Exhibit L
HDD Inadvertent Return Contingency Plan

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DICKINSON WRIGHT PLLC

HDD INADVERTENT RETURN CONTINGENCY PLAN 20212135.001A

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HDD INADVERTENT RETURN CONTINGENCY PLAN

1 INTRODUCTION

Horizontal Directional Drilling (HDD) is a steerable utility installation system using a surfaced-launched drill rig. HDD is commonly used to install cable and pipelines beneath roads, rivers, wetlands and other obstacles. An HDD profile is typically designed to pass beneath these obstacles to avoid disruption or damage to surface structures. HDD is an efficient, safe, cost effective method for installing utilities and is considered an industry standard for trenchless utility installation. Drilling fluid is used throughout the operation to transport drill cuttings, reduce friction, and stabilize the drilled hole. Installation of a medium voltage cable by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small diameter pilot hole along a designed path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the cable. The third stage consists of pulling the cable through the enlarged hole.

Formational drilling fluid losses typically occur when the drilling fluid flows through the pore spaces in the soil through which the HDD profile passes. An inadvertent return occurs when drilling fluid emerges at the ground surface or in any other undesired location from formation fluid loss.

This inadvertent return contingency plan provides specific procedures and steps for preventing, monitoring, detecting, and controlling releases of drilling fluid during the construction of the HDD crossings for the proposed Birch Solar development Project.

2 DRILLING FLUID AND DRILLING FLUID SYSTEMS

The HDD process uses drilling fluids to facilitate many of the HDD operations. Drilling fluid is a slurry composed of water and bentonite clay intended to transport drill cuttings, reduce friction, and stabilize the drilled hole. Bentonite clay (sodium montmorillonite) is a naturally occurring hydrophilic clay that can absorb up to ten times its weight in water. Bentonite is inert, non-toxic and is a non-hazardous substance used for drilling potable water wells. The composition of the drilling fluids and its engineering properties are tested to ensure their suitability for the given subsurface conditions encountered along the alignment and at each individual HDD location.

Depending on subsurface conditions encountered, polymers or lost circulation materials (LCM) may be added to the drilling fluid mixture. Polymers are often used to increase the carrying capacity of the drilling fluid or reduce clay adhesion. LCMs (e.g. organic materials, wood chips, etc.) may be used to seal drilling fluid surface releases return zone or to seal around the borehole to prevent drilling fluid from escaping into the formation and allow for the reestablishment of drilling fluid returns to the entry and/or exit pits. Many types of polymers and LCMs are available for use during HDD operations that are inert and environmentally benign.

Most drilling fluids, drilling fluid additives and polymers used in the HDD industry are NSF 60 compliant, as these products are also used in other rotary drilling applications such as water well drilling and completion. Therefore, if NSF 60 complaint products are used there will be no effects on water quality. LightSource will require the HDD contractor to use only NSF 60 compliant additives and polymers, and to submit Safety Data Sheets (SDSs) to verify.

During HDD operations, the drilling fluid is prepared in a mixing tank. The fluid is pumped at a flow rate ranging between 100 to 800 gallons per minute (gpm) through the center of the drill pipe to the bit or cutters. Return flow is through the annulus created between the wall of the boring and the drill pipe. The cuttings are then carried back to the entry pit. When in the entry pit, the drilling fluid is pumped to the fluid cleaning system. Typically, shaker screens, desanders, desilters, and possibly centrifuges remove increasingly finer cuttings from the drilling fluid. The cleaned and recycled drilling fluid is returned to the mixing tank and pumps for reuse in the drilled hole. The cuttings are disposed of at an approved disposal site.

The environmental impact of a release of drilling fluid into a water body is a temporary increase in local turbidity until the drilling fluid dissipates with the current or settles to the bottom.

Drilling fluid is easily contained by standard erosion and sedimentation control measures such as stray bales and silt fence. Drilling fluid would be contained on entry and exit worksites by hay bales and silt fence installed and maintained around the perimeter of each site. Within the boundaries of the worksites, drilling fluid would be controlled using pits at the crossing entry and exit points and typical fluid handling equipment such as trash pumps.

