OPTIONS ARRAY

Pursuant to Section V.A.8 of the Consent Judgment, as amended, PLS is submitting this Options Array, which sets forth various options for addressing the potential, if unlikely, risks that:

1. PLS requires more extraction/treatment capacity to maintain compliance with the Eastern Area objectives than the 200 gpm provided by the current infrastructure; and

2. The northern portion of the deep transmission line fails.[1]

PLS believes that each of the options discussed below is "implementable" within the identified limitations and subject to obtaining the necessary approvals and/or Court-ordered access. Obviously, the necessary approvals and access rights can only be sought if and when there is an actual set of circumstances that gives rise to the need for such approvals/access. PLS reserves the right to identify additional alternatives if and when such a specific situation arises.

SCENARIO 1 MORE THAN THE CURRENTLY AVAILABLE 200 GALLONS PER MINUTE IS NEEDED TO MEET EASTERN AREA OBJECTIVES

The deep transmission line currently allows PLS to convey up to 200 gallons per minute (gpm) from the Evergreen Subdivision area back to the Wagner Road facility for treatment and then disposal via PLS' permitted surface water discharge. The anticipated installation of an new pipeline connecting the Maple Road extraction well (TW-19) and the Evergreen piping infrastructure will allow PLS to transmit purged water from this area back to the main treatment system as well, subject to the 200 gpm capacity of the deep transmission line. The following alternatives are options for addressing the possibility that PLS will need to extract more than a total of 200 gpm from the Evergreen and Maple Road areas to meet its Eastern Area cleanup objectives.

Alternative A: Treatment and Groundwater Injection in Maple Road or Alternative Area

Description. PLS currently uses this method to treat and manage water from the Maple Road Interim Response. PLS has the capacity to treat up to 200 gpm with its Mobile Treatment Unit. Two injection wells with a designed capacity of 200 gpm are also available in the Maple Village area, although their actual combined capacity has been limited to 75 gpm due to fouling problems. Additional injection wells could be installed to increase actual treatment and discharge capacity to 200 gpm. The proposed modifications include construction of a transmission pipeline from Maple Village to Evergreen that could be used for moving water in either direction as needed. For contingency purposes, PLS could utilize the Maple Road mobile treatment unit and injection wells to treat and dispose of water extracted from the Evergreen wells to control the plume in the Evergreen area. Operating the Maple Village

[1] PLS already has in place a redundant near-surface pipeline that could replace the capacity of the Southern transmission line (the portion that begins at the Porter Lot) in the event that part of the transmission line fails.

treatment/injection system at its full 200 gpm design capacity would increase PLS' total capacity to 400 gpm when combined with the 200 gpm deep transmission line.

Limitations: This option could be implemented to provide up to 75 gpm of additional capacity within a short timeframe because the infrastructure exists or will be constructed as part of the remedial modifications and groundwater injection at this location has been approved by MDNRE. (The availability of this short-term capacity is conditioned on PLS' ability to meet its Maple Road GSI containment objective without needing to continuously operate TW-19.) The fouling issues would have to be resolved or additional injection wells installed if the system's entire design capacity of 200 gpm was needed on a long-term basis. At a minimum, however, the Maple Road system, together with the flexibility provided by installation of the Maple Road/Evergreen transmission line, would be an invaluable interim method of addressing additional groundwater while other, longer-term and potentially higher capacity options are being constructed. If this alternative was required to provide capacity greater than 75 gpm, particularly on a long-term basis, the injection well portion of the system would need to be modified and the feasibility of installing additional injection wells, potentially in an area(s) other than the Maple Village Area would need to be evaluated. In sum, this option could add 75 gpm of short-term treatment/discharge capacity to the deep transmission line's 200 gpm and up to an additional 200 gpm if the system was modified to achieve its 200 gpm design capacity (e.g., by installing new or additional injection wells).

