



December 14, 2023

**File:** 193710375

**Stantec Consulting Services Inc.**

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Mr. Amer Safadi  
Remedial Project Manager  
Superfund Division  
U.S. Environmental Protection Agency, Region 7  
11201 Renner Boulevard  
Lenexa, KS 66219

**RE:** Response to Fourth Five Year Review  
Former Manufactured Gas Plant Site  
Mason City, Iowa

Dear Mr. Safadi,

On behalf of Interstate Power and Light Company (IPL), Stantec Consulting Services Inc. (Stantec) is submitting this response letter to the United States Environmental Protection Agency (EPA) regarding EPA's Issues and Recommendations that were included in the April 5, 2023, *Fourth Five-Year Review Report for Mason City Coal Gasification Plant Superfund Site (4<sup>th</sup> FYR)*. The Mason City Former Manufactured Gas Plant site (Site) is depicted in Figure 1.

The Issues and Recommendations, Other Findings, and Question C Summary in the 4<sup>th</sup> FYR are presented below in italicized text and Stantec's responses are provided in plain text. The 4<sup>th</sup> FYR Issues/Recommendations and responses will also be incorporated in the 2023 Annual Progress Report to be submitted in first quarter 2024. .

**Issue Category:** *Remedy Performance*

- **Issue:** *Benzene was not detected in the 2021 groundwater sample collected from MW-8R, but concentrations in the three sampling events prior exceeded the groundwater cleanup standard by more than an order of magnitude.*
- **Recommendation:** *Due to the significant concentration fluctuation in MW-8/MW-8R, additional source control measures of ORC® Advanced injections should be considered to prevent further benzene migration and to decrease benzene concentrations over time.*

**Response:** A pilot injection of ORC® Advanced was conducted in the area around MW-2R in 2014 with post-injection monitoring conducted. Documentation of the effectiveness of the 2014 injection and post-injection monitoring was included in the 2015 Annual Progress Report. In response to EPA's Issue/Recommendation, a pilot injection of similar overall scope to that of 2014 is proposed for implementation in 2024 in the area around MW-8R, with the goal to enhance natural attenuation and decreasing benzene concentrations over time. An injection work plan including underground injection control (UIC) permitting and planning will be prepared and submitted to the EPA for approval prior to implementing the injection activity around MW-8R.



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**Reference: DNAPL Delineation Activities Summary**

**Issue Category:** *Remedy Performance*

- **Issue:** *Dense non-aqueous phase liquid (DNAPL) extraction efforts appear to be limited in their ability to control continuing contaminant contributions to groundwater, and do not appear to be sufficient to support MNA achievement of groundwater cleanup levels.*
- **Recommendation:** *DNAPL destruction should be considered to further limit these contributions and expedite the monitored natural attenuation (MNA) remedy to achieve groundwater cleanup standards. Additional data collection is needed to assess the current DNAPL extraction configuration. And continued groundwater monitoring is necessary until all samples meet the groundwater cleanup standard defined in the Consent Decree (CD). Develop a plan to address these issues per the milestone date of 12/31/2023.*

**Response:** Pilot testing of mobile dual phase extraction (MPDE) is proposed for implementation during 2024 at the Site. The pilot injection work plan described above will also include the proposed scope of work for the pilot MDPE that will focus on monitoring wells MW-38, MW-39, MW-40, and MW-46. The goal of the MDPE is DNAPL recovery to control continuing contaminant contributions to groundwater. Continued groundwater monitoring is also proposed. Due to the occurrence of DNAPL within fractured bedrock at the Site, in-situ DNAPL destruction via injection (e.g., oxidant, surfactant, etc.) was not considered due to the potential to mobilize the contamination.

**Issue Category:** *Remedy Performance*

- **Issue:** *The action level for 2-methylnaphthalene poses an unacceptable non-cancer hazard quotient (HQ) of 1.75 to a child resident. An MCL is not available for this compound.*
- **Recommendation:** *The 2-methylnaphthalene action level should be revised to ensure long-term protectiveness of the remedy.*

**Response:** In subsequent site monitoring, groundwater analytical results will be compared to the performance standard for 2-methylnaphthalene [63 parts per billion (ppb)] established in the September 3, 2008, Explanation of Significant Differences (ESD) and the May 2022 regional screening level (36 ppb).

