



August 27, 2020

Via Electronic Mail – johohenste@pa.gov

John F. Hohenstein, P.E.
Regional Manager
Waterways and Wetlands
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

Re: Notice of Violation dated August 20, 2020
Pennsylvania Pipeline Project (a.k.a. Mariner East 2)
DEP Permit Nos. E15-862 and ESG 01 000 15 001
Upper Uwchlan Township, Chester County

Dear Mr. Hohenstein,

On August 20, 2020, Sunoco Pipeline, L.P. (“SPLP”) received a Notice of Violation (“NOV”) from the Department concerning an inadvertent return (“IR”) of drilling fluid and subsidence event at the Horizontal Directional Drill (“HDD”) S3-0290, PA-CH-0100.0000-RD in Upper Uwchlan Township, Chester County. SPLP’s response to the NOV is provided below. SPLP would also like to note that prior to the IR event occurring on August 10, 2020, there was a significant regional storm on that produced 5 to 7 inches of rain, which caused increased sedimentation and harmed riparian vegetation in the local area.

First, the NOV asserts that “To date, Sunoco has not provided an immediate or long-term restoration plan to address impacts to waters of the Commonwealth.” SPLP disagrees that it did not promptly provide information that the Department requested, including how SPLP would remediate and address the IR at this site. In fact, on August 14, 2020, SPLP via email provided to the Department a stream/lake assessment plan and an update on SPLP’s cleanup/monitoring response efforts. Additionally, the Department has dedicated staff working with SPLP’s field personnel to whom real time updates are continuously provided. The Department then requested a more formal restoration plan, which SPLP promptly provided on August 21, 2020, that included the preliminary results from SPLP’s stream/lake assessments. In order to develop a longer-term restoration plan, field delineations and additional evaluations were needed. That work was expedited to ensure that the correct, appropriate, and responsible restoration efforts were put into place.

Nevertheless, the NOV requests that SPLP provide additional information to the Department for review and approval. Each of the Department's requests listed in the NOV and SPLP's response to each item is set forth below.

1. *An Interim IR report form(s) for the site, as required by Section 6.3 of the IR PPC Plan.*

Response: An Initial IR Report was submitted on August 10, 2020, and Interim IR Reports were submitted on August 18, 2020 and August 25, 2020. SPLP will continue to submit additional Interim IR Reports in accordance with the schedule listed in the HDD IR Plan

2. *A detailed description, including photographs and monitoring data collected to date documenting the initial and current site conditions, of the actions taken to contain and remove the industrial waste from each water of the Commonwealth, including wetlands, impacted by the IR and the subsidence event. Also include a detailed plan describing the additional measures Sunoco proposes to perform to complete remediation of the IR, including its plan to assess and restore wetlands functions and values impacted by the IR and the subsidence event, as well as any aquatic resources in the wetland, tributary stream, and reservoir. Separate descriptions and actions need to be provided for the impacted wetland, the impacted tributary streams, and the impacted reservoir. Among other things, data collected documenting the initial and current site conditions, separated as specified by wetland, tributary, and reservoir should detail:*

- a. *A geospatial representation of the survey area, impact area, remediation area, and other limits of disturbance, investigation, or ingress/egress.*
- b. *Characterization of the reservoir substrate, tributary substrate, linear and longitudinal profiles, and pool/riffle complexes.*
- c. *Quantification and characterization of nutrient, carbon, and trace metal flux between the reservoir substrate and water column.*
- d. *Quantification and characterization of aquatic plantonic and macrophytic plant communities and terrestrial plant communities.*
- e. *Quantification of hydrologic impacts, including surface/groundwater flowpaths and subsurface aquifers/hyporheic zones.*
- f. *Delineation and mapping of the floodway.*
- g. *Delineation of the floodway along both trib and wetland, including delineation of pasture, shrub coverage, and tree coverage with identification of dominant species within the delineated floodway.*

Response: SPLP has submitted photo documentation to the Department in conjunction with the IR Reports (August 10, 18, and 25, 2020), additional updates were provided via email (August 14 and August 24, 2020), and also submitted with the HDD Restart Report (August 17, 2020) for this location. These reports chronologically photo document and describe the initial and daily site conditions and activities, including actions taken to contain and remove drilling fluid from waters of the commonwealth. These reports, and the Incident Report

submitted to the Department on August 14, 2020, detail the actions taken at the subsidence area within wetland H17.

SPLP is in the process of preparing two detailed plans describing additional measures to complete the remediation of the IR at wetland, streams, and the reservoir, including the subsidence area. The first plan is an Impact Assessment and Restoration Plan for Wetland H17 and Streams H10/H11 and the second is an Impact Assessment and Restoration Plan for Marsh Creek Reservoir. Included in these plans will be an impact assessment that will include much of the information requested in 2a-g above, along with any additional restoration measures necessary to restore any realized impacts to aquatic resources, including wetland functions and values. These plans will also include monitoring to ensure restoration goals are met.

