INTERIM GUIDELINES FOR HORIZONTAL DIRECTIONAL DRILLLING (HDD) UNDER THE PROPERTY AND TRACK(S) OF CSX TRANSPORTATION, INC.

Preface: In order to facilitate use of the latest technology available for construction of pipelines that traverse the property and tracks(s) of CSX Transportation, Inc., the following interim guidelines to govern the approval and execution of pipeline and wire line occupancies utilizing Horizontal Directional Drilling (HDD) have been adopted.

Scope: The guidelines detailed in this document do not nullify or supersede existing policies, standards, or practice currently approved by CSXT.

1. Applicant engineering drawing submittal shall include actual planned depth of pipe under each railroad track. The plan and profile views must show the entire bore, including the sending and receiving pits, regardless of the railroad right-of-way limits.

2. Applicant must provide pipe specifications for casing and carrier pipes. Pipe must satisfy all applicable governmental and industry regulations.

3. Applicant must provide qualifications of drilling contractor, including specific instances of previous successful experience in drilling under railroad and other sensitive surface facilities.

4. Prior to commencement of drilling:

   a) The contractor must submit a Boring Plan, using the CSXT Horizontal Directional Drilling (HDD) Bore Plan Template found on the CSXT's permitting website at www.csx.com. Bore Plan template found on the CSX Website.

   b) The contractor must provide a detailed Fraction Mitigation (frac-out) Plan, including method of monitoring quantity and capturing the return of drilling fluids with particular attention to variation from proposed plan (i.e. volumes, pressure, or consistency). The CSX frac-out plan, can be found on the CSXT's permitting website at www.csx.com, and may be adopted.

   c) Establish a Survey Grid Line and provide a program of monitoring and documenting the actual location of the bore hole during drilling operations.

   d) Both the bore plan template and frac-out plan may be submitted at the time of application submittal via the online application process or to the CSXT Construction Monitor prior to construction.

9. A construction monitor is required to monitor the ground and track for movement during the drilling reaming, and pullback processes. The construction monitor will be provided by CSX at the applicant's sole cost and expense. The installation process and all train movement must be immediately stopped if movement is detected. The damaged area must be immediately repaired. The installation process must be reviewed and modified as required before the installation may proceed. Applicant must pay Railroad's expenses for review and inspection.

10. Upon completion of the HDD installation work, the contractor shall provide an accurate as-built drawing of the installed HDD segment. As-built drawings will include both plan and profile views. The latitude and longitude coordinates of the entry, exit, and turn points shall be provided on the as-built drawing(s).

11. A subsurface exploration is required for bores twenty (20) inches or larger.

12. All back reaming must utilize trailing rods.

Office of Corridor Services

Original: March 4, 2007

Revision: Items Nos. 2 and 4 were revised by CSXT, Project Engineering, Corridor Occupancy Services, on
May 4, 2009.

Revision: Items Nos. 2, 3, 7(a), and 10 were revised/added by CSXT, Project Engineering, Corridor Occupancy Services, on July 1, 2015.

Revision: Item No. 11 added by CSXT, Project Engineering, Corridor Occupancy Services, on February 23, 2016.

Revision: Items Nos. 2, 5, 8(a), 8(b), 8(d), 9, and 10 were revised by CSXT, Project Engineering, Corridor Services on April 3, 2018.

Horizontal Directional Drilling (HDD) Bore Plan Template

Failure to provide all requested information will cause a delay or rejection of your request.

Bore Pipe Information:

Pipe Size (O.D.): _____ Pipe Material & Grade: _____ Weight of Pipe (lb/ft): _____
(Outside Diameter of pipe to be bored) HDPE must be grade SDR 11 or better (thicker wall)

Maximum size of bore hole: _____" Number and Diameter of back reams: _____
****The maximum size of the bore hole may not exceed Outside Diameter (O.D.) x 1.5 if O.D. is 12" or less. If the O.D. is greater than 12", the bore hole may not exceed O.D. x 1.3 or O.D. + 12" whichever is less.

