MEMO

TO: **Jim Suttle, Hiland Crude**

FROM: **Brian Yeagley, Integrity Solutions LTD.**

DATE: **7/8/14**

RE: **Vance Residence Crude Oil Spill Monitoring**

INTRODUCTION:

Hiland Crude requested that Integrity Solutions, ltd. perform overland spread pipeline spill modeling near their crude oil pipeline and the Vance residence. The purpose of this modeling was to demonstrate that a worst-case scenario with the currently located pipeline did not impact the residence. Additionally, Hiland wished to confirm that a relocation of the pipeline 500' to the north of the current location also had no impact on the Vance residence.

APPROACH:

Integrity Solutions provides High Consequence Area (HCA) analysis to operators of 49CFR195 jurisdictional pipelines*. Part of this analysis includes modeling an "overland spread" of a spill plume emanating at ground level along the centerline of the pipeline. This analysis uses the ground profile to model a spread of a spill plume. The USGS National Elevation Dataset (NED) data is used. This data provides a ground elevation for a 10 meter square "pixel" of earth. In the model, each pixel is "filled" with product and then product is migrated to each adjacent pixel that is equal or lesser elevation. This is repeated until the calculated release has "run out". A release is initiated in the model at each pixel that is intersected by the pipeline. Each pixel is modeled to hold 16 bbl of product – based on leaving one inch of product in the filled pixel. The 1 inch depth is considered conservative due to the fact that most surfaces would, in fact, hold much more than one inch (example: cultivated farm land). Additionally, the model is considered conservative due to the fact that the release is modeled at the surface. Experience indicates that leaks often follow the previously excavated pipe trench for some time prior to the leak reaching the ground surface – making the above ground modeled release volume significantly less.

Releases were modeled at the existing pipeline location and at the anticipated new location 500' to the north. A release volume of 782 bbls was used – provided by Hiland and based on maximum pumping rates through this section of pipeline along with anticipated leak detection capabilities. Figure 1 shows the results of both modeled releases.

The green pipeline with the orange overland spread plume represents a release along the existing pipeline location. The red pipeline with the green overland spread plume represents the proposed relocation of the pipeline 500' to the north. Note that the Vance residence is not impacted by the overland spill plume in either scenario.

EXHIBIT 6

tabbles.

*The reader is encouraged to contact Integrity Sol[...] desired.

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Late-filed Exhibit 6

Hiland Crude, LLC

Figure 1 - Vance Residence Overland Spread Plumes

CONCLUSION:

The modeling performed by Integrity Solutions on the existing pipeline location and the proposed relocation 500' to the north are both represented in Figure 1. In each scenario, the overland spill plumes do not intersect the Vance Residence.

*The reader is encouraged to contact Integrity Solutions, ltd. if more details on the modeling process are desired.