

**From:** Gielniewski, Margaret <gielniewski.margaret@epa.gov>  
**Sent:** Friday, October 29, 2021 9:02 AM  
**To:** Dombrowski, Frank J  
**Cc:** Krueger, Sarah E - DNR; Korpela, Adrienne/MKE; Marcus Byker (Marcus.Byker@ramboll.com); Cummings, James  
**Subject:** WPSC Marinette Alternatives Array Memo Comments  
**Attachments:** Marinette-AltArray\_CommentsMemo\_10.29.2021.pdf

**CAUTION: This email originated from outside the organization.  
Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hello Frank,

Please find EPA's and WDNR's comments on the Marinette Alternatives Array Memo. We would like to see a few more options in the FS, particularly groundwater treatment/cleanup options combined with soil treatment/cleanup options.

If you have any questions,

Please let me know.

Kind regards,  
Margaret

Margaret Gielniewski  
U.S. EPA Superfund Project Manager  
[gielniewski.margaret@epa.gov](mailto:gielniewski.margaret@epa.gov)  
312.886.6244



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

Mr. Frank Dombrowski  
WEC Energy Group – Business Services  
Environmental Dept. - Land Quality Group  
333 W. Everett St., A231  
Milwaukee, WI 53203

October 29, 2021

Subject: Review of the *Focused Remedial Alternatives Array Technical Memorandum, Former Marinette Manufactured Gas Plant Site, Marinette, Wisconsin, Wisconsin Public Service Corporation, May 17, 2021*

Dear Mr. Dombrowski,

EPA and Wisconsin DNR reviewed the *Focused Remedial Alternatives Array Technical Memorandum, Former Marinette Manufactured Gas Plant Site, Marinette, Wisconsin, Wisconsin Public Service Corporation*, dated May 17, 2021, prepared by Ramboll, on behalf of Wisconsin Public Service Corporation (WPSC).

General comments are provided below; specific comments are provided in tabular format in Table 1.

GENERAL COMMENTS

GC 1: The Agencies noticed that there was not inclusion of treatment options for dissolved phase product, and/or product found in groundwater. The Agencies would like to see treatment options for dissolved phase paired with the alternatives found in the *Alternatives Array Technical Memorandum*. Some of the alternatives for the dissolved phase/MGP-related materials found in groundwater include:

- Use of a permeable reactive barrier downgradient of the areas proposed for ISS; ISGS.
- Use of horizontal/vertical injection locations where persulfate or other oxidants/enhanced bioremediation can be used in conjunction with excavation or ISS (if compatible).
- ISS in conjunction with in-situ chemical oxidation should be considered where feasible. ISS and ISCO reagents can be introduced together. This combination offers generation of treatment residuals which may be beneficial in bioremediation of dissolved phase contamination.

The Agencies are amenable to additional dissolved-phase product remediation options to be included in the Feasibility Study.

GC 2: The ISGS options may be more complex than represented. For ISS, a tiered treatability study may be needed to address strength, durability, hydraulic conductivity and leaching considerations. For ISGS, the most important issues to verify are changes in NAPL morphology, NAPL interface crust formation and flowable characteristics which may include water drive and Dean Stark testing to illustrate changes in residual saturation to treatment. A site-specific treatability study will thus be needed, and to further understand changes to NAPL leaching behavior in the long term. Prior to implementation, ISGS or ISS would require bench and field tests addressing these issues and reflect the BMPs from the technology vendor on reagent delivery and documentation of success.

GC 3: None of the accessible areas discuss or include evaluation of a Horizontal Engineered Barrier, There may be a need to include that evaluation as part of Alternatives 2 and 3 to meet State requirements; although, any cap or cover may be addressed as part of the Institutional Controls for the State of Wisconsin.

