. A copy of the Post-Closure Plan and any amendments will be maintained with the Renewal Application in the Environmental File Records Room located in the Refinery Environmental Department offices.

5.5 References

Caldwell Environmental Associates, Inc., 1999. Certification of Closure for the Hazardous Waste Land Treatment Unit at Sunoco, Inc. (R&M) Tulsa Refinery. Norman, Oklahoma. June 1999.

Land Protection Division, 2005. RCRA Post-Closure Permit – Consent Order 02-190 2005 Land Treatment Unit (LTU) Soil Core Sampling. Oklahoma Department of Environmental Quality Land Protection Division. December 28, 2005.

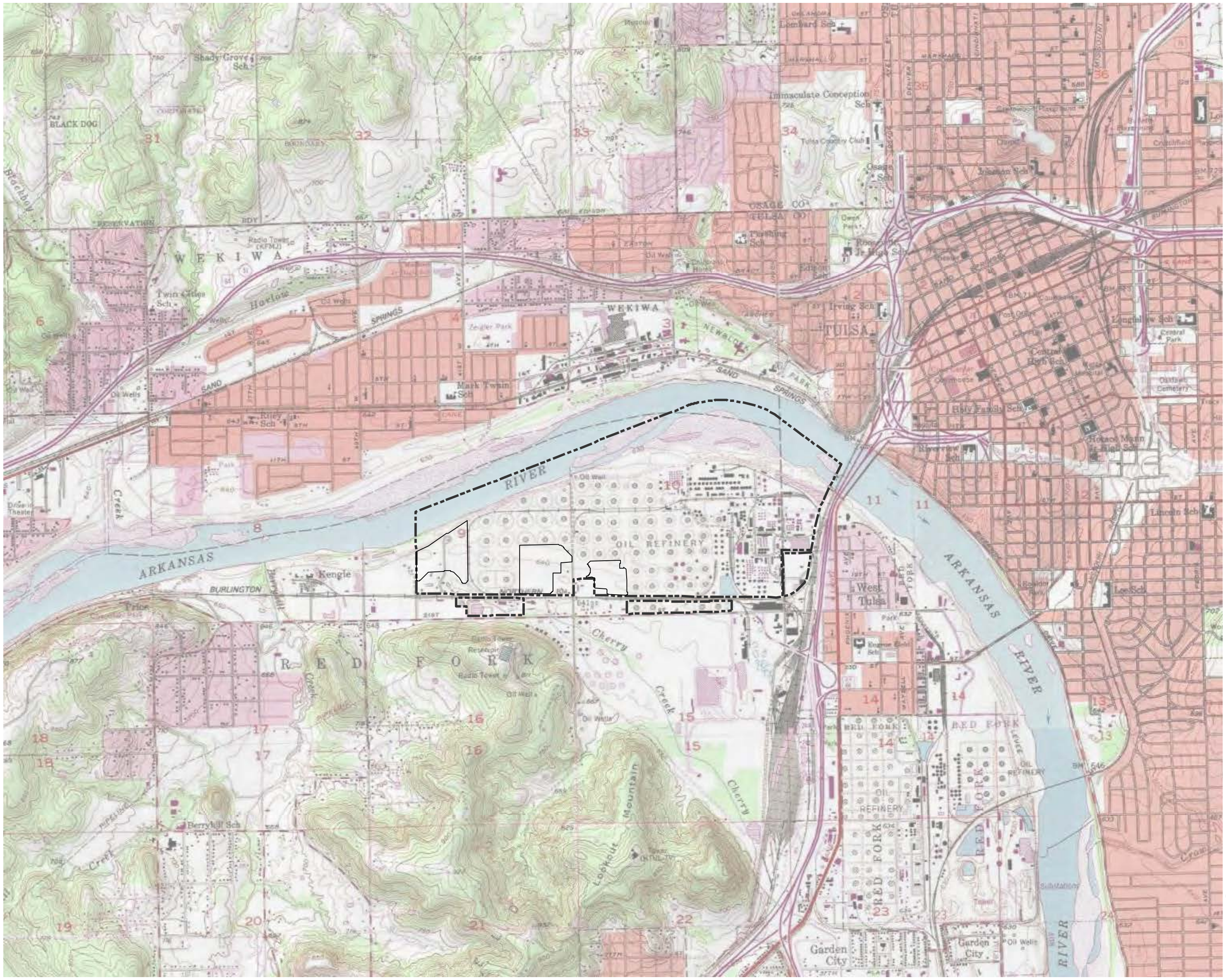
Land Protection Division, 2006. RCRA Post-Closure Permit – Consent Order 02-190 2006 Land Treatment Unit (LTU) Soil Core Sampling. Oklahoma Department of Environmental Quality Land Protection Division. December 27, 2006.

Oklahoma State Department of Health and EPA, 1998. Joint Hazardous Waste Management Permit, Permit Number 3572041. The Oklahoma State Department of Health and United States Environmental Protection Agency, Region VI. November 1, 1998.

ODEQ, 2009. Resource Conservation and Recovery Act Post-Closure and Corrective Action Permit for a Closed Hazardous Waste Management Facility No. 058078775-PC. Oklahoma Department of Environmental Quality. June 1, 2009.

ODEQ, 2018. Class 2 Permit Modification Request, HollyFrontier Tulsa Refining LLC – West Facility (HFTR), Tulsa County, Oklahoma, EPA ID OKD990750960. Oklahoma Department of Environmental Quality. June 21, 2018.

Figures



LEGEND

- LTUs
- REFINERY BOUNDARY

BASE MAP: USGS 7.5 MIN QUADRANGLES (SAND SPRINGS, SAPULPA NORTH, & TULSA).

N

0 2,000 4,000 FEET

1 " = 4,000 '

1:48,000

HOLLYFRONTIER

TRC

505 East Huntland Drive
Suite #250
Austin, TX 78752
Phone: 512.329.6080

TRC - GIS

PROJECT:

HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

TITLE:

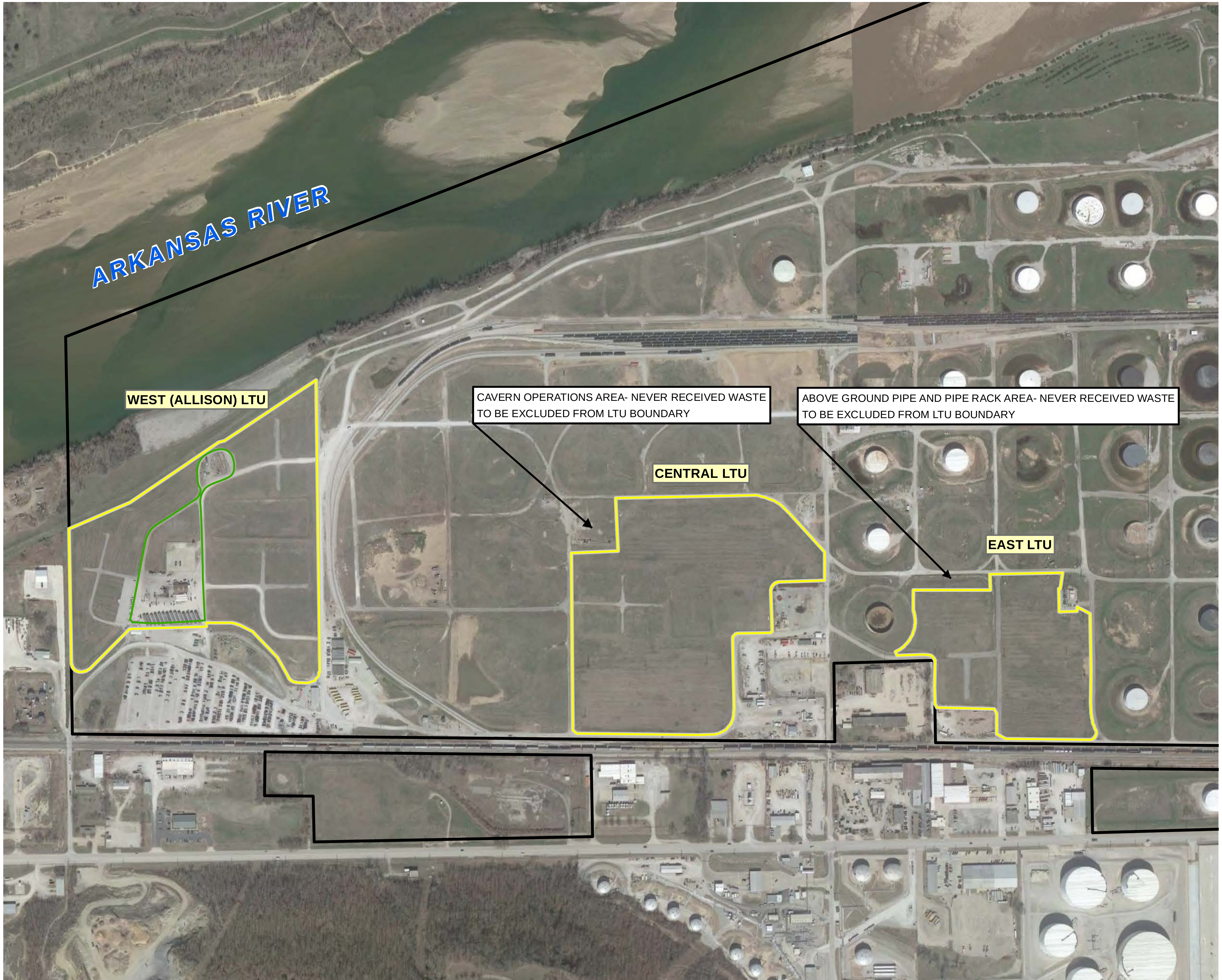
TOPOGRAPHIC SITE LOCATION MAP

DRAWN BY:	MHORN
CHECKED BY:	MWALTHER
APPROVED BY:	KFOGARTY
DATE:	NOVEMBER 2018
PROJ. NO.:	304508
FILE:	5-1.mxd

FIGURE 5-1

TRC - GIS

Coordinate System: NAD 1983 StatePlane Oklahoma North FIPS 3501 Feet (Foot US)
Map Rotation: 0



LEGEND

NON-WASTE AREA

LAND TREATMENT UNITS WITH PROPOSED EXCLUSIONS (2018 PERMIT MODIFICATION, ACCEPTED JUNE 2018 WITH CLARIFICATION NOVEMBER 2018)

NOTE:
EXISTING ROADS IN THE LTUS ARE PROPOSED TO REMAIN IN USE.