**Other Findings**

*The following recommendations were identified during the 4<sup>th</sup> FYR, but do not affect current and/or future protectiveness:*

- **Finding:** *ORC<sup>®</sup> Advanced was used in a pilot study around MW-2R and was very effective at supporting biodegradation of benzene concentrations to below RLS. However, 2021 was the first year since the injection which DO and ORP were detected at levels at or below the levels observed prior to injection (Stantec, 2022). Recommendation is to continue to monitor MW-2R for potential benzene rebound now.*



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**Reference: DNAPL Delineation Activities Summary**

**Response:** The effectiveness of the 2014 ORC® Advanced injection near MW-2R is acknowledged, and groundwater monitoring at MW-2R will continue during the annual event including monitoring DO, ORP, and benzene.

- **Finding:** *Naphthalene was detected in MW-4 which is located on the downgradient edge of the site and should be closely monitored to ensure contamination is not migrating off-site.*

**Response:** Groundwater monitoring at MW-4 will continue during the annual event.

- **Finding:** *Repair monitoring well MW-4, MW-9, and MW-10 to ensure they are properly secured. Closely monitor the concrete pad at monitoring well MW-22 to ensure it does not compromise the integrity of the well. Remove surface build up near MW-36 to ensure it does not become buried and lost.*

**Response:** Flush-mount monitoring well completions at MW-4, MW-9, MW-10, MW-22 and MW-36 were replaced during site work in April 2023. Also, the compacted gravel area around MW-36 was regraded and raised to prevent this area from becoming buried. Documentation of the surface completion replacement work will be included in the 2023 Annual Progress Report.

- **Finding:** *Monitoring wells MW-13, MW-14RR, and MW-36 were recommended to no longer be sampled after 2019 because they were found to be compliant with the CD. Recommendation is to continue collecting groundwater elevation data to determine groundwater flow conditions.*

**Response:** Annual groundwater monitoring will continue to include gauging groundwater elevations in all monitoring wells at the Site to continue to assess groundwater flow conditions.

**Question C Summary:** *During the FYR period, two new monitoring wells MW-42 and MW-43 were installed west of the site. Contaminants of concern were detected at concentrations exceeding their respective groundwater cleanup levels. Environmental Covenants do not appear to protect the property around monitoring wells MW-42 and MW-43 and should be reviewed to ensure the remedy remains protective of human health.*

**Response:** The current two Environmental Covenants (ECs) for the Site control both the site area owned by IPL (EC recorded in 2008) and the site area owned by the city of Mason City, Iowa (City) (EC recorded in 2009) and do not control the area that is west of the Site across South Delaware Avenue on the property where MW-42 and MW-43 are located. The area at MW-42 is located within the City right-of-way (ROW) along the west side of South Delaware Avenue and the area at MW-43 is owned by the City. Two commercially zoned and vacant property parcels are immediately west (Parcel No. 071030101100) and south (Parcel No. 071030101200) of MW-42 and MW-43, respectively, and currently would prohibit residential land use. Existing City Ordinance Article C. Private Wells 6-1C-3: Permit Process: C. (Ord. 6-1C-3:C) (Attached) prohibits the installation of private wells within the City limits if the building or facility to be served by the private well is within 200 feet of public water. Therefore, the existing City Ordinance Ord. 6-1C-3:C is an



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**Reference: DNAPL Delineation Activities Summary**

element contributing to current protectiveness of human health because the future installation of private water wells on the property around monitoring wells MW-42 and MW-43 is prohibited by the ordinance.

If you have questions, please contact Jill Stevens of IPL at (608) 334-6502 or me.

Sincerely,

**Stantec Consulting Services Inc.**

A handwritten signature in blue ink that reads "Rick Binder".

Rick Binder PG, CPG  
Project Manager  
Phone: (262) 643-9010  
[rick.binder@stantec.com](mailto:rick.binder@stantec.com)

A handwritten signature in blue ink that reads "Rob Malcomson".

