APPENDIX H

INADVERTENT RELEASE PLAN

INADVERTENT RETURNS CONTINGENCY PLAN
PG&E DISTIBUTION FEEDER MAIN 0630-01
SACRAMENTO RIVER CROSSING
MERIDIAN, CALIFORNIA

KLEINFELDER PROJECT NO. 20213054.017A

September 10, 2021

A Report Prepared for:

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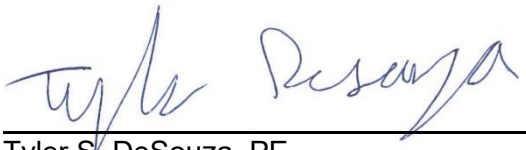
Prepared by:



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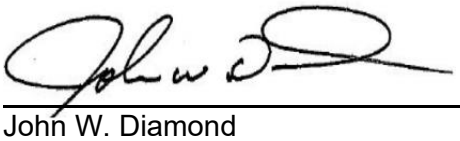

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1 INTRODUCTION

This Inadvertent Returns (IR) Contingency Plan provides specific procedures and steps to address any potential inadvertent return of drilling fluids associated with the proposed horizontal directional drill (HDD) crossing of the Sacramento River in Meridian, California during construction of the PG&E Distribution Feeder Main (DFM) 0630-01pipeline replacement project (R-1385). The proposed R-1385 project includes trenchless crossings with a new 4-inch-diameter high pressure, natural gas pipeline.

The following plan has been prepared to outline measures to minimize the potential for inadvertent returns, provide for timely detection of inadvertent returns, contain and clean up potential inadvertent returns during drilling operations, and provide for required notifications of an inadvertent return to the PG&E project specific Environmental Field Specialist (EFS) and any required regulatory agencies. Unless otherwise specified, PG&E will implement the following plan in consultation with the contractor, On-Site Engineer (whom will also be monitoring the bore path for any sign of inadvertent returns during drilling operations) and the PG&E Pipeline Inspector.

Key elements of this plan include:

1. A List of Preventative Measures (Section 3)
2. Monitoring and Inadvertent Returns Response and Corrective Actions (Section 4)
3. Response Supplies (Section 5)
4. Notification Procedures (Section 6)
5. Abandonment (Section 7)

2 PROJECT LOCATION AND DESCRIPTION

The proposed PG&E DFM 06-30-01 pipeline replacement project (R-1385) includes a crossing of the Sacramento River in Meridian, California with a new 4-inch-diameter natural gas pipeline.

Drilling fluid is easily controlled by standard erosion and sediment control measures within upland areas. Within the boundaries of the worksite, it is anticipated that the contractor will control drilling fluid through the use of pits at the crossing entry and exit points, and typical fluid handling equipment such as trash pumps, tanks, and tanker trucks.

The environmental impact of a release of drilling fluid into a water body is a temporary increase in turbidity until drilling fluid dissipates with the current and settles to the bottom. In the immediate vicinity of a release, benthic organisms may be smothered if sufficient quantities of bentonite settle upon them.

2.1 SITE SPECIFIC INADVERTENT RETURN RISK FACTORS

There are several site-specific factors at the proposed crossing location that present a risk for inadvertent returns. The primary risk factors at the Sacramento River crossing include the risk of drilling fluid finding preferential flow paths within the crossing alignment limits. Flow is possible into the irrigation canal to the north of the crossing as well as any nearby utility trenches. Mitigation measures could include the use of conductor casing and/or identifying minimum clearances from such features. There is also risk of preferential flow paths in nearby geotechnical explorations and monitoring wells. These risks can be mitigated by properly abandoning active monitoring wells prior to beginning work. The boring drilled by Kleinfelder in October 2020 was grouted from termination depth to ground surface. However, the installed well (MW-1) remains active. There are no backfill records of the borings drilled by Caltrans between 1961 and 1972. These borings locations should be located in the field and closely monitored during HDD drilling operations for any sign of inadvertent returns. Further, deep open-graded gravels and sands found within the river channel deposits can also provide the potential for preferential flow paths. The risk associated with preferential flow paths in void spaces in the sands and gravels can be mitigated with appropriate drilling fluid make up in the borehole and by following the monitoring plan outlined in Section 4.

In addition to the risks outlined above, there is an increased risk of inadvertent returns at shallow depths near the entry and exit pits. The risk of inadvertent returns near the entry and exit pits can be reduced by decreasing drilling fluid pressures at shallow depths and by pre excavating the exit pits in order to capture drilling fluid in the exit pit as the drill string approaches the surface.