HOLLYFRONTIER

AERIAL IMAGERY:
GOOGLE EARTH AND THEIR DATA PARTNERS, 3/12/2018.

N

0 500 1,000
Feet

1 " = 500 '
1:6,000

PROJECT:
HOLLYFRONTIER TULSA REFINING LLC
TULSA WEST REFINERY - PERMIT NO. 058078775-PC
TULSA, OKLAHOMA

TITLE:
LAND TREATMENT UNITS LOCATION AND NON-WASTE AREA PROPOSED EXCLUSIONS

DRAWN BY:	MHORN	PROJ. NO.:	304508
CHECKED BY:	MWALTHER		
APPROVED BY:		**FIGURE 5-2**	
DATE:	NOVEMBER 2018		

TRC

505 East Huntland Drive, Suite 250
Austin, TX 78752
Phone: 512.329.6080
www.trcsolutions.com

FILE NO.: 5-2.mxd

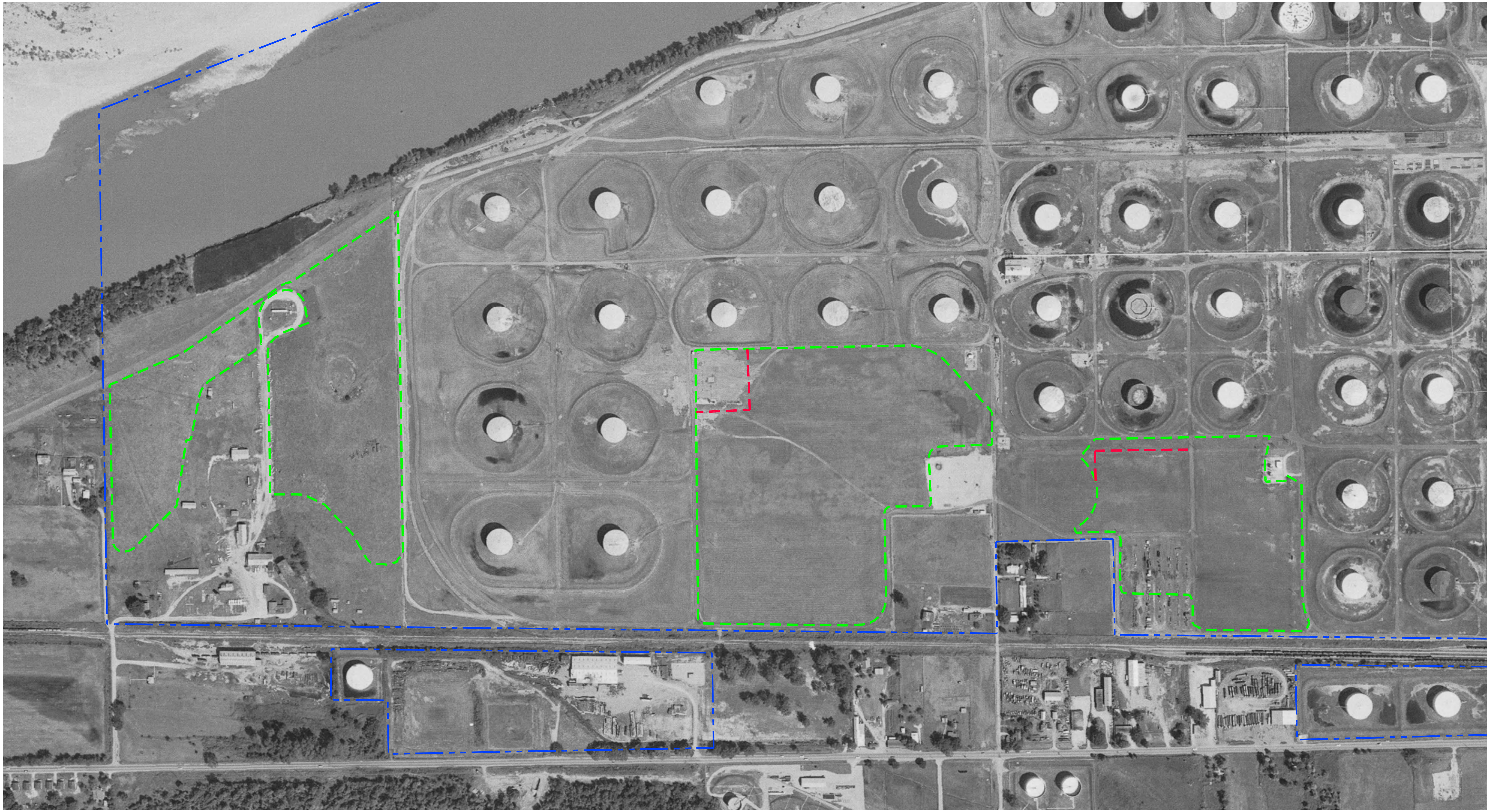
Plot Date:
Path:

