

Attachment A -
Summary of Review and Approval Process and
Future Compliance Requirements for Groundwater Management Zone

1. On August 1, 2019, the Defendant submitted an application for a groundwater management zone (“GMZ Application”) to the Illinois EPA. (Attached as Exhibit 1) The GMZ Application provided details on the following, including:

- a. Defining boundaries, including horizontal and vertical, for the GMZ;
- b. Defining Remedial Criteria as Class I Potable Resource Groundwater Standards;
- c. Summarizing Remedial Actions completed, including:
 - i. Implementing Source Control measures, including rehabilitation of the well known as L. McCord #2 (“MC2”) and evaluation and maintenance of other wells at the Site;
 - ii. Monitoring and residential control measures, including passive vent installation, distribution of bottled water, and installation of gas-water separators and methane detectors;
 - iii. Remediating the aquifer, including by installing three (3) gas relief wells within the Mahomet Aquifer and shallow sands;
 - iv. Proposing additional remediation measures for the GMZ, including using MC2 for venting; installing additional passive vents, methane detectors, and gas-water separators; and providing notifications to local well drillers/IDPH for the coordination of well drilling;
- d. Documenting remediation action to be continued until the remediation objectives are met, including:

- i. Use of monitoring and residential control measures;
- ii. Use of gas relief wells; and
- iii. Continued use of additional remediation measures.

2. On September 6, 2019, Illinois EPA provided comments on the GMZ Application, which included a request for high resolution figures and maps, and an assessment of remedial alternatives. (Attached as Exhibit 2)

3. On September 26, 2019, the Defendant responded, wherein it agreed to provide high resolution figures and a discussion of other remedial alternatives. (Attached as Exhibit 3). On November 7, 2019, a call was held between PGL, GSI, Illinois EPA, and Office of the Illinois Attorney General to discuss additional factors that will likely control the timeframe required to achieve the clean-up objectives. Following that call, on December 6, 2019, GSI submitted the additional information on behalf of PGL. (Attached as Exhibit 3(a))

4. On March 23, 2020, Illinois EPA provided further guidance to Defendant regarding alternatives to submitting fate and transport modeling (Attached as Exhibit 4), which included taking the following actions:

- a. Relief Wells - installing relief wells in the four stratigraphic trap areas identified in the Defendant's 3-D visualization model and cross sections;
- b. Flaring - securing permits for, and begin flaring, existing relief wells, or continuing that flaring to the extent it has already been initiated;
- c. Monitoring and Reporting Protocol - submitting for review and approval a more extensive, ongoing monitoring and reporting protocol while the newly-installed and existing relief wells are operating;

- d. Data Collection - collecting data from both the newly-installed and existing relief wells;
- e. Groundwater Monitoring Wells - submitting for review and approval a proposal of a network of dedicated groundwater monitoring wells in each of the four stratigraphic trap areas;
- f. Frequency of Sampling of Groundwater Monitoring Wells - conducting extensive sampling of the groundwater monitoring wells, with quarterly sampling thereafter; and
- g. Fate-and-Transport Model - using all data generated, including the groundwater monitoring well data with the potable well sampling data, to develop a fate-and-transport model.

5. On May 20, 2020, Defendant provided a response (“Final Proposal”) (Attached as Exhibit 5) as follows:

a. Relief Wells

- i. In each of the four stratigraphic trap areas, one stratigraphic boring will be drilled to bedrock, with coring of selected intervals. Specific locations within each area will depend on physical access and the ability of Defendant to obtain landowner permission for well installation.
- ii. During drilling, the soil cores, cuttings, and drilling fluids will be screened for methane gas levels to provide supplemental information on gas presence.
- iii. Based on screening for gas and observed stratigraphy, a target interval to intersect the optimal pressurized gas zone within the Mahomet Aquifer, or

related transmissive zones, will be selected in the field. This zone will be screened using a 4-inch diameter well casing and stainless steel screen, which will be installed permanently and grouted to the surface.

- iv. After installation, each relief well will be developed and pilot tested for gas production by groundwater pumping and other methods. Based on the results of this testing, a program of gas production will be developed for each well, with appropriate specifications for equipment, operation, and other aspects of the gas recovery at that location.
- v. Relief wells that are found to produce little to no gas may be retained for monitoring purposes or permanently abandoned, but will not be incorporated into the gas relief well system.

b. Flaring

- i. Each of the three existing relief wells (RW-1, RW-2, and RW-3) will be pilot tested for gas production, as described above.
- ii. If pilot testing shows that wells RW-1, RW-2, and/or RW-3 exhibit the capability to produce significant volumes of gas, these will be incorporated into the gas relief well system, including all appropriate permitting.
- iii. In this event, Peoples Gas may elect to replace one or more of these wells with co-located wells equipped with longer screens (these wells currently having 4-foot long screens). If this is done, the existing relief wells will be abandoned in a manner compliant with State regulations.

- iv. If RW-1, RW-2, and/or RW-3 produce little to no gas, they may be retained for monitoring purposes or permanently abandoned, but will not be incorporated into the gas relief well system.
- v. For each new or existing relief well, gas emissions will be monitored and controlled pursuant to the applicable air emissions permits.
- vi. For levels of gas emission that require control, combustion is anticipated to be used as the control method; however, Peoples Gas may elect to use other methods that meet permit and regulatory requirements.

c. Monitoring and Reporting Protocol

- i. All water supply wells within the GMZ boundaries will be sampled initially for methane, in addition to any monitoring wells, subject to Peoples Gas's ability to obtain landowner permission for sampling.
- ii. All water supply wells exhibiting 10 mg/L of MC2 thermogenic methane or more will be incorporated into the on-going monitoring program.
- iii. A minimum of ten (10) additional water supply wells within the GMZ will also be selected for inclusion into the on-going monitoring program. Selected wells will include those that contain less than 10 mg/L MC2 thermogenic methane, or contain microbial gas, but are present at locations that are useful for monitoring any potential outward migration of MC2 gas ("sentinel wells").
- iv. All monitoring wells will be included in the on-going monitoring program.
- v. All wells included in the monitoring program will be sampled quarterly for the first year of remedy implementation, and semiannually until remedy

goals are attained, subject to Defendant's ability to obtain landowner permission for sampling.

