EcolSciences, Inc.
Environmental Management & Regulatory Compliance

July 26, 2024

Mr. Ralph G. Carchia
Assistant Engineer
Sparta Township
65 Main Street
Sparta, New Jersey 07871

Via Email

RE: Summary Memorandum
A.O. Polymer Superfund Site
44 Station Road
Block 19, Lots 45-B and 45-C
Sparta, Sussex County, New Jersey
NJDEP PI #012272
USEPA ID#: NJD030253355

Dear Ralph:

EcolSciences, Inc. (EcolSciences) has prepared this memorandum to summarize the current status of the above-reference Site based on our review of the provided recent environmental reports and to outline potential impacts to surrounding properties, if identified. The documents provided to EcolSciences include the February 3, 2023 Fifth Five-Year Review Report prepared by the United States Environmental Protection Agency (USEPA), March 19, 2024 Groundwater Monitoring Report prepared by Sanborn, Head and Associates, Inc. (Sanborn Head) and March 28, 2024 Biennial Certification Form – Groundwater prepared by Sanborn Head. The remediation of the A.O. Polymer Site is being overseen by the USEPA with input from the New Jersey Department of Environmental Protection (NJDEP).

Site Background

The A.O. Polymer Site is a former manufacturing facility that occupied approximately 4.18-acres. The Site operated as a specialty polymer and resin manufacturing facility for approximately 30 years. Mohawk Industries began operations at the Site in the early 1960s and produced resins using a polymerization process and reclaimed cleaning fluids for electronic components. In 1978, A.O. Polymer purchased the facility and conducted manufacturing processes to produce resins, plastics, paper coatings, and specialty polymers until 1994 when the Site was abandoned. The Site was reported to have consisted of an approximately 3.76-acre facility area and a 0.42-acre disposal area (also known as the former waste lagoon area). The facility area included offices, laboratories, a main reactor building, storage buildings and tanks and a non-contact water cooling pond. The disposal area is located in the northern portion of the Site and included

unlined pits where chemical wastes were discarded, which primarily consisted of solvents containing volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Waste handling practices also included the improper storage of over 800 deteriorating drums and burial of crushed and opened drums containing waste materials.

In 1978, in response to complaints of odors from well water and air near the Site, investigations by the Sparta Health Department and NJDEP were initiated. The NJDEP also investigated reports of drum stockpiling and identified on-site waste disposal and storage practices as the source of groundwater contamination in residential wells. The Site was placed on the USEPA's National Priorities List (NPL) on September 1, 1983. The facility area portion of the Site (Lot 45-B) was removed from the NPL on August 26, 2002, and this portion of the Site has been redeveloped into an office park, storage and recreation facility that includes outdoor athletic fields. The approximately 0.42-acre disposal area (Lot 45-C) remains on the NPL in association with the groundwater impacts.

Remediation and Contaminant Summary

Soil in the disposal pit area was contaminated with VOCs which has acted as a source for the groundwater VOC plume that migrated to the Wallkill River, located approximately one quarter of a mile east and downgradient of the Site. As reported by the USEPA, potable wells have been closed within the contaminated portion of the aquifer, and local residents and businesses have been connected to the municipal water supply. The well closures were a result of initial potable well sampling conducted in 1978 in which the NJDEP and the local health department collected samples from potable wells on properties surrounding the Site and identified VOCs in three domestic wells on Station Road. In January 1980, these homes were connected to municipal water supply mitigating exposure to the groundwater.

In 1980 and 1981, the NJDEP removed the disposal pit contents and as a result 1,700 cubic yards of contaminated soil, 1,150 drums and 120 cubic yards of debris were removed. Subsequent remedial investigation and feasibility study (RI/FS) activities were conducted, including the initial installation of 29 monitoring wells by NJDEP that defined the extent of the groundwater contamination. Groundwater contamination on the Site has primarily consisted of the VOCs trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride (VC), which have been detected at levels above the NJDEP's Groundwater Quality Standards (GWQS).