Response to items 2a-g follows:

- a) *A geospatial representation of the survey area, impact area, remediation area, and other limits of disturbance, investigation, or ingress/egress.*
 - Both the Impact Assessment and Restoration Plans described above will provide a delineation of the survey area, impact area, and remediation area. The survey area will include areas adjacent to the impact area, as well as reference wetland, stream, and reservoir areas used for the impact analysis. The impact area will include all areas impacted by the IR, including those used for staging, ingress/egress and other investigations. Therefore, the remediation area will be the same as the impact area.

- b) *Characterization of the reservoir substrate, tributary substrate, linear and longitudinal profiles, and pool/riffle complexes.*
 - SPLP's consultants (AECOM, Tetra Tech, and Skelly & Loy) are in the process of completing the characterization of the substrate of the impacted and reference streams, and this data will be presented in the Impact Assessment and Restoration Plan for Wetland H17 and Streams H10/H11. The plan will also map the pool/riffle complexes for the impacted and reference streams.
 - SPLP's consultants are in the process of completing the characterization of the substrate of the reservoir and reservoir reference area and this data will be presented in the Impact Assessment and Restoration Plan for Marsh Creek Reservoir. SPLP will provide the preliminary results to the Department when received.
 - Bathymetry data will be required for remedial design/restoration plans, which SPLP's consultants will be collecting within the next two weeks. This data will also be incorporated into the Impact Assessment and Restoration Plan for Marsh Creek Reservoir and provided to the Department upon completion

- c) *Quantification and characterization of nutrient, carbon, and trace metal flux between the reservoir substrate and water column*
- SPLP's consultants are in the process of performing this analysis; however, the sample results have a minimum 7-day analysis turn-around time frame. SPLP will provide the preliminary results to the Department following their receipt. The results will also be incorporated into the impact assessment and restoration plans and used to develop the appropriate remediation/restoration measures.
- d) *Quantification and characterization of aquatic planktonic and macrophytic plant communities and terrestrial plant communities.*
- SPLP's consultants are in the process of completing the quantification and characterization of the macrophytic plant communities within the impacted and reference streams and wetlands, and this data will be presented in the Impact Assessment and Restoration Plan for Wetland H17 and Streams H10/H11. Terrestrial plant communities are being addressed in response to No. 2g. below.
 - SPLP's consultants are in the process of completing the quantification and characterization of the planktonic and macrophytic plant communities within the impacted and reference reservoir areas, and this data will be presented within the impact assessment and restoration plan for Marsh Creek Reservoir.
- e) *Quantification of hydrologic impacts, including surface/groundwater flowpaths and subsurface aquifers/hyporheic zones.*
- The hydrology of W-H17 is a predominantly driven by groundwater. Prior to the start-up of drilling for the 20-inch line, minor seeps were observed throughout this wetland and the soils remained saturated even during the dry season and recent dry weather. In addition to the seeps, the wetland receives discharges from an adjacent pond (P-H2) located on the eastern edge of the wetland and flow from a spring house located approximately 430 feet to the northwest of the wetland. Groundwater emerges from seeps within W-H17, collects into rills, then discharges into two stream segments identified as streams H10 and S-H11. These stream segments eventually converge within wetland H17 forming a single stream that flows southwest, ultimately discharging into Marsh Creek Reservoir.

No pre-drill quantification of flow rates from the various elements of this hydrologic system was required. Moreover, a true baseline of flow measurements, for purposes of comparison to current conditions, would require long-term, pre-drill seasonal monitoring. However, comparisons can be made from documented observations made by Environmental Inspectors and Professional Geologists that are made as part of their regular inspection duties. These inspections started the day prior to the start of drilling for the 20-inch HDD at S3-0290 and continue to date. The daily inspections include examination of wetland H17, rills, and the stream segments that converge within wetland H17 (S-H10 and S-H11).

Based on the Environmental Inspection and Professional Geologist inspection reports, there has been no observable change in the hydrology of the wetland and rills that feed the tributary from pre-drill observations to present (post August 10, 2020 IR), except for the temporary turbidity created by the IR itself.

f) *Delineation and mapping of the floodway.*

- The majority of the area is located outside of the FEMA identified floodway. Therefore, where the FEMA delineation is absent a 50-foot-wide floodway from the top of bank of identified tributaries will be assumed. The floodway will be identified on the plans provided with the impact assessment and restoration plans.

g) *Delineation of the floodway along both trib and wetland, including delineation of pasture, shrub coverage, and tree coverage with identification of dominant species within the delineated floodway.*

- SPLP will provide the mapping of upland and wetland cover type descriptions and classifications occurring within the survey area which will encompass the impacted area, adjacent lands, and reference areas. This mapping and characterization of the cover types will be provided within the Impact Assessment and Restoration Plan for Wetland H17 and Streams H10/H11.

