Madison-Kipp Corporation

Post Office Box 8043
Madison, WI 53708-8043

201 Waubesa Street
Madison, WI 53704-5728

September 15, 2015

Nicolas Bertolas
Waste Water Specialist - Bureau of Water Quality
Wisconsin Department of Natural Resources
South Central Region
3911 Fish Hatchery Rd.
Fitchburg, WI 53711

Subject: Discharge Monitoring Report - Groundwater Extraction and Treatment System (GETS)
Madison Kipp Corporation (MKC), 201 Waubesa Street, Madison, Wisconsin

Dear Mr. Bertolas,

This letter summarizes the activities completed from August 1 through August 31, 2015 as part of the Groundwater Extraction and Treatment System (GETS) at the Madison Kipp Corporation (MKC) site under the Wisconsin Pollution Discharge Elimination System (WPDES) Permit WI-0046566-6. A summary of operation and activities completed during August 2015 is presented below.

GETS Operation and Monitoring

The GETS system ran intermittently from August 1 through August 31, 2015. Compliance samples were collected on August 5, August 13 and August 21, 2015 per the WPDES permit. On August 9, 2015, the hydrogen peroxide tank that provides neutralization of sodium permanganate emptied and was not replaced for several hours. During this time, water with sodium permanganate was discharged. Once the issue was discovered, the hydrogen peroxide tank was immediately changed. On August 28, 2015, a pressure transducer was installed on the hydrogen peroxide feed line and programming of the system was modified to prevent the GETS from operating if hydrogen peroxide is not being dosed into the system. Between August 9 and August 28, the GETS was operated only during times when a staff member was available to monitor effective hydrogen peroxide dosing for permanganate neutralization.

Influent groundwater continue to fall in the 3.8 milligram per liter range, using the Ground Water Sample Preservation at In-Situ Chemical Oxidation Sites - Recommended Guidelines colormetric chart dated August 2012, Attachment B. With the exception of the period mentioned above, sodium permanganate has not been present in the system discharge water. Sodium permanganate neutralization is documented in Attachment C.

MKC
Madison-Kipp Corporation

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If you have any questions or need additional information, please contact myself at asatkoski@madison-kipp.com or (608) 242-5200.

Alina Satkoski

Alina Satkoski

Environmental Engineer
Madison Kipp Corporation

Attachment A Discharge Monitoring Report Form
Attachment B Ground Water Sample Preservation at In-Situ Chemical Oxidation Sites - Recommended Guidelines colormetric chart dated August 2012
Attachment C Neutralization Photos

Copies:
Jennine Trask - ARCADIS (electronic)
Mike Schmoller - WDNR (electronic)
George Parrino - Madison Department of Health (electronic)

DISCHARGE MONITORING REPORT FORM **Year:____2015_____**
Contaminated Groundwater from Remedial Action Operations - Surface Water Discharge
Permit No. WI-0046566-6 Rev. December16, 2013

Facility Name and Location
Madison Kipp Corporation
201 Waubesa St
Madison, WI 53704
Consultant Managing Project: Arcadis
FIN#:

Outfall # and Description		Flow (gal/day)	Oil & Grease (mg/L)	BOD_5 (mg/L)	Total BETX (µg/L)	PAHs group of 10 (µg/L)	Benzo(a) pyrene (µg/L)	Naphthalene (µg/L)	Potassium Permanganate (mg/L)	Benzene (µg/L)	TSS (mg/L)
Effluent	Month: August	64,800	1.5	Not Detected	Not Detected	0.042	Not Detected	Not Detected	0	Not Detected	3.0
	Month:										
	Month:										
	Month:										
See Footnotes					(1)	(2)					
Effluent Limits (refer to sec. 4 of the permit)		--	10 mg/l	20 mg/L	750 µg/L	0.1 µg/l	0.1 µg/l	70 µg/l	(3)	50 µg/l	40 mg/L
Sample Frequency: Pre-treatment		Daily	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Sample Frequency: Post-treatment		Daily	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Sample Type		Estimate	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Impaired or TMDL surface waters			Does this facility discharge a pollutant of concern to an impaired surface water or to a surface water with a TMDL allocation? ☐ No ☐ Yes								

Outfall # and Description		VOCs (µg/L)	Vinyl Chloride (µg/L)	trans-1,2-Dichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Tetrachloroethene (µg/L)	Chloride (mg/L)	cis-1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	
Effluent	Month: August	82.6	Not Detected	Not Detected	Not Detected	44	193	30.7	8.0	
	Month:									
	Month:									
	Month:									
See Footnotes										
Effluent Limits (refer to sec. 4 of the permit)			10 ug/L		50 µg/L	50 µg/L	395 mg/L		50 µg/L	
Sample Frequency: Pre-treatment		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	
Sample Frequency: Post-treatment		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	
Sample Type		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	

FOOTNOTES:

(1) Total BETX is the sum of the benzene, ethylbenzene, toluene and xylene concentrations.

(2) PAH group of 10 (Polynuclear Aromatic Hydrocarbons) include the sum of the following individual compounds: benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene

(3) Madison Kipp/Arcadis will conduct visual monitoring for this compound.

DIRECTIONS:

- For "Outfall # and Description" enter the number of the outfall you are reporting (001 or 002, etc.)
- Monitoring for a given parameter depends on if the discharge is to surface water or groundwater.
- The value entered must be the highest value of all samples analyzed for that day.
- Print additional DMRs as necessary for monthly reporting.