3 INADVERTENT RETURN EVALAUATION AND PREVENTION

3.1 GENERAL

In the contingency planning for this project, prevention of an inadvertent return has been a consideration in the design the profile of the HDD crossing. A factor in selecting the cable crossing profile is the type of soil and/or rock the HDD profile will pass through and the depth of soil cover. Dense granular soils and competent rock are considered to have relatively low susceptibility to an inadvertent return potential. The second factor considered in developing a profile is adequate thickness of overlying soil.

Regardless of the subsurface conditions, there is typically a high risk of an inadvertent return within about 100 to 150 feet of the HDD entry and exit points, as the drill path approaches the ground surface with decreasing overburden confinement. Where areas with high potential for an inadvertent return are identified, steps can be taken to manage and contain drilling fluid to reduce impacts.

3.2 PERSONNEL RESPONSIBILITIES AND TRAINING

3.2.1 Personnel Responsibilities

The actions in this Plan are to be implemented by the following personnel:

- Chief Inspector – LightSource will designate a Chief Inspector ("CI") for the Project. The CI will have overall authority for construction activities that occur on their designated portion of the Project.
- HDD Inspector – LightSource will designate a HDD Inspector for the Project. The HDD Inspector will have overall authority for the HDD construction activities that occur on their designated portion of the Project and will report to the CI.
- Environmental Inspector – At least one Environmental Inspector ("EI") will be designated by LightSource to monitor the HDD activities. The EI will have peer status with all other project inspectors and will report directly to the Lead Environmental Inspector. The EI, along with all other inspectors and inspection personnel, will have the authority to stop

activities that violate the environmental conditions of the FERC certificate (if applicable), other federal and state permits, or landowner requirements, and to order corrective action.

- HDD Superintendent – The HDD Superintendent is the senior on-site representative of the HDD contractor. The HDD Superintendent has overall responsibility for implementing this Plan on behalf of the HDD contractor. The HDD Superintendent will be familiar with the aspects of the drilling activity, the contents of the Plan and the conditions of approval under which the activity is permitted to take place. The HDD Superintendent will make available a copy of this Plan to the appropriate construction personnel. The HDD Superintendent will ensure that workers are properly trained and familiar with the necessary procedures for response to an inadvertent return.
- HDD Operator – The HDD Operator is the HDD contractor's driller operating the drilling rig and mud pumps. The HDD Operator is responsible for monitoring circulation back to the entry and exit locations. In the event of loss of circulation, the HDD Operator must communicate the event to the HDD Superintendent and HDD contractor field crews. The HDD Operator is responsible for stoppage or changes to the drilling program in the event of an observed inadvertent return.
- HDD Contractor Personnel – During HDD installation, field crews will be responsible for monitoring the HDD alignment along with LightSource field representatives. Field crews, in coordination with the EI, are responsible for timely notifications and responses to observed releases in accordance with this Plan. The Lead EI ultimately must approve the action plan for mitigating the release.

3.2.2 Training

Prior to the start of HDD construction activities, all personnel involved in HDD operations will receive the site-specific training including but not limited to:

- Project specific safety training;
- Review provisions of this Plan and site-specific permit requirements;
- Review location of sensitive environmental resources at the site;
- Review drilling procedures for release prevention;
- Review the site-specific monitoring requirements;
- Review the location and operation of release control equipment and materials;

- Review protocols for reporting an observed inadvertent return

3.3 SURFACE AND SUBSURFACE CONDITIONS

3.3.1 Surface Conditions

The initial step in the HDD design process and evaluation of the risk of an inadvertent return is to conduct a detailed site reconnaissance. During site reconnaissance, the proposed HDD site is evaluated for the availability of adequate workspace and suitable temporary ingress and egress for construction equipment and personnel; topographic features such as large elevation differentials that could limit or preclude the use of HDD technology; and potentially limiting surface features such as existing infrastructure and environmentally sensitive habitat areas. By selecting a crossing site with an optimal combination of the aforementioned features, an HDD can then be designed with an appropriate geometric profile and sufficient depth of cover for a particular crossing.