3. *A detailed resource delineation and functional assessment (DEP Rapid Assessment method see <http://www.depgreenport.state.pa.us/elibrary/GetFolder?FolderID=4678> and Wetland Evaluation Technique (WET) Functions and Values assessment) for wetland, stream, and bodies of water of the entire area impacted by the IR, subsidence and cleanup efforts (Impact Area). Please also delineate resources outside of the Impact Area that are being used for sampling control sites. The delineation needs to include a quantitative assessment of acreage of bodies of water (wetlands and lake) impacted and linear feet of stream impacted by the IR and cleanup activities. Also include a detailed work schedule for assessment activities and contact information for Sunoco's personnel performing these assessment activities. Sunoco or its consultants should provide a minimum of 48-hour notice to DEP and DCNR before performing any assessment activities. Provide notice to Mr. John Hohenstein, Ms. Desiree Henning-Dudley and Mr. Frank De Francesco and Mr. James Wassel for DCNR.*

Response: SPLP and its consultants are actively in the process of performing a detailed resource delineation and function assessment for the wetland, stream, and reservoir in the areas impacted by the IR, as well as reference areas. These mapping and assessment efforts will be provided within the impact assessment and restoration plans that are currently being prepared. As requested by this paragraph, on 8/26/2020, a detailed work schedule for assessment activities was provided to the Department and DCNR via email 48-hours in advance of the work scheduled to occur on Friday, August 28, 2020 through Monday, August 31, 2020, including contact information for SPLP and its consultants – Tetra Tech, Skelly & Loy, and AECOM.

4. *A restart report meeting the requirements of Section 5.1.5 (Monitoring Protocol for Condition 3) of the April 2018 IR PPC Plan, that has been prepared and sealed by a Pennsylvania Licensed Professional Geologist. (DEP has received Sunoco's restart report required pursuant to the Section 5.1.5 (Monitoring Protocol for Condition 3) of the April 2018 IR PPC Plan on August 17, 2020.)*

Response: A Restart Report prepared and sealed by Richard T. Wardrop, a Pennsylvania Licensed Professional Geologist, was submitted to the Department on August 17, 2020.

5. *A detailed description of the geophysical testing to be conducted at the site that includes, at a minimum, testing and analysis for resistivity, seismicity, and gravity. Also include a detailed evaluation of the local geology in the vicinity of the IR area and the potential for the presence of any solution channels that might have contributed to the occurrence of the IR and the subsidence.*

Response: Geophysical testing is proposed for a 500-foot-long by 50-foot-wide section of the HDD profile centered on the August 10, 2020 IR location. The exact area of the survey may be adjusted in the field based on site conditions. The geophysical testing will include microgravity, electrical resistivity, and seismic refraction.

The geology of the area surrounding and including the HDD alignments for the 16-inch and 20-inch HDDs at this location is described in the HDD Revaluation Report previously submitted to the Department for the 20-inch drill, Section 2.2, dated May 2019. Based on published mapping of geologic contacts, geotechnical boring information for HDD S3-0290, and cuttings logged by PGs during the pilot boring for the 20-inch pipeline at this location, the area surrounding and including the HDD alignments does not contain carbonate rock that would contain solution channels and/or promote the development of karst features (Kochanov, et. al., 1993, PAGEODE).

The August 10, 2020 IR is located within the graphitic gneiss bedrock horizon. The geologic formations associated with HDD S3-0290 are described as follows:

- **graphitic gneiss (gg):** The graphitic felsic gneiss includes quartz, orthoclase, hornblende, biotite, graphite, and small areas of marble. It is light to medium gray. The graphite occurs as flakes 1 to 2 mm in diameter, somewhat larger than the usual grain size of the rock, and is disseminated throughout the gneiss. The unit is also referred to as the Pickering Gneiss (Hall, 1934). It has distinct and very common flaggy banding and is of sedimentary origin. Its thickness is unknown (Berg et al., 1980; Geyer and Wilshusen, 1982).
- **metadiabase (md):** a dark-greenish-gray to almost black diabase. Grain size is generally 0.5 to 1 mm. The rock consists of augite, feldspar, and magnetite. Much of it has been extensively altered. Feldspar is altered to sericite, and augite has been replaced by epidote and chlorite. It occurs as mostly thin dikes, but a few may be greater than 100 feet thick. It exhibits no banding (Geyer and Wilshusen, 1982).

6. *Michels Corporation drilling logs for both drill rigs associated with PA-CH-0100.0000-RD from July 27, 2020, to August 11, 2020. DEP received drilling logs from Sunoco on August 14, 2020. Please confirm that there are no additional drilling logs or supplement the information previously produced.*

Response: Michels completes a daily work report, regardless of the status of drilling, as long as a rig or any drilling personnel are on site. Beyond the reports that SPLP submitted to the Department on August 14, 2020, there are no additional drilling logs or related work reports from Michaels that reflect drilling operations at this location, since the drill was shut down as a result of the IR.