Alternative B: Treatment and Discharge to Ann Arbor Sanitary Sewer System

Description: Discharge of treated water into the sanitary sewer is a possible method of handling additional water beyond the 200 gpm capacity of the deep transmission line. This alternative would involve treatment of the groundwater by the Maple Road Mobile Unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection would depend on where the groundwater was extracted and the availability of the necessary City infrastructure. Groundwater extracted from the Maple Road extraction well (TW-19) could be treated by the Mobile Unit and then either disposed of in close proximity to the Mobile Unit or piped via the contemplated Maple Road/Allison pipeline for disposal in the Evergreen Subdivision area if the City requested. The design documents PLS has submitted to the City for the Maple Road/Allison pipeline include parallel pipelines, which will maximize PLS' sewer discharge options. A parallel piping system will allow PLS to transmit treated water back to the Evergreen area for discharge in that area if the excess volume (>200 gpm) had to be transmitted from the Evergreen extraction wells to the Mobile Unit for treatment.

Limitations: This disposal method would have to be authorized by the City of Ann Arbor. The City Council has previously adopted a resolution that would require PLS to treat the groundwater to below 3 ppb of 1,4-dioxane before discharging to the sanitary sewer. Although the Mobile Unit is capable of treating up to 200 gpm of contaminated groundwater to this level for 1,4-dioxane, the ozone treatment system does generate low levels of Bromate as a bi-product, particularly if required to treat to such a low level for 1,4-dioxane. PLS cannot predict how the City would react to a request for such a discharge. When this discharge option was evaluated in connection with the Unit E Feasibility Analysis, the City informed PLS that there was insufficient capacity in the sewer system for the high volume of water that would be needed to address that plume. The City would need to confirm what, if any, capacity would exist for this alternative to be feasible. Moreover, costs for this alternative are expected to be high because of

the need to operate the mobile treatment system and the cost of sewer fees. This alternative will likely not be implementable due to likely treatment requirements and/or capacity limitations except for low flow and/or temporary situations. It is also noted that the Court may be limited in its ability to require the City to accept this potential discharge.

Alternative C Treatment and Discharge to Ann Arbor Storm Sewer

Description: Discharge of treated water into the City's storm sewer is also a possible alternative. This alternative would involve treatment of the groundwater by the Maple Road Mobile Unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection and discharge point would depend on where the groundwater was extracted and the availability of the necessary City infrastructure. If the groundwater was extracted from the Maple Road extraction well (TW-19) it could be treated by the Mobile Unit and then either disposed of in close proximity to the Mobile Unit or piped via the contemplated Maple Road/Allison pipeline for disposal in the Evergreen Subdivision area if the City preferred this discharge location. The design documents PLS has submitted to the City for the Maple Road/Allison pipeline include parallel pipelines, which will maximize PLS' sewer discharge options. A parallel piping system will allow PLS to transmit treated water back to the Evergreen area for discharge in that area if the excess volume (>200 gpm) had to be transmitted from the Evergreen extraction wells to the Mobile Unit for treatment.

Limitations: The storm sewer system has well-documented capacity limitations. This alternative would require approval from the City of Ann Arbor, the Washtenaw County Drain Commissioner and the State of Michigan, and the installation of the necessary infrastructure to connect to the system. Although a state discharge permit could be obtained, local ordinances of the City generally prohibit discharges of groundwater to the City's storm system and the Drain Commission has passed a resolution barring such discharges to the portion of the storm sewer under its jurisdiction. It is likely that this alternative would require flow (discharge) into the storm to be temporally suspended during times when the storm sewer is at or near capacity, such as during storm events. Given the capacity concerns, the governmental approvals that would be needed, and the potential limits on the Court's ability to provide PLS with access to the storm sewer, this alternative may only be implementable in low flow and/or temporary situations.