Appendices

5.1 Historical Photos of the Land Treatment Units

APPENDIX 5.1 – HISTORIAL PHOTOS OF THE LAND TREATMENT UNITS

D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:31pm

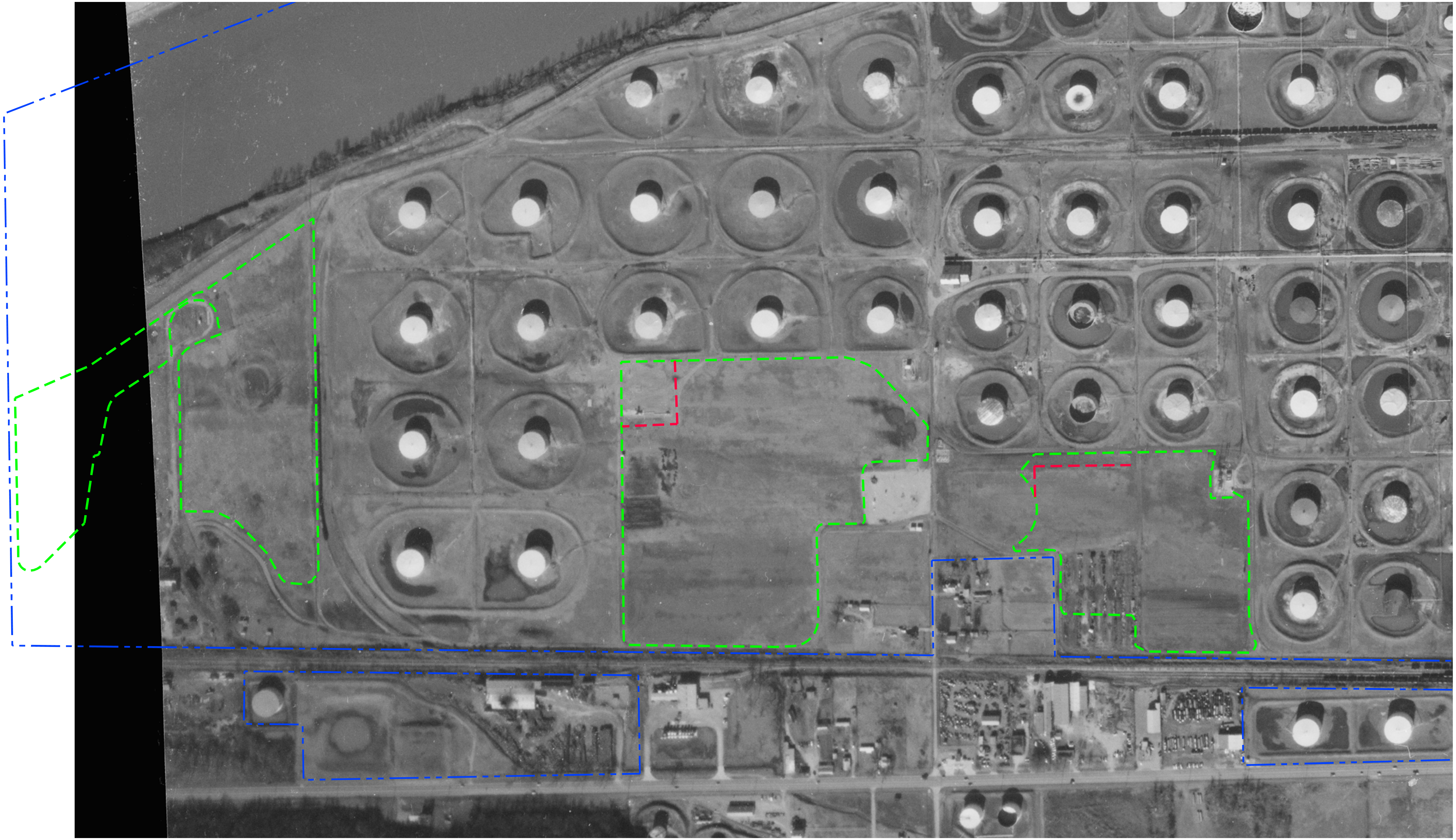


HISTORICAL AERIAL PHOTOGRAPH DATED
SEPTEMBER 10, 1967

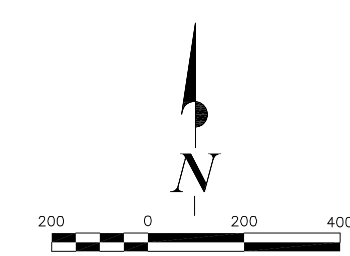
N

200 0 200 400
SCALE FEET

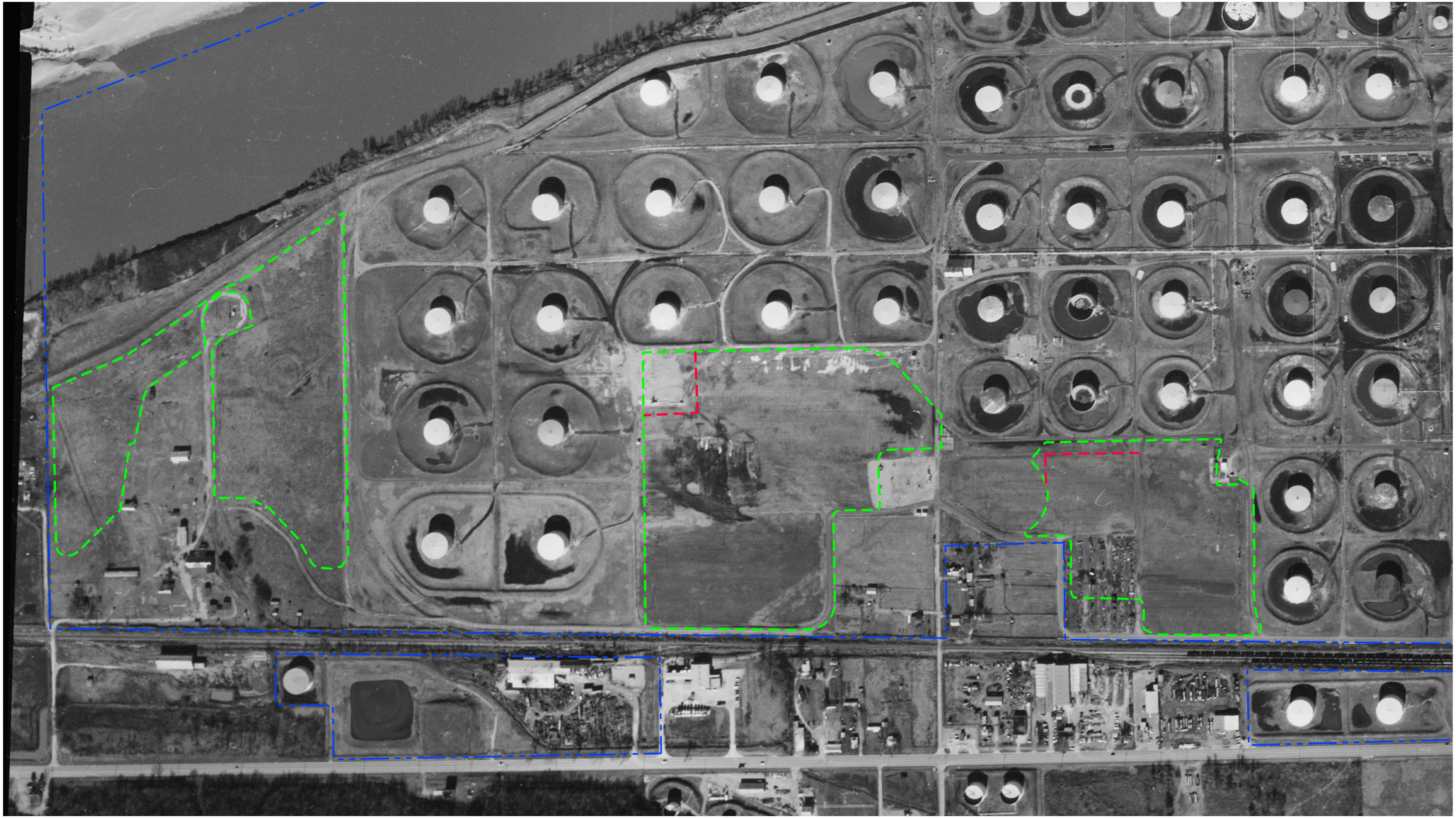
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:32pm



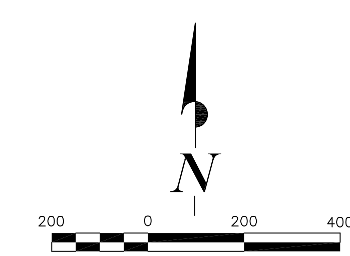
HISTORICAL AERIAL PHOTOGRAPH DATED
DECEMBER 17, 1971



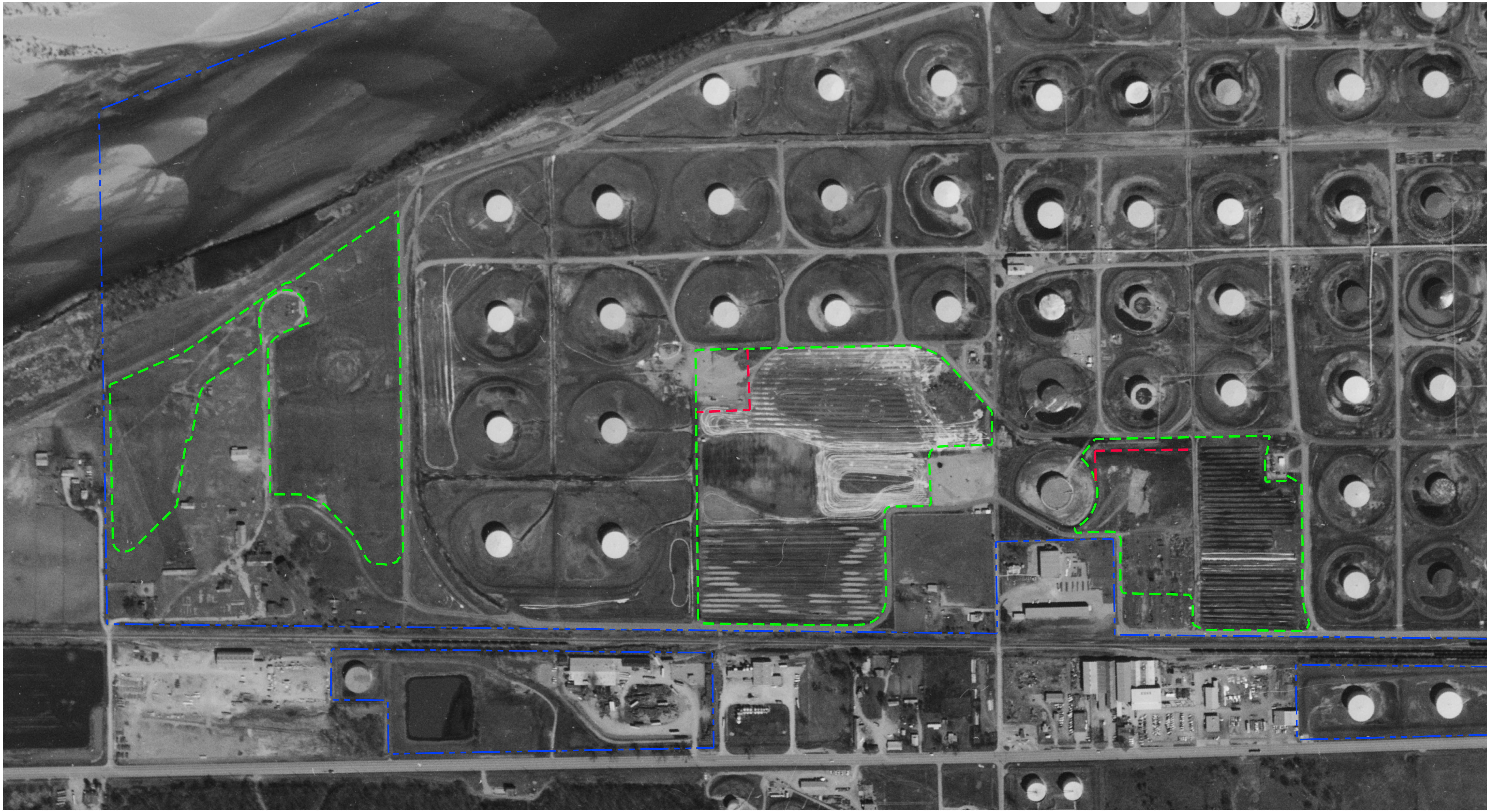
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:33pm