7. *The method and calculations used to determine the volume of drilling solution released. There are three primary mud-related components of the HDD system: the borehole, the mud pit(s), and the mud system (tanks, external piping, etc.). The calculation provided by Sunoco on August 17, 2020, only accounts for the borehole component. Please provide the status of the mud pit(s) and the mud system prior to and immediately following the IR.*

Response: As this request acknowledges, SPLP previously provided this information to the Department via email on August 14 and 17, 2020. SPLP nevertheless provides it again below.

- IR volume submitted in initial IR Report on 8/11/2020 = 8,163 gallons (annulus volume) - 259.96 gallons (drilling rod displacement) – 191 gallons (casing displacement) = **7,712 gallons** maximum estimated volume of IR
- Supporting calculations:
 - Annulus volume = Total 8,163 gallons [148.25' of 36" casing (34" ID) = 6,991 gallons + 191.57' of 12.25" pilot hole = 1,172 gallons]
 - The open-ended displacement on the drill stem is 0.765 gal/ ft. The stem length above the IR elevation is 339.82' (total 259.96 gallons).
 - The Drilling Fluids Specialist confirmed that drilling fluid, at the viscosities that used, would contain between 4.2% to 4.8% bentonite (or 54-62 50# bags) to water ratio.
 - Centralizer casing installed at the entry side, displaced another approximately 191 gallons of fluid (16" casing, 0.500 wt, 148.24' length along with 13.5' of 6" schedule 40 steel pipe for centralizer legs)

Regarding the status of the mud pit and the mud system, both were at normal levels prior to and immediately following the IR. All drilling activities were halted as the washover tool was being removed from the drill annulus prior to the discovery of the IR. Due to these facts, we believe that the fluid in the borehole, above the elevation of the IR location, flushed out and the fluid column of the borehole equalized to the IR location elevation, which was taken into account for the above calculations.

8. *An explanation of the remediation techniques used in response to IRs associated with the installation of the 16-inch pipe on the site.*

Response: To reduce the potential chance of future IRs occurring at the HDD 290 location, following the installation of the first pipeline at this location (i.e. the 16" pipeline), SPLP prepared and submitted an HDD Reevaluation Report to the Department on May 28, 2019, which was approved on January 23, 2020. SPLP implemented the following techniques and steps for the second HDD (i.e. the 20" pipeline):

- Developed a new profile design for the 20" construction, which was on a deeper profile than the 16" installation profile;
- Installed 36" conductor casing on both ends of the HDD profile through soils and seated into rock prior to drilling;
- Utilized an intersect method of drilling that uses two drilling rigs, one on each side of the HDD profile entry/exit, as a method to keep pressures lower than typical pressures when using a single drilling rig;
- Continuously monitored mud flow with a licensed P.G. on site during drilling operations and conducted monitoring the right-of-way;
- Utilized loss control measures products in the drilling mud mix;
- Utilized a thicker drilling mud consistency;
- Periodically grouted during pilot hole construction when needed;
- Utilized a single pass ream, rather than successive reams, which reduces the amount of disturbance within the annulus;
- Utilized washover tooling to ensure cuttings would not plug up the reamer tool, which also reduces potential pressures in the annulus during reaming process.

9. *An explanation of which LCMs were implemented during all phases with the HDD of the 20-inch pipe.*

Response: The only LCM that has been used on the 20" pipeline installation has been Plugz-It Max manufactured by Wyo-Ben, Inc., which was used during the pilot phase of the drill. Additionally, the borehole was grouted during the pilot phase with PennDot 1:3 mix.

10. *Drilling logs note how much fluid is pumped down hole each day and how much fresh water is added every day, but there is no indication of how much fluid is lost to the formation every day. Provide data on how much fluid/drilling mud is lost to the formation and how much is recovered each day.*

Response: There is no known exact equation or formula that can be used to determine drilling fluid/mud lost to the geological formation or how much, exactly, is recovered outside of the circumstance of a complete flush or complete loss. However, there are operational rule of thumb calculations that are used while actively drilling – which is the amount of water that it takes to refill the mud/drilling fluid reclaimer after completing a joint of drilling stem, and subtracting out the amount of cuttings (either liquid or solid) that went into the cuttings box. This number tells

you the approximate volume of fluid that was used per joint of the drilling stem. To determine a loss percentage, one takes the result from the equation above, divided by the total amount of mud/water pumped downhole during a joint of the drilling stem to determine the percentage of the mud/water material that was lost to the formation.

For example – if there was 200 gallons of water used to refill the mud/drilling fluid reclaimer, and 190 gallons of cuttings return to the cuttings box, then 10 gallons was the approximate amount lost to the formation. The joint of drilling stem took 10 minutes to complete, and the pump rate was at 40 gallons per minute, so it took 400 gallons for completion of the joint. Thus, 10 gallons lost to formation divided by 400 gallons for completion of joint = 2.5% approximate loss to formation.