Alternative D New Pipeline from Maple Road or Evergreen Area - Treatment at Wagner Road Facility

Description: A new, near-surface, pipeline could be installed to connect the Evergreen Subdivision or Maple Road areas to the Wagner Road facility for treatment. PLS anticipates that following approval of the Consent Judgment modifications, approximately 600 gpm of treatment capacity would be available to treat water from the Evergreen and Maple Road areas. It is anticipated that this treatment capacity would be sufficient to accommodate any foreseeable necessary flow from these areas and the pipeline could be sized appropriately. A feasibility study would need to be conducted to determine the best route for the line.

Limitations: This option may be cost effective if additional capacity needs are relatively high (greater than 100 gpm) and the need for the capacity is long term. This option would require right-of-way access from the City and potentially, Scio Township and MDOT or court-ordered access. This option would require significant construction time before it could be implemented.

Future Alternatives

PLS reserves the right to identify additional alternatives if and when a specific situation requiring capacity beyond that provided by the current infrastructure arises.

SCENARIO 2 NORTH HORIZONTAL TRANSMISSION PIPELINE FAILS

The northern portion of the deep horizontal transmission line is a HDPE pipeline that PLS inserted into the original northern horizontal well after the original steel transmission pipeline failed in 2005. PLS has supplied documentation of the HDPE pipeline's 50 year life expectancy. To supplement this information, PLS has identified the following alternatives, which are options for addressing the possibility that the pipeline fails despite its expected reliability.

Alternative A Treatment and Groundwater Injection in Maple Road or Alternative Area

Description: PLS currently uses this method to treat and manage water from the Maple Road Interim Response. PLS has the capacity to treat up to 200 gpm with its Mobile Treatment Unit. Two injection wells with a designed capacity of 200 gpm are also available in the Maple Village area, although their actual combined capacity has been limited to 75 gpm due to fouling problems. Additional injection wells could be installed to increase actual treatment and discharge capacity to 200 gpm. The proposed modifications include construction of a parallel transmission pipeline from Maple Village to Evergreen that could be used for moving water in either direction as needed. For contingency purposes, PLS could utilize the Maple Road mobile treatment unit and injection wells to treat and dispose of water extracted from the Evergreen wells to control the plume in the Evergreen area. Operating the Maple Village treatment/injection system at its full 200 gpm design capacity would allow PLS to replace the 200 gpm capacity of the deep transmission line.

Limitations: This option could be implemented to provide up to 75 gpm of capacity within a short timeframe because the infrastructure exists or will be constructed as part of the remedial modifications and groundwater injection at this location has been approved by MDNRE. (The availability of this short-term capacity is conditioned on PLS' ability to meet its Maple Road GSI containment objective without needing to continuously operate TW-19.) The fouling issues would have to be resolved or additional injection wells installed if the system's entire design capacity of 200 gpm was needed on a long-term basis. At a minimum, however, the Maple Road system, together with the flexibility provided by installation of the Maple Road/Evergreen transmission line, would be an invaluable interim method of addressing additional groundwater while other, longer-term and potentially higher capacity options are being constructed. If this alternative was required to provide capacity greater than 75 gpm, particularly on a long-term basis, the injection well portion of the system would need to be modified and the feasibility of installing additional injection wells, potentially in an area(s) other than the Maple Village Area would need to be evaluated. In sum, this option could add 75 gpm

of short-term treatment/discharge capacity and up to 200 gpm if the system was modified to achieve its 200 gpm design capacity (e.g., by installing new or additional injection wells).