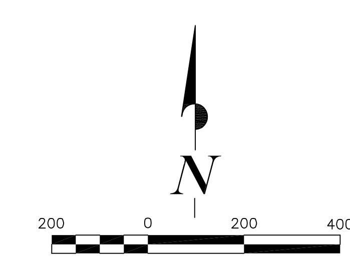
HISTORICAL AERIAL PHOTOGRAPH DATED
DECEMBER 6, 1973



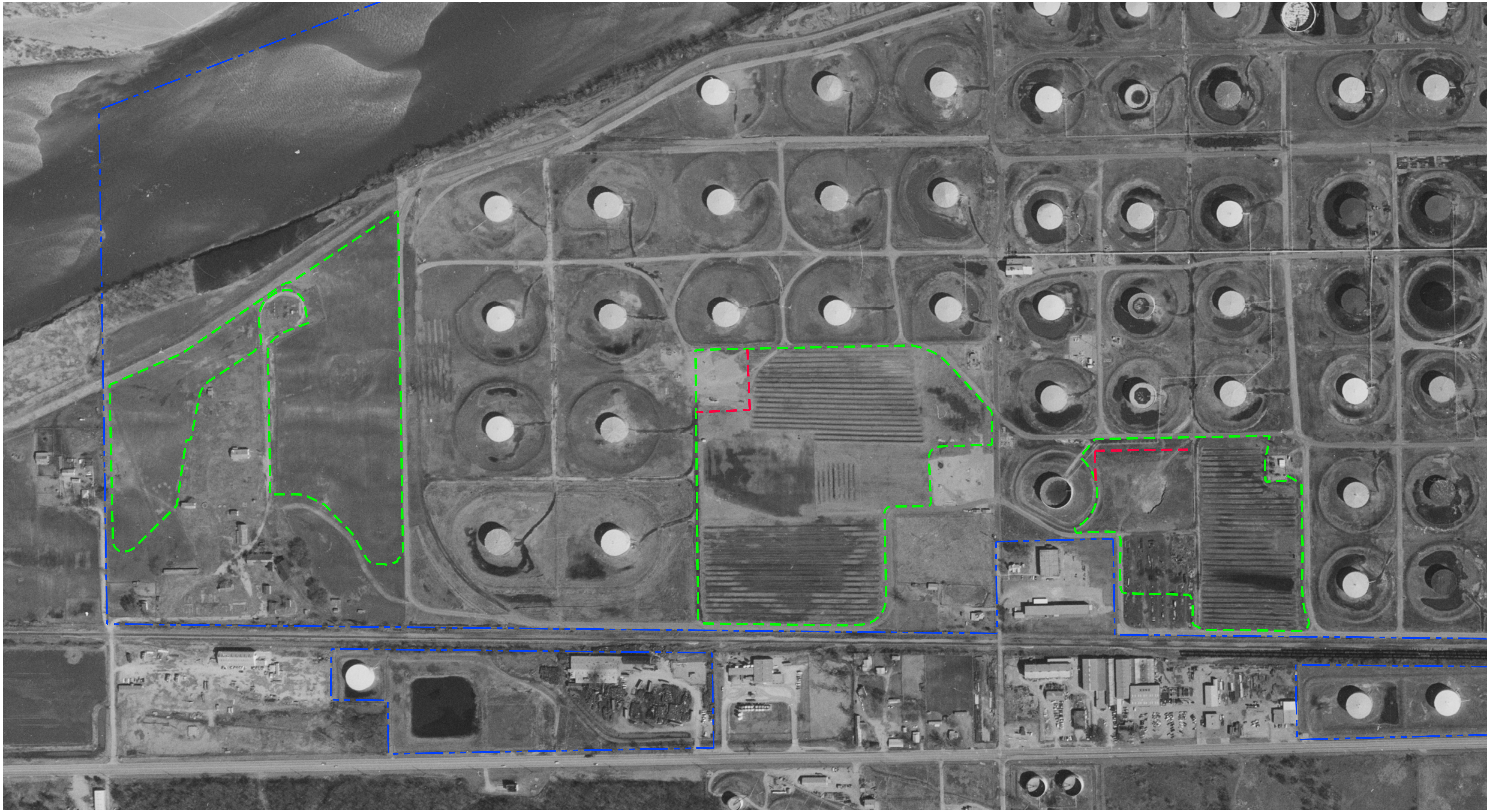
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:34pm



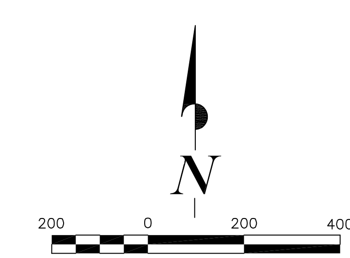
HISTORICAL AERIAL PHOTOGRAPH DATED
APRIL 2, 1976



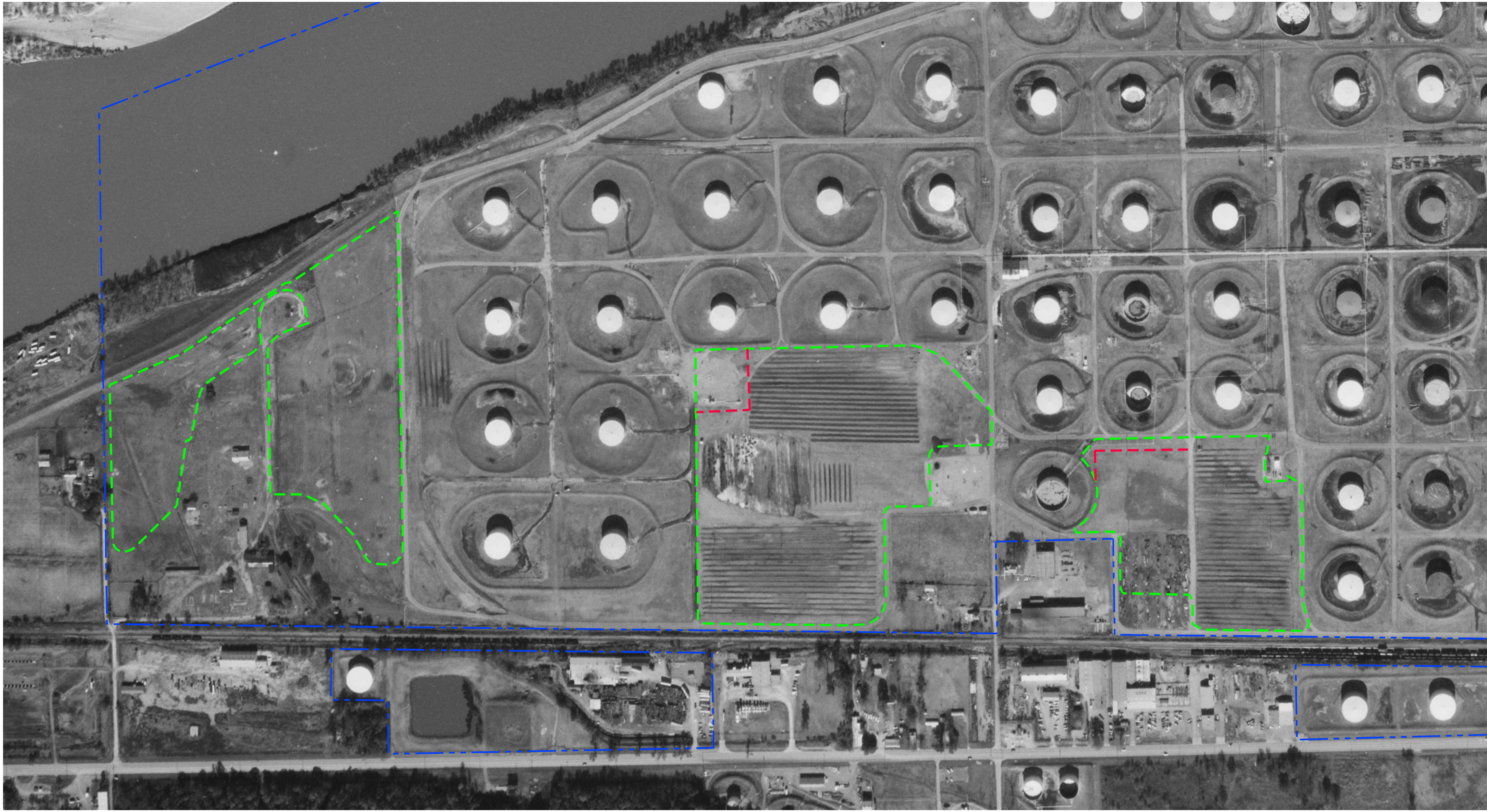
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:34pm



HISTORICAL AERIAL PHOTOGRAPH DATED
MARCH 28, 1978



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:35pm



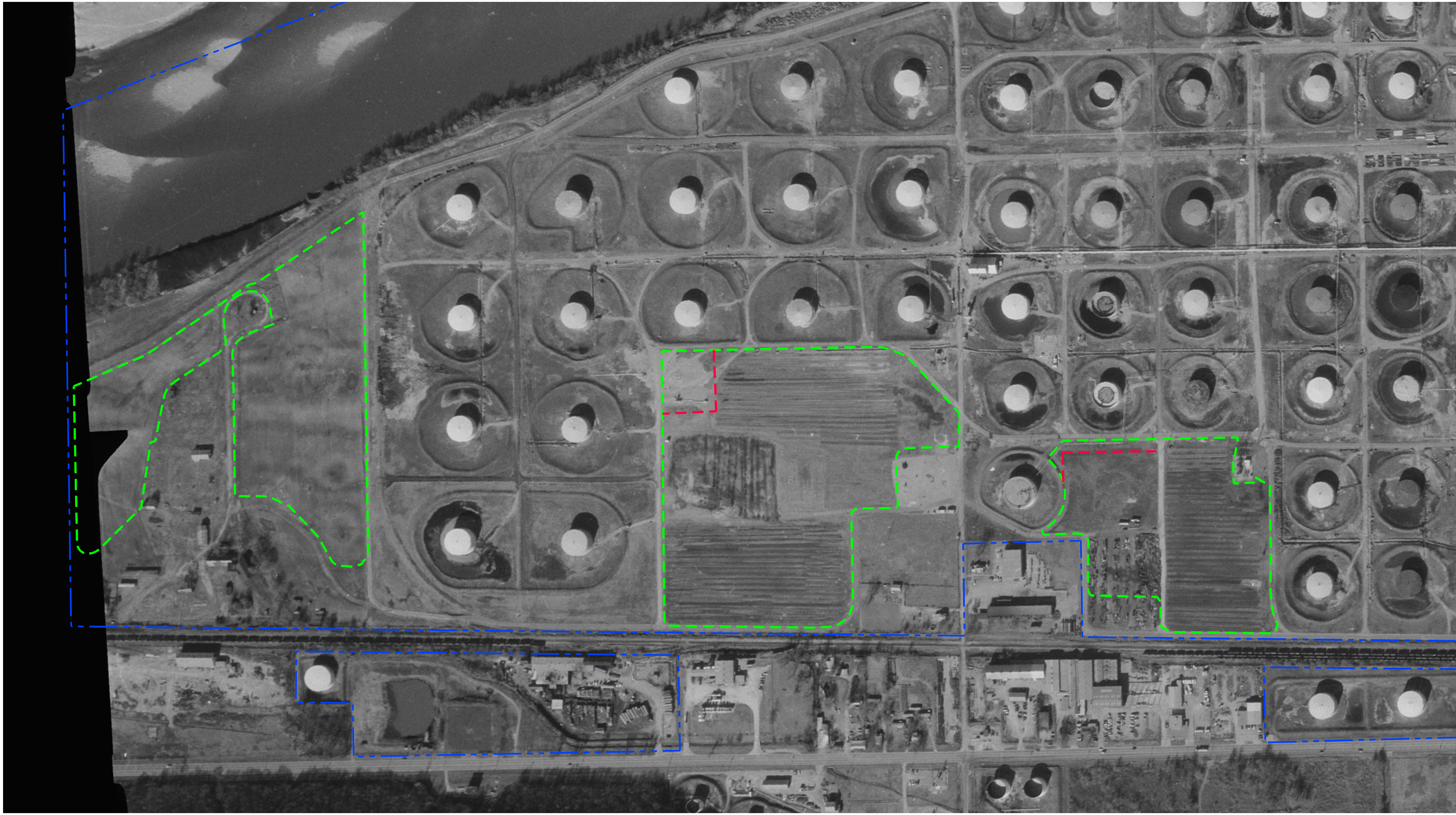
HISTORICAL AERIAL PHOTOGRAPH DATED
NOVEMBER 14, 1979

