APPENDIX L

HDD Contingency Plan

(SPOT Application, Vol IIb, Appendix H)
(Response to Information Request #227)

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Sea Port Oil Terminal Project
Offshore Brazoria County, Texas

VOLUME IIb
APPENDIX H

HORIZONTAL DIRECTIONAL DRILL CONTINGENCY PLAN

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1.0 INTRODUCTION

Horizontal directional drills (HDDs) are commonly used in pipeline construction for crossing large waterbodies, transportation corridors, and other sensitive features. This special pipeline construction method allows for the pipeline to be placed via a drill without impacting the ground surface between the entry and exit locations. This HDD Contingency Plan provides procedures to manage contingencies that may occur during HDDs associated with the installation of the Sea Port Oil Terminal (SPOT) Project's onshore pipelines. Section 1.4.4.12, "Special Pipeline Construction Methods," Volume IIb, provides a detailed description of the HDD installation process and the locations of all HDDs planned for the SPOT Project.

2.0 ALTERNATIVE CONSTRUCTION TO HDD

HDDs have been in use since the 1970s. The technology has become commonplace and is a proven method that is readily available for installing crude oil pipelines. Issues that occur with HDDs are primarily related to geotechnical issues, where significant non-uniformity exists in the underlying formations (notably containing scattered rock, sands, and gravel) or cavities where the drilling fluid pressures on the drill string head cannot be maintained or could be lost. In these cases, the pilot hole or reaming hole may collapse and not accommodate pulling through the welded pipe section.

If, for any reason, it becomes necessary to suspend HDD operations and/or abandon a partially completed drill hole, the drill string will be withdrawn and the hole will be pumped with flowable backfill material and pugged at the surface. If it is determined necessary to abandon the original HDD location, the proposed alignment may be modified to accommodate a new HDD. The typical procedure to replace an HDD is to move its location approximately 50 feet (15.2 meters) to either side of the original location.

In the event that an HDD is found to be technically unfeasible, an alternative construction method to suit the site-specific conditions may be selected, including open cut construction of bore methods (see Section 1.4.4, "Pipeline Construction," Volume IIb). Such alternative methods would only be used after notifying applicable regulatory agencies and obtaining any necessary approvals. As the proposed SPOT Project would occur in Harris County and Brazoria County, Texas, the geology is generally conducive to the use of HDDs and, therefore, the chance would be low for an HDD to be non-viable and an alternative method to be chosen.

3.0 HDD MONITORING PROCEDURES

During an HDD, there is the potential risk of an inadvertent release of drilling muds to the ground surface. The HDD contractor supervisor will be onsite at all times during an HDD and will continuously monitor all operations during drilling activities for any indication of loss of pressure or loss of drilling muds/fluids. Drilling mud that would be used for HDDs will consist of fresh water with a high-yield

bentonite to achieve the necessary viscosity for the drilling mud. Bentonite is the commercial name for a nontoxic mixture of naturally-occurring clays and rock particles and is not considered a hazardous material by the U.S. Environmental Protection Agency or the Texas Department of Environmental Quality. Drilling parameters will be established to maximize circulation of drilling muds and minimize the risk of inadvertent releases. Monitoring of the HDD will include:

- Visual inspection along the drill path, including monitoring the wetlands and waterbodies for evidence of a release;
- Continuous monitoring of drilling mud, drilling mud pressures, and return flows by the HDD contractor; and
- Periodic recording of HDD status regarding site conditions, pressures, returns, and progress during the course of HDD activities.

Once the HDD is complete, the HDD contractor would inspect the site after equipment removal for any signs of an inadvertent release.

4.0 DRILLING FLUIDS CONTROL AND CONTAINMENT

4.1 STORAGE OF FLUIDS AND LUBRICANTS

Any use of fluids and lubricants that could harm the environment if released would be handled in accordance with the applicable federal, state, and local regulations as well as the HDD contractor's Spill Response Plan. The HDD contractor would be required to provide the Spill Response Plan for review and approval by the SPOT Terminal Services LLC (the Applicant) or their representative.

4.2 CONTAINMENT AND CLEANUP OF DRILLING FLUIDS

HDD procedures demand that highly accurate monitoring and control systems are used to track the progress and exact location of the drilling head at all times. Drilling mud is used during the advancement of the drill string to erode the formation and aid in stabilizing the pilot hole. The specific weight of the drilling mud is adjusted throughout the installation method to ensure hydrological stability. If a release of drilling mud should occur, the following measures will be implemented. Only experienced personnel trained in the HDD will be assigned the task of conducting and monitoring the HDD.

