

**STATE OF MICHIGAN
MICHIGAN OFFICE OF ADMINISTRATIVE HEARINGS AND RULES**

In the matter of

Docket No.: 17-005710

**The Petitions of Tom Boerner
and the Menominee Indian Tribe
of Wisconsin on the permit
issued to Aquila Resources Inc.
(Consolidated Cases)**

Permit No.: MP-01-2016

**Part: 632, Nonferrous Metallic Mineral
Mining**

**Agency: Department of Environment,
Great Lakes, and Energy**

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Case Type: Oil, Gas and Minerals Division

FINAL DECISION AND ORDER

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Case Type: Oil, Gas and Minerals Division

_____/

**Issued and entered
this 3rd day of May, 2019
by Daniel L. Pulter
Administrative Law Judge**

FINAL DECISION AND ORDER

This contested case concerns an Application submitted by Aquila Resources Inc. (Permittee) for a permit under Part 632, Nonferrous Metallic Mineral Mining, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended. MCL 324.63201, *et seq.* The Oil, Gas and Minerals Division (OGMD) of the Department of Environment, Great Lakes, and Energy (EGLE)¹ issued a permit on December 28, 2016. Tom Boerner challenged the Permit by filing a Petition for Contested Case Hearing on February 24, 2017. On that date, the Menominee Indian Tribe of Wisconsin (Menominee) also challenged the permit by filing a Petition for Contested Case Hearing. The Petitions filed by Mr. Boerner and Menominee (collectively Petitioners) were consolidated into a single proceeding by a Notice entered on March 23, 2017. The Permittee was granted leave to intervene by an Order entered on March 31, 2017.

¹ The name of the Division that administers Part 632, along with the Department itself, has changed since the permit was first issued. For ease of reference, the former is identified as OGMD, and the latter as EGLE.

JURISDICTION

Under Part 632, “[a] person shall not engage in the mining of nonferrous metallic minerals except as authorized in a mining permit issued by the department.” MCL 324.63205(1). Upon issuance, “[a] person who is aggrieved ... by the issuance ... of a mining permit under this part may file a petition with the department requesting a contested case hearing....” MCL 324.63219(1). In their Petitions, the Petitioners claimed they were aggrieved by the issuance of a mining permit to the Permittee.

Consistent with § 63219(1), a contested case hearing was conducted over thirty days on April 23-27, 2018; April 30, 2018; May 1, 2018; June 4-7, 2018; June 11-14, 2018; June 18-22, 2018; June 28-29, 2018; August 1-3, 2018; August 6-7, 2018; August 20-21, 2018; and October 15, 2018. The hearing was conducted under the applicable provisions of the Administrative Procedures Act (APA), 1969 PA 306, as amended. MCL 24.201, *et seq.* The record was closed at the conclusion of the hearing on October 15, 2018. Initial closing briefs and response briefs were filed in accordance with the agreed schedule of the Parties. A site visit in the presence of counsel and the Parties was conducted on July 16, 2018.

PROPERTY RIGHTS PRESERVATION ACT

Pursuant to the Property Rights Preservation Act, 1996 PA 101, MCL 24.421, *et seq.*, the undersigned, in formulating this Final Decision and Order, reviewed the Takings Assessment Guidelines and considered the issue of whether this governmental action equates to a constitutional taking of property. Const 1963, art 10 § 2.

PARTIES

I. Petitioners

A. Menominee was represented by Gussie A. Lord of the firm Jill Grant & Associates, LLC, and by F. Michelle Halley. Menominee offered the testimony of the following witnesses:

1. Dr. Kendra Zamzow, an environmental chemist employed by the Center for Science in Public Participation (2 Tr 141-307).
2. James R. Kuipers, a mining and mineral processing engineer with Kuipers & Associates (2 Tr 308 to 3 Tr 491).
3. Dr. David Hyndman, a hydrologist and hydrogeologist who is the chair of the Department of Geological Sciences at Michigan State University (3 Tr 492-568, 4 Tr 630-748, 26 Tr 3927-3962).
4. James Fossum, a fishery biologist who is retired from the United States Fish & Wildlife Service (4 Tr 576-629).
5. Tim Landwehr, a fishing guide who is the owner of Tight Lines Fly Fishing Company (5 Tr 753-815).
6. John Teller, Sr., a Menominee language teacher at the reservation for the Menominee Indian Tribe of Wisconsin (5 Tr 816-852).
7. Nick Liegeois, the owner of a cabin located in Wisconsin across the Menominee River from the proposed project site (6 Tr 903-952).
8. Dr. Marla Buckmaster, a professor emeritus in archaeology at Northern Michigan University (6 Tr 955-1081, 30 Tr 4296-4342).
9. David J. Grignon, the Tribal Historic Preservation Officer for the Menominee Indian Tribe of Wisconsin (7 Tr 1087-1138).
10. Dr. David Overstreet, an adjunct professor of archaeology at the College of Menominee Nation (7 Tr 1140-1225, 28 Tr 4130-4184).
11. Douglas Cox, the Chairman of the Menominee Indian Tribe of Wisconsin (9 Tr 1451-1500).
12. Dr. Deke Gundersen, who possesses a Ph.D. in fisheries and is a Professor and Director of Environmental Science at Pacific University (12 Tr 1975-2173).