N

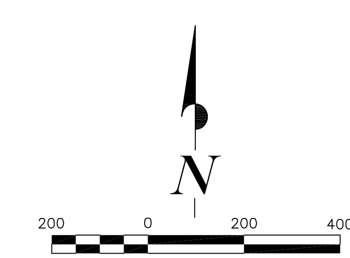
200 0 200 400

SCALE FEET

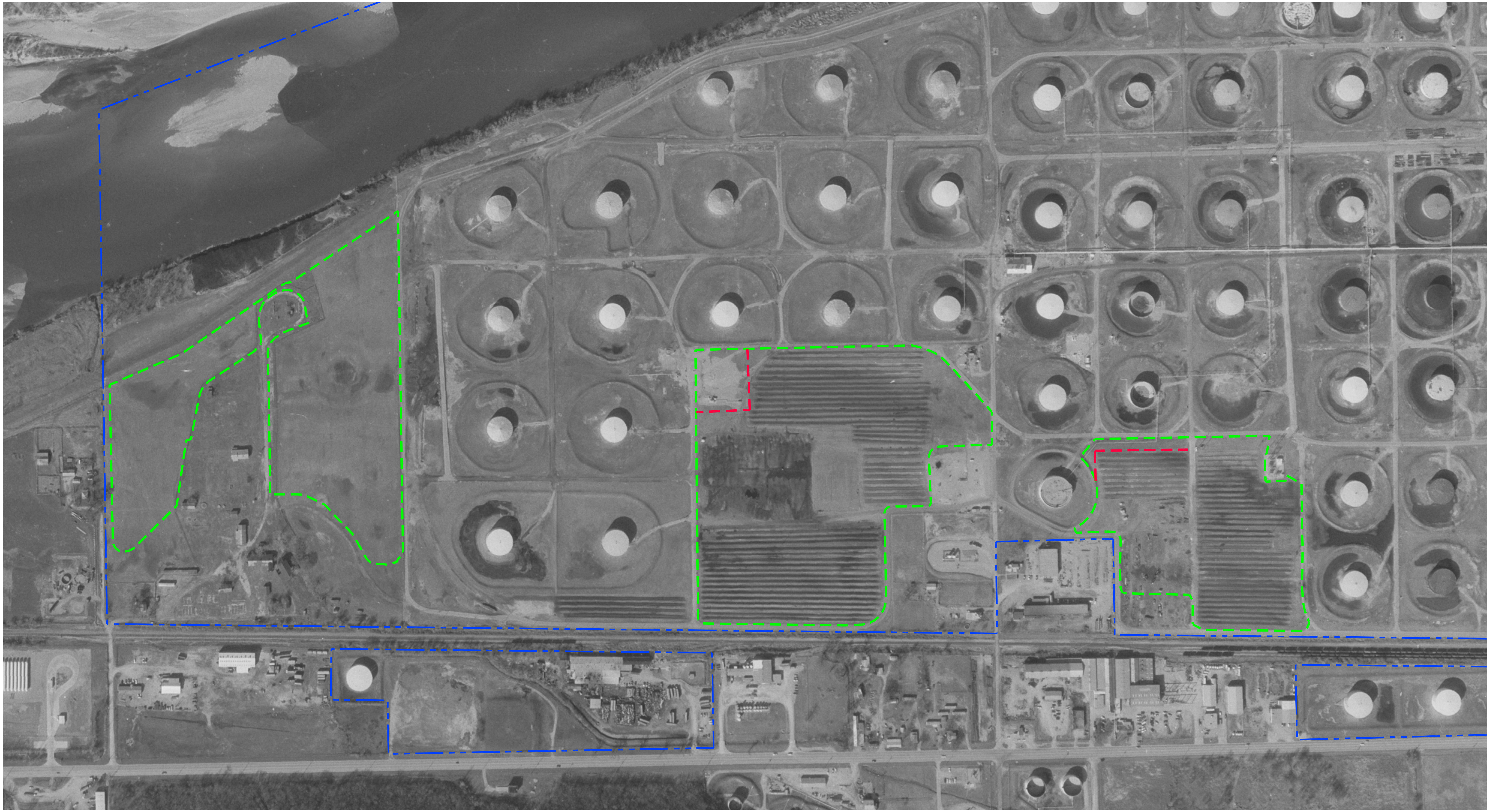
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:35pm



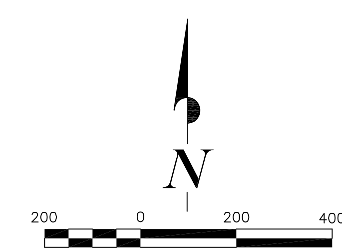
HISTORICAL AERIAL PHOTOGRAPH DATED
DECEMBER 9, 1981