Rob Malcomson  
Project Technical Lead  
Phone: (515) 251-1019  
[robert.malcomson@stantec.com](mailto:robert.malcomson@stantec.com)

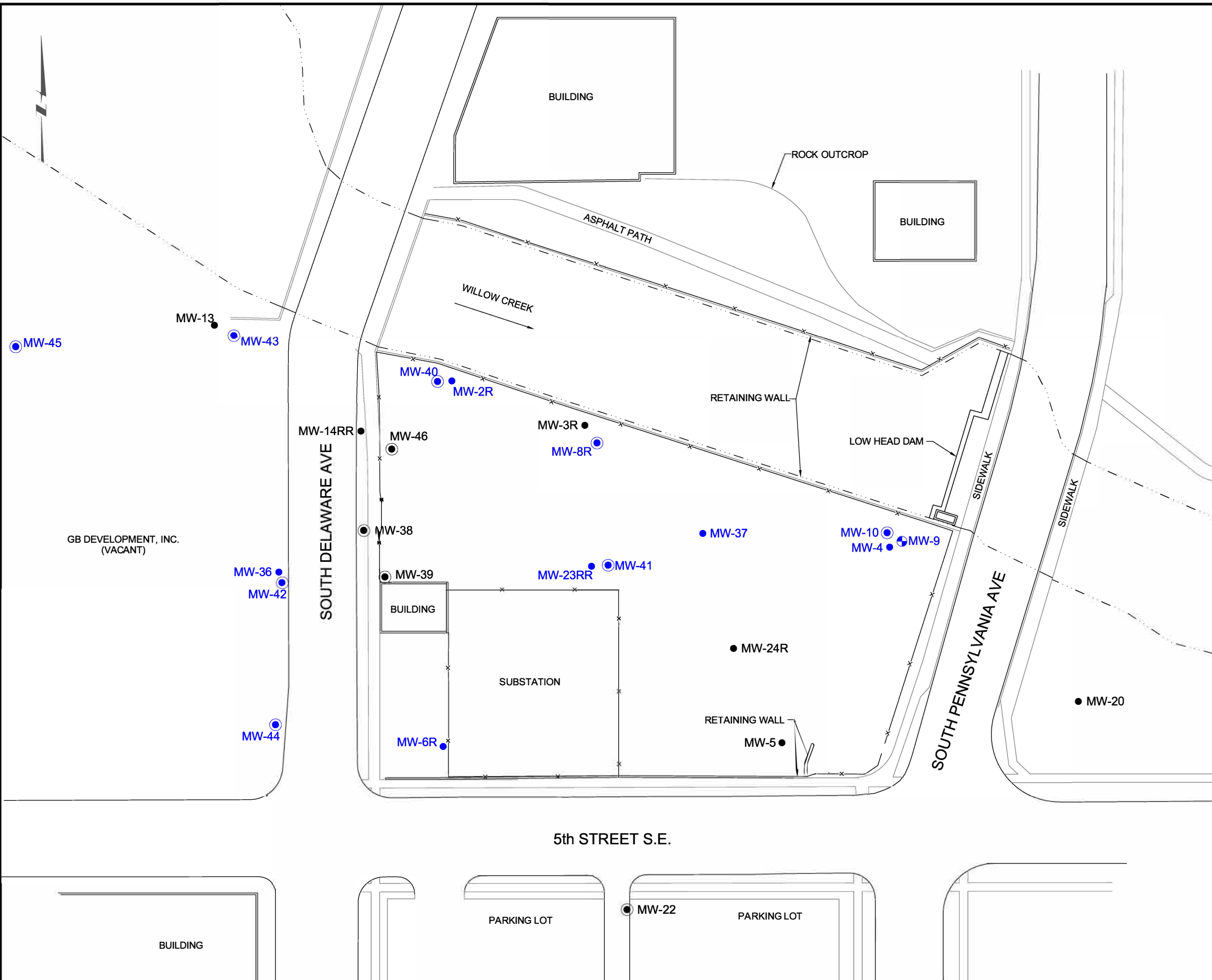
rm:Imd

cc: Jill Stevens, Interstate Power and Light Company – electronic copy  
Brad Davison, Iowa Department of Natural Resources –electronic copy

Attachments:

- Figure 1 Site Map
- Mason City Ordinance Article C. Private Wells 6-1C-3: Permit Process: C.