3.3.2 Subsurface Conditions

A thorough evaluation of the subsurface conditions along a proposed HDD alignment enables the designer to select a profile depth that passes through the most competent and desirable subsurface layer for drilling. Subsurface soil and groundwater conditions are explored by advancing exploratory borings to depths of 20 to 25 feet below the anticipated design profile depth. The borings are observed in the field during drilling and soil/rock samples are visually classified and logged. Laboratory tests, including moisture content, dry unit weight, sieve analyses, unconfined compression and triaxial compression tests are completed on selected samples from the borings.

The subsurface data is then used in conjunction with the surface data to optimize the HDD profile so that it passes through and beneath the most competent subsurface layers, thereby reducing the potential for drilling fluid to migrate to the ground surface. Additionally, it provides favorable drilling conditions for the contractor reducing the likelihood of prolonged drilling activities which may increase the potential for instability of the drilled hole.

3.4 HDD GEOMETRY

The HDD profile is designed to reduce the potential for an inadvertent return in sensitive areas to the extent possible considering site limitations. The type of subsurface material and the depth of cover material are two main factors considered in developing the profile of an HDD crossing.

The geometry of the crossing profile can also affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radii turns, downhole pressures can build up, thereby, increasing the potential for an inadvertent return. The HDD design profiles for the proposed HDD reduces this potential to the extent possible, with vertical curves appropriate for the product pipe diameter. Therefore, the potential for pressure buildup caused by utility line geometry has been reduced.

3.5 INADVERTENT RETURN ANALYSIS

3.5.1 General

During HDD installation, drilling fluid is transported under pressure through the drill pipe string to the cutting tool. For HDD installations of this size, pump pressures of several hundred pounds per square inch (psi) and pump rates of 100 to 800 gpm are typical. The drilling fluid typically has a specific gravity ranging from 1.1 to 1.2 (approximately 69 to 75 pounds per cubic foot [pcf]).

The total drilling fluid pressure at the cutting tool is a function of pumping pressures, the elevation difference between the drill rig and the cutting tool and friction losses. Soil and rock formations along the drill path experience maximum drilling fluid pressures in the immediate proximity of the drill bit or reaming tools. The energy (pressure) of the drilling fluid is steadily diminished along its path from the drill rig to the cutting tool and back to the drill rig through the annulus of the hole. Thus, the pumping pressure required to circulate the drilling fluid increases as the drill bit advances farther from the drill rig. Typically, the annular drilling fluid pressure at the cutting tool can range from 15 to 25 percent of the pump pressure.

3.5.2 Drilling Fluid Loss

Drilling fluid circulation may be reduced or lost during HDD operations by drilling fluid loss to the surrounding formation or by the accumulation of cuttings downhole that create a blockage which may result in an inadvertent return. These two processes are discussed below:

- Formational fluid loss occurs when drilling fluid flows into surrounding permeable soil units either within the pore spaces of the soil or along preexisting fractures or voids in the formation.
- Subsequent loss of drilling fluid can occur where the combined resisting force of the available overburden pressure and the shear strength of the overburden soil is less than the hydrostatic drilling fluid pressure and the pressures applied to the surrounding soil from the drilling fluid at the cutting tool.

Formational drilling fluid losses typically occur when the drilling fluid flows through the pore spaces in the soil through which the HDD profile passes. Thus, a formation with a higher porosity can potentially absorb a larger volume of drilling fluid than a formation with a lower porosity. Silty sands, silts and clays typically have a low susceptibility to formational drilling fluid losses. Coarse sand and gravel units with low percentages of silt and clay have a moderate to high susceptibility for drilling fluid loss. The proper management of the drilling fluid properties can reduce the volume of formational drilling fluid loss.

3.5.3 Inadvertent Return

An inadvertent return occurs when drilling fluid emerges at the ground surface or in any other undesired location such as wetlands, utility trenches, basements, roads, railroads, and waterbodies. In practice, an inadvertent return typically occurs in close proximity to the entry and exit points where annular pressures are high and soil cover is thin. An inadvertent return can also occur at locations along a drill path where there are low shear strength soils, where soil cover is relatively thin or along preexisting fractures or voids. Other locations where an inadvertent return can occur are along preferential pathways such as exploratory boring locations, within utility trenches, or along the edges of existing subsurface structures such as piles or utility poles.