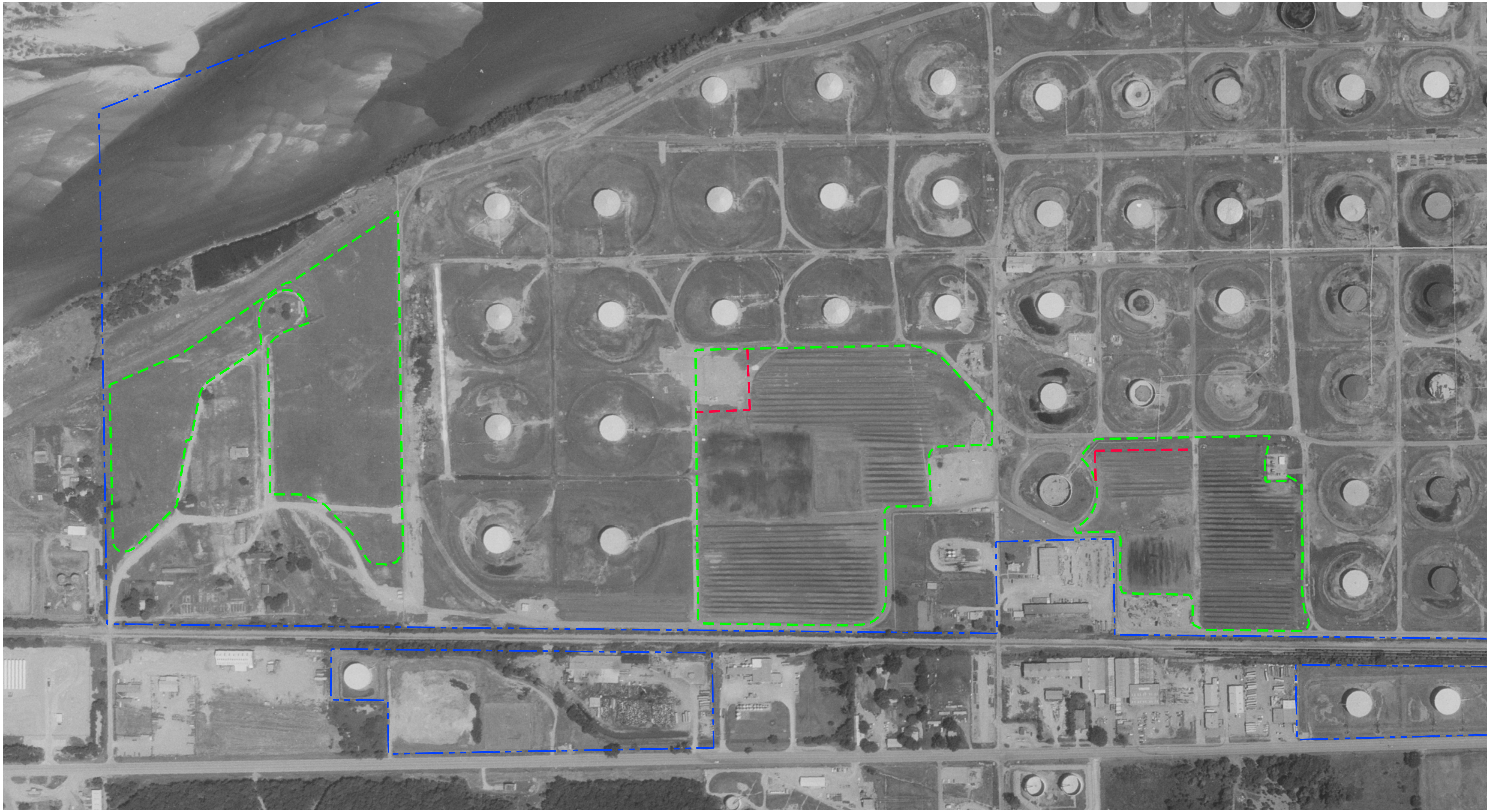


D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:36pm

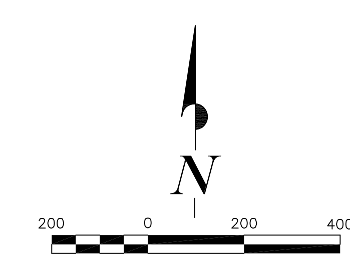


HISTORICAL AERIAL PHOTOGRAPH DATED
FEBRUARY 16, 1983

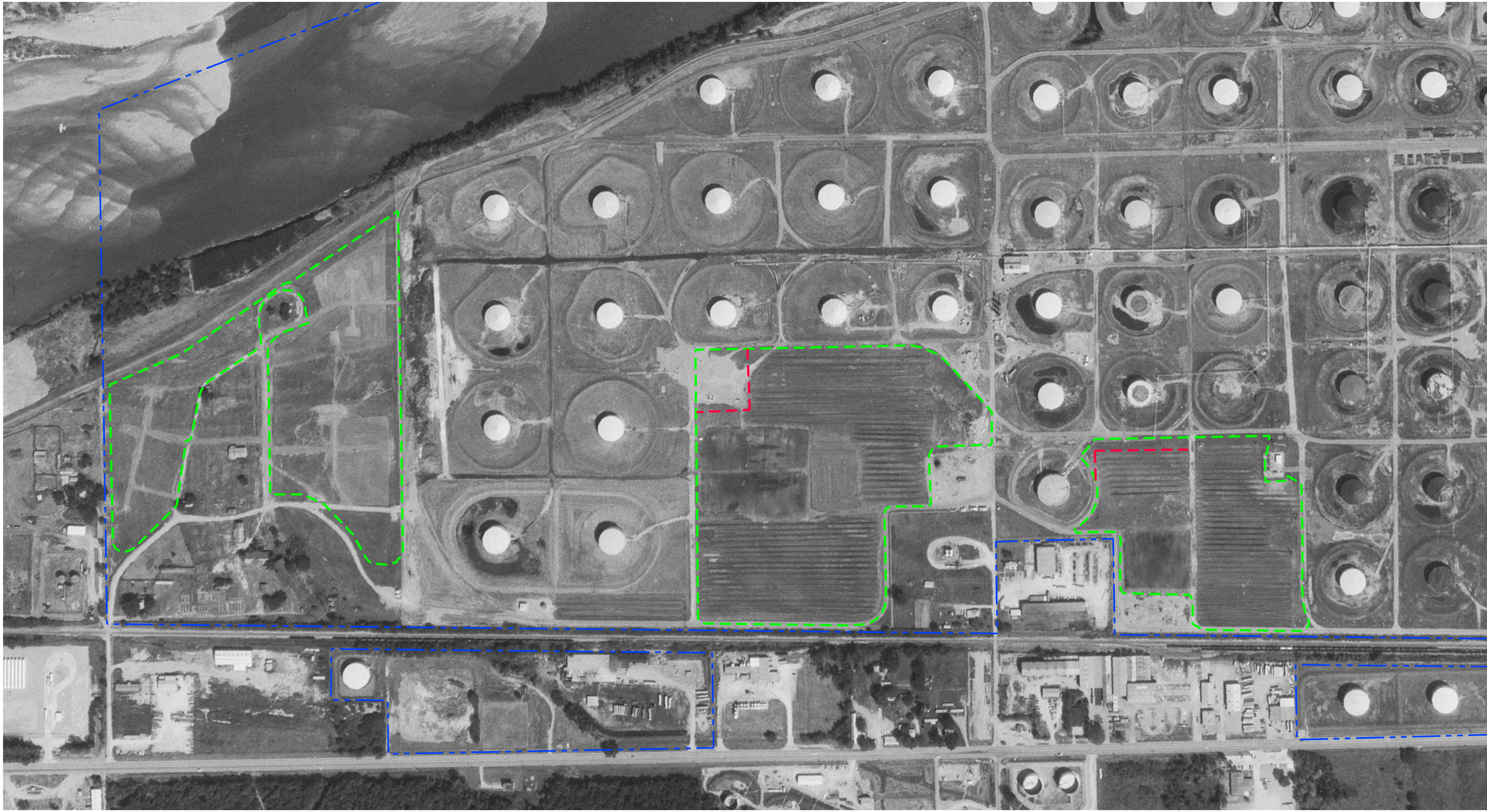




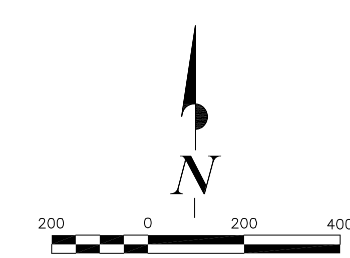
HISTORICAL AERIAL PHOTOGRAPH DATED
JULY 18, 1984



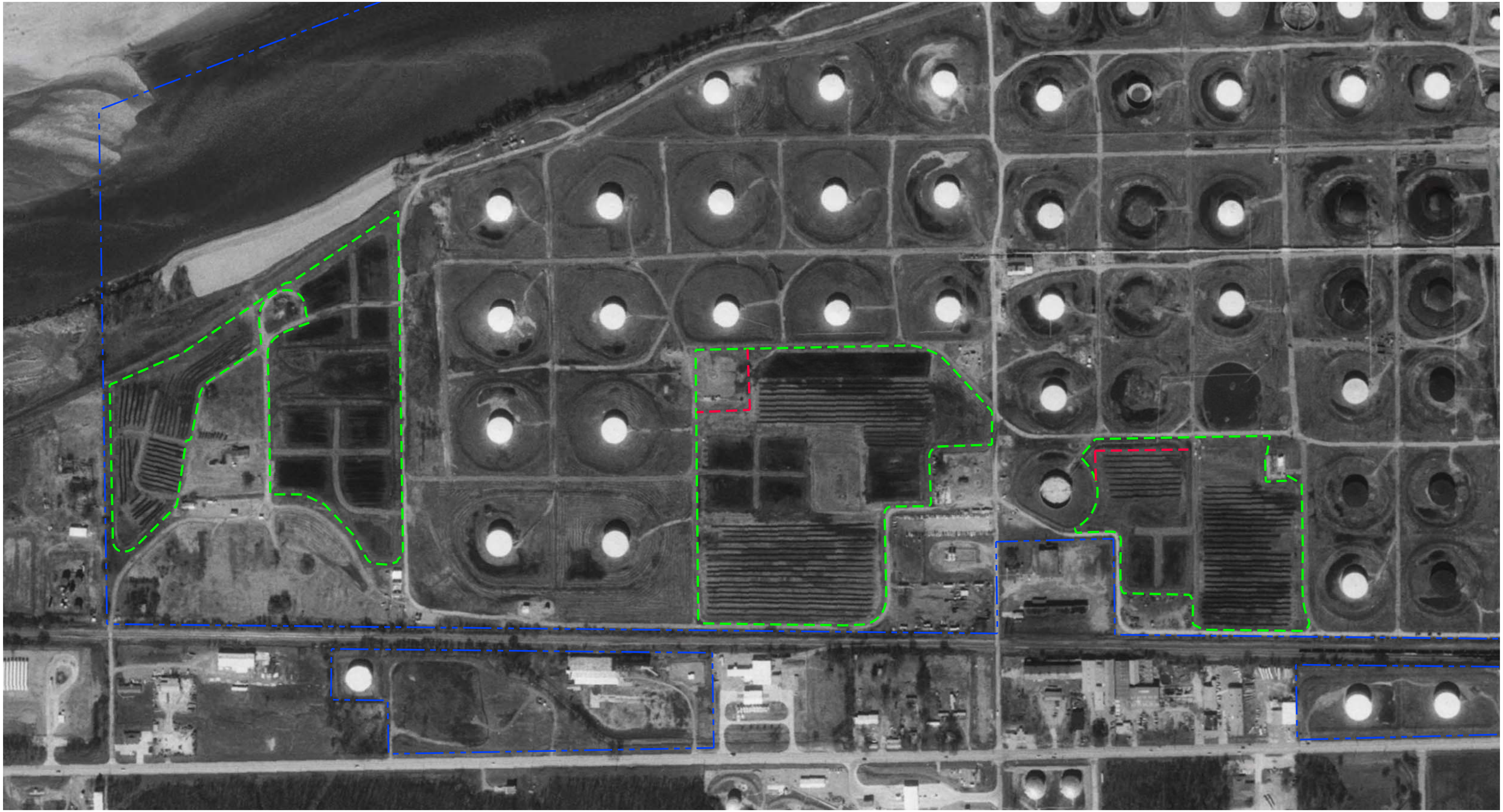
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:36pm



