FLINT HILLS resources®
Corpus Christi Refineries

CERTIFIED MAIL
RETURN RECEIPT REQUEST
7012 3050 0000 9879 4683

P.O. Box 2608
Corpus Christi, Texas 78403-2608

March 13, 2014

Ms. Kathleen Aisling
U.S. Environmental Protection Agency, Region 6
Air Permits Section (6PD-R)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Flint Hills Resources Corpus Christi, LLC - West Refinery
PSD Greenhouse Gas Permit Application
Domestic Crude Project
Response to March 3, 2014 Information Request

Dear Ms. Aisling:

On behalf of Flint Hills Resources Corpus Christi, LLC (FHR), I am submitting responses to your March 3, 2014 information request (sent via email) regarding the greenhouse gas (GHG) prevention of significant deterioration (PSD) permit application FHR submitted to EPA Region 6 on December 12, 2012. The permit application seeks to authorize a project at FHR's West Refinery to allow the refinery to process a larger percentage of domestic crude oil (the Domestic Crude Project). Responses to your information request are provided on the following pages.

In the event you have additional questions or would like to discuss further, please contact Daren Knowles at (361) 242-8301.

Sincerely,

Valerie Pompa
Vice President and Manufacturing Manager

VP/DK/syw
Air 14-101; W 3 N 22

Enclosure

cc: Air Section Manager, TCEQ, Region 14, Corpus Christi, w/enclosure
Mr. Kris L. Kirchner, P.E., Waid Environmental, Austin, w/enclosure
Mr. Jeff Robinson, EPA Region 6, w/enclosure (via email)
Ms. Melanie Magee, EPA Region 6, w/enclosure (via email)

RESPONSES TO MARCH 3, 2014 INFORMATION REQUEST

On Page 47 of the original permit application, FHR discusses the source of the emissions and some controls that are used to minimize the fugitive emissions such as engines, thermal oxidizer, and carbon canisters. On Page 83 and 84 of the original permit application, in the BACT discussion, FHR selects BACT as a number of upfront procedures including purging to a flare or flare gas recovery unit, but does not mention the other control devices.

Here is what I need:

1. **Describe the emissions (both fugitive and non fugitive) and which activities they stem from.**

   FHR's Response

   We have estimated GHG emissions from three different MSS activities associated with the Domestic Crude Project:
   - the opening of process vessels and associated piping/equipment,
   - the loading of vacuum trucks,
   - tank maintenance including refilling tanks after a product change, tank degassing, and refilling tanks after a tank degassing/cleaning.

   Opening of Process Vessels and Associated Piping/Equipment

   Before opening process vessels and other equipment in the process units to atmosphere so that maintenance can be performed, the equipment is decommissioned. The decommissioning step includes activities such as purging, depressuring, steaming, acid and caustic washing, process line pigging and other chemical cleaning. During the decommissioning step, emissions are routed to the flare gas recovery unit (FGRU), which recovers hydrocarbons that would normally be flared and transfers the hydrocarbons to the Fuel Gas System. Therefore, there are no GHG emissions to the atmosphere during decommissioning. Once equipment has been decommissioned, blinds for maintenance are installed. This requires opening the equipment to atmosphere and releasing any residual VOC to the atmosphere. FHR has estimated the fugitive methane emissions when the equipment is opened to atmosphere.

   The Loading of Vacuum Trucks

   Vacuum trucks are used to transfer materials from one container to another and empty tanks and other vessels during maintenance activities. Vacuum trucks are also used for blinding activities, pump maintenance, dewatering crude tanks etc. Because the new Saturates Gas Plant No. 3 process unit is being built, there is the potential for more vacuum trucks being utilized than were authorized by the TCEQ in NSR Permit No. 8803A in July 2009. Accordingly, FHR has included the increased GHG emissions from these vacuum trucks in the application. Pursuant to TCEQ BACT requirements for VOC emissions, the vacuum truck emissions will be controlled with a carbon canister, engine, or thermal oxidizer, which reduce methane emissions by at least 98%. Controlling the vacuum truck emissions with an engine or thermal oxidizer generates GHG emissions from the combustion of the vacuum truck emissions. Worst case GHG emissions have been estimated for the combustion of the vacuum truck emissions with an engine or thermal oxidizer using the CO_2 emission factor from 40 CFR 98, Table C-1 for crude oil, which is the highest factor for all types of vapors combusted, and the CH_4 and N_2O factors from 40 CFR 98, Table C-2 for petroleum. Because multiple MSS activities are controlled with an engine or thermal oxidizer, one calculation is provided based on the maximum fuel gas firing capacity of the engine or thermal oxidizer and the total number of operating

hours during the year from all of the MSS activities (vacuum truck loading and tank maintenance) represented in the application for the Domestic Crude Project.

Tank Maintenance

FHR is proposing to construct two new storage tanks (IFRTK1 and IFRTK2) as part of the domestic crude project. During normal operation, these new storage tanks will only store materials that do not have the potential for greenhouse gas emissions. However, pursuant to TCEC BACT requirements for VOC emissions, some tank maintenance activities are controlled with an engine or thermal oxidizer to reduce VOC emissions. GHG emissions are generated as a result of combusting the vapors generated during the maintenance activities. The activities that are controlled are refilling the tanks after a product change, degassing the tanks, and refilling the tanks after tank degassing/cleaning. GHG emissions have been estimated using the CO_2 emission factor from 40 CFR 98, Table C-1 for crude oil, which is the highest factor for all types of vapors combusted, and the CH_4 and N_2O factors from 40 CFR 98, Table C-2 for petroleum. Because multiple MSS activities are controlled with an engine or thermal oxidizer, one calculation is provided based on the maximum fuel gas firing capacity of the engine or thermal oxidizer and the total number of operating hours during the year from all of the MSS activities (vacuum truck loading and tank maintenance) represented in the application for the Domestic Crude Project.

2. What specifically are the control devices and which ones are portable?

FHR's Response

The control devices used to control emissions from new MSS activities as part of the Domestic Crude Project are carbon canisters, engines, and thermal oxidizers. All of these control devices are portable.

3. Which emissions go to which control device (including the flares) and under what circumstances?

FHR's Response

See response to Question No. 1.

4. What can be done to minimize the fugitive emissions (which goes into the BACT discussion)?

FHR's Response

Fugitive GHG (methane) emissions resulting from the opening of process vessels and associated equipment are minimized by decommissioning the equipment prior to opening the equipment to the atmosphere as described in the response to Question No. 1. There are no fugitive GHG emissions generated from vacuum truck loading or tank maintenance activities. Instead, GHG emissions associated with these activities are generated when VOC emissions from these activities are controlled with an engine or thermal oxidizer pursuant to TCEQ BACT requirements. GHG emissions generated from controlling the vacuum truck loading emissions and the tank maintenance emissions are minimized by maintaining good combustion practices for the engines and thermal oxidizers.