Based on the results of the RI/FS, the USEPA issued a Record of Decision (ROD) on June 28, 1991 that provided the selected remedy would not result in hazardous substances remaining on the Site above health-based levels and the soil and groundwater remedies have goals that support unlimited use and unrestricted exposure. The soil cleanup levels are based on the NJDEP's soil action levels (i.e. Soil Remediation Standards) and the

groundwater cleanup levels are the more restrictive of the federal or NJDEP standards (i.e. NJDEP GWQS).

In 1994, after the manufacturing operations ceased and the property was abandoned, unsecured hazardous waste consisting of soil, asbestos-containing material, hazardous and non-hazardous wastes and liquids were also removed by the USEPA. After removal activities were completed, EPA collected confirmatory soil samples to determine if any remaining areas of the Site required remediation. The USEPA's analysis of earlier soil samples, and the post-removal action soil samples taken from within the facility area, indicated that soil in the facility area did not exceed NJDEP's Residential Direct Contact Soil Cleanup Criteria and no further soil investigation or action was required.

CEA and Long-Term Remediation

In 1998 (and updated in 2013), a groundwater classification exception area/well restriction area (CEA/WRA) was established for the VOCs of concern referenced above and serves as an institutional control for the Site. The CEA is approximately 25-acres in size, 120 feet deep, and extends eastward to the Wallkill River. The CEA includes Block 19, Lots 45.02 and 45.03 and offsite Lots 39, 42, 43, 44 and 45.01. A map showing the current extent of the CEA (i.e. the delineated extent of groundwater contamination above NJDEP's GWQS) is attached to this letter.

Long-term remediation efforts consisted of a soil vapor extraction (SVE) system to remove VOC contamination from soil in the disposal area and a groundwater pump and treat system to extract the most substantive contaminated groundwater from the portion of the plume closest to the source area while addressing the remaining lower-level groundwater contaminant concentrations through natural degradation and attenuation. Remediation efforts also included adding in-situ thermal treatment to the SVE system and groundwater treatment system to optimize VOC removal within four of the former lagoon areas and in the active groundwater capture area. Thermal treatment is a well-known effective in-situ treatment option. Confirmation soil samples were collected in each of the former lagoon areas to confirm that soil was remediated to concentrations below the ROD goal of 1 milligram per kilogram (1 mg/kg) for total VOCs and 10 mg/kg for total SVOCs. The USEPA reported that only one of the confirmatory samples contained the VOC xylene over the ROD goal. Given the success of the remediation, the single exceedance is anticipated to degrade over time, which appears to be an appropriate approach in conjunction until the ongoing groundwater monitoring activities and established CEA.

The soil and groundwater systems operated from January 1995 through January 2020 and the treatment systems were reportedly effective at recovering approximately 13,500 gallons of VOCs. In January 2020, the groundwater treatment system was turned off as TCE concentrations (the VOC with highest concentrations) were confirmed to be less than 300 micrograms per liter (ug/l), which was the established treatment objective. While TCE concentrations remained above the NJDEP's GWQS of 1 ug/l, four

consecutive rounds of groundwater sampling completed after system shutdown indicate groundwater concentrations have remained below the treatment objective and overall VOC concentrations exhibit a stable and decreasing contaminant trend. Addressing the remaining groundwater concentrations through monitored natural attenuation is consistent with NJDEP remedial approaches implemented throughout New Jersey.

Starting in 2020, the Site began long-term semi-annual groundwater monitoring and reporting. The number of wells sampled has been reduced over time to remove wells that consistently demonstrated groundwater contaminant concentrations below the NJDEP's standards. Currently, there are 42 monitoring wells and 1 surface water elevation monitoring location; however, only a subset of these points are sampled as the plume has shrunk from its original footprint.