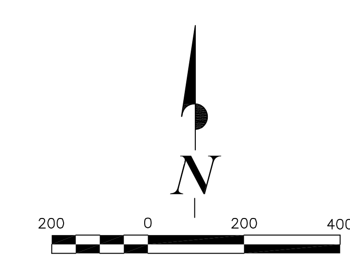
HISTORICAL AERIAL PHOTOGRAPH DATED
SEPTEMBER 5, 1985



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018—6:37pm

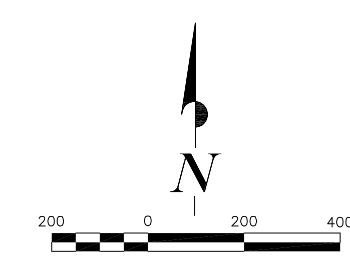


HISTORICAL AERIAL PHOTOGRAPH DATED
MARCH 7, 1995

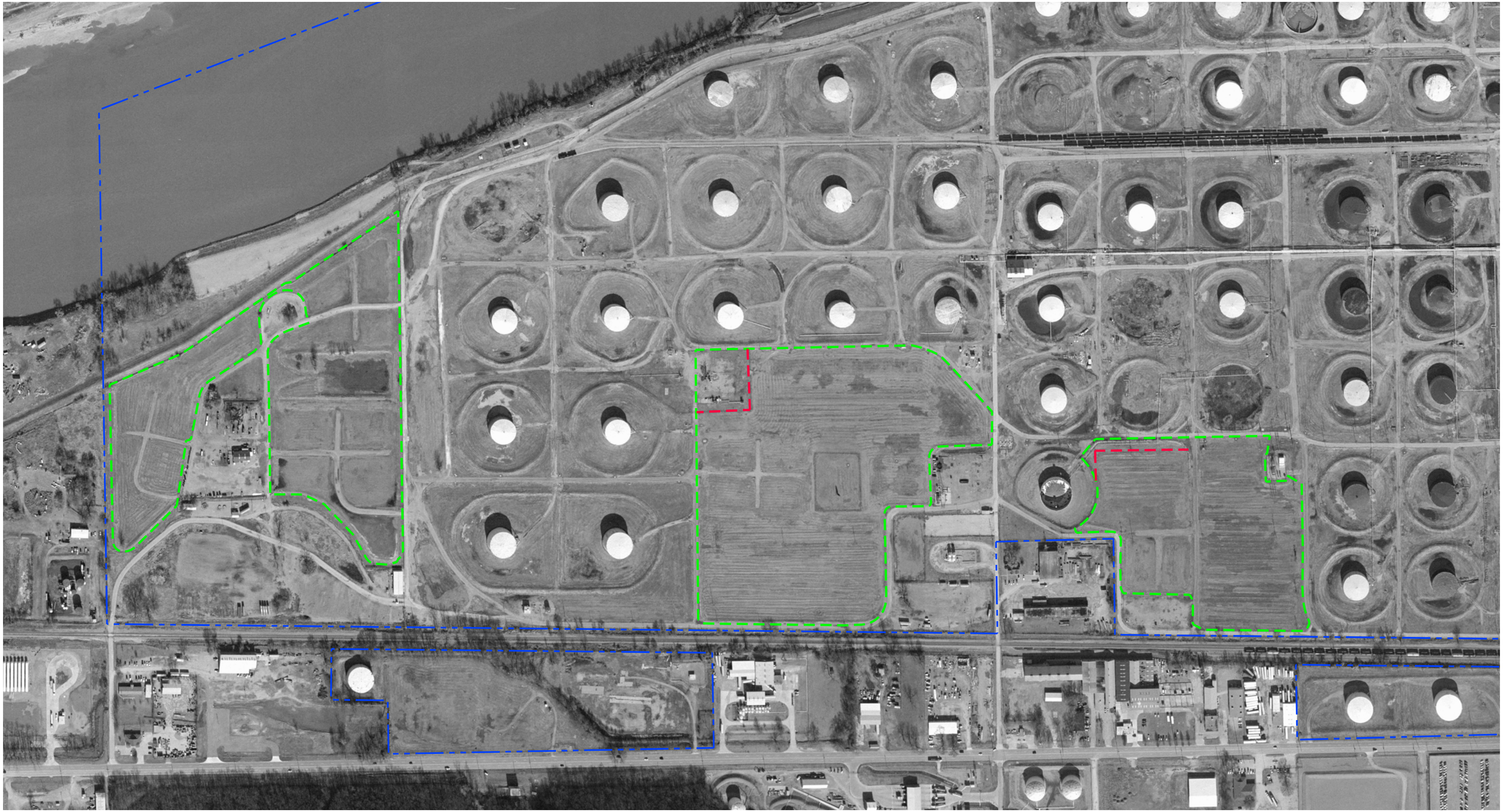


D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:37pm

HISTORICAL AERIAL PHOTOGRAPH DATED
JULY 14, 2003



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:38pm



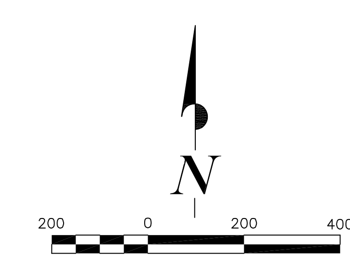
HISTORICAL AERIAL PHOTOGRAPH DATED
FEBRUARY 2004

N

200 0 200 400

SCALE FEET

HISTORICAL AERIAL PHOTOGRAPH DATED
JULY 20, 2004



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:39pm

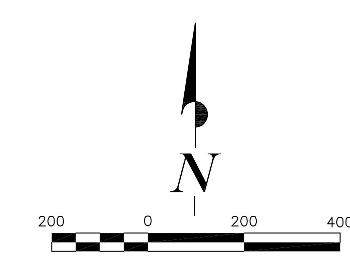
HISTORICAL AERIAL PHOTOGRAPH DATED
JUNE 15, 2005

N

200 0 200 400
SCALE FEET

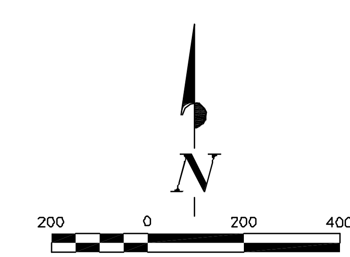
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018–6:39pm

HISTORICAL AERIAL PHOTOGRAPH DATED
SEPTEMBER 27,2006

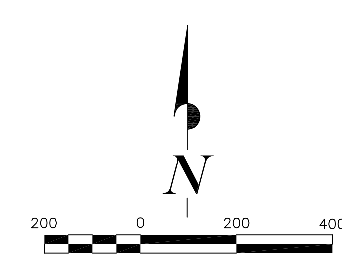


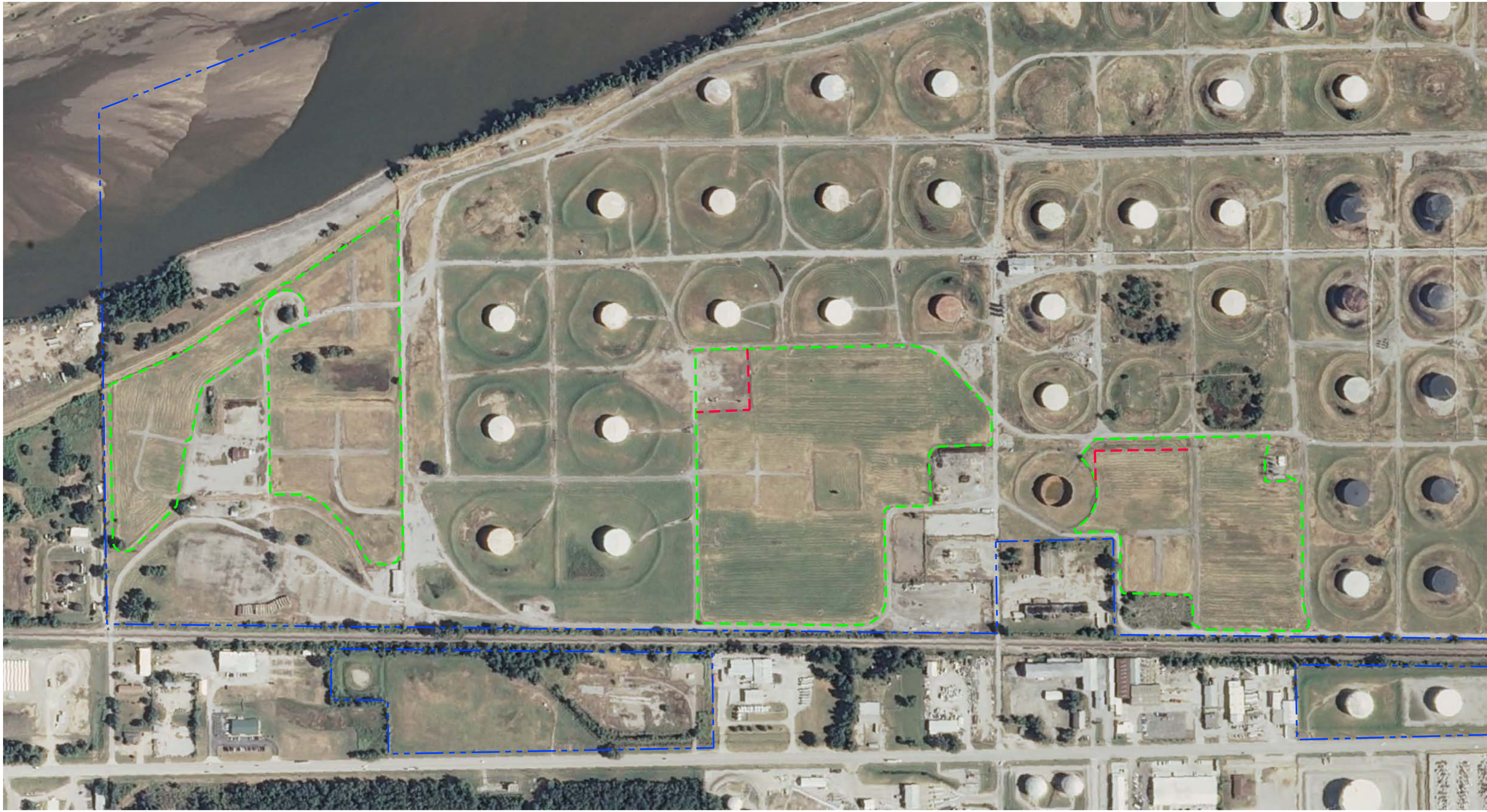
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:40pm