3 PREVENTATIVE MEASURES

3.1 ON-SITE ENGINEER

An engineer will be on-site during drilling to monitor drilling fluid pressures and viscosities measured by the contractor. The on-site engineer will also monitor circulation and returns, penetration rates, and equipment operation during drilling. The on-site engineer will monitor cuttings and make recommendations for modifying drilling fluid properties to account for changes in soil conditions. The engineer will also be on site to monitor pipe pull-back operations after completion of the HDD bore. The role of the on-site engineer is to monitor, document, and provide recommendations to the HDD contractor as needed. The on-site engineer will not direct the HDD contractor's work or means and methods, and drilling operations are the sole responsibility of the HDD contractor. However, the on-site engineer will have stop work authority if there is any concern that the contractor's means and methods are increasing the risk of an inadvertent return along the bore path.

3.2 HDD CONTRACTOR REQUIREMENTS

The HDD contractor shall be responsible for contacting Underground Service Alert (USA) a minimum of three working days prior to the commencement of drilling operations in order to identify any underground utility conflicts. Any potential conflicts should be potholed, as necessary, prior to the start of drilling activities. The contractor should maintain an appropriate clearance between the outside edge of the existing utility and the outside edge of the largest diameter reamer or other boring equipment. Any pre-installation inspection work that is required by PG&E must be completed prior to commencing drilling operations. All available facility maps and/or construction drawings should be reviewed for any unmarked utilities prior to the commencement of drilling.

The HDD contractor shall have a drilling supervisor on-site at all times while HDD operations are underway. All on-site employees shall be prepared to respond to any inadvertent returns that may occur during drilling operations and be aware of and capable of performing their assigned tasks for containment and cleanup of inadvertent returns.

3.2.1 Drilling Fluid

The HDD contractor shall select appropriate drilling fluids for the anticipated subsurface conditions. The Safety Data Sheets for each of the drilling fluids additives that the contractor anticipates using during HDD drilling operations must be made available on site prior to commencement of and during all drilling operations. Only drilling fluid additives that have been pre-approved by PG&E may be used for drilling.

3.2.2 Maintenance of Circulation in the Borehole

The HDD contractor shall select proper tools and equipment to maintain proper annular space and allow for circulation of drilling fluids. The contractor will be responsible for collecting samples of their drilling fluid for testing in order to document the drilling fluid properties before they begin drilling and each time they add newly mixed mud to the hole.

During HDD drilling operations, the rate of advancement should be controlled to allow for cuttings to be sufficiently circulated out of the borehole. The most effective way to minimize the risk of an inadvertent return associated with HDD drilling operations is to maintain fluid circulation to the extent practical. Maintenance of fluid circulation is the responsibility of the HDD contractor, and the contractor is responsible for verifying that the borehole is clean and to employ methods to minimize the risk of borehole plugging.

The on-site engineer will monitor drilling fluid returns in conjunction with the HDD contractor during drilling operations. The on-site engineer will have authority to stop work if fluid circulation is not maintained and there is a perceived increased risk of an inadvertent return.

3.2.2 Borehole Pressures

A proper drilling fluid pressure should be maintained throughout the entire length of the bores and should be reduced as much as practical near the exit point. A pressure sensing sub several feet behind the drill bit can be used to monitor drilling fluid pressures in the bore hole and compare them to the maximum predicted allowable pressures. This can be used to help avoid inadvertent fluid releases. The pressure sub provides real-time monitoring of fluid pressures within the borehole and is useful in detecting a spike in drilling pressure that may result from a borehole that

is not well cleaned and/or becomes blocked with the drilling solids. Furthermore, the pressure data allows the driller to understand when modifications to the drilling method may be needed to avoid a fluid release.

3.2.3 Erosion and Sedimentation Controls

Soil erosion and sedimentation controls will be in place in the active drilling areas, and the entry and exit pits will be constructed to contain the drilling fluids and slurry and minimize the risk for a release to the environment. Excess or waste drilling slurry will be managed and disposed of by the contractor in accordance with PG&E requirements and in compliance with applicable local, state and federal regulations.