Equipment Information:

Proposed Equipment (Brand/Model): _____

Method of Drilling Fluid Recovery: _____

Maximum Drilling Machine Pullback Capabilities: _____

Minimum Drilling RPM: _____ Maximum Drilling RPM: _____

Minimum Drilling PSI: _____ Maximum Drilling PSI: _____

Minimum Drilling GPM: _____ Maximum Drilling GPM: _____

Drilling Head Type: _____ Dia.: _____ in. Number/Size of Holes/Nozzles: _____

Back Reamer Head: Type: _____ Dia.: _____ in. Number/Size of Holes/Nozzles: _____

Drilling Head Fluid Pressure: Pilot Bore: _____ psi/min _____ psi/max _____ Operating psi

Back Ream: _____ psi/min _____ psi/max _____ Operating psi

Anticipated Drilling Fluid Rate: Pilot Bore: _____ gal/min Back Ream: _____ gal/min

Geotechnical: Soil Type: _____ Bearing Capacity: _____ psi
***For bores 20" or larger; a soil boring geotechnical profile is required

Design Information: Entry Angle: _____ Exit Angle: _____ Depth: Base of rail to Top of Casing: _____

We will adopt CSX Transportation's Fraction Mitigation Contingency Plan for Directional Drilling: _____ (Y/N)

NOTES:

- Once the bore enters CSXT property, the work must be continuous until the drilling is complete and the pipe is pulled in place.
- The bore must be tracked constantly, with the location and depth marked every 10 feet.
- All construction activities must comply with CSXT's Interim Guidelines for Horizontal Directional Drilling (HDD).
- The project must comply with all conditions, obligations, and additional safety precautions required by the local CSXT Division.
- Owner or Contractor shall give a minimum of Thirty (30) days advance notice to CSXT Representative for anticipated need for Flagging and Inspection service. No work shall be undertaken until the Flag Person(s) and Inspector(s) are at the job site.
- Drilling fluid with Bentonite additive is required.
- Dry Bores and Wet Bores (Jetting) are not allowed.
- To minimize the potential of the bore hole collapsing, all back reaming must utilize trailing rods.

CSX TRANSPORTATION

SAMPLE
FRACTION MITIGATION
CONTINGENCY PLAN
FOR DIRECTIONAL DRILLING

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FRAC-OUT CONTIGENCY PLAN (FCP)

1.0 Introduction and Purpose

Directional bore operations have a potential to release fluids into the surface environment through frac-outs (A frac-out is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.) Because drilling mud's consists largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if it is released into water bodies, bentonite has the potential to adversely impact fish and invertebrates.

While drilling fluid seepage associated with a frac-out is most likely to occur near the bore entry and exit points where the drill head is shallow, frac-outs can occur in any location along a directional bore. This Frac-Out Contingency Plan (FCP) establishes operational procedures and responsibilities for the prevention, containment, and clean-up of frac-outs associated with the proposed directional drilling utility project of _____. All personnel and Sub-Contractors responsible for the work must adhere to this plan during the directional drilling process.

The specific objectives of this plan are to:

1. Minimize the potential for a frac-out associated with directional drilling procedures;
2. Provide for the timely detection of frac-outs;
3. Protect the environmentally sensitive riverbed and associated riparian vegetation;
4. Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite; and
5. Ensure that all appropriate notifications are made immediately to the customer, management, and safety personnel.

2.0 Description of Work

The proposed project consists of directional drilling within the right of ways of the railroad to include drilling that may cross under the tracks of the railroad.

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. If an inadvertent return of materials occurs, the drilling operations shall cease immediately and the bore hole stabilized to prevent further contamination and settlement of the track structure. The clean-up of all spills shall begin immediately. Management & safety department shall be notified immediately of any spills and shall be consulted regarding clean-up procedures. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck and containment materials, such as straw bales, shall also be on-site prior to and during all operations. The Site Supervisor will be immediately notified. In the event of a frac-out, the on-site foreman/supervisor will conduct an evaluation of the situation and direct

recommended mitigation actions, based on the following guidelines.

2.1.1 If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, drilling operations may resume after use of a leak stopping compound or redirection of the bore.