4.2.1 Measures to Contain a Release of Drilling Fluid in a Wetland or Waterbody

1. If the inadvertent release of drilling mud occurs within a wetland or sensitive area, appropriate regulatory agencies will be contacted in accordance with application regulations and permit conditions. Drilling mud pressure will be reduced and operations will be temporarily suspended to assess the extent of the release and to implement other possible corrective actions.

2. If public health and safety is threatened, drilling mud circulation pumps will be turned off until the threat is eliminated. This measure will be taken as a last resort because of the potential for drill-hole collapse resulting from loss of down-hole pressure.

3. A sample of the drilling mud will be collected and held for future analysis in the event that an analysis is requested by regulatory agencies.

4. Inspection will be initiated to determine the potential movement of released drilling mud within the wetland, waterbody, or other sensitive feature.

5. The HDD contractor will determine and implement modifications to the HDD technique or composition of drilling mud (i.e., thickening of drilling mud by increasing bentonite content), as appropriate, to minimize or prevent further releases of drilling mud.

6. Reasonable measures, within the limitation of HDD technology and the HDD contractor's capability, will be taken to re-establish drilling mud circulation.

7. The HDD contractor will evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, the HDD contractor will also consider if placement of containment structures will cause additional adverse environmental impacts.

8. Upon completion of HDD operations, the Applicant will consult with the applicable regulatory agencies to determine if there is a need for any final cleanup requirements for the inadvertent release.

4.2.2 Measures to Contain a Release of Drilling Fluid on Land

1. If a land release is detected, the HDD contractor will take corrective action to contain the release and to prevent offsite migration.

2. If public health and safety are threatened by an inadvertent release, HDD operations will be shut down until the threat is effectively addressed or eliminated.

3. The HDD contractor will determine and implement modifications to the HDD technique or composition of drilling mud (i.e., thickening of drilling mud by increasing bentonite content), as appropriate, to minimize or prevent further releases of drilling mud.

4. If the amount of drilling mud from an on-land release does not allow for practical collection, the drilling mud will be diluted with freshwater and allowed to dry. If warranted, a containment structure will be installed to prevent silt-laden water from flowing into a wetland or waterbody.

5. If the amount of release is enough to allow collection, the drilling mud released will be collected and returned to either the HDD operation or disposed offsite.

5.0 NOTIFICATION PROCEDURES

If a release occurs, the HDD contractor must immediately notify the Applicant's Chief Inspector. The Applicant's Chief Inspector will then notify the appropriate regulatory agencies of the inadvertent release. The Applicant's Chief Inspector will maintain an agency contact list for the SPOT Project.

Annex #227 – Data Gap #227 Response

Annex 227 (Responses to Questions in Appendix DR4-227)

Modify the HDD Contingency Plan to include additional information as follows:

a. In Section 3.0, HDD Monitoring Procedures:
   i. Indicate how often visual inspection of the drilled alignment would occur on land and in waterbodies.
   Response:
   Visual inspection of the drilled alignment would occur on land and in waterbodies on a continuous basis.

   ii. Indicate how often seeps or springs along or near the drill path would be visually inspected.
   Response:
   Seeps or springs along or near the drill path would not be visually inspected, as a loss of pressure or reduction of drilling mud/fluid return would provide a more reliable and timely indication of a release than visual inspection of seeps or springs. However, the horizontal directional drill (HDD) contractor supervisor would be on site at all times during an HDD operation and would continuously monitor all operations during drilling activities for any indication of loss of pressure or loss of drilling muds/fluids.

   iii. Indicate who would conduct visual inspections.
   Response:
   The HDD contractor supervisor would conduct visual inspections.

b. In Section 4.2, Containment and Cleanup of Drilling Fluids:
   i. Better describe the procedures that would be followed by the Contractor in the event of an inadvertent release. For example, clarify if the Environmental Inspector and SPOT representative would be notified immediately and whether drilling operations would be suspended until authorized to move forward.
   Response:
   Wetland or Waterbody Release
   Section 4.2.1 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019) details the procedures that would be followed by the HDD contractor in the event of an inadvertent release in a wetland or waterbody. The HDD contractor would notify the SPOT Representative and Environmental Inspector immediately. Drilling operations would be suspended to assess the extent of the release and to implement other possible corrective actions, such as installation of booms, silt fences, sandbags, and straw bales.

