

Update to the Conceptual Site Model of TCE Impacts at and Down Gradient of the Southeast Hennepin Area Groundwater and Vapor State Superfund Site

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Prepared for: General Mills, Inc.
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GSI Environmental and Geosyntec Consultants have previously submitted reviews of environmental conditions at the former General Mills, Inc. facility ("Facility") located at 2010 East Hennepin Avenue, Minneapolis, Minnesota ("East Hennepin Site") (GSI, 2017; Geosyntec, 2017). The East Hennepin Site also has been referred to as the General Mills/Henkel Corporation Superfund Site. In this short Technical Note, we provide an update to the previously reported Conceptual Site Model ("Model"). This update is based on new data (i.e., April/May 2017 soil and groundwater sampling results collected by the Minnesota Pollution Control Agency ("MPCA")) that provide further confirmation and detail regarding significant impacts to soil and groundwater by TCE from significant sources up gradient of the Facility. These data confirm a significant TCE source on or near 2600 Winter St. NE, a property owned since approximately 1964 by Sears ("Sears property"). This TCE source, as well as other sources not yet identified, have been contaminating the groundwater for decades and still impact the East Hennepin Site and the Como neighborhood. The April/May 2017 sampling data further confirm the existence of these up gradient sources and our Model for the area. These data further reinforce our key conclusions: 1) that the historical releases from the Facility have been fully remediated; 2) that the Facility is not a source of TCE to the groundwater beneath the East Hennepin Site; and 3) that up gradient sources of TCE fully explain the persistent TCE plume.

THE MODEL AND KEY CONCLUSIONS REGARDING THE EAST HENNEPIN SITE AND UP GRADIENT SOURCES OF TCE IMPACTS TO SOIL AND GROUNDWATER.

In March 2017, GSI and Geosyntec reported the following key conclusions to the MPCA:

1. The historic Model was founded on two faulty assumptions: 1) that solvent wastes from the former disposal area at the Facility caused all groundwater impacts, and 2) that these wastes contained significant amounts of TCE. However, data presented in our March 2017 reports demonstrated that neither of these conclusions is supported by primary evidence;
2. The General Mills waste material had a unique signature containing only minor amounts of TCE;
3. General Mills waste material was confined to a small area in the immediate vicinity of the GMI disposal area at the Facility;
4. The General Mills waste was not, and is not, a dense non-aqueous phase liquid source of impacts to groundwater and soil gas;

5. The soil and groundwater impacts associated with the Facility have been fully remediated;
6. The Facility is not a source of TCE to groundwater or soil vapor;
7. TCE from up gradient sources has been contaminating the area for decades – and still impact the Como Neighborhood, including the East Hennepin Site;
8. No additional remedial actions are necessary to address impacts from the Facility; and
9. The MPCA must revise its CSM to address the up gradient TCE sources instead of the fully remediated impacts from the Facility.

NEW DATA (APRIL/MAY 2017) PROVIDE FURTHER SUPPORT FOR THE MODEL THAT THERE ARE SIGNIFICANT TCE SOURCES IN THE SOUTHEAST HENNEPIN AREA, INCLUDING THE SEARS PROPERTY, THAT FULLY EXPLAIN THE PERSISTENT TCE GROUNDWATER PLUME IN BOTH AREAS.

In April and May 2017, the MPCA conducted additional investigations within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site (located up gradient of the East Hennepin Site), including collection of groundwater samples from 10 existing groundwater monitoring wells and collection of soil and groundwater samples from 13 new sample points (not including SP-30, located at SE 19th Ave. and SE Elm Street). These new data (Figure 1) corroborate our earlier conclusions related to this area.

MPCA's April/May 2017 results provide further strong support for the new Model, specifically that significant sources of TCE up gradient of the former General Mills facility, including the Sears property, have impacted groundwater for decades.

The new investigation results provide important additional evidence for the Model presented to MPCA in March 2017. The new data indicate a significant TCE source on the Sears property. TCE concentrations in groundwater immediately down gradient of the Sears property (south and west) were as high as 2,020 µg/L at SP-22 (Figure 1) while the TCE concentrations measured up gradient of the Sears property (north and east) were much lower (a maximum of 128 µg/L at SP-29).

These investigation results show that the most significant source of TCE within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site is located on the Sears property (i.e., the area between SP-22 and SP-29) (Figure 1). Although additional source(s) of TCE are present within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site – particularly to the north and east of the Sears property – these new MPCA results indicate that additional investigation should be conducted on the Sears property to characterize and remediate this significant historical TCE release.

The sources of TCE within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site fully explain the current TCE plume.

The new investigation results support our prior finding that the TCE plume originates within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site. The new MPCA investigation results (Figure 1), along with recent more comprehensive area-wide monitoring results, show that TCE concentrations in groundwater within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site are much higher than in down gradient areas, including areas on or near the former General Mills Facility. These recent data, which are consistent with prior data indicating high concentrations of TCE in groundwater within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site, have been present for decades (GSI 2017 and Geosyntec 2017). These data reinforce our earlier conclusions that the impacts associated with the Facility have been fully remediated and that the Facility is not a TCE source to groundwater beneath the area.

