Environmental Audits
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August 11, 2019

Ms. Jennifer Dorman
Environmental Program Associate
Wisconsin Dept. of Natural Resources
2300 N. Dr. Martin Luther King Jr. Drive
Milwaukee, WI 53212

Via Priority Mail & Electronic Copy

Re: **Twin Disc, Inc. FID 252007140**
BRRTS# 02-52-000072
Twin Disc, Inc. Annual Monitoring Results Broach Machine #2525

Dear Ms. Dorman:

Enclosed please find one (1) copy of a report entitled *"Twin Disc, Inc. Annual Monitoring Results Broach Machine #2525"*. This document details the results of the latest analysis of the groundwater monitoring wells installed about the perimeter of Broach Machine #2525 located at Twin Disc, Inc., 4600 21st Street, Racine, WI 53405, FID #252007140, BRRTS# 02-52-000072.

Should you have any questions or require any additional information, please do not hesitate to call.

Sincerely,

Edwin E. Raymond

Edwin E. Raymond

cc: Ms. Roxanne Knuth – Twin Disc, Inc.

encl.

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Remediation Site Progress and Operation, Maintenance, Monitoring & Optimization Report

Form 4400-194 (R 1/14)

Notice: Pursuant to ss. NR 700.11(1) and 724.13(3), Wis. Adm. Code, this form is required to be completed or a narrative report or letter containing the equivalent information required in this form may be submitted in lieu of the actual form. Failure to submit this form as required is a violation and is subject to the penalties as stated in s. 292.99, Wis. Stats. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.). *Unless otherwise noted, all citations refer to Wisconsin Administrative Code.*

GENERAL INSTRUCTIONS, PURPOSE AND APPLICABILITY OF THIS FORM: Completion of this form is required under s. NR 700.11(1) and s. NR 724.13(3), Wis. Adm. Code. A narrative report or letter containing the equivalent information required in this form may be submitted in lieu of the actual form. Failure to submit this form as required is a violation of s. NR 700.11(1) and s. NR 724.13(3), Wis. Adm. Code, and is subject to the penalties in s. 292.99, Wis. Stats. This form must be submitted every six months for remediation projects that are regulated under the NR 700 series of Wis. Adm. Code. Specifically, for sites meeting any of the following criteria:

- Any site where a discharge has occurred that report progress in accordance with s. NR 700.11(1), Wis. Adm. Code until site closure is granted. This includes sites where no response activities occurred during the six month reporting period. **Attach, if applicable, a separate brief summary of the work completed during the reporting period and the anticipated future work.**
- Soil or groundwater remediation projects that report operation and maintenance progress in accordance with s. NR 724.13(3), Wis. Adm. Code.

Note: Long-term monitoring results submitted in accordance with s. NR 724.17(3), Wis. Adm. Code are required to be submitted within 10 business days of receiving sampling results and are not required to be submitted using this form. However, portions of this form require monitoring data summary information that may be based on information previously submitted in accordance with s. NR 724.17(3), Wis. Adm. Code.

Note: Responsible parties should check with the State Project Manager assigned to the site to determine if this form is required to be submitted at sites responded to under the Federal Comprehensive Environmental Response and Compensation Act (commonly known as Superfund) or an equivalent State lead Superfund response.

Note: Responsible parties should check with the State Project Manager assigned to the site to determine if any of the information required in this form may be omitted or changed and obtain prior written approval for any omissions or changes.

Submittal of this form is not a substitute for reporting required by Department programs such as Waste Water or Air Management. Personally identifiable information on this form is not intended to be used for any other purpose than tracking progress of the remediation by the Bureau for Remediation and Redevelopment.

Only complete and submit all of page GI-1 and Section E on pages 3 and 4 for sites where a discharge has been reported but no response, monitoring or remediation has begun or occurred during the six month reporting period that are required to report only under s. NR 700.11(1), Wis. Adm. Code and attach, if applicable, a summary of the anticipated future work.

Section GI - General Site Information

A. General Information

1. Site name

Twin Disc, Inc. Broach Machine #2525

2. Reporting period from:	To:	Days in period:
07/01/2018	06/30/2019	365

3. Regulatory agency (enter DNR, DCOM, DATCP and/or other)	4. BRRTS ID No. (2 digit program-2 digit county-6 digit site specific)
DNR	02-52-000072

5. Site location

Region	County	Address
Southeast Region	Racine	4600 21st Street

Municipality name ◉ City ○ Town ○ Village	Township	Range ◉E ○W	Section	¼	¼ ¼
Milwaukee	N				

6. Responsible party	7. Consultant
Name: Twin Disc, Inc.	☐ Select if the following information has changed since the last submittal
Mailing address: 4600 21st Street, Racine, WI 53405	Company name: Environmental Audits, Inc.
Phone number: (262) 554-0640	Mailing address: 11327 W. Lincoln Ave. West Allis, WI 53227
	Phone number: (414) 226-5563

8. Contaminants

DRO, VOC

9. Soil types (USCS or USDA)
Clay, Silty Clays

10. Hydraulic conductivity(cm/sec):	11. Average linear velocity of groundwater (ft/yr)
1.4E-7	NA

12. If soil is treated ex situ, is the treatment location off site? ◯ Yes ◯ No

If yes, give location: Region	County					
Municipality name ◯ City ◯ Town ◯ Village		Township N	Range ◯E ◯W	Section	¼	¼ ¼

B. Remediation Method

Only submit sections that apply to an individual site. Check all that apply:

- ☒ Groundwater extraction (submit a completed Section GW-1).
- ☒ Free product recovery (submit a completed Section GW-1).
- ☐ In situ air sparging (submit a completed Section GW-2).
- ☐ Groundwater natural attenuation (submit a completed Section GW-3).
- ☐ Other groundwater remediation method (submit a completed Section GW-4).
- ☐ Soil venting (including soil vapor extraction building venting and bioventing submit a completed Section IS-1).
- ☐ Soil natural attenuation (submit a completed Section IS-2).
- ☐ Other in situ soil remediation method (submit a completed Section IS-3).
- ☐ Biopiles (submit a completed Section ES-1).
- ☐ Landspreading/thinspreading of petroleum contaminated soil (submit a completed Section ES-2).
- ☐ Other ex situ remediation method (submit a completed Section ES-3).
- ☐ Site is a landfill (submit a completed Section LF-1).

