SOP Number **001**

SOP Title **Line Locating**

1. PURPOSE

- Underground utility identification and clearance is critical to every site on which BBGCI does excavation, trenching, or any ground disturbance. First, knowledge of underground line location is vital for safe operations. Second, many states have laws that require all excavators, contractors, and other parties to notify utility companies before beginning excavation on public or private property. Most utility companies require notice at least 48 hours in advance. Third, the location of these lines by the utility companies reduces BBGCI's liability should lines be miss-located and damaged during drilling or excavation.

2. INTRODUCTION

- This SOP provides a description of methods that are applied to establishing and clearing locations for subsurface investigations by locating utilities. This will be performed by our line locating staff, who are trained and experienced in locating subsurface utilities. However, site field personnel clearly have a responsible role in understanding when the job has been completed

3. SCOPE

- This SOP applies to all field activities where there is possible contact with above ground utilities or sub-surface utilities. The definition and location of subsurface and overhead utilities presents a major hazard to field personnel working on site. This SOP should always be implemented completely, and should be supplemented (or superseded, if necessary) only if the added requirements do not prevent adequate evaluation of utilities.

4. DEFINITIONS

- Kilovolt- one thousand volts

5. RESPONSIBILITIES

<u>Division Manager or Designee</u>

- Oversee full compliance.

Supervisor/Foreman

- Shall document that this SOP was implemented on site.

HSE Technician

- Ensure full compliance with the SOP.
- Report any deficiencies to the Health and Safety Manager and the Division Manager.

Line Locating Personnel

- Understand and implement this SOP during all field activities.
- Complete any JSEA, work permit, or other required permits prior to operation.
- Obtaining the appropriate field logbooks, field records, instruments, materials and calibration standards necessary to complete the field task.
- Only authorized entity to complete/update ONE Call, and issue plot plans (line find map).

6. SPECIFIC PROCEDURE

Buried and overhead utilities must be identified and located prior to beginning any invasive field work. A several fold process is used to accomplish a good understanding of utilities in an area. This process is supplemented later by additional safety precautions to prevent the hitting of utilities. The process includes pre-work identification of utilities, notification to local utilities, and technical investigation of potential utilities, followed by field truth testing. This process is discussed in more detail below.

At the beginning of a project, a review will be made of any available property maps, blue lines, or as-built prior to site activities. This exercise often will result in an incomplete picture and should always be supplemented whenever possible with additional information. However, examining as-built maps, if available, always enhances an understanding of utility locations in the area of investigation.

During the project site walk, any discrepancies or new information regarding utility locations should be added to project maps. The site walk is a good time to review and confirm overhead utility lines.

After the above actions have occurred, the next action, and one that will always be taken even when on private land, is notification of potential subsurface activity to the local utility locator service (ONECALL 811).

The Line Locating Personnel shall consult with ONECALL 811 at least 48 hours in advance of conducting subsurface field work. All drilling or subsurface locations should be clearly marked (white paint) before calling ONECALL. Suggested marking guidelines are included in Attachment B. ONECALL will assign a “ticket” number to your site that

will need to be recorded. This ticket number is valid for a limited time, but may be extended by contacting ONECALL again. These updates SHALL be conducted between line locators and ONE CALL (811) only. ONECALL will notify utility representatives who will mark according to the utilities' color scheme. If possible, the line locating personnel or designee should meet with the utility personnel to make sure they understand where all utilities are located.

Because ONECALL only clears directly around marked locations it is often necessary to take additional precautions to locate utility locations throughout the area. If necessary, utilities may be located using standard geophysical methods such as electromagnetic (EM), ground penetrating radar (GPR), magnetic gradient survey and/or a pipe locator. Line locating personnel typically conduct these operations.

Another source of information, especially for private land, is the landowner. Landowners usually know, in general, where utilities are buried on their property.

Utility locations will be marked using the following color code, unless the facility locator uses a different color code:

COLOR	IDENTIFICATION
White	Work location
Red	Electrical lines
Yellow	Gas or oil lines
Orange	Telephone lines
Blue	Water lines
Green	Sewer lines

Also important to operations that will occur in areas with utilities is clearance of overhead lines. Drill rig towers can be high enough to directly contact or provide inadvertent grounds for overhead lines. The following table gives the required minimum clearances for working proximity to overhead power lines.