The HDD contractor's construction procedures constitute another important factor influencing when and where drilling fluid loss occurs. If the HDD contractor operates with insufficient drilling fluid flow rates, inadequate drilling fluid properties or excessive rates of penetration, the annulus may become blocked through an accumulation of drill cuttings falling out of suspension. This can occur within formations that typically have a low potential for an inadvertent return. If the accumulation of cuttings creates a blockage downhole, the annulus may become over-pressurized, leading to the potential of an inadvertent return. The contractor has the responsibility to mitigate the risk of overpressure by techniques stated in more detail in the next section. Additionally, a LightSource HDD inspector will be assigned full-time to the site.

3.6 RESPONSIBILITY OF CONTRACTOR

The drilling contractor is responsible for execution of the directional drilling operation, including actions for monitoring, detecting and controlling drilling fluid loss. The HDD contractor should utilize appropriate best management practices and drilling methods to limit the potential for an inadvertent return. Such practices include the contractor taking care such that penetration rates will not exceed the rate of cuttings removal from the hole, maintaining proper drilling fluid properties to clean the hole and not allow excess solids to build up in the drilling fluid, and maintaining drilling fluid returns at all times during the pilot hole, hole opening and pullback processes. The contractor’s means and methods significantly influence the potential for an inadvertent return to occur during construction. LightSource’s HDD Inspector will closely supervise the progress and actions of the drilling contractor.

4 INADVERTENT RETURN MONITORING AND DETECTION

4.1 MONITORING PROCEDURES

The HDD Inspector, EI, and all HDD Contractor personnel are responsible for continuously monitoring operations during drilling activities. Monitoring will include:

- Inspection along the drill path, including monitoring the waterbody for evidence of a release. Inspection of the ground surface along the drill path will be completed at least every two hours during pilot hole and reaming operations.
- Continuous examination of drilling fluid pressures and the flow rate of the drilling fluid returns.
- The drilling operator will provide information regarding drilling conditions to the HDD Inspector and EI throughout the course of drilling activities.
- In the case of an in-stream release, monitoring may include an inspection by boat to determine plume movement within the waterbody.
- If an in-stream release occurs, the EI will collect drilling fluid returns at the borehole entry location for future analysis, as required.
- Monitoring will be documented by the HDD Inspector and/or EI.

4.2 DRILLING FLUID PRESSURES

Drilling fluid pressures are affected by several factors. A description of some of these factors and how they can be managed follows.

- *Drilling fluid density.* Greater drilling fluid densities result in greater downhole pressures. A large component of drilling fluid density is the concentration of cuttings in the fluid. By controlling drilling and hole opening penetration rates and maximizing the effectiveness of drilling fluid recycling equipment, drilling fluid densities can be kept below acceptable limits.
- *Drilling fluid viscosity.* Greater drilling fluid viscosities result in greater downhole pressures. However, greater viscosities also help seal off fissures and other escape paths into the surrounding formation from the HDD borehole. Similarly, increased viscosity improves the

cuttings carrying capability of the drilling fluid. Drilling fluid viscosity must be carefully managed to obtain a balance between these conflicting requirements.

- *Drilled hole cleanliness.* Cuttings tend to settle out of the flow of drilling fluid in the annular space around the drill pipe string. Accumulations of cuttings or cutting beds restrict the flow of drilling fluid through the annular space. This results in an increase in the pressure required to maintain flow. Careful management of drilling fluid properties and the regular use of borehole swabbing techniques will keep the borehole free of cuttings beds and their associated pressure increases.
- The drilling fluid pressures in the borehole will vary throughout the installation processes. They will change with the depth of cover, the distance drilled, and the borehole diameter. However, changes in pressure should be gradual and can to a large extent be predicted. Rapid or unexpected changes in pressure are indicators of potential problems downhole. It is critical that drilling fluid pressures be monitored and recorded throughout the pilot hole process when pressures are the highest. There are two techniques available for drilling fluid pressure monitoring. They are drill pipe pressure monitoring and downhole annular pressure monitoring.