However, it should be noted that there are numerous variables in play, such as the amount of groundwater that is contained within the annulus, the amount of fluid needed to fill the annulus, elevation, and borehole geometry, which make this operational rule of thumb calculation a non-exact determination.

In addition, the driller constantly monitors the reclaimer tank, cutting box(es) and the bore pit to alert to any potential issues. For example, if the reclaimer tank suddenly drops two feet, workers would then check the cuttings box to see if there was a sudden increase in cuttings to account for the drop in the reclaimer tank. If this increase is not observed, workers will then check the entry/exit pit to see if the pit had a rise in the amount of fluid. If there is no observed rise in the cuttings box or entry/exit pit, workers then know the mud went down hole and did not recirculate, at which time the driller would temporarily suspend drilling operations for further discussions and evaluations with the Environmental Inspector, Professional Geologist, and Utility Inspector to determine the amount of loss, and whether it was lost to the formation or is a circumstance indicating a significant loss of return/circulation to be reported to the Department in accordance with the procedures in the HDD IR Plan.

11. Drilling logs indicate that from June 2, 2020, through June 6, 2020, over 20,000 gallons of drilling fluid were reported as lost. Please explain how the daily volume of lost drilling fluid is calculated. Also, please explain how Sunoco determines when the drill has experienced a loss of circulation. Further, please explain why a 500-gallon fluid loss was reported in a Loss Prevention Report on March 3, 2020, but the June fluid losses were not so reported.

Response: The March 3, 2020, 500-gallon fluid loss was determined to be a 50% loss of circulation or “significant” loss of return based on the operational rule of thumb calculation listed above in Response No. 10 above. In contrast, as reflected on the P.G. logs, the June 2 through June 6, 2020 drilling operations had a minimum return of 94% or greater. While the PG reports for June 2-6 do note a small amount of drilling fluid lost, there was no observed changes in either return flows to the mud-pit or cuttings from the shaker that could have indicated a potential loss of circulation/loss of return. These observations were discussed with site personnel, including the Environmental Inspector, Professional Geologist, and Utility Inspector, and it was determined not to be a significant loss of return/circulation

As mentioned in response to Request No. 10 above, there is no known exact equation or formula that can be used to determine fluid/drilling lost to the geological formation or how much, exactly, is recovered outside of the circumstance of a complete flush or complete loss. The operational rule of thumb calculations described in response to Request No. 10 above were used while actively drilling, including during the June 2-June 6 time period.

12. *Drilling logs indicate that on August 8, 2020, 17,000 gallons of mud were mixed and the washover tool was tripped out of the bore. Please explain the rationale for these actions and the drilling conditions/observations at that time.*

Response: At the start of the work shift, fluid returns to the exit (i.e. low) side of the HDD profile did not appear as expected, and therefore it was assumed that returns were traveling through the borehole column to the entry (i.e. high) side of the HDD profile. In an attempt to regain circulation to the low side of the HDD profile, the driller decided to deploy the washover tool to clear any cuttings behind the reamer. This was done in an attempt to get returns back to the exit (i.e. low) side of the HDD profile. The drilling fluid/mud that is mixed during use of the washover tool is an industry-standard practice and required for the washover tool to clear cuttings from around the drill stem using a fluid (i.e. mud) jetting action, similar in comparison to a power washer. After the washover tool was advanced to the desired location, it had to be tripped out and removed from the annulus in order to continue the reaming operations.

13. *In the drilling logs, please explain the columns “Clean Water Used,” “Bags of Bentonite Used,” and “Mud mixed,” and how they are related. There are times when over 100 bags of bentonite are added, but no “Clean Water Used” or “Mud Mixed” (i.e., August 3, 2020). Explain what happened in this instance.*

Response: The column titled “Clean Water Used” indicates when a volume of water is taken from the water storage unit for some purpose. The purpose of the water can be for washing down equipment and other uses, in addition to mixing mud. The volume of “Clean Water Used” is only considered to be the volume of “Mud Mixed” when bags of bentonite are being added to the mixer during the same period when water is taken from the storage until. If no water is taken from the storage unit, but bentonite is being added to the mixer, then the driller is typically thickening the consistency of the drilling mud. The PG obtains this information from the Utility Inspector approximately four times per day, dividing the activity into four periods of time over the course of a work shift.

Regarding references to the drilling logs of August 3, 2020 when bentonite was added but water was not also added at the same time, while tripping out the reamer, the driller was deploying the washover tool to clear build-up of cuttings behind the reamer. The drilling fluid had been watered down by excess groundwater in the annulus. Bentonite was added into the watered-down fluid to achieve the proper viscosities required for drilling activities. This influx of groundwater has occurred on multiple occasions throughout this HDD, causing the drilling fluid

to be temporarily thinner in consistency than desired, therefore requiring the driller to add additional bentonite to the drilling fluid.