SUMMARY AND CONCLUSIONS

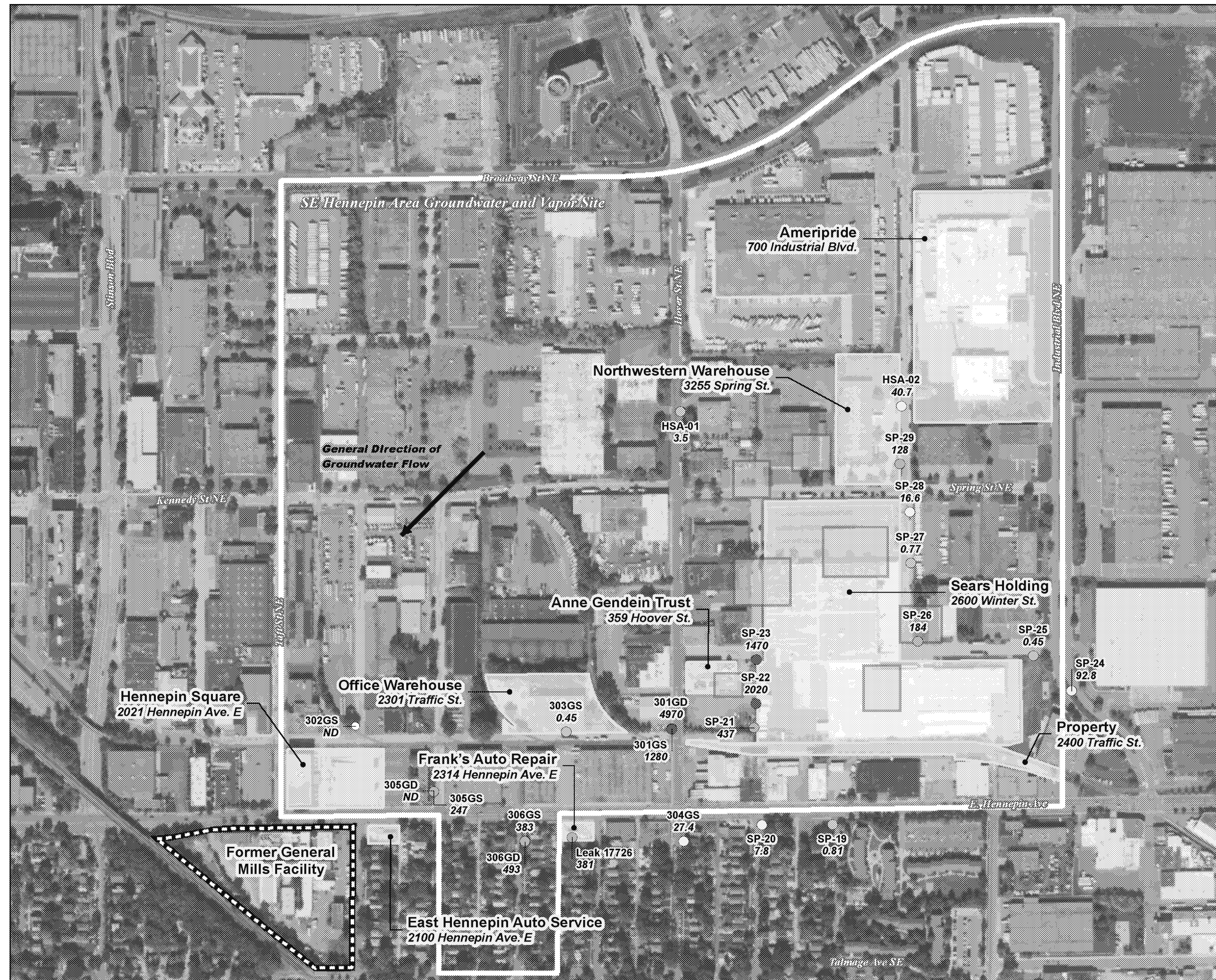
The new investigation results obtained by the MPCA in April and May 2017 support the Model which we presented to the MPCA in March 2017 and corroborate the previous conclusion that the sources of TCE within the Southeast Hennepin Area Groundwater and Vapor State Superfund Site fully explain the current TCE plume in groundwater. The new data provide no evidence that the East Hennepin Site is an on-going source of TCE in groundwater. We reiterate our conclusion that no additional response actions are necessary to address impacts associated with the historical activities at the General Mills/Henkel Facility. No up gradient investigation will alter these findings and conclusions as to the East Hennepin Site.

Therefore, the MPCA must update its current model to accurately reflect the historical, present and ongoing impacts of TCE from the source on the Sears property and from other potential sources up gradient of that property on the East Hennepin Site and other areas in the Como neighborhood.

REFERENCES

GSI Environmental Inc. Evaluation of Remedy Completeness at the General Mills/Henkel Corp. Superfund Site. March 2017.

Geosyntec Consultants. Supplemental Report on VOC Sources and Remediation at the General Mills/Henkel Corp. Superfund Site. March 2017.



LEGEND

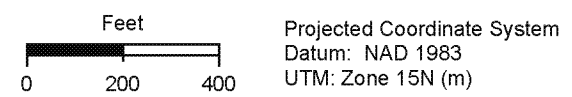
- Area of disturbed ground with road access suggestive of potential waste disposal, identified in 1947 aerial photo
- MPCA VIC or Leak Program Site

Most Recent TCE in Groundwater

- > 1,000 µg/L
- 100 - 1,000 µg/L
- 5 - 100 µg/L
- 0 - 5 µg/L
- Not detected

Notes

1. Groundwater results shown are from samples collected from the Glacial Drift Aquifer in 2017.
2. Background Imagery: World Imagery - 1m; Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.



**MPCA 2017
GROUNDWATER SAMPLE RESULTS**

**Southeast Hennepin Area Groundwater and Vapor Site
Minneapolis, MN**

GSI Job No.	4679	Drawn By:	CDM
Issued:	25-Aug-2017	Chk'd By:	LMB
Map ID:	002_01	App'd By:	LMB/TEM

FIGURE 1