4.3 DRILL PIPE PRESSURE MONITORING

Pressure in the drill pipe is measured at the surface by the drilling fluid pump system. The difference between this pressure and the downhole pressure in the borehole is the pressure drop experienced by the fluid as it flows down the drill pipe string and through the downhole tool. Hence drill pipe pressure gives only an approximate indication of the downhole pressure before the drilling fluid exits the tooling.

Careful monitoring of drill pipe pressure can provide an indication of a rapid or unexpected change in downhole pressure.

4.4 DOWNHOLE PRESSURE MONITORING

Downhole pressure monitoring is typically only used during the pilot hole operation. This is a sophisticated technique that involves the use of a pressure transducer incorporated into the downhole survey probe immediately behind the drilling assembly. The transducer measures the drilling fluid pressure in the annular space around the probe. Data from the transducer is transmitted to the drill rig at the surface via the same electrical wire line used to transmit survey data.

4.5 DRILLING FLUID VOLUME MANAGEMENT

If drilling fluid is not allowed to escape from the drilled hole, then the volume of fluid pumped downhole would return to the surface via the annular space. However, it is typical that a portion of the drilling fluid will be lost to the surrounding formation. Even though some drilling fluid loss should be expected, a program for monitoring and managing the volumes of drilling fluid used is beneficial in identifying sudden decreases in drilling fluid volume, which could be a sign of a potential inadvertent return.

Throughout the HDD process the contractor will keep a running balance of the total volume of fluid pumped downhole and the total volume recovered from the return pits. The difference between these volumes will be the volume lost from the drilled hole.

If the rate of loss of fluid is greater than expected or if it suddenly increases this could be an indication of a problem downhole. Measures to reduce the loss of fluid from the borehole would be implemented as described in this plan.

4.6 DETECTION

HDD is a technically advanced process involving skilled operators. The detection of conditions that indicate a potential inadvertent return is highly dependent upon the skills and experiences of the drilling crew. Each drilling situation is unique in that the behavior of the subsurface soil is highly variable and difficult to predict. There is no down-hole monitoring equipment that can specifically detect the potential for an inadvertent return. It is a combination of factors, which must be properly interpreted, that may indicate conditions that can have the potential of causing an inadvertent return.

A downhole annular pressure tool that can measure downhole annular pressures in real-time during the drilling process can be included in the pilot hole jetting assembly and/or reaming assembly to assist in measuring and detecting elevated drilling fluid pressure conditions that could result in an inadvertent return. By using a downhole annular pressure tool, the drilling operator can observe when elevated downhole annular pressures occur, which could indicate an elevated risk of an inadvertent return in the formation. Using this tool, the drilling operator could observe a significant decrease in downhole annular pressure which could indicate that an inadvertent return has occurred. In this case, the drilling operator could disengage the drilling fluid pumps to limit the amount of drilling fluid being pumped downhole and potentially prevent an inadvertent return.

5 INADVERTENT RETURN RESPONSE, CONTAINMENT AND CONTROL

5.1 INADVERTENT RETURN RESPONSE

By actively monitoring drilling operations, LightSource intends to correct problems before they occur. The HDD contractor will also monitor the condition of the ground surface around the HDD alignment throughout the HDD drilling process.

If during HDD operations, drilling fluid is detected/observed at the surface, the drilling crew will take immediate corrective action. The first corrective action is to stop the drilling fluid pumps. By stopping the pumps, the pressure in the hole will quickly dissipate. With no pressure in the hole, the surface seepage will stop.

The inadvertent return will be assessed by the HDD Superintendent, EI, and HDD Inspector to determine an estimated volume of the release. They will also assess the potential of the release to reach adjacent waterbodies, wetlands, or other types of infrastructure (e.g., wells). The HDD Superintendent will assess the drilling parameters (depth, type of formation, fluid flow rate, and drilling fluid characteristics) and incorporate appropriate changes.

The HDD Superintendent, EI, and HDD Inspector will coordinate installation of appropriate containment structures and implement additional response measures. Site topography in conjunction with access for personnel and equipment to the release site are major factors in determining the methods used for containment and disposal.

5.2 INADVERTENT RETURN CONTAINMENT

After assessment of the inadvertent return, the following measures will be implemented to stop or reduce the extent and severity of the release:

5.2.1 Upland Release

If an inadvertent return occurs in upland areas, regardless of whether the release is inside or outside the project right-of-way, the drilling crew will take immediate corrective action to contain the release and to prevent migration.

