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August 30, 2017

Mr. Allan C. Beshore  
Director, Central Region, OPS  
U.S. Department of Transportation  
Pipeline and Hazardous Materials Safety Administration  
901 Locust Street  
Suite 462  
Kansas City, MO 64106-2641

Re: Notice of Proposed Violation, Proposed Civil Penalty, and Proposed Compliance Order No. CPF 3-2016-5011, issued December 15, 2016.

Mr. Beshore:

On behalf of Flint Hills Resources Pine Bend, LLC ("FHR"), I write regarding the above-referenced Notice of Probable Violation (together, the "Notice") to amend FHR's Response to the Notice, dated March 16, 2017 (the "Response").

As you know, I, along with other FHR representatives, met informally with you and your team on June 2, 2017, to discuss the Notice and Response. After our conversation regarding Probable Violation 2, FHR has holistically reviewed the open dike impounding of Tank 541 to provide additional information that may assist your inquiry into this matter.<sup>1</sup> As such, this letter and the enclosed materials hereby replace and supersede the portion of the Response that addressed Probable Violation 2.<sup>2</sup> FHR's response to Probable Violation 1 (which demonstrates that Tank 541 met API 650 construction tolerances) remains the same.

Provided below is an expanded description of how Tank 541 satisfies the requirements of the NFPA 30 §22.11 provisions cited in the Notice and a restatement of certain preliminary issues. Enclosed are Exhibits that illustrate key points, as referenced below.

**Tank 541 spill control utilizes impoundment by open diking.**

Under NFPA 30 §22.11, an above ground storage tank must comply with one of four different types of spill control: 1) remote impounding (§22.11.1); 2) impoundment by open diking (§22.11.2); 3) impoundment by closed-top diking (§22.11.3); or 4) secondary containment using a tank (§22.11.4). There is no requirement in NFPA 30 §22.11 to comply with more than one type of spill control. This is important because 49 CFR §195.264 incorporates NFPA 30 §22.11.1 and 22.11.2 by reference, thereby adopting its meaning and intent.

<sup>1</sup> I gave notice of FHR's intent to amend the Response by email to PHMSA on June 9, 2017.

<sup>2</sup> The replaced section of the Response concerning Probable Violation 2 was titled "2) §195.264 Impoundment, protection against entry, normal/emergency venting or pressure/vacuum relief for aboveground breakout tanks."

To this end, *Tank 541 is surrounded by an open dike that satisfies the impoundment requirements of §22.11.2*, as you can see in the enclosed Exhibit Map (the "Map").<sup>3</sup> If a leak were to occur on Tank 541, the first 399,000 gallons would flow to the storm water retention pond (the "Pond") within the dike and the remainder would continue to pool at the east end of the containment area. The Pond is simply a deep area within the open dike and should not be viewed as "Impoundment by drainage to a remote impounding area" under 49 CFR §195.264 or remote impounding under NFPA 30 §22.11.1. In the unlikely event of a catastrophic failure, the tanks in the open dike could be surrounded by product, which is consistent with open dike containment.

Tank 541's spill control complies with NFPA 30 §22.11.2, rendering NFPA 30 §22.11.1 inapplicable, since NFPA 30 §22.11 does not require compliance with both.

**Tank 541's spill control plan is designed to drain the tank contents at a 1% grade for at least 50 feet or to the dike base, whichever is less.**

FHR has reviewed the slope around Tank 541, finding that some settling around the Tank ringwall has occurred, reducing the slope adjacent to the Tank to less than 1% in certain areas. FHR will ensure the slope around the Tank complies with NFPA 30 §22.11.2.1, and will submit documentation of work performed, as stated in the Proposed Compliance Order. This and similar grading activity is part of FHR's routine maintenance for the facility.

Other than grading around the ringwall, Tank 541's spill control plan is compliant with NFPA 30 §22.11.2. To illustrate this, the Map shows the elevation around Tank 541 and the sloping west-to-east drainage paths across the tank farm. This design is such that a release from any side of Tank 541 would flow in the direction of "Path A" and "Path B"—as represented on the Map—for at least 50 feet. If the contents were spilled westward, towards the dike wall, the flow would be redirected eastward by the dike wall and the slope around tank 541, moving the contents for at least 50 feet. The flow path is not radial, meaning it would not flow for at least 50 feet in every direction. Instead, it flows in a way that follows the contours of the tank farm, flowing along the dike wall and around neighboring tanks.

This west-to-east flow path is photographed in the enclosed Exhibits A-E and explained below.

*Exhibit A-* This photograph captures the eastern side of Tank 541. The dike wall is clearly shown in the background, extending along the western and northern side (behind and to the right) of the Tank. In the event of a release, the contents of the tank would be channeled to the east, towards the vicinity of where this photograph was taken. This flow path is evident by the darker channel area at the right side of the photograph that leads to the rocky outfall at the lower right of the photograph. This path is represented on the Map as Path A. It is possible, given the contour and elevation in the tank farm, that some contents of Tank 541 would flow around the opposite, southern side of Tank 590 (the unnumbered tank pictured at the far left of the photograph). This flow path is represented on the Map as Path B and shown in Exhibits B and D, as described below.

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<sup>3</sup> Under NFPA 30 §22.11.2, the open dike around tanks must exceed the greatest amount of liquid that can be discharged by the largest tank. In this case, the surveyed dike volume is 5,220,250 gallons. The largest tank's volume (Tank 510) is 3,652,016. Indeed, the volumetric capacity of the dike exceeds the largest tank.