RETURN REPORT BY: **February 15, of the year following completion of monitoring**

RETURN TO: **ATTN: Nicholas Bertolas**
Department of Natural Resources
3911 Fish Hatchery Rd.
Fitchburg, WI 53711

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment, (40 CFR 122.5). I also certify that the values being submitted are the actual values found in the samples; no values have been modified or changed in any manner. Wherever I believe a value being reported is inaccurate, I have added an explanation indicating the reasons why the value is inaccurate.

Alina Satkoski — 9/15/15
Signature of Person Completing Form — Date

Alina Satkoski — 9/15/15
Signature of Principal Exec. or Authorized Agent — Date

plan, or in general EPA documents such as the Resource Conservation and Recovery Act (RCRA) guidance document (U.S. EPA, 1992) or EPA SW-846 (U.S. EPA, 1982). Additional direction on ground water sampling techniques can be found in Yeskis and Zavala (2002).

2.1. Permanganate (MnO_4^-)

Data and information presented below are reported in terms of the permanganate anion (MnO_4^-; 118.9 grams per mole (g/mol)). Permanganate is purchased either as sodium permanganate ($NaMnO_4$; 141.9 g/mol) or potassium permanganate ($KMnO_4$; 158.0 g/mol) and as a result conversion to the permanganate anion concentration is needed to determine sample preservation needs as per the *Issue Paper*. Specifically, the ratios 118.9/141.9 (g-mole/g-mole) and 118.9/158.0 (g-mole/g-mole) are used to convert $NaMnO_4$ and $KMnO_4$, respectively to MnO_4^-.

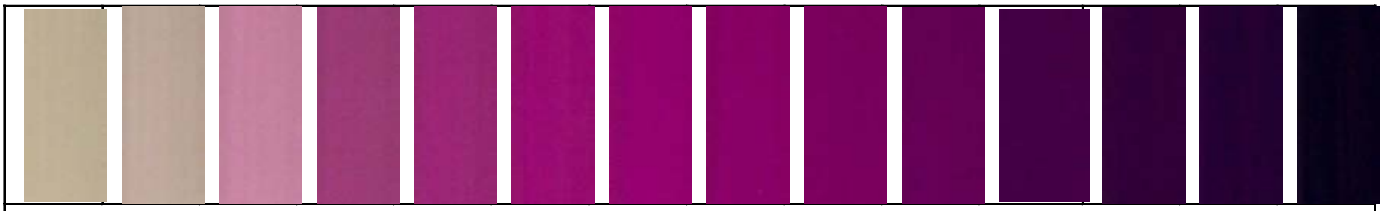
2.1.1. Analysis by Visual Observation

The characteristic pink or purple color of MnO_4^- in a 40 mL VOA vial can be used as a general guideline to estimate the concentration by using the MnO_4^- colorimetric scale (Table 1). This method should be used with caution because ground water turbidity and colloidal manganese dioxide solids (MnO_2(s)) can affect sample color and result in deviations from the tabulated color scale. Field filtration can help minimize these interferences, but may not fully remove all color if sub-micron colloidal and/or dissolved constituents are present.

2.1.2. Spectrophotometric Analysis

The permanganate concentration can be determined using commercially available field test kits (SenSafe™, 2011; CHEMetrics, 2011). Additionally, an accurate measurement of the permanganate concentrations can be determined using a field spectrophotometer (maximum absorbance wavelength (λ) = 525 nanometers (nm) (A_{525})) and a calibration curve involving a linear correlation between MnO_4^- concentration and A_{525} (Figure 2, Table 1). Filtered samples (0.2-0.45 micron) may be required to eliminate background colloidal or suspended solid materials that can absorb light at 525 nm and interfere with permanganate measurement. Volatilization of

Table 1. Permanganate concentration, spectrophotometric absorbance at 525 nm, and required amount of ascorbic acid required to neutralize the oxidant in a 40 mL vial. The color scale represents actual photos of MnO_4^- vials and is included for conceptual guidance. Actual colors vary based on background lighting, and color printers. Additionally, photographs of low concentrations (i.e., clear solutions) do not accurately capture transparency.



$[MnO_4^-]$ (mg/L) (millimolar in parentheses)													
0 (0)	0.75 (0.01)	3.8 (0.03)	7.5 (0.06)	11.3 (0.09)	18.8 (0.16)	30.1 (0.25)	37.6 (0.32)	56.4 (0.47)	75.3 (0.63)	113 (0.95)	151 (1.27)	188 (1.58)	376 (3.16)
Absorbance[1], wavelength (λ) = 525 nm													
0	0.011	0.059	0.134	0.197	0.329	0.516	0.627	NL	NL	NL	NL	NL	NL
Ascorbic Acid Stock Solution (M) [2]													
-	0.015	0.015	0.15	0.15	0.15	0.15	0.15	1.5	1.5	1.5	1.5	1.5	1.5
Volume of Ascorbic Acid solution (µL)													
0	30	150	30	46	76	121	152	23	30	46	61	76	152
Mass of Ascorbic Acid (mg)													
0	0.08	0.4	0.79	1.21	2.1	3.32	4.17	6.1	7.9	12.2	16.1	20.1	40.2

(1) $[MnO_4^-]$ (mg/L) = 58.8 × A_{525}; A_{525} is the absorbance at 525 nm; non-linear above 38 mg/L MnO_4^-.
(2) To minimize sample dilution, the ascorbic acid stock solution used was 0.015, 0.15, and 1.5 M.

Attachment C
Neutralization Photos
August 2015 Discharge Monitoring Report
Madison Kipp Corporation

August 13, 2015

August 21, 2015

August 14, 2015

August 31, 2015