   Land Release
   Section 4.2.2 of the HDD Contingency Plan details the procedures that would be followed by the contractor in the event of an inadvertent release on land. The HDD contractor would notify the SPOT Representative and Environmental Inspector immediately. Drilling operations would be suspended to assess the extent of the release and to implement other possible corrective actions, such as installation of booms, silt fences, sandbags, and straw bales. Only after the release is

controlled and all appropriate contingency measures are implemented would HDD operations continue.

ii. Provide details for the types of containment barriers that could be used in wetlands or on land, such as hand-placed barriers (e.g., hay bales, sand bags, silt fences) or excavation of small pits to contain the fluids.

Response:

Containment barriers, including straw bales, sandbags, and silt fences, would be used, as appropriate, to contain drilling fluids. Excavation of small pits would also be used, as appropriate, to contain drilling fluids.

iii. If a small pit is necessary to contain the fluids, indicate how the fluid would be removed from the pit and disposed of.

Response:

Drilling fluids would be removed from the pit(s) by pumping or mechanical means and disposed of in locally approved land farms.

iv. Indicate under what circumstances drilling would be allowed to continue or resume.

Response:

Drilling would be allowed to continue only after compliance with all requirements listed in Sections 4.0 and 5.0 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019) are satisfied.

v. Indicate under what circumstances drilling would be required to cease and whether consultation with regulatory agencies would be initiated to determine how to proceed.

Response:

Drilling would cease if an inadvertent release occurs in a wetland or waterbody. Reference Section 4.2.1 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019).

Drilling would cease on land if public safety and health are threatened by an inadvertent release, or if drilling fluid threatens to enter a waterbody or other sensitive environment. Reference Section 4.2.2 of the HDD Contingency Plan.

vi. Provide details for cleanup if an inadvertent return occurs in a waterbody where it can be contained (e.g., shallow, standing, or slow-moving water) and indicate under what circumstances drilling could resume.

Response:

Details for cleanup, if an inadvertent release occurs in a waterbody where it can be contained, will follow applicable agency requirements. Drilling would be allowed to resume only after compliance with all requirements listed in Sections 4.0 and 5.0 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019) are satisfied.

vii. Indicate what thickening agents could be used.

Response:

Thickening agents may or may not be used, and as a result, they have not been defined at this time. The use of thickening agent(s) would be determined in coordination with the drilling contractor(s) selected, if needed.

viii. Indicate the procedures to be followed if impacts on fish and wildlife are observed due to exposure of drilling fluids, and indicate if SPOT would consult with the appropriate regulatory agencies before proceeding.

Response:

As indicated in Section 4.1 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019), the HDD contractor would be responsible for emergency response if an inadvertent release of drilling mud/fluids occurs, with immediate involvement of the Environmental Inspector, Chief Inspector, and SPOT Project Personnel. Additionally, the HDD contractor would maintain a record of HDD activities and the Environmental Inspector would document any observed impacts to fish and wildlife. If impacts are observed, the U.S. Fish and Wildlife Service (USFWS) and Texas Parks & Wildlife Department (TPWD) would be consulted for technical guidance on the specific situation prior to initiating any clean-up efforts. Contact information for these agencies follows:

U.S. Fish and Wildlife Contact Information:

USFWS Texas Ecological Services Field Office
Mr. Chuck Ardizzone, Project Leader
17629 El Camino Real, Suite 211
Houston, Texas 77058
Telephone Number: (281) 286-8282
E-mail: chuck_ardizzone@fws.gov

Texas Parks & Wildlife Department Contact Information:

Texas Parks and Wildlife Department
Mr. David Forrester
District Leader, Brazoria and Harris Counties
111 E. Travis, Suite 200
La Grange, Texas 78945
Telephone Number: (979) 968-6591
E-mail: david.forrester@tpwd.texas.gov

ix. Indicate if an Emergency Response Contractor would be deployed, if necessary, to assist with containing and remediating large returns.

Response:

Emergency response would be conducted by the HDD contractor with involvement from the Environmental Inspector, Chief Inspector, and SPOT Project Personnel.

x. Indicate if the contractor would be instructed on Federally-listed species and what procedures would be followed if Federally-listed species are observed in area of an inadvertent release.