3.3 PG&E ENVIRONMENTAL REQUIREMENTS

Prior to commencement of drilling operations PG&E shall:

- Clearly show the construction limits on the design drawings
- Identify water crossings, and wetlands if necessary, within and adjacent to the construction area as shown on the project alignment sheets
- Verify that all required environmental permits are in place

4 MONITORING AND INADVERTENT RETURNS RESPONSE AND CORRECTIVE ACTIONS

During drilling operations, information including drilling fluid pressures, drilling fluid pumping rates, physical route, geologic formation, line of approach, etc. will be monitored by the Contractor and the on-site Engineer so that they are maintained according to the design plan. The contractor will be responsible for collecting samples of their drilling fluid for testing in order to document the drilling fluid properties before they begin drilling and each time they add newly mixed mud to the hole.

In order to identify whether an inadvertent drilling fluid return has occurred, HDD activities will be actively monitored by the HDD inspection team, including: the contractor, the pipeline/project inspector, the on-site engineer, the Environmental inspector, and the project Environmental Field Specialist (as required). Monitoring procedures will include the following:

1. Visual surface inspection along and in the vicinity of the drill path;
2. Visual inspection of the entry and receiving pits (throughout the day);
3. Monitoring of drilling fluid pressures and return flows;
4. Visual inspection along the drill path upon completion of HDD drilling operations and pipe pullback; and
5. Frequent inspection along areas of identified higher risk, i.e. the Sacramento River,areas upgradient to the river, and previous exploration locations.

4.1 INADVERTENT RETURN RESPONSE

The HDD contractor shall immediately follow the notification procedures and utilize the contact list provided in Section 6 in the event of any sudden losses in returns or any inadvertent return to the surface. If an inadvertent return is observed, the HDD contractor will take certain reasonable measures to eliminate, reduce, or control the release. The actions to be taken will depend on the location and time of release, site specific geologic conditions, and the volume of the release.

If a release occurs in an upland area, the HDD contractor will immediately take appropriate reasonable actions to reduce, eliminate, or control the release. The action may include:

- Constructing a small pit or sandbag coffer around the release point, installing a section of silt-fence or compost filter sock to trap as much sediment as possible, and placing a pump hose in the pit to pump the drilling fluid back to the bore site or to a tanker
- Reducing drilling fluid pressure
- Thickening drilling fluid mixture
- Adding pre-approved loss circulation materials to the fluid mixture, such as bentonite pellets or sealant, etc.
- If IR cannot be controlled by the above, stop work and turning off the pump that is used to circulate drilling fluid in order to drop pressures and investigate the likely cause(s) of the inadvertent return

The HDD contractor in consultation with the pipeline inspector will determine which methods are most appropriate to eliminate, reduce or control the release. Recovered drilling fluid will be recycled and reused to the extent that is practical. Waste drilling fluid will be disposed of in a permitted solid waste landfill in accordance with PG&E protocols.

If an inadvertent return occurs into any nearby drainage or waterbodies, it will be the responsibility of the HDD contractor to contain and collect drilling fluid, and ultimately restore the disturbed area, as practical. Drilling operations will be temporarily suspended to allow contractor to set up a containment and collection system.

If an inadvertent return occurs in close proximity to where there is imminent danger of the drilling fluid migrating into one of the waterways adjacent to the proposed crossing locations, then drilling operations will cease until HDD personnel and inspection team have had an opportunity to examine the site and evaluate the threat to the drainage or waterbody. The EFS will make all appropriate agency and owner notifications.

The response action will be on a case-by-case basis. A plan for avoiding additional impacts, which may include a pump or flume bypass with secondary containment, in addition to all of the action items listed above will be implemented. The HDD activity may be resumed only after it has been determined with reasonable certainty that any additional release of drilling fluid will be minimal and can be adequately contained without posing further impacts to the drainage or waterbody. The release site should continue to be closely monitored for any additional further inadvertent return activity until the HDD work in the area is completed.

One exception to ceasing drilling operations until containment is developed would be a release of drilling fluids during the pipe pullback process or if ceasing operations would pose significant risk of causing the pipe to be stuck and pullback not able to resume. It should be recognized that in some instances restoration of circulation may not be practical or possible and that environmental impact will be minimized by completing construction as soon as possible.

Prior to the start of the drilling process, the project team including the contractor, on-Site Engineer, PG&E Pipeline Inspector, and the Environmental Field Specialist will review this contingency plan, their roles and responsibilities, applicable operating permits, any known sensitive environmental areas, and reporting requirements.