GC 4: If the State of Wisconsin implements the Institutional Controls considered at the inaccessible source areas, it should be noted that the State of Wisconsin no longer uses Deed Restrictions. The State of Wisconsin would impose “continuing obligations” at the time of the remedial action and record them in the Wisconsin Remediation and Redevelopment Database (WRRD).

GS 5: Additional information regarding necessary pilot tests, bench scale studies, etc. and potential timeline for implementation would be helpful in the evaluation, especially as pertains to ISS and ISGS.

GS 6: Currently, the same technologies are proposed to address source material at the Boom Landing Zone and Waste Water Treatment Plant (WWTP) Zone for each alternative. Consider if there would be benefit in adding another alternative that includes excavation for source material at the Boom Landing Zone and either ISS or ISGS within the WWTP Zone.

Thank you for the opportunity to comment. It may make sense to have a meeting to discuss the comments prior to the FS deliverable.

I can be reached at [gielniewski.margaret@epa.gov](mailto:gielniewski.margaret@epa.gov) or at (312)886-6244.

Kind regards,



Margaret Gielniewski Remedial Project Manager  
U.S. EPA Region 5

Cc:

Jim Cummings, EPA Headquarters  
Sarah Krueger, WDNR  
Adrienne Korpela, Jacobs  
Marcus Byker, Ramboll

**Table 1. Specific Comments on the Marinette Alternatives Array Technical Memorandum**

Comment No.	Section	Page	Paragraph/ Bullet	Comment
1	Remedial Action Objectives	2/12	Para. 1 1 <sup>st</sup> bullet	For RAO-1, the ROD indicates preventing exposure to NAPL more broadly, rather than DNAPL. Reword the RAO to maintain consistency with the ROD.
2	Remedial Action Objectives	2/12	Para. 1 1 <sup>st</sup> and 2 <sup>nd</sup> bullets	The word "unacceptable" should be placed in front of "human exposure" for RAO-1 and RAO-2. Revise wording of these RAOs.
3	Remedial Action Objectives	2/12	Para. 1 2 <sup>nd</sup> bullet	Clarify what criteria will be used to be protective of surface water from COCs in groundwater for RAO-4 and how protectiveness will be evaluated. Remove language stating "to the extent practicable."
4	Efficacy of ROD Following Review...	4/12	Para. 1	If the single injection of "oxidant" is referring to an ISGS solution (from Provectus/IET), then the technology may be misapplied because ISGS is used to arrest NAPL mobility as primary goal and dissolved phase treatment as a secondary goal. Based on NAPL impacts, multiple injections may be required in a targeted manner.
5	Summary of PDI Activities to Date	4/12	Para. 1	The text states, "A full description of investigation activities and results will be provided in a forthcoming PDI Evaluation Report to be submitted once delineation activities are completed on the MM Property." It is assumed that the nature and extent of contamination in this Alternatives Array Technical Memorandum is accurate based on the 2020 PDI. However, we reserve additional review and comment on the nature and extent of contamination after the PDI Evaluation Report is issued.
6	Boom Landing PDI Results	6/12	Para. 2	Reported lifetime incremental cancer risk (CR) and hazard index (HI) values do not have supporting calculations/data or a reference. A reference to the RI HHRA where this information can be found/verified should be placed within the discussion and the RI cited in the References section.
	WWTP North Zone	7/12	Para. 3	
7	Groundwater Evaluation	7/12	Para. 1	Please add a Figure 4 that shows a cross-section down the center of the slough showing groundwater elevation, NAPL and dissolved impacts, lithology, etc., to aid in technology selection and deployment discussions.
8	Basis of Change in Source Material Remedy	8/12	Several (1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , 5 <sup>th</sup> bullets)	Clarify for the reader if and how new information has come to light since the ROD that supports these reasons as a basis of change to the remedy. Several of the reasons provided (utilities, dewatering, railroad, and impact of inaccessible areas) would typically be known during the development of the ROD.
9	Development of Source Remedial Target Zone	9/12	Para. 1	Table 1 presents details of the remedial investigation and PDI results. We reserve additional review and comment on the nature and extent of contamination after the PDI Evaluation Report is issued.