Contaminants of Emerging Concern

In April 2018 and February 2020, consistent with current NJDEP requirements, select Site monitoring wells were sampled for the contaminants of emerging concern 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS), respectively. Results from the sampling events indicated that 1,4-dioxane was not detected in the three recovery wells (RW-2, RW-3 and RW-4) sampled within the area of the plume that has exhibited the highest VOC concentrations and is therefore not a concern.

Results of the PFAS sampling from three monitoring wells (source area wells CW7-50, RW-4 and background well AOP-102) indicate that the PFAS compound perfluorooctanoic acid (PFOA) was detected in CW7-50 at a concentration of 31 nanograms per liter (ng/l) (or parts per trillion) marginally above the NJDEP's GWQS of 14 ng/l. Detections of PFAS compounds were present in the remaining groundwater samples but below the GWQS and PFAS compounds were not detected in the background monitoring well. Since PFAS are newly regulated, future sampling requirements will be determined by the NJDEP and USEPA. Given the low concentration and location of the exceedance within the plume and the two other locations that were clean and/or below the GWQS, PFAS appear to be a minor issue that likely remains within the footprint of the CEA although additional delineation sampling would be necessary to confirm the extent.

Vapor Intrusion

Elevated levels of VOCs at the Site exceed the NJDEP's groundwater Vapor Intrusion Screening Levels (VISLs) and vapor intrusion has been identified as a potential exposure pathway that is periodically assessed by the USEPA as part of the Five-Year Review Report. Site VOCs, including TCE and VC, continue to exceed the VISLs in select Site monitoring wells within the CEA footprint as of the February 2022 groundwater sampling event summarized in the USEPA's 2023 Five-Year Review Report and as of the November 2023 groundwater sampling event summarized in Sanborn Head's March 19, 2024 Semi-Annual Groundwater Monitoring Report. The USEPA's evaluation has identified that one building is currently present overlying the plume area; however, the

building is noted to be used for storage and is not regularly occupied; therefore, it was concluded that it is unlikely to pose a significant vapor intrusion exposure risk. EcolSciences notes that the SVE system building and groundwater treatment system building are partially located within the limits of the CEA on the western portion of the Site; however, these buildings are unoccupied. Remaining buildings on the western portion of the Site are located outside of the mapped limits of the CEA and are located beyond 100-feet (i.e. the NJDEP's trigger distance to evaluate vapor intrusion) from the extent of groundwater impacts that exhibit exceedances of the NJDEP's VISL based on the reported groundwater concentrations from November 2023.

Additionally, a parks and recreation maintenance building is present within the limits of the CEA and under the NJDEP's one-size fits all Vapor Intrusion Technical Guidance document, the issue of vapor intrusion appears to necessitate evaluation; however, in the context of the superfund program, the USEPA typically evaluates risk on a more specific site by site basis. It would be prudent to confirm with the USEPA their assessment that a vapor intrusion investigation is not warranted. If a vapor intrusion investigation is necessary, it should be conducted during the heating season (i.e. November 1st through March 31st). Further, if additional buildings are developed over the plume area or the existing buildings have a change in use additional evaluation may be required.

Current Status

The Site has consisted of two areas that include subsurface soil contamination above the groundwater table in the former waste lagoon area and groundwater contamination. As a result of the historical discharges, significant soil and groundwater source removal efforts were conducted and long-term remediation of both media has been successful in removing and reducing contaminants in accordance with the ROD goals. The findings of the evaluation concluded that no further investigation or action appears necessary for soil and while residual groundwater VOC impacts persist above the GWQS. This is common for these types of contaminants and complete remediation typically occurs slowly over time under natural conditions with long term monitoring (i.e. sampling) and continued reporting to document the improvement.