HISTORICAL AERIAL PHOTOGRAPH DATED
UNKNOWN MONTH/DAY, 2007

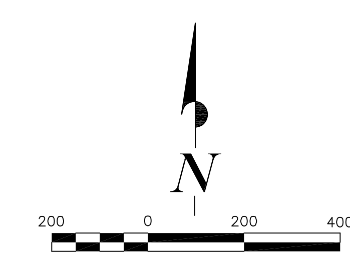


HISTORICAL AERIAL PHOTOGRAPH DATED
MAY 4, 2008

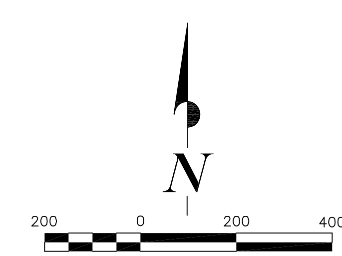




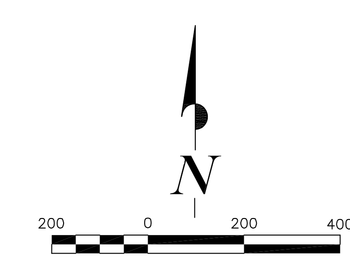
HISTORICAL AERIAL PHOTOGRAPH DATED
AUGUST 13, 2010



HISTORICAL AERIAL PHOTOGRAPH DATED
FEBRUARY 28, 2011

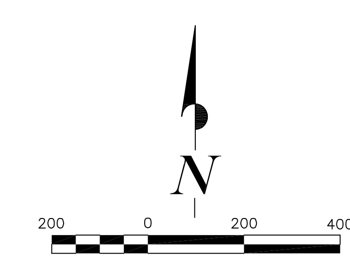


HISTORICAL AERIAL PHOTOGRAPH DATED
AUGUST 17, 2013



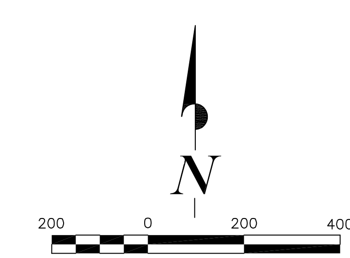
D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:43pm

HISTORICAL AERIAL PHOTOGRAPH DATED
MARCH 29, 2015



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:43pm

HISTORICAL AERIAL PHOTOGRAPH DATED
APRIL 30, 2015



D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:44pm

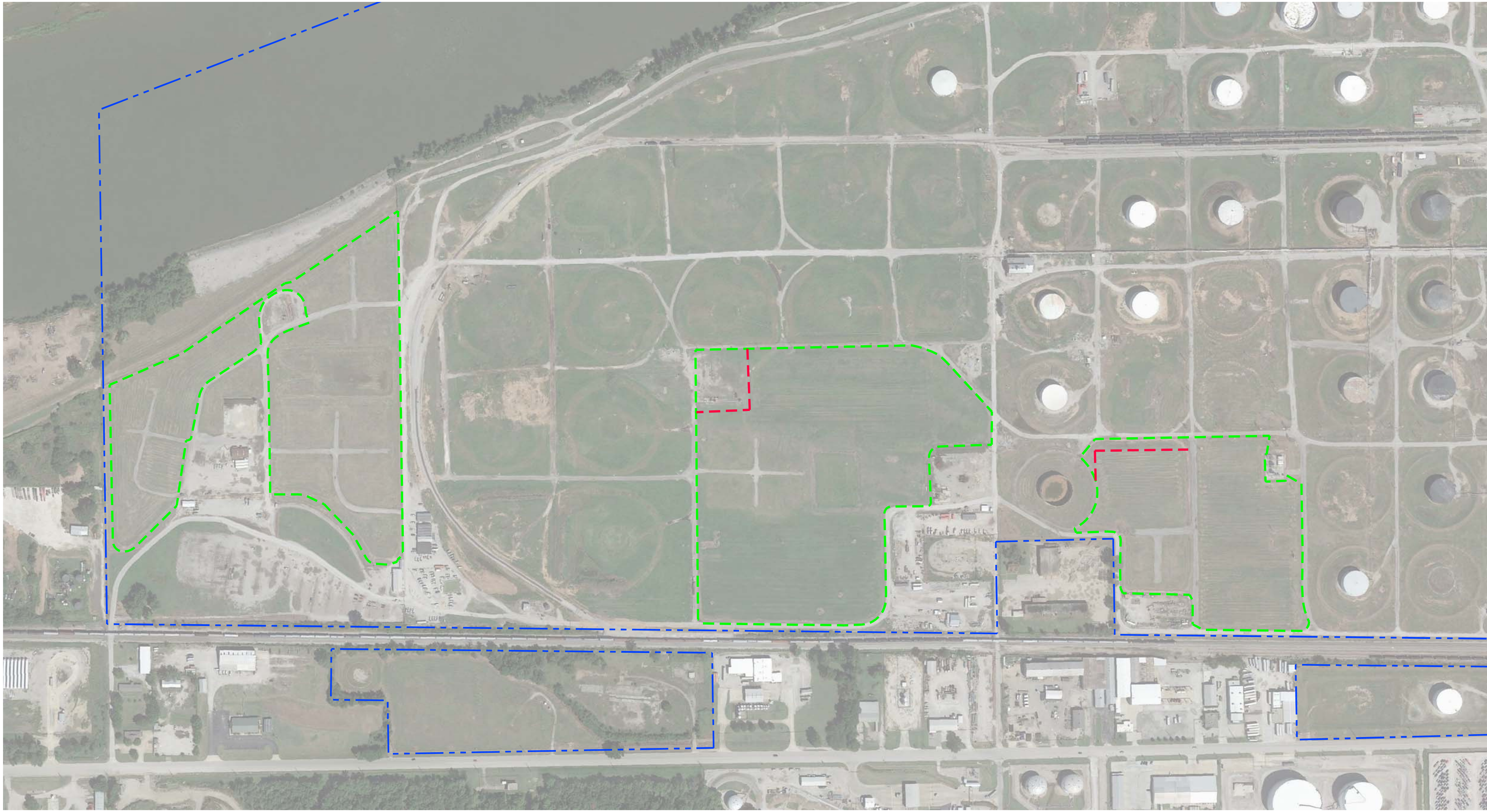
HISTORICAL AERIAL PHOTOGRAPH DATED
AUGUST 9, 2015

N

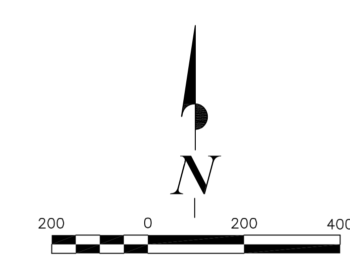
200 0 200 400

SCALE FEET

D:\Projects\HollyFrontier\HTW\HFCHHTW003_HTW_SMR\2018\04_CAD\HTW_HistoricalAerials_Site.dwg on Nov 07, 2018-6:44pm



HISTORICAL AERIAL PHOTOGRAPH DATED
SEPTEMBER 10, 2016



6 POST-CLOSURE AND CORRECTIVE ACTION COST ESTIMATES AND FINANCIAL ASSURANCE

6.1 Post-Closure Notices

No later than 60 days after completion of the established post-closure period for each land treatment unit (LTU), the HollyFrontier Tulsa Refining LLC (HFTR), Tulsa West Refinery (the Refinery) will submit to the Oklahoma Department of Environmental Quality (ODEQ), by registered mail, a signed certification that the post-closure of the LTUs was performed in accordance with the specification in the approved post-closure plan. The certification will be signed by the Refinery and an independent, registered professional engineer (PE). Documentation supporting the independent, registered PE's certification will be furnished to the ODEQ upon request until the ODEQ releases the Refinery from the financial assurance requirements for post-closure.

6.2 Cost Estimates

Table 6-1 provides cost estimates for post-closure care and maintenance for the regulated units (LTUs) and corrective action for Solid Waste Management Units (SWMUs), groundwater, light non-aqueous phase liquids (LNAPL), and the Arkansas Riverbank area. The cost estimates are based on third-party costs and do not include any potential salvage value for resale of wastes, structures, or equipment. The cost estimates assume that all work may be completed by an independent, third-party contractor hired by the Refinery. The background information for each cost estimate is provided in Appendix 6.1.

The total estimated cost is included in this table and is calculated by multiplying the estimated annual cost by the number of years of required post-closure. Note that the costs provided are consistent with the Refinery's 3Q 2018 environmental accrual and so are slightly higher than the most recent annual financial assurance submittal (March 2018). As required, the financial assurance estimate is updated annually using an inflation factor or by recalculation the maximum cost of closure in current dollars. The updated cost estimates will be maintained at the Refinery. The annually updated financial assurance will be provided to the ODEQ per the schedule defined in 40 CFR 264 Subpart H.

6.3 Financial Assurance

Financial assurance documentation for post-closure care of the regulated units and liability coverage is provided in Appendix 6.2. The financial assurance documentation was prepared in accordance with Title 40 Part 264.145(f) of the Code of Federal Regulations (40 CFR 264.145(f)). Financial assurance information will be reviewed annually and updated to reflect inflation or other changes as necessary.