**Table 1. Specific Comments on the Marinette Alternatives Array Technical Memorandum**

Comment No.	Section	Page	Paragraph/ Bullet	Comment
10	Assemble and Document Remedial Alternatives	10/12	Para. 3	The text states that “the remedial option for the non-source soil, soil vapor and sediment are consistent with the remedial alternatives evaluated in the ROD based on the 2017 FS.” However, groundwater is not mentioned. Although this technical memorandum purports to focus solely on source material, it is difficult to decouple source material from groundwater because the strategies selected to address source material will have a large impact on groundwater. Therefore, components and technologies to address the dissolved-phase contamination should be explicitly included in each alternative description, including the need for monitoring and evaluation if PRGs are met.
11	Alternatives 2, 3, 4, and Table 3	11/12	-	ISGS is a NAPL immobilization technology, it is not geared toward dissolved phase treatment. The correct deployment of this technology is to first arrest NAPL and then reduce interphase mass transfer via crusts form on NAPL surfaces. Dissolved phase treatment is, to a degree, coincidental until oxidant is exhausted. Also, high soil fraction of organic carbon/sediment will increase oxidant demand so benefit may be quite short, within hours/days of injection only. If dissolved phase reduction is the goal, ISCO may be a better choice. That being said, strategic ISGS injection in the slough area to ensure NAPL immobilization (NAPL likely lurking somewhere) coupled with a downgradient permeable reactive barrier (PRB) could be very effective to prevent migration of COCs into the river area. Depending on In Situ NAPL architecture, no hydraulic conductivity (K) or transmissivity (T) reduction may occur, the technology then relies on reductions in mass transfer from the NAPL core. ISS might drop K too much and divert preferential flow of GW and NAPL in the slough channel to other areas, so ISGS seems potentially well-suited for this geometry/application. Further discussions (or a joint working session) regarding the applicability of ISGS may be beneficial.
12	Alternatives 2, 3, 4, and Table 3	11/12	Para. 2 through 4	Add requirements for appropriate bench and pilot testing for the application of ISS, ISGS, and oxidant use.
13	Alternatives 2, 3	11/12	Para. 2 and 3	Remove the following text from Alternative 2 and Alternative 3 descriptions: “ISGS is consistent with ROD expectations for groundwater remediation as the permanganate component of the ISGS solution is an effective chemical oxidant to address dissolved-phase impacts.” This is not accurate; ISGS is primarily used to immobilize NAPL and dissolved phase treatment is ancillary. Therefore, it would not meet the intent of RAO-2, RAO-3, and RAO-4 from the ROD. Different technologies will need to be evaluated and considered to address dissolved phase contamination; see previous comments regarding this topic.
14	Alternative 4	11/12	Para. 4	A one-time placement of oxidant into the excavation may not be sufficient to address dissolved phase contamination. Often, multiple applications of oxidant are required to be effective. Consider more robust technologies to address dissolved phase contamination and to meet the groundwater RAOs.