14. *What is contained in the “super sacks” noted on Form B of the drilling logs and how many pounds is each Super Sack?*

Response: A solidifying agent called Caciment, manufactured by Mintek Resources, is contained within the super sacks, which weigh approximately 2,500 lbs each. Caciment is mixed with the drilling cuttings/liquids that are removed from the annulus to solidify the consistency of the cuttings/liquids before they are hauled for off-site disposal. This product is not used during any drilling operation and is not introduced into the HDD annulus. The SDS for Caciment can be found as “**Attachment A**” to this submittal.

15. *Explain why grout was used in the drilling mud on July 9, 2020, and July 10, 2020. Was this a labeling mistake or was grout pumped downhole?*

Response: Grout was not mixed into the drilling mud or pumped downhole on these dates. Rather, the annulus was grouted during the pilot phase of this drill only, as described above in Response No. 8 and the HDD Reevaluation Report to the Department on May 28, 2019, which was approved on January 23, 2020, as a best-management practice and IR mitigation strategy. While reaming, it did appear that some of the drilling fluid returns contained remnants of the grout that was previously used from the pilot phase, which was noted on the logs of the cuttings observed.

16. *Define “donut” and “washover tool” and describe how they are used. Both are noted on Form B in the comments in the drilling logs, with the donut used in July and the washover tool used in August.*

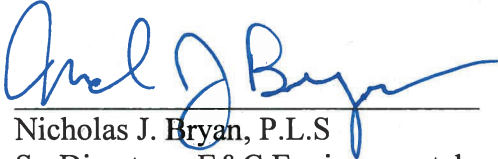
Response: A donut is an industry short-hand reference term for a washover tool – they are the same thing. A washover tool is a fluid (i.e. mud) jetting ring that goes outside of the drill stem and jets away cuttings from around the drill stem to clean off and clear the stem using drilling mud, similar in comparison to a power washer. Performing this procedure increases the efficiency of drilling mud returns by removing any build-up or restrictions from the annulus.

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Please note that nothing in this response should be construed either as an admission of any of the legal conclusions set forth by the Department in the NOV or as a waiver of any legal defenses SPLP may possess.

If you have any questions about this response or the attached information, please contact me as soon as possible at (570) 505-3740 or via email at Nick.Bryan@EnergyTransfer.com.

Thank you,

A handwritten signature in blue ink, appearing to read "Nick J. Bryan", written over a horizontal line.

Nicholas J. Bryan, P.L.S
Sr. Director – E&C Environmental
Energy Transfer

Attachments:

Attachment A – Cacimite SDS

Attachment A

1. Identification

Product Name: Calciment

Synonyms: High Calcium Lime
 Kiln Dust, Lime
 Kiln Dust, LKD,
 Envirolime , CKD,
 Cement Kiln Dust

Recommended Uses: Manufacture of glass, brick, block and other building materials; pH adjustment; flocculation; soil conditioning; soil stabilization; solidification and dewatering.

Distributor: MIntek Resources

3725 Pentagon Blvd.
 Suite 100
 Beavercreek, OH 45431
 Phone: 888-431-0218

Emergency Contact: ChemTel Inc.: (800) 255-3924 (MIS8507735)

2. Hazards Identification

GHS classification	Physical Hazards	
	None	
	Health Hazards	
	Skin Irritation	Category 2
	Eye Damage	Category 1
	Carcinogenicity	Category 1A
	Specific Target Organ Toxicity – Single Exposure	Category 3
	Specific Target Organ Toxicity – Repeated Exposure	Category 1
GHS Label Elements:	Signal Word: Danger	
	Hazard Statements:	
	Causes skin irritation.	
	Causes serious eye damage.	
	May cause respiratory irritation.	
	May cause cancer through inhalation	
	Causes damage to lungs through prolonged or repeated exposure by inhalation.	
	May react violently with water, releasing heat which can ignite combustible materials.	

Precautionary Statements: Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Keep container tightly closed
 Do not breathe dust.
 Wash thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Use only outdoors or in well-ventilated area
 Wear protective gloves, clothing and eye protection
 Do not use water on material spills.

Pictograms:



3. Composition

<u>Chemical name</u>	<u>% by weight</u>	<u>CAS#</u>
Calcium carbonate	0-90	1317-65-3
Calcium oxide	0-50	1305-788
Calcium hydroxide	0-70	1305-62-0
Calcium magnesium carbonate	0-50	16389-88-1
Calcium magnesium oxide	0-50	37247-91-9
Magnesium carbonate	0-5	546-93-0
Magnesium oxide	0-5	1309-48-4
Silica-crystalline quartz	< 10	14808-60-7

4. First Aid Measures

Eyes:	Immediately flush eyes with generous amounts of water for at least 15 minutes. Pull back the eyelid to ensure that all lime dust has been washed out. Seek medical attention immediately. Do not rub eyes.
Skin:	Wash exposed area with large amounts of water. Seek medical attention immediately.
Ingestion:	Do not induce vomiting. Seek medical attention immediately. Never give anything by mouth unless instructed to do so by medical personnel.
Inhalation:	Move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration
Most Important Symptoms:	Irritation of skin, eyes, gastrointestinal tract or respiratory tract.
Immediate medical attention / special treatment?	See first aid information above. Note to Physicians: Provide general supportive measures and treat symptomatically.