Through these witnesses, Menominee entered Exhibits P-4 through P-7, P-15, P-31, P-47 through P-53, P-55, P-56,² P-58, P-62, P-64, P-66 through P-69, P-73, P-75, P-77, P-

² Exhibit P-57 was proffered for admission into evidence without objection. 3 Tr 363. Exhibit P-57 purports to be the website "www.gardguide.com." *Id.* At the time of admission, Menominee was displaying Figure 4-1 from the website. The undersigned, believing that the figure was the proffered exhibit, admitted the exhibit into evidence. However, the undersigned later discovered that Menominee was attempting to admit the entire website into evidence. 3 Tr 364-365. A website address cannot be offered as an exhibit because the website may be revised subsequent to

78, P-80, P-83, P-87 through P-89, P-91, P-98, P-105, P-107, P-108, P-116, P-117, P-120 through P-124, P-128, P-131, P-149, P-149A, P-149B, P-153 through P-155, P-157 through P-159, P-166 through P-168, P-168A, P-174, P-179, P-185, P-197, P-211, P-212, P-215, P-216, and P-220 through P-223.³

B. Mr. Boerner appeared *in propria persona* and did not offer the testimony of any witnesses. Through witnesses tendered by other parties, Mr. Boerner entered Exhibits P-385, P-393 and P-442.

II. Respondent

A. The OGMD was represented by Robert P. Reichel and Andrew T. Prins, Assistant Attorneys General. The OGMD offered the testimony of the following witnesses:

1. Joe Maki, the state mining specialist with the OGMD (8 Tr 1232-1444, 9 Tr 1506-1618).
2. Melanie Humphrey, a geological technician with the OGMD (10 Tr 1625-1777).
3. Michael Depa, a toxicologist with the Air Quality Division (AQD) of EGLE (10 Tr 1778-1799, 11 Tr 1806-1902).
4. Margie Ring, a Senior Environmental Engineer employed by the Waste and Hazardous Materials Division of EGLE (11 Tr 1903-1964).
5. Charles Thomas, a hydrologist and hydrogeologist who is employed as the District Supervisor for the Drinking Water and Municipal Assistance Division of EGLE (13 Tr 2180-2319).
6. Dr. Dean Anderson, the State Archaeologist (13 Tr 2320-2355, 14 Tr 2362-2476).

the hearing. As a result, such an exhibit has authentication concerns. MRE 901. The undersigned requested Menominee to provide a hard copy of the exhibit. 3 Tr 366. Because Menominee did not provide a hard copy of the exhibit, Exhibit P-57 is stricken from the record, and the proffered Exhibit (which is merely a web address) is now marked "Rejected" and is included in the record for purposes of appeal. R 792.10126(2).

³ During the course of the proceedings, the objections to Exhibits P-14, P-28, P-51A, P-57, P-71, P-74, P-76, P-94, P-217, P-218, P-219, P-219A, I-95, and I-249A were sustained. In accordance with Rule 126(2) of the Administrative Hearing Rules, these Exhibits have been marked "Rejected" and have been included in the record for purposes of appeal. R 792.10126(2).

7. Harold R. Fitch, the Director of the OGMD (14 Tr 2477-2523).

Through these witnesses, the OGMD entered Exhibits R-1 through R-7, R-9 through R-22, R-28, R-30, R-41, R-43 through R-46, R-52, R-53, R-55, R-57, R-72, R-93, R-103, R-110, R-117, R-130, R-133 through R-137, R-141, R-144, and R-146 through R-149.⁴

III. Intervenor

A. The Permittee was represented by Daniel P. Ettinger, Christopher J. Predko, David R. Whitfield, and Ashley G. Chrysler of the firm Warner, Norcross & Judd LLP. The Permittee offered the testimony of the following witnesses:

1. Stephen V. Donohue, a licensed professional hydrologist who is employed as the Vice President of Mining by Foth Infrastructure & Environment, LLC (15 Tr 2541-2671, 16 Tr 2677-2811, 17 Tr 2816-2947, 23 Tr 3664-3740, 29 Tr 4190-4238).
2. Andrea K. Martin, a licensed professional engineer who is employed as the Lead Environmental Engineer for Foth Infrastructure & Environment, LLC (17 Tr 2948-2999, 18 Tr 3005-3063).
3. Mark C. Ciardelli, a geochemist who is employed as the Environmental Science and Chemistry Competency Leader by Foth Infrastructure & Environment, LLC (18 Tr 3064-3182, 19 Tr 3189-3202).
4. Dr. Luiz A. Meiro de Castro, who is employed as a Senior Rock Mechanics Engineer for Golder Associates Ltd. (19 Tr 3203-3278).
5. Kenneth A. Bocking, Senior Geotechnical Engineer for Golder Associates Ltd. (19 Tr 3279-3334).
6. Dr. William J. Adams, an aquatic ecotoxicologist (20 Tr 3340-3453).
7. Peter F. Andersen, a groundwater hydrology and civil engineering professional for Tetra Tech (21 Tr 3459-3603, 29 Tr 4239-4288).
8. Gregory W. Council, a groundwater modeling and environmental engineering professional employed by Tetra Tech (22 Tr 3609-3659).

⁴ The Exhibits entered by the OGMD reflect an Exhibit number beginning with OGMD-1, etc. For purposes of this Final Decision and Order, all Exhibits entered by the OGMD, as the Respondent, shall be renumbered herein, such that Exhibit OGMD-1 shall be referred to as Exhibit R-1, etc.

9. Trace Arlaud, a mine drilling and blasting specialist for JDS Energy & Mining Inc. (24 Tr 3746-3823).
10. Dr. Donald L. Tilton, a wetlands consultant for Tilton Enterprises, LLC. (25 Tr 3831-3920).
11. Steven Koster, an environmental consultant for Environmental Resources Management (26 Tr 3964-4030).
12. Jacquie Payette, an archaeologist for Environmental Resources Management (27 Tr 4035-4122).

Through these witnesses, the Permittee entered Exhibits I-45, I-46, I-76, I-79, I-92, I-93, I-94, I-108 through I-114, I-120, I-125 through I-128, I-162, I-193, I-194, I-220, I-224, I-233, I-242, I-246 through I-252.

STIPULATIONS ON THE RECORD

During the Pre-Hearing Conference held on December 18, 2017, the Parties stipulated that:

1. Aquila Resources Inc. (Permittee) is the proper applicant;
2. The Department has jurisdiction; and
3. The proposed activity is regulated, and a permit is required.

Scheduling Order entered on December 18, 2017. Stipulations by the Parties are evidence and are binding on the Parties. MCL 24.278. Since these stipulations are factual, I adopt them as Findings of Fact.

FINDINGS OF FACT

I. Pre-Application

The mineral deposit which forms the basis of this contested case was discovered in 2002. Exhibit R-9 (EIA Appendix C) at p 263. Mr. Maki was first informed about the project in 2003. 8 Tr 1247. His initial involvement related to an inspection under Part 625, Mineral Wells, of the NREPA. MCL 324.62501, *et seq.*; 8 Tr 1247. Thereafter, the OGMD conducted pre-application meetings with the Permittee as well as initial outreach

with the public. 8 Tr 1248. This outreach consisted of public meetings to discuss the exploration project and to explain what the OGMD knew about it. 8 Tr 1248. The Permittee commenced a baseline environmental study in 2007 during which the EGLE staff met with the Permittee to provide guidance with interpreting Part 632 requirements. Exhibit P-166 at p 1.

On June 8, 2015, the Permittee notified the OGMD that it intended to file a Mining Permit Application (MPA) under Part 632 within the next 6 to 8 months. 8 Tr 1249, Exhibit R-1. The OGMD had developed a "Scoping Environmental Impact Assessment," which is similar to the Environmental Impact Statement (EIS) process employed at the United States Environmental Protection Agency (EPA) that attempts to define the issues, including conferencing with the EPA, the Native American tribes, state regulators, and the mining company.⁵ 8 Tr 1249. Following receipt of the Permittee's letter of intent, a letter was sent by the OGMD to all the Michigan Native American tribes inviting them to such a meeting. 8 Tr 1249-1250, Exhibit P-166. This letter was also sent to Menominee and other Native American tribes in Wisconsin and Minnesota. *Id.* The meeting was held on October 15, 2015. Exhibit R-155. EGLE received comments from Menominee on November 4