5 RESPONSE SUPPLIES

Response supplies will be maintained on-site by the contractor and verified by the PG&E Inspector to ensure that appropriate response supplies for the site are present and serviceable. It is anticipated that these supplies may include, but are not limited to the following materials:

- Sandbags
- Filter cloth (e.g. silt fence)
- T-bar posts
- Straw wattles
- Hand tools such as brooms, rakes, shovels, etc.
- 55-Gallon Barrel
- 6-mil polyethylene or equivalent
- Trash pump w/ sufficient lengths of leak free hose and suction heads

The contractor is responsible for having appropriate response materials on-site and ready for use in the case of an inadvertent return during HDD drilling operations. The contractor is responsible to have additional resources available for deployment to the site as necessary to address an inadvertent return such as any of the materials listed above that are not stored on site, vacuum trucks, frac tanks, etc. The Safety Data Sheets (SDS(s)) for the drilling fluids that will be used during drilling will be provided by the drilling contractor and made available on site prior to commencement of and during all drilling operations.

6 NOTIFICATION PROCEDURES

If an inadvertent return is discovered, action steps will be taken by the contractor to contain the inadvertent return as described above in the Response to Inadvertent Returns in Section 4. Procedures for notification to PG&E personnel and regulatory agencies are detailed in this section.

The HDD contractor shall immediately notify a member of the project inspection team of any sudden losses in returns or any inadvertent return to the surface. If the HDD contractor is not able to immediately speak directly with the Pipeline Inspector:

- For loss of circulation, the HDD contractor will work with the inspection team to restore circulation and notify the project manager
- For inadvertent returns the project inspection team will notify PG&E personnel.

The HDD contractor will notify PG&E for an inadvertent return. PG&E will assess the corrective actions that are planned, and whether the return poses any threat to public health and safety. PG&E will notify any required regulatory agencies as required; however, contact information for regulatory agencies is provided in the table below.

Should an inadvertent return occur, the response and remediation efforts will be documented by the contractor, Pipeline Inspector, and the on-site engineer in the field notes. The field notes will provide details on at least the following:

- The location, date and time of return
- The date and time PG&E was notified
- Drilling conditions at the time of the return
- Personnel and response efforts
- Quantities of drilling fluids/slurry collected
- Drilling fluid/slurry disposal records.

A list of project contacts is provided in the table below.

Project Contact Information:

Name	Project Role	Company	Contact Info
Clarence Li, PE	Senior Gas Transmission Engineer, Strength Test Engineering	PG&E	925.967.8247
Alex Rodriguez	Gas Transmission Project Manager	PG&E	916.223.5419
John Diamond	Senior Project Manager/ Principal Trenchless Engineer	Kleinfelder	801.949.8744
Tyler S. DeSouza, PE	Trenchless Engineer/ Field Inspector	Kleinfelder	559.708.7378
Jim Brotherton	President and Owner	Brotherton Pipeline	541.944.2450
Israel Brotherton	Rig Manager	Brotherton Pipeline	541.944.5089

Regulatory Contact Information (to be contacted by the PG&E Environmental Field Specialist)**:**

Table 2: Agency Notification List	
Agency	**Contact**
US Army Corps of Engineers – Sacramento District Headquarters	916-557-5100
California Office of Emergency Services	800-852-7550
National Response Center	800-424-8802
State Lands Commission	562-590-5201
California Department of Fish and Wildlife	916-445-9338
Regional Water Quality Control Board	916-464-3291
Colusa County Environmental Health Services	530-458-0888
Colusa County Sheriff's Department	530-458-0200
Sutter County Environmental Health Services	530-822-7400
Sutter County Sheriff's Department	530-822-7307

Additional emergency contact information such as fire and medical, if needed, is provided in the contractors site-specific Health and Safety Plan, which will be available on-site at all times.

7 ABANDONMENT

In the event the HDD hole is to be abandoned, PG&E may opt to abandon the drill hole by pumping an approved downhole grout into the abandoned hole as the drill assembly is extracted.

7.1 ALTERNATIVE EVALUATION

Before any determination that the drill entry or exit location should be relocated off of the existing approved workspace or the pursuit of other alternatives for completing the crossing, an attempt will be made to identify and assess the reason for the failure of the HDD and the probability of success of the alternatives. Potential changes to HDD drilling methodologies may include but are not limited to one of the following alternatives or a combination of the following alternatives:

- Changing drill procedures (bit selection, mud viscosity/pressure/flow velocity, bit rotation/velocity, etc.)
- Changing of the drill profile (depth of hole)
- Horizontal relocation of the drill hole

8 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by PG&E (Client) and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder's recommendations.