5. Fire Fighting Measures

Suitable (and unsuitable) fire extinguishing media:	Use dry chemical fire extinguisher. Do not use water or halogenated compounds, except that large amounts of water may be used to deluge small quantities of this product.
Specific hazards arising from the product	Inhalation, skin or eye contact, can result in serious injury. This product is not combustible or flammable. However, this product may react violently with water, and can release heat sufficient to ignite combustible materials. This product is not considered to be an explosion hazard, although reaction with water or other incompatible materials may rupture containers. When this product is wet, it can be very slippery and can result in a slip hazard. Hazardous Combustion Products: None.
Special protective equipment and precautions for fire fighters	Wear full fire-fighting turn-out gear (full Bunker gear), and respiratory protection (SCBA) to prevent inhalation, skin or eye contact.

6. Accidental Release Measures

Personal precautions, protective equipment, emergency procedures:

Avoid inhalation, eye and skin contact. Avoid generating airborne dust. Wear appropriate protective clothing as described in section 8.

Methods and materials for containment and clean up:

Utilize cleanup methods that minimize generating dust: vacuum. Avoid dry sweeping. Do not use water on large spills, as this product may react violently with water and release heat. Residue on surfaces may be removed with copious amount of water or vinegar.

7. Handling & Storage

Safe Handling:	Avoid inhalation, skin and eye contact. Avoid generating airborne dust. An eye wash station should be readily available when this product is handled.
Safe Storage:	Keep in tightly closed containers. Protect containers from physical damage. Store in a cool, dry, and well-ventilated location. Do not store near incompatible materials (see Section 10 below). Keep away from moisture. Long-term storage in aluminum containers is not recommended, as calcium oxide may corrode aluminum over long periods of time

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)	Ont. Reg. 833 TWAEV (mg/m ³)
Calcium carbonate	15 5 (respirable)	10	10
Calcium oxide	5	2	2
Calcium hydroxide	15 (total) 5 (respirable)	5	5
Calcium magnesium carbonate	-	-	-
Calcium magnesium oxide	-	-	-
Magnesium carbonate	15 (total) 5 (respirable)	10	10
Magnesium oxide	15	10	10
silica - crystalline quartz	30 / (% silica +2) (total) 10 / (% silica +2) (respirable)	0.025 (respirable)	0.1

Engineering Controls: Use with adequate general or local exhaust ventilation and to maintain exposure below occupational exposure limits.

Individual Protection Measures (Personal Protective Equipment):

Specific Eye / Face Protection:	Safety glasses with side shields. In windy conditions, or if work activity generates elevated airborne dust levels, dust proof or chemical goggles are recommended. Contact lenses should not be worn.
Specific Skin Protection:	When there is a risk of skin contact, wear appropriate clothing and gloves to prevent contact.
Specific Respiratory Protection:	If exposure limits are exceeded, an approved particulate respirator, or supplied air respirator, appropriate for the airborne concentrations, should be used. Selection and use of the respiratory protective equipment must be in accordance with applicable regulations and good industrial hygiene practices.
Other:	An emergency eye wash fountain and shower are recommended.

9. Physical & Chemical Properties

Appearance:	White or grayish white material
Odor:	Odorless
Odor threshold:	Not Applicable
pH at 25 degrees C:	12.45
Melting Point:	°F (1410 °C)
Boiling Point and range:	°F (1565 °C)
Flash Point:	Not Applicable

Evaporation Rate:	Not Applicable
Flammability:	Not Applicable
Upper/lower flammability or explosive limits	Not Applicable
Vapor pressure/density:	Non Volatile
Relative density:	2.4 – 3.0
Solubility:	0.100- 0.125 g/100g - but reacts with water to produce Ca(OH) ₂ and heat Soluble in acids, glycerin, and sugar solutions
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature:	Not Available
Decomposition temperature:	Not available
Viscosity:	Not Applicable

10. Stability & Reactivity

Reactivity:	Reacts violently with water to form calcium hydroxide, releasing heat. Reacts with acids to form calcium salts, releasing heat. Reacts with carbon dioxide in air to form calcium carbonate. See also Incompatibility below.
Chemical stability:	Stable under normal storage and handling conditions.
Possibility of Hazardous Reactions:	See “reactivity” above.
Conditions to avoid:	Vicinity of incompatible materials.
Incompatibility:	This product should not be mixed or stored with the following materials, due to the potential for violent reaction and release of heat: <ul style="list-style-type: none">• water (unless in a controlled process)• acids• reactive fluoridated compounds• reactive brominated compounds• reactive powdered metals• reactive phosphorous compounds• aluminum powder• organic acid anhydrides• nitro-organic compounds• interhalogenated compounds
Hazardous decomposition products:	None

11. Toxicological Information

Likely routes of exposure & symptoms:

Eyes: Contact can cause severe irritation or burning of eyes, including permanent damage.