- Typically, containment is achieved by excavating a small sump pit at the site of the release and/or surrounding the release with containment materials (i.e. hay bales, silt fence and/or sandbags). When contained, the drilling fluid is either collected by vacuum trucks or pumped to a location where vacuum trucks can be accessed. The fluids are then transported either back to the HDD drill rig or to a disposal site.
- Additional berms will be constructed around the release site as directed by the EI to prevent release materials from flowing into a waterbody.
- If the amount of an upland release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence and/or hay bale installation) to prevent silt-laden water from flowing into a waterbody.

5.2.2 Wetland Release

If an inadvertent return occurs in a wetland, either inside or outside the project right-of-way, the drilling crew will take immediate corrective action to contain the release and to prevent migration. These will include:

- Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.
- Promptly implement appropriate containment measures to contain and recover the slurry.
  - Efforts to contain and recover slurry in wetlands may result in further disturbance by equipment and personnel, and possibly offset the benefit gained in removing the slurry.
  - If the amount of the slurry is too small to allow the practical collection from the affected area, the fluid will be diluted with fresh water or allowed to dry and dissipate naturally.
- If the release cannot be controlled or contained, immediately suspend drilling operations until appropriate containment is in place.
- Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.

5.2.3 Waterbody Release

If a release occurs within a waterbody, the drilling crew will take immediate corrective action to contain the release to the extent practical. The following approach will generally be followed after an inadvertent return has been isolated, and the flow has stopped. Because the unpredictable nature of the locations and environment in which an inadvertent return may occur, this description cannot encompass all possible approaches to clean-up under all conditions. If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement corrective actions.

The following are response techniques that may be applied for a waterbody release:

- If the bentonite material flows overland prior to entering the waterbody, installation of containment materials such as silt fencing or sandbag dams at the point of entry will be used to reduce or stop the flow; if the release is directly into the waterbody, other means to isolate the vent site from the flowing waterbody will be used.
- If the release occurs in non-flowing water less than about 2 feet deep, a vacuum truck or pump(s), with a sufficient hose will remove the drilling fluid. Personnel will remove the bentonite, working from downstream to upstream, to allow maximum visibility. Hand tools may be used to scarify the sediments and ensure removal to the maximum extent practicable.
- If necessary, water may be temporarily diverted using barriers such as sandbags to isolate the impacted area. If water diversion is successful, a vacuum truck or pump(s), with a sufficient hose will remove the drilling fluid.
- If an inadvertent return occurs in a waterbody that is more than two feet in depth or has significant flow, there are limitations to what can be done to contain or control the drilling fluid that has been released. If it is impracticable to remove the drilling fluid, a clear written explanation of the current conditions and the forward plan of action will be submitted to the applicable regulatory agencies. If the agencies approve the forward plan of action, drilling operations will resume.
- Measures will be implemented to limit the further release of fluid into the waterbody including the introduction of lost circulation materials into the drilling fluid, increasing drilling fluid viscosity and the temporary reduction of drilling fluid pumping rates. Drill penetration rates will also be temporarily increased to move the drilling assembly away from the release point as quickly as possible for the release to stop quickly.
- Exposed soils will have temporary erosion control measures established as soon as practical with permanent erosion controls established as soon as possible.

- Disturbance of vegetation will be kept to a minimum and all disturbed vegetation will be restored.

5.3 INADVERTENT RETURN CONTROL

After an inadvertent return has been contained, measures will be taken to control the inadvertent return and to reduce the chance of recurrence. Developing the corrective measures will be a joint effort of LightSource, the HDD Inspector, the EI, and the HDD contractor and will be site and problem specific. Below is a summary of possible corrective measures that could be implemented in the event of an inadvertent return:

- Increase the drilling fluid viscosity in an attempt at sealing the point at which fluid is leaving the drilled hole. The drilling operation may be suspended for a short period (e.g. overnight) to allow the fractured zone to become sealed with the higher viscosity fluid.
- If increasing the drilling fluid viscosity is ineffective, LCM may be introduced into the hole by incorporating them in the drilling fluid and pumping the material down-hole. The drilling operation may again be suspended for a short period (e.g. overnight) to allow the fractured zone to become sealed with the lost circulation materials.
- Depending on the location of the fractured zone, a steel casing may be installed that is of sufficient size to receive the largest expected down-hole tools for the crossing. This casing installation provides a temporary conduit for drilling fluids to flow while opening the remaining section of the hole to a diameter acceptable for receiving the proposed product pipe. To alleviate future concerns with the steel casing after the HDD installation is completed, the casing is generally extracted from the hole prior to or just after completing the HDD installation. However, there have been instances when attempts at extracting the steel casing were unsuccessful.
- In the event fluid flow is still not regained through the annulus of the drilled hole and a steel casing installation is not selected, the HDD contractor may elect to install a grout mixture into the drilled hole in an attempt at sealing the fractured zone. When opting to utilize this approach, the down-hole drilling assembly is generally extracted from down-hole. The existing hole will be re-drilled to the point at which it had previously been drilled prior to having encountered the loss of drilling fluid.
- Another approach that can be implemented in the event the grouting program within the drilled hole is unsuccessful at sealing the fractured zone is attempting a grouting program

from the surface. This approach is only viable in areas where drilling rigs with vertical drilling capabilities can access the HDD alignment. If a surface grouting program is selected, the HDD drilling assembly is extracted from down-hole. Multiple holes are then drilled vertically on either side and along the HDD alignment to allow for grout slurry to be pumped into the fracture zone where the drilling fluid had previously been lost from the drilled hole. This process can take several days to complete in order to insert the grout in a grid pattern that covers the full fractured zone, during which time the HDD operation is suspended. Upon completion of the surface grouting program, the HDD operation resumes, and a pilot hole must be reestablished through the grouted formation.

5.4 RESPONSE EQUIPMENT

Equipment for containing, controlling, and cleaning up an inadvertent return will be kept on site throughout the installation process. Heavy equipment not specifically designated for control and cleanup of drilling fluid such as backhoes will also be available on site.

The following list identifies some materials and equipment that will be maintained at each HDD site in sufficient quantities to help ensure containment of an inadvertent return:

- Weed free straw or hay bales
- Sandbags
- Stakes to secure bales
- Silt fence
- Shovels, rakes, brooms and buckets
- Trash pumps and flexible hose
- Light tower(s), so that cleanup work could continue after dark
- A boat with appropriate personal safety equipment at major water body crossings depending on seasonal flows
- Vacuum trucks

5.5 REPORTING

If an inadvertent return occurs within a stream, wetland or wetland buffer, or other sensitive resources, or poses a threat to public safety, the Lead EI will immediately notify the LightSource Environmental Manager.

Regulatory agencies will be contacted as required by the agencies reporting requirements. LightSource will inform the regulatory agencies if any threat to public health and safety exist and explain whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement corrective actions. If public health and safety are threatened, drilling fluid circulation pumps will be turned off and work will stop until the threat to public health and safety are mitigated.

The Lead EI will provide the following:

- The location of the inadvertent return;
- A description of the area affected; and
- The containment measures implemented.

As soon as possible, a report, containing the following information, will be prepared and emailed to the appropriate agencies.

- The cause of the release;
- Photographs of the release site;
- The area affected;
- The location and size of the resulting work area; and
- The location of any drainage, streams or wetlands in the area and the distance to them from the inadvertent return site.

Upon completion of HDD activities, a report will be prepared that summarizes:

- The events leading up to the inadvertent return;
- The measures taken to minimize the impacts following the release;
- Any impacts from the release;
- Mitigation for the impacts from the release; and
- Agency contacts.

5.6 ABANDONMENT

If the drill path becomes obstructed and cannot be cleared or if corrective actions do not prevent or control releases from occurring, LightSource may opt to re-drill the hole along a different alignment or suspend the project altogether. In either case, the following procedures will be implemented to abandon the drill hole.

The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.

Closer to the surface (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.

The borehole entry location and, if necessary, the exit location will be graded and seeded by the contractor to its original grade and condition after the drill hole has been abandoned.