C. General Effectiveness Evaluation for All Active Systems

If the remediation is active (not natural attentuation), complete this subsection.

1. Is the system operating at design rates and specifications? ◉ Yes ◯ No
   If the answer is no, explain whether or not modifications are necessary to achieve the goal that was previously established in design.

2. Are modifications to the system warranted to improve effectiveness ◯ Yes ◉ No
   If yes, explain:

3. Is natural attenuation an effective low cost option at this time? ◯ Yes ◉ No
4. Is closure sampling warranted at this time? ◯ Yes ◉ No
5. Are there any modifications that can be made to the remediation to improve cost effectiveness? ◯ Yes ◉ No
   If yes, explain:

D. Economic and Cost Data to Date

1. Total investigation cost: _____
2. Implementation costs (design, capital and installation costs, excluding investigation costs): _____
3. Total costs during the previous reporting period: _____
4. Total costs during this reporting period: _____
5. Total anticipated costs for the next reporting period: _____
6. Are any unusual or one-time costs listed in the reporting periods covered by D.3., D.4. or D.5. above? ○ Yes ◉ No
   If yes, explain:

7. If closure is anticipated within 12 months, estimated costs for project closeout: _____

E. Name(s), Signature(s) and Date of Person(s) Submitting Form

Legibly print name, date and sign. Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring or an investigation. Other persons may sign this form for sites with no response activities during the six month reporting period.

Registered Professional Engineers:

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Peter L. Raymond	Registered Professional Engineer
Signature: Peter L Raymond	Date: 08/04/2019

Hydrogeologists:

I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Edwin E. Raymond	Professional Geologist
Signature: Edwin E. Raymond	Date: 08/11/2019

Scientists:

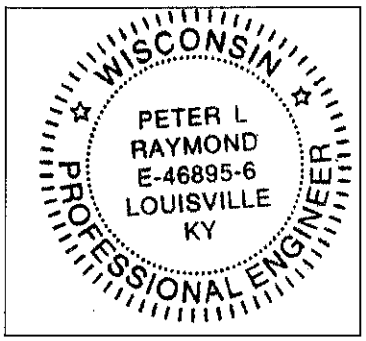
I hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

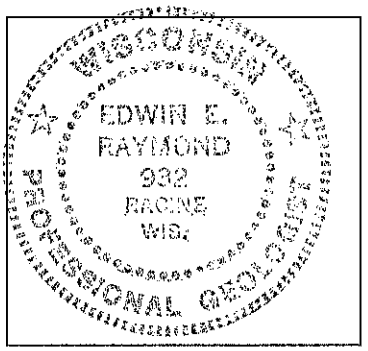
Print name	Title
Signature	Date

Other Persons:

Print name	Title
Signature	Date

Professional Seal(s), if applicable:





Section GW-1, Groundwater Pump and Treat Systems and Free Product Recovery Systems

A. Groundwater Extraction System Operation:

1. Total number of groundwater extraction wells or trenches available: 2 and the number in use during period: 2
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain:
   73
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain:
   20%; sump pit and stand pipe are manually pumped dry on a sporadic basis.
4. Quantity of groundwater extracted during this time period: 3,252 gallons
5. Average groundwater extraction rate: 2 gpm
6. Quantity of dissolved phase contaminants removed during this time period in pounds: 0.003 lbs

B. Free Product Recovery System Operation

1. Is free product (nonaqueous phase liquid) being recovered at this site? (●) Yes ( ) No
   If yes, explain:
   Extraction Pumps
2. Quantity of free product extracted during this time period (enter none if none): 518 gallons
3. Average free product extraction rate: 3.7 gpm

C. System Effectiveness Evaluation

1. Is a contaminated groundwater plume fully contained in the capture zone? (●) Yes ( ) No
   If no, explain:
2. If free product is present, is the free product fully contained in capture zone? (●) Yes ( ) No
   If no, explain:
3. If free product is present in any wells at the site, but free product was not recovered during reporting period, explain:
4. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in C.4.a.
   a. Contaminant: Free Product
   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: ____ %
   c. Maximum contaminant concentration level in any monitoring well of that contaminant: ____ µg/L
   d. Maximum contaminant concentration level in any extraction well of that contaminant: ____ µg/L

e. If the maximum concentration in a monitoring well is more that one order of magnitude above the concentration measured in an extraction well, explain why the extracted groundwater contamination levels are significantly less than the levels at other locations within the aquifer.

D. Additional Attachments

Attach the following to this form:

- Most recent report to the DNR Wastewater Program, if applicable.
- Groundwater contour map with capture zone indicated.
- Groundwater contaminant distribution map (may be combined with contour map).
- Graph of cumulative contaminant removal, if both free product recovery and ground water extraction are used, provide separate graphs.
- Time versus groundwater contaminant concentration graphs for the contaminant listed in C.4.a. (above), as follows:
  - -- Graph of contaminant concentrations versus time for each extraction well in use during the period.
  - -- Graph of contaminant concentrations versus time for the monitoring well with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.
- System operational data table.