# ATTACHMENTS



- LEGEND:**
- WATER TABLE AQUIFER MONITORING WELL
  - ⊙ SHALLOW BEDROCK MONITORING WELL
  - ⦿ INTERMEDIATE ZONE MONITORING WELL

**NOTES:**

WELLS IN BLUE ARE INTENDED FOR SAMPLING  
 WELLS IN BLACK ARE TO BE GAUGED FOR WATER LEVELS ONLY

p:\staterac-sc-pw\staterac-sc-pw-23\Documents\_MWH\_Iowa\Projects A-F\Alliant Energy (AE)\mason\Civil\2022\193710334 FIGURE Fig 1-2

DESIGNED BY	R. KRONEMAN	10/26/22
DRAWN BY	S. HANSEN	10/26/22
CHECKED BY	R. KRONEMAN	10/26/22
APPROVED BY	R. KRONEMAN	10/26/22
PROJECT MANAGER	R. KRONEMAN	10/26/22
CLIENT APPROVAL		
CLIENT REFERENCE NO.		



PROJECT LOCATION	DES MOINES, IOWA
PROJECT	INTERSTATE POWER AND LIGHT COMPANY FORMER MANUFACTURED GAS PLANT MASON CITY, IOWA
TITLE	SITE PLAN

FIGURE 1 REVISION A  
 FILE NAME 193710334 FIGURE Fig 1-2

## ARTICLE C. PRIVATE WELLS

SECTION:

### **6-1C-1: Scope**

### **6-1C-2: Permit Required**

### **6-1C-3: Permit Process**

#### **6-1C-1: SCOPE:**

The provisions of this article shall apply to all private water wells, including, but not limited to, new construction and modification of existing wells located or to be constructed within the City limits of Mason City, Iowa, as defined in section 1-5-1 of this Code. (Ord. 09-06, 6-2-2009)

#### **6-1C-2: PERMIT REQUIRED:**

A. No person shall construct a private well within the area described in section 6-1C-1 of this article in the City of Mason City after the effective date of this provision, unless a permit has been issued for the well by the Mason City Engineering Department. This permit shall be in addition to any permits required by the State or County. This requirement shall not apply to monitoring wells used for soil and groundwater investigation.

B. The applicant shall be required to have an environmental assessment completed to determine if there are known sources of contamination within five hundred feet (500') of the proposed site.

C. The permit applicant shall also provide to the Engineering Department any further study/testing required to further address any problems identified in the assessment described in subsection B of this section concerning the soil and groundwater contamination in the particularly described application site. (Ord. 03-6, 4-1-2003)

#### **6-1C-3: PERMIT PROCESS:**

A. Any person desiring a well permit shall make application to the Mason City Engineering Department on the form prescribed. The Mason City Engineering Department shall determine the necessary information, data and testing required for the issuance of the permit.

B. In determining whether to issue a permit or not, the Mason City Engineering Department shall consider the availability of public water to serve the real property, building or facility, the estimated amount of water to be consumed, possible contamination of the water, and the purpose for which the water will be used.

C. If the property, building or facility to be served is located within two hundred feet (200') of public water, the Mason City Engineering Department shall automatically deny the permit and the applicant shall be required to use the public water system.

D. If the Mason City Engineering Department determines that the water is in an area of contamination or is otherwise unfit, the permit may be denied or limitations may be made as to the use of the water from said private well as necessary to protect life and property. In determining what the actual area of contamination is, the Mason City Engineering Department shall consider current levels and areas of contamination, as well as where the contamination might reasonably be expected to expand to in the foreseeable future.

E. The application shall not be deemed complete until all information, data and testing results required by the Mason City Engineering Department have been submitted for consideration along with a fifty dollar (\$50.00) application fee. (Ord. 03-6, 4-1-2003)