Skin: Contact can cause severe irritation or burning of skin, especially in the presence of moisture.

Ingestion: This product can cause severe irritation or burning of gastrointestinal tract if swallowed.

Inhalation: This product can cause severe irritation of the respiratory system.

Chronic health effects: This product contains trace amounts of crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica can cause silicosis, as serious lung disease.

Respiratory or skin sensitization: This material is not known to cause sensitization

Germ cell mutagenicity: No data available.

Carcinogenicity: This product is not listed as carcinogenic by OSHA, IARC, NTP, ACGIH, or the EU Directives. This product may contain trace amounts of crystalline silica quartz which is listed by IARC as "Carcinogenic to Humans" (Group 1) and "Known to be a Human Carcinogen" by NTP (National Toxicology Program).

Reproductive toxicity: No Data Available.

Numerical Measures of Toxicity
Crystalline Silica: Oral (rat) LD₅₀ > 22,500 mg/kg
Calcium hydroxide: Oral (rat) LD₅₀: 7340 mg/kg
Calcium oxide: Oral (rat) LD₅₀: 3059 mg/kg

12. Ecological Information

Because of the elevated pH of this product, it might be expected to produce some ecotoxicity upon exposure to certain aquatic organisms and aquatic systems in high concentrations

This material shows no bioaccumulation effect or food chain concentration toxicity.

13. Disposal Considerations

Dispose of contents in accordance with federal, state, provincial and local regulations.

14. Transport Information

UN Number	UN1910
UN Proper shipping name	Calcium Oxide
Transport Hazard class(es)	When transported by air only: Hazard Class 8-Corrosive
Packing group	When transported by air only: Packing Group III
Environmental hazards	This material is alkaline and if released into water or moist soil will cause an increase in pH

Transport in bulk (according to Annex II of MARPOL 73/79 and the IBC

Code:

Special precautions
 which a user needs to
 be aware of

When being transported by air, calcium oxide is classified in the Department of Transportation (DOT) regulations as a hazardous material. (49 CFR 172.101). For aircraft transport only, Calcium Oxide is classified as Hazard Class 8-Corrosive, UN1910, Packing Group III. For passenger aircraft, the maximum net quantity allowed per container is 25 kg. For cargo aircraft, the maximum net quantity allowed per container is 100 kg. For quantities greater than 25 kg up to and including 100 kg, the container shall be labeled with CARGO AIRCRAFT ONLY. Because express carriers (i.e., Federal Express, Airborne Express, and United Parcel Service) ship by air, calcium oxide presented to these carriers for shipment must be packaged, marked, and labeled in accordance with IATA requirements, and must be accompanied by the appropriate shipping documentation. Only personnel trained and certified under applicable DOT Hazardous Materials Regulations (contained in Title 49 of the Code of Federal Regulations) may prepare any calcium oxide product for air transport. Calcium oxide is not classified as a hazardous material by DOT when transported by means other than by air.

15. Regulatory Information

CERCLA Hazardous Substances	Not listed
SARA Toxic Chemical (40 CFR 372.65)	Not listed
SARA Section 302 Extremely Hazardous Substances (40 CFR 355)	Not listed
SARA 311/312	Not listed
SARA Section 313 Toxic Chemicals reporting requirements	None
Threshold planning quantity (TPQ)	Not listed
RCRA Hazardous Waste Classification (40 CFR 261)	Not Classified
EPA Toxic Substances Control Act (TSCA) Status	All of the components of this product are listed on the TSCA
California Proposition 65	Airborne crystalline silica particulates of respirable size are known to the State of California to cause cancer.
NFPA ratings	Health: 3 Fire: 0 Reactivity: 2 W
HMIS Ratings	Health: 3 Fire: 0 Reactivity: 2 Personal protection: E
OSHA Specifically regulated substance (29 CFR 1910)	Not listed
OSHA Air contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A)	Listed
MSHA	Not listed
Canada DSL	Listed

Canadian WHMIS Classification

D2A, Materials Causing other toxic effects.



E, Corrosive Material

Canada CPR

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation of a Canada and this SDS contains all the required information.

16. Other Information

List of GHS	H315: Causes skin irritation
Hazard	H318: Causes serious eye damage
Statements:	H335: May cause respiratory irritation. H350: May cause cancer through inhalation H372: Causes damage to lungs through prolonged or repeated exposure by inhalation.
List of GHS	P201: Obtain special instructions before use.
Precautionary	P202: Do not handle until all safety precautions have been read and understood.
Statements:	P233: Keep container tightly closed P260: Do not breathe dust. P264: Wash thoroughly after handling. P270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in well-ventilated area P280: Wear protective gloves, clothing and eye protection

Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act	IARC	International Agency for Research on Cancer
NTP	National Toxicology Program		

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