Alternative B Treatment and Discharge to Ann Arbor Sanitary Sewer System

Description: Discharge of treated water into the City's sanitary sewer is a possible option for addressing the failure of the deep transmission line. This alternative would involve treatment of the groundwater by the Maple Road Mobile Unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection would depend on where the groundwater was extracted and the availability of the necessary City infrastructure. If the groundwater was extracted from the Maple Road extraction well (TW-19) it could be treated by the Mobile Unit and then either disposed of in close proximity to the Mobile Unit or piped via the contemplated Maple Road/Allison pipeline for disposal in the Evergreen Subdivision area if the City preferred this discharge location. The design documents PLS has submitted to the City for the Maple Road/Allison pipeline includes a parallel pipeline, which will maximize PLS' sewer discharge location options

Limitations: This disposal method would have to be authorized by the City of Ann Arbor. The City Council has previously adopted a resolution that would require PLS to treat the groundwater to below 3 ppb of 1,4-dioxane before discharging to the sanitary sewer. Although the Mobile Unit is capable of treating up to 200 gpm of contaminated groundwater to this level for 1,4-dioxane, the ozone treatment system does generate low levels of Bromate as a bi-product, particularly if required to treat to such a low level for 1,4-dioxane. PLS cannot predict how the City would react to a request for such a discharge. When this discharge option was evaluated in connection with the Unit E Feasibility Analysis, the City informed PLS that there was insufficient capacity in the sewer system for the high volume of water that would be needed to address that plume. The City would need to confirm what, if any, capacity would exist for this alternative to be feasible. Moreover, costs for this alternative are expected to be high because of the need to operate the mobile treatment system and the cost of sewer fees. In sum, this alternative will likely not be implementable due to likely treatment requirements and/or capacity limitations except for low flow and/or temporary situations. It is also noted that the Court may be limited in its ability to require the City to accept this potential discharge. Given the capacity concerns, the governmental approvals that would be needed, and the potential limits on the Court's ability to provide PLS with access to the sanitary sewer, this alternative is not likely to provide a viable long term replacement for the transmission line, but may be implementable as a means of handling lower flows on a tempoary basis while a larger and permanent solution is constructed.

Alternative C Treatment and Discharge to Ann Arbor Storm Sewer

Description: Discharge of treated water into the City's storm sewer is also possible alternative. This alternative would involve treatment of the groundwater by the Maple Road Mobile Unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection and discharge point would depend on where the groundwater was extracted and the availability of the necessary City infrastructure. If the groundwater was extracted from the Maple Road extraction well (TW-19) it could be treated by the Mobile Unit and then either disposed of in close proximity to the Mobile Unit or piped via the contemplated Maple Road/Allison pipeline for disposal in the Evergreen Subdivision area if the City preferred this discharge location. The design documents PLS has submitted to the City for the Maple

Road/Allison pipeline include a parallel pipeline, which will maximize PLS' sewer discharge location options.

Limitations: The storm sewer system has well-documented capacity limitations. It is also likely that this alternative would require all flow (discharge) into the storm to be temporally suspended during storm events. As noted in the description of the Scenario 1 (>200 gpm capacity required), there are numerous approvals that would need to be obtained from the various authorities with jurisdiction over the storm water sewer. Given the capacity concerns, the governmental approvals that would be needed, and the potential limits on the Court's ability to provide PLS with access to the storm sewer, this alternative may only be implementable in low flow and/or temporary situations, but may be implementable as a means of handling lower flows on a temporary basis while a larger and permanent solution is constructed.

Alternative D **New Pipeline from Maple Road or Evergreen Area - Treatment at Wagner Road Facility**

Description: A new, near-surface, pipeline could be installed to connect the Evergreen Subdivision or Maple areas to the Wagner Road facility for treatment. A feasibility study would need to be conducted to determine the best route for the line.

Limitations: This option would require right-of-way access from the City and potentially, Scio Township and MDOT, or court-ordered access. This option would require significant construction time before it could be implemented. But in the event that the transmission line fails, PLS believes the installation of a new pipeline will likely be the most viable permanent alternative for managing such flows.

Future Alternatives

As noted above, PLS reserves the right to identify additional alternatives if and when a specific situation affecting the availability of the transmission line arises. For example, when the original transmission line failed, the parties determined that it was leaking in an already contaminated portion of the aquifer and agreed that it could continue to operate while repairs were made, with appropriate monitoring. Similar fact-specific alternatives will likely be identified if and when such a contingency arises.