In summary, EcolSciences concludes the following:

- A groundwater CEA/WRA continues to be in effect for the Site and surrounding properties for an indeterminate duration that restricts the installation of groundwater wells and groundwater use in the area. The CEA/WRA is a preventative measure established to avoid future exposure to the groundwater. As reported by the USEPA, the Site and surrounding properties were connected to municipal drinking water supply in the early 1980s thereby mitigating potential exposures from drinking water. As part of the CEA/WRA, a Ground Water Remedial Action Protectiveness/Biennial Certification is required to be submitted every two years to the NJDEP as an overall evaluation of the plume, receptors,

and current/planned water use within and surrounding the restricted area, with the last certification submitted by Sanborn Head on March 28, 2024.

- Site groundwater conditions are monitored regularly per the USEPA's required semi-annual groundwater sampling (occurring in May and November) and reporting, with the reports submitted to the USEPA and NJDEP to ensure that the groundwater concentrations and plume area is remaining stable and decreasing over time, as is currently occurring. The semi-annual sampling and reporting provide a regular review of current Site groundwater concentrations.

- The Site is also subject to USEPA's Five-Year Review reports to be prepared every five years with the next report due in 2028. As part of this review, the Site history and current conditions, including a review of receptors, vapor intrusion and review of recent groundwater data, are evaluated and a determination made if the remedies implemented for soil and groundwater continue to remain protective of human health and the environment. As of the most recent 2023 Five-Year Review Report, the remedies are functioning as intended with significant source area mass removal completed, residual groundwater concentrations largely declining and no other findings of concern identified.

- Results of post remedial system shut down sampling indicate that VOCs persist in the groundwater above the GWQS and/or VISL, with highest concentrations localized to the source area, which is located in an undeveloped and wooded area. Outside of the source area, VOC concentrations are largely below the GWQS although several VOCs, namely TCE, still remain above the GWQS and VISL in some monitoring wells. It is anticipated that these concentrations will continue to decline over time and eventually comply with the GWQS as the contaminants naturally degrade.

- A vapor intrusion evaluation was not warranted as concluded by the USEPA as only one building utilized for storage is present overlying the plume. The SVE system building and groundwater treatment system building partially overly the plume; however, these buildings are vacant. EcolSciences' evaluation of the groundwater concentrations, contaminant contour maps and distances to nearby structures, including nearby residences along Station Road that are located hydraulically sidegradient to the plume, indicates that it does not appear that Site VOCs above the VISLs are present within at least 100-feet (i.e. the NJDEP's vapor intrusion screening distance for non-petroleum compounds) of these structures, with the exception of the parks and recreation maintenance building. Further evaluation of the maintenance building appears necessary and it would be prudent to confirm with the USEPA their assessment that a vapor intrusion investigation is not warranted. If additional buildings are developed over the plume area or the existing buildings have a change in use additional evaluation may be required.

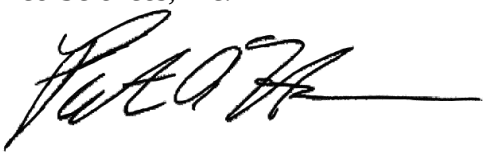
- Given the low concentration and location of the PFOA exceedance within the plume and the two other locations that were clean and/or below the GWQS, PFAS appear to be a minor issue that likely remains within the footprint of the CEA although additional delineation sampling would be necessary to confirm the extent and to revise the CEA/WRA to include this compound. Since the Site and surrounding properties are connected to municipal water supply and PFAS compounds are not associated with vapor intrusion, no further investigation in these regards is warranted.

In closing, it appears that the USEPA's remediation has been comprehensive and continues to be completed in a manner to ensure that surrounding receptors are protected. The current approach (along with confirming future sampling plans for PFAS compounds) should continue to be implemented with the case followed to ensure the continued protectiveness of human health and safety and the environment.

If you have any questions, please feel free to call or email Amy Lopez or me.

Very truly yours,

EcolSciences, Inc.



Peter A. Hansen, LSRP, LEP
Principal

cc: Amy Lopez, LSRP