*Exhibit B-* The eastern side of Tank 590 is shown in the upper right quadrant of this photograph. The darker drainage channel in the lower right quadrant of the photograph shows the flow path for liquids moving past Tank 590 along its northern side (to the right of Tank 590; see Path A), as well as the direction of liquids flowing to its southern side (to the left of Tank 590; see Path B). These two flow paths would meet as pictured here and continue flowing east past Tank 540 (the unnumbered tank at the left of the photograph).

*Exhibit C-* This photograph shows the eastern side of Tank 540. The darker drainage channel to the right of the tank clearly shows the drainage flow path as it moves past the north side (to the right) of the Tank (see Path A).

*Exhibit D-* This photograph shows the darker drainage channel (Path A) moving past the northern sides (right sides) of Tank 540 and Tank 521 towards Tank 510 (the unseen tank casting a shadow at the left of the photograph). Near the top of the shadow, the photograph also shows the drainage flow path of any contents of Tank 541 that moved to the south of Tank 590 (as described above for Exhibit A) and that may not have been gathered by the drainage channel pictured in Exhibit B, instead moving the liquids further eastward across the center of the tank farm (see Path B). This is the least likely drainage flow path from Tank 541; but it is a possibility, if there were a release along the southwest side of Tank 541 and the contents were disbursed widely enough.

*Exhibit E-* This photograph shows the Pond, which is the endpoint for the drainage channels. Fluids would flow from Tank 541, through the channels described above and into the Pond through a pipe buried beneath the orange cone at the lower right side of the photograph.

The contents of Tank 541 would be drained for much more than 50 feet, even if it spilled towards the dike wall, as shown by these Exhibits. This complies with—and exceeds—the requirements of NFPA 30 §22.11.2.1.

**The Notice does not address “seriousness”.**

PHMSA’s Notice alleges that Tank 541 fails to comply with NFPA 30 §22.11.1 and §22.11.2, because “the drainage route was not located so that if the liquid in the drainage system were ignited, tanks and piping would not be exposed to fire.”

To the extent that PHMSA is referring to the drainage channels associated with Tank 541, we have assumed that PHMSA is applying NFPA 30 §22.11.1.3, which generally follows the language in PHMSA’s Notice. NFPA 30 §22.11.1.3 is very clear that potential exposure to fire alone is not enough, it must be serious exposure:

NFPA 30 §22.11.1.3. The drainage route shall be located so that, if the liquid in the drainage system is ignited, the fire will not seriously expose tanks or adjoining property.

The Notice does not acknowledge this seriousness requirement. Nor does it state how the drainage channel could seriously expose tanks or piping.<sup>4</sup>

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<sup>4</sup> Additionally, the Notice does not specify what tanks or piping could be “exposed to fire” or whether NFPA 30 §22.11.1 or §22.11.2 (or both) are being applied to these tanks and piping. Without these facts, FHR has made certain assumptions about what parts of its facility are at issue.

**The drainage channel would not seriously expose tanks to fire.**

As stated previously, Tank 541 spill control utilizes impoundment by open diking. However, FHR reviewed its storm water drainage design and concluded that even if the remote impounding provisions of NFPA 30 §22.11.1 applied (and we believe they do not, as described above) a fire in the drainage channels would not seriously expose Tank 540 or any other tank to fire.

This determination was made because the walls of Tank 540 and other storage tanks near the drainage path are steel and would need to be heated to at least 1000°F for ten minutes to lose strength. Moreover, the liquid inside the tank forms a large heat sink that would absorb and limit the rate at which the tank walls heat up, increasing the time of exposure before the steel walls lose strength. Given these conditions, it would take a significant amount of time to heat the tank to 1000°F, and then it would have to remain at that temperature for at least ten minutes.

This is especially important because the area available for flow in the drainage channel, combined with the grade of the channel (which meets or exceeds 1%), ensures the flow of liquids from any tank draining into the channel would pass all storage tanks in under ten minutes, even if there was a catastrophic failure. Stated differently, if flowing liquids were on fire in the channel, the fire would not last long enough to weaken the walls of any tank near the drainage path. Serious exposure would not occur. This is also true for non-catastrophic releases. The smaller release volumes would not generate a fire significant enough to endanger the tanks or equipment.

**Conclusion**

In short, FHR has satisfied NFPA 30 § 22.11 through an open diking system under §22.11.2. We do not understand how this means that FHR could also be cited under NFPA 30 §22.11.1 (Remote Impounding) because §22.11 calls for compliance with §22.11.1 or §22.11.2, but not both. Even if NFPA 30 § 22.11.1 were to apply, other tanks would not be seriously exposed to fire because of the grade in the drainage channel. Only in the most catastrophic spill, is it possible that the drainage channel could be overwhelmed, at which time the open dike spill control system would be relied on to contain the spill.

For these reasons and those included in our Response, we again respectfully request that PHMSA 1) remove references to NFPA §22.11.1 and Tank 541's drainage channels, 2) accept FHR's commitment to ensuring a 1% slope around Tank 541 as bringing Tank 541 into compliance with §22.11.2, and 3) with respect to Probable Violation 1, that PHMSA eliminate the proposed civil penalty and compliance order based on FHR's satisfaction of API 650, as thoroughly explained in the Response.

FHR values its positive, cooperative relationship with PHMSA and looks forward to resolving this matter. Feel free to contact me directly at (316) 828-8520 (or by email at [keith.walton@fhr.com](mailto:keith.walton@fhr.com)) with any questions or comments.

Respectfully yours,



Keith Walton  
Compliance Manager  
Terminal Operations