Nominal Voltage	Minimum Clearance
0-50 KV	10 ft., or one mast length; whichever is greater
>50 KV	10 ft., plus an additional 4 inches for every 10 KV over 50 KV or 1.5 mast lengths; whichever is greater.

If it is necessary to work without the minimum clearance, the overhead line must be de-energized or rerouted by the utility company or a competent electrical contractor. Any

work of this nature must be completed with adequate lock-out/tag-out procedures as outlined in a project health and safety plan.

Underground utility locating must be performed no more than 3 days prior to commencement of ground disturbance. Ground disturbance can only continue under the umbrella of this initial sweep providing a crew has been on the location non-stop consecutively, not counting weekends and holidays. After any cease of work, excluding weekends or holidays, all proposed excavations onsite SHALL be relocated.

Plot plan (line find map) SHALL BE updated (redlined) daily and discussed at daily tailgate meeting to ensure that ALL underground utilities buried by BBGCI or its sub-contractors are identified on drawings. These changes SHALL BE turned in to the line locating office the same day as changes occur.

After utilities have been located and marked, as an added assurance, immediately prior to excavation activity the proposed site of ground disturbance Shall be checked with a green stick (metal detector) device.

Furthermore any utilities buried by BBGCI SHALL BE marked with pin flags and these markings will remain in place identifying such buried utilities for the duration of the job.

NOTE: Any deviations from this SOP must be approved by the Division Manager after collaboration with Health and Safety Department.

Utility Clearance Form (Attachment A) must be completed and signed off by the Supervisor/Foreman prior to commencement of relevant site work. This form signifies that the Supervisor/Foreman has observed, or designated that someone observed that all utility location aspects as outlined in this SOP have been completed.

7. JOB RELATED HAZARDS

- **This is a list of some of the possible hazards associated with line locating. Always be aware of these hazards as well as other potential hazards:**

- *Environmental Concerns*
- *Weather Conditions*
- *Wildlife*
- *Traffic*
- *Site Specific*
- *Slips, Trips, Falls*
- *Remote Locations*

8. REQUIRED PPE

- Hard Hat

- Steel Toe Boots
- Safety Glasses
- Snake Guards
- Air Monitor (Site Specific)
- Fire Resistant Clothing (Site Specific)

9. QUALITY ASSURANCE/ QUALITY CONTROL

Quality assurance and quality control of line locating is accomplished using the following tiers:

- *Tier one*- research potential utility locations through existing drawings.
- *Tier Two*- contact ONECALL at least 48 hours before starting work.
- *Tier Three*- line locating personnel will sweep area and make sure all utilities are clearly marked.
- *Tier Four*- Make sure line locating equipment is field calibrated every 12 months. If equipment fails field calibration it must be sent to manufacturer service center for repair.
- *Tier Five*- Ensure line locating personnel have been certified in equipment usage and line locating techniques.
- *Tier Six*- Line Locators must be notified the same day of any utilities buried by BBGCI, so that changes can be made to the plot plan, and the line locators can get the updated plot plan to all crews performing ground disturbance activities on the affected location.

10. FORMS/TEMPLATES TO BE USED

The materials required for this SOP include the following:

- Bound field logbook
- JSEA
- Additional Work Permits
- One Call
- Instruments designed for locating subsurface utilities
- Maps/figures/drawings showing the location of known utilities; and
- Replacement batteries and parts for instruments (if applicable).

Instruments used during field activities may include, but are not limited to, the following:

- Utility Line Locating Devices

- Electromagnetic Instruments
- Magnetometers
- Ground Penetrating Radar

11. INTERNAL AND EXTERNAL REFERENCES

11.1 Internal References

11.2 External References

- OSHA 1926.650-1926.652 *Excavations*
- OSHA 1926.955 *Provisions for Preventing Accident Due to Proximity to Overhead Lines*
- OSHA 1910-333 *Selection and Use of Work Practices in Sub Part S- Electrical*

12. CHANGE HISTORY

SOP no.	Effective Date	Significant Changes	Previous SOP no.

Effective Date:	
Review Date:	