Response:

As indicated in the USACE SPOT application, SWCA has opined that the proposed Project would have no effect on federally-listed species and the bald eagle due to a variety of factors, including, but not limited to, avoidance of potential habitat via horizontal bore or HDD. Further, there is only one immobile listed species (i.e., the Texas prairie-dawn) and SWCA has opined that this species is unlikely to occur within the project area due to a lack of potentially suitable habitat. The remaining species include the West Indian manatee, bird species, and sea turtles. The manatee, bird species, and sea turtles while in the water are physically capable of evading and/or avoiding areas affected by an inadvertent release. Thus, the only species that have the potential to be affected by an inadvertent release are the sea turtle species while on land. It is also worthwhile noting that laboratory results from the Geotechnical Survey (Volume III, Attachment 2B, "Geotechnical Investigation," [Confidential], of the Deepwater Port License Application, January 2019) of the pipeline route near shore show that the HDD would be in "Stiff to Very Stiff Clay," which would act as a natural barrier in the unlikely event of an inadvertent release of drilling mud/fluids.

As indicated in Section 4.1 of the HDD Contingency Plan (Volume IIb, Appendix H, of the Deepwater Port License Application, January 2019), the HDD contractor would be responsible for the emergency response if an inadvertent release of drilling mud/fluids occurs, with immediate involvement of the Environmental Inspector, Chief Inspector, and SPOT Project Personnel. Additionally, the HDD contractor would maintain a record of HDD activities and an Environmental Inspector would document any observed federally listed species in the area, if present. In the unlikely event that federally-listed species are affected by an inadvertent return, USFWS and TPWD would be consulted for technical guidance and approval on the specific situation prior to initiating any clean-up effort. Contact information for these agencies follows:

U.S. Fish and Wildlife Contact Information:
USFWS Texas Ecological Services Field Office
Mr. Chuck Ardizzone, Project Leader
17629 El Camino Real, Suite 211
Houston, Texas 77058
Telephone Number: (281) 286-8282
E-mail: chuck_ardizzone@fws.gov

Texas Parks & Wildlife Department Contact Information:
Texas Parks and Wildlife Department
Mr. David Forrester
District Leader, Brazoria and Harris Counties
111 E. Travis, Suite 200
La Grange, Texas 78945
Telephone Number: (979) 968-6591
E-mail: david.forrester@tpwd.texas.gov

c. Include a section that addresses how an inadvertent release would be handled specifically for the offshore HDD location.

Response:

The laboratory results from the Geotechnical Survey (Volume III, Attachment 2B, "Geotechnical Investigation," [Confidential], of the Deepwater Port License Application, January 2019) of the pipeline route near shore show that the HDD would be in "Stiff to Very Stiff Clay." Therefore, it is doubtful that an inadvertent release of drilling fluids would occur; however, during the drilling or reaming sequence of the HDD procedure, should the natural bottom materials above the HDD bore not be able to contain the drilling fluids, and the drilling fluid is released onto the ocean floor, a loss of drilling fluid pressure would be observed and recorded at the HDD drilling control station. The drilling fluid is comprised primarily of bentonite, a naturally occurring swelling clay, as well as other non-toxic additives. Tides, bottom currents, and wave action would naturally disperse the drilling fluid over time.

If deemed appropriate in response to an inadvertent release offshore, the support vessel near the HDD exit pit can place lighted buoys at the release location and a shallow draft boat would inspect the HDD route in an attempt to locate the release and monitor the natural movement of the materials to ensure that the materials do not interfere with vessel traffic. The HDD drilling rig would be repositioned and a new pilot hole would be drilled using a larger entry angle, and the depth of the horizontal bore would be increased to a deeper elevation, while using the same exit angle and location.

d. Include a section that describes what supplies would be available and maintained at each HDD site for cleanup of an inadvertent release. Include a list of materials and vehicles.

Response:

Equipment and supplies that would be available to address an inadvertent release include: vacuum trucks, booms, absorbent pads, shovels, and hay bales.

e. Include a section that describes restoration activities and indicate if appropriate regulatory agencies would be consulted if activities would occur in wetlands or waterbodies.

Response:

Restoration activities have not been defined at this time. Restoration activities would be conducted in consultation with USFWS, TPWD, and landowner(s).

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