- vi. The number of wells, frequency of sampling, and specific wells used for monitoring purposes will be re-evaluated every three years.

d. Data Collection

- i. For each relief well, the following will be monitored and recorded: times of well operation versus downtime; volume and rate of water produced; volume and rate of air produced; percent natural gas concentration in produced air; estimated volume of natural gas produced at atmospheric pressure; molecular and isotopic composition of produced natural gas (analyzed initially, and repeated if there are significant changes in well conditions); and volume of water discharged, dissolved methane concentration, and associated water chemistry, as required by the discharge permit.
- ii. The performance of all relief wells will be evaluated by Peoples Gas on a quarterly basis. Depending on gas production, Peoples Gas may shift individual well operation to an intermittent basis or terminate the operation of that well in the event of no or minimal gas production.

e. Groundwater Monitoring Wells or Gas Relief Monitoring Wells

- i. Defendant will install three (3) monitoring wells at off-set locations surrounding each of the four newly-installed relief wells, screened in the same zone as that targeted for gas recovery. Specific locations within each area will depend on physical access and the ability of Peoples Gas to obtain

landowner permission for well installation. Additionally, monitoring well locations may be adjusted as described below so as to provide useful information on gas occurrence and migration within the aquifer.

- ii. If pilot testing finds that a given relief well does not produce significant volumes of gas and will therefore not be incorporated into the gas relief well system, the three monitoring wells designated for that relief well will be redistributed to other areas, with the new location and depth of completion subject to agreement between Defendant and IEPA, and the ability of Defendant to obtain landowner permission for installation.
- iii. Similarly, if there are existing water supply wells in the vicinity of a given relief well such that these water supply wells provide adequate information on nearby gas conditions, the three monitoring wells designated for that relief well will be redistributed as described above. Regardless of redistribution, the maximum number of monitoring wells to be installed will be twelve (12).

f. Frequency of Groundwater Monitoring Well Sampling

- i. Peoples Gas shall perform the sampling of monitoring wells at the frequency described, *supra*, at Paragraph 5.c, for the Monitoring and Reporting Protocol.

g. Fate-and-Transport Model

- i. Defendant shall operate the gas relief system for at least two (2) years, together with the described groundwater monitoring program.

- ii. After two (2) years of operation, operating data and the other hydrogeologic information acquired in this study shall be incorporated into a two-phase fate-and-transport model for free and dissolved gas in groundwater.
- iii. This fate and transport model will be submitted to IEPA before the end of the third year of operation.
- iv. This model will be utilized by Defendant and IEPA to evaluate the effectiveness of the remedy system and assess alternative scenarios for management of the GMZ.

6. On September 25, 2020, Illinois EPA conditionally approved Defendant's application for a groundwater management zone ("GMZ Application") (Attached as Exhibit 6), with the following stipulations and comments:

- a. Relief Wells – Illinois EPA must approve specific locations of each well prior to installation of the well, but otherwise approved Defendant's Final Proposal;
- b. Flaring - Illinois EPA approved Defendant's Final Proposal;
- c. Monitoring and Reporting Protocol - Illinois EPA requires sampling of the groundwater monitoring network to include a minimum of each well sampled for a total of eight samples in the first year to represent temporal variation, with quarterly sampling thereafter, and approves quarterly monitoring of the relief wells, and, with Illinois EPA approval, semiannual monitoring thereafter, but otherwise approved Defendant's Final Proposal;
- d. Data Collection - Illinois EPA must approve the calculations of statistical analysis prior to the finalization of any reporting activities; Illinois EPA must

approve any termination of a relief well; and otherwise approved Defendant's Final Proposal;

- e. Groundwater Monitoring Wells or Gas Relief Monitoring Wells – Illinois EPA must approve specific locations of each well prior to installation of the well, but otherwise approved Defendant's Final Proposal;
- f. Frequency of Groundwater Monitoring Well Sampling - Illinois EPA rejected Defendant's Final Proposal and instead required the sampling frequency of the groundwater monitoring network including a minimum of each well sampled for a total of eight samples in the first year, with quarterly sampling thereafter; and
- g. Fate-and-Transport Model - Illinois EPA approved Defendant's Final Proposal.

7. Defendant requested approval by Illinois EPA for the specific location of relief wells in four stratigraphic trap areas, which were approved by Illinois EPA, conditioned upon Illinois EPA's review and approval of a Relief Well Installation Report, as follows: (1) request on March 24, 2021, which was approved by Illinois EPA on April 1, 2021; (2) request on April 19, 2021, which was approved by Illinois EPA on April 22, 2021; (3) request on April 27, 2021, which was approved by Illinois EPA on May 5, 2021; and (4) request on May 24, 2021, which was subject to discussion and ultimately approved on September 9, 2021.

8. Regardless of the chronology set forth above, the Summary of Sampling Frequencies and Analytical Suites for Gas Relief Wells, Monitoring Wells, and Water Supply Wells (Attached as Exhibit 7) sets forth the Defendant's obligations for sampling and analysis under the GMZ.