**Table 1. Specific Comments on the Marinette Alternatives Array Technical Memorandum**

Comment No.	Section	Page	Paragraph/ Bullet	Comment
15	Table 2 - Initial Assessment of General Response Actions...	1 of 1	-	Ex Situ Approaches, Excavation: Clarify further why off-site disposal is retained, but on-site treatment and on-site disposal is not given that the rationales provided are similar. Clarify what "On-site treatment further complicates implementation" means.
16	Table 3 - Screening of Remedial Technology...	1 of 3	-	Containment: Expand the height of the row so that the text under "Rationale" is not cut off.
17	Table 3 - Screening of Remedial Technology...	1 of 3	-	In Situ Approaches, Physical/Chemical Treatment, In Situ Stabilization/Solidification, Implementability: the 3rd bullet states, "Dense network of utilities on site will slow production and may require alternate mixing requirements (excavator mixing or jet grouting)." It is unclear how this will be accomplished at the site given the dense utility networks at the site, especially when reliable information is not always available for utility locations.
18	Table 3 - Screening of Remedial Technology...	2 of 3	-	In Situ Approaches, Physical/Chemical Treatment, In Situ Thermal Treatment, Implementability: the 6th bullet states, "Given the absence of available information on location of utilities, this study would be fundamentally flawed resulting in high risk of negative impact to buried utilities." It would seem that this limitation would also be applicable to ISS and ISGS, which are retained. Please clarify.
19	Table 3 - Screening of Remedial Technology...	2 of 3	-	In Situ Approaches, Chemical Treatment, In Situ Geochemical Stabilization (ISGS), Implementability: the 5th bullet states, "Requires location of utilities prior to implementation." However, elsewhere in the table, it is stated that there is a lack of reliable information pertaining to utility location in some areas. Therefore, this technology may have some of the same implementation issues as other technologies, such as in situ thermal treatment. Please clarify or address.
20	Table 4 - Summary of Assembled Alternatives	1 of 1	-	Note 1 states, "Investigation on MMC Zone has not yet been completed. Alternate remedial technologies may be recommended in the forthcoming Focused Feasibility Study depending on the type and magnitude of impacts observed, physical constraints and property-owner constraints affecting remedy implementation." We cannot comment on the remedial technologies and alternatives provided for the MMC Zone at this time given the lack of characterization and the potential to consider other remedial technologies in the future. We will reserve review until after characterization has been completed for this property.
21	Attachment 1 ARARs Table	1	-	Soil Gas/Indoor Air - Chemical Specific: NR 726.15 Case Closure- Closure Letters and Continuing Obligations is in the ROD but is not in this table. Please explain.
22	Attachment 1 ARARs Table	1	-	Soil Gas/Indoor Air - Chemical Specific: NR 726.05(6), (7) and (8) are in the ROD for or groundwater but are not in the ROD for Indoor Air/Vapor as presented in this Table. Please explain the significance and whether inclusion of this citation implies any change to any goal, cleanup level, or action level.

**Table 1. Specific Comments on the Marinette Alternatives Array Technical Memorandum**

Comment No.	Section	Page	Paragraph/ Bullet	Comment
23	Attachment 1 ARARs Table	1	-	Soil Gas/Indoor Air - Chemical Specific: Typo preceding "Case Closure" as the citation NR 726.15 is missing. If intentional, please explain.
24	Attachment 1 ARARs Table	3	-	Site Disturbance: Typo NR 415.04(2Xa) remove the "X"
25	Attachment 1 ARARs Table	4	-	All Groundwater Alternatives, 2 <sup>nd</sup> row: Typo NR 28527 correct to NR 285.27
26	Attachment 1 ARARs Table	4	-	In-Situ Chemical or Thermal Treatment, 5 <sup>th</sup> row: Typo in ROD and Table 1. "to §NR" should be completed to state "to §NR (3)"
27	Attachment 1 ARARs Table			<p>Please include the following ARARs:</p> <ul style="list-style-type: none"> <li>a. Wis. Stats. § 292: Remedial Action</li> <li>b. Wis. Admn. Code NR 716: Migration pathways, site investigation</li> <li>c. Wis. Admn. Code NR 727: Continuing obligations, institutional controls</li> <li>d. 40 CFR 300.430(a)(1)(iii): Remedial alternatives, Principle Threat Waste</li> <li>e. RCRA 40 CFR 257: Non-hazardous waste standards</li> <li>f. RCRA 40 CFR 261.3: Definition of hazardous waste</li> <li>g. RCRA 40 CFR 262: Transport of hazardous waste</li> <li>h. RCRA 40 CFR 264 – 265: Wastewater treatment standards, waste storage, excavation, and fugitive dust</li> </ul>