2.1.2 If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand to a depth of 2-feet, contained and properly disposed of, as required by law. The drilling contractor shall be responsible for ensuring that the bentonite is either properly disposed of at an approved disposal facility or properly recycled in an approved manner. The Site Supervisor shall notify and take any necessary follow-up response actions in coordination with agency representatives. The Site Supervisor will coordinate the mobilization of equipment stored at off-site locations (e.g., vacuum trucks) on an as needed basis.

3.0 Site Supervisor/Foreman Responsibilities

The Site Supervisor/Foreman has overall responsibility for implementing this FCP. The Site Supervisor/Foreman will ensure that all employees are trained prior to all drilling. The Site Supervisor/Foreman shall be notified immediately when a frac-out is detected. The Site Supervisor/Foreman will be responsible for ensuring that the safety department is aware of the frac-out, coordinating personnel, response, clean-up, regulatory agency notification and coordination to ensure proper clean-up, disposal of recovered material and timely reporting of the incident. The Site Supervisor/Foreman shall ensure all waste disposal facility by personnel experienced in the removal, transport and disposal of drilling mud.

The Site Supervisor/Foreman shall be familiar with all aspects of the drilling activity, the contents of this Frac-out Contingency Plan and the conditions of the approval under which the activity is permitted to take place. The Site Supervisor/Foreman shall have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The Site Supervisor/Foreman shall assure that a copy of this plan is available (onsite) and accessible to all construction personnel. The Site Supervisor/Foreman shall ensure that all workers are properly trained and familiar with the necessary procedures for response to a frac-out, prior to commencement of drilling operations.

4.0 Equipment

The Site Supervisor shall ensure that:

- All equipment and vehicles are checked and maintained daily to prevent leaks of hazardous materials.
- Spill kits and spill containment materials are available on-site at all times and that the equipment is in good working order.
- Equipment required to contain and clean up a frac-out release will either be available at the work site or readily available at an offsite location within 15 minutes of the bore site.
- If equipment is required to be operated near a riverbed, absorbent pads and plastic sheeting for placement beneath motorized equipment shall be used to protect the riverbed from engine fluids.

5.0 Training

Prior to the start of construction, the Site Supervisor/Foreman, shall ensure that the crew members receive training in the following:

- The provisions of the Frac-out Contingency Plan, equipment maintenance and site specific permit and monitoring requirements;
- Inspection procedures for release prevention and containment equipment and materials;
- Contractor/crew member responsibilities in the event of a release;
- Operation of release prevention and control equipment and the location of release control materials, as necessary and appropriate; and
- Protocols for communication with the agency representatives who might be on-site during the clean-up effort.

6.1 Drilling Procedures

The following procedures shall be followed each day, prior to the start of work. The Frac-out Contingency Plan shall be available on-site during all construction. The Site Supervisor/Foreman shall be on-site at any time that drilling is occurring or is planned to occur. The Site Supervisor/Foreman shall ensure that a Job Briefing meeting is held at the start of each day of drilling to review the appropriate procedures to be followed in case of frac-out. Questions shall be answered and clarification given on any point over which the drilling crew or other project staff has concerns.

Drilling pressures shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent frac-outs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously-drilled sections after each new joint pipe is added.

Exit and entry pits shall be enclosed by silt fences and straw. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck shall be readily available on-site prior to and during all drilling procedures. Containment materials (Straw, silt fencing, sand bags, frac-out spill kits, etc.) shall be staged on-site at location

where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (straw bales or sedimentation fences) between the bore site and the edge of the water source, shall be constructed, prior to drilling, to prevent released bentonite material from reaching the water.

Once the drill rig is in place, and drilling begins, the drill operator shall stop work whenever the pressure in the drill rig drops, or there is a lack of returns in the entrance pit. At this time the Site Supervisor/Foreman shall be informed of the potential frac-out. The Site Supervisor/Foreman and the drill rig operator(s) shall work to coordinate the likely location of the frac-out. The location of the frac-out shall be recorded and notes made on the location and measures taken to address concern. The following subsections shall be adhered to when addressing a frac-out situation.

Water containing mud, silt, bentonite, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream or any other water source. The Bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and wastes shall be recycled, or disposed of, as appropriate.

6.2 Vacuum Truck

A vacuum truck shall be staged at a location from which it can be mobilized and relocated so that any place along the drill shot, can be reached by the apparatus, within 10 minutes of a frac-out.

6.3 Field Response to Frac-Out Occurrence

The response of the filed crew to a frac-out release shall be immediate and in accordance with procedures identified in the Plan. All appropriate emergency actions that do not pose additional threats to sensitive resources will be taken, as follows:

a. Directional boring will stop immediately;
b. The bore stern will be pulled back to relieve pressure on frac-out;
c. The Site Supervisor/Foreman will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications made;
d. The Site Supervisor/Foreman shall evaluate the situation and recommend the type and level of response warranted, including the level of notification required;
e. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, a leak stopping compound shall be used to block the frac-out. If the use of leak stopping compound is not fully successful, the bore stem shall be redirected to a new location along the desired drill path where a frac-out has not occurred.
f. If the frac-out has reached the surface, any material contaminated with

Bentonite shall be removed by hand, to a depth of 2-feet, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand shall be placed and the area returned to pre-project contours.

g. If a frac-out occurs, reaches the surface and becomes widespread, the Site Supervisor/Foreman shall authorize a readily accessible vacuum truck and bulldozer stored off-site to be mobilized. The vacuum truck may be either positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot, or may be pulled by a bulldozer, so that contaminated soils can be vacuumed up.

6.4 Response Close-out Procedures

When the release has been contained and cleaned up, response closeout activities will be conducted at the direction of the Site Supervisor/ Foreman and shall include the following:

a. The recovered drilling fluid will either be recycled or hauled to an approved facility for disposal. No recovered drilling fluids will be discharged into streams, storm drains, or any other water source.
b. All frac-out excavation and clean-up sites will be returned to pre-project contours using clean fill, as necessary.
c. All containment measures (fiber rolls, straw bale, etc.) will be removed, unless otherwise specified by the Site Supervisor/Foreman.

6.5 Construction Re-start

For small releases not requiring notification, drilling may continue, if 100 percent containment is achieved through the use of a leak stopping compound or redirection of the bore and the clean-up crew remains at the frac-out location throughout the construction period.

For releases requiring external notification and/or other agencies, construction activities will not restart without prior approval from the safety department.

6.6 Bore Abandonment

Abandonment of the bore will only be required when all efforts to control the frac-out within the existing directional bore have failed.

7.1 Notification

In the event of a Frac-out that reached a water source, the Site Supervisor/Foreman will notify safety department so they can notify the appropriate resource agencies. All agency notifications will occur within 24 hours and proper documentation will be accomplished in a timely and complete manner. The following information will be provided;

1. Name and telephone of person reporting;
2. Location of the release;
3. Date and time of release;
4. Type and quantity, estimated size of release;
5. How the release occurred;
6. The type pf activity that was occurring around the area of the frac-out;
7. Description of an sensitive areas, and their location in relation to the frac-out;
8. Description of the methods used to clean up or secure the site; and
9. Listing of the current permits obtained for the project.

7.2 Communicating with Regulatory Agency Personnel

All employees and subcontractors will adhere to the following protocols when permitting Regulatory Agency Personnel arrive on site. Regulatory Agency Personnel will be required to comply with appropriate safety rules. Only the Site Supervisor/Foreman and the safety department are to coordinate communication with the Regulatory Agency Personnel.

7.3 Documentation

The Site Supervisor/Foreman shall record the frac-out event in his or her daily log. The log will include the following: Details on the release event, including an estimate of the amount of bentonite released, the location and time of release, the size of the area impacted, and the success of the clean-up action. The log report shall also include the: Name and telephone number of person reporting; Date, How the release occurred; The type of activity that was occurring around the area of the frac-out; Description of any sensitive areas, and their location in relation to the frac-out; Description of the methods used to clean up or secure the site; and a listing of the current permits obtained for the project.

8.0 Project Completion and Clean-up

a. All materials and any rubbish-construction debris shall be removed from the construction zone at the end of each workday;
b. Sump pits at bore entry and exits will be filled and returned to natural grade; and
c. All protective measures (fiber rolls, straw bale, silt fence, etc.) will be removed unless otherwise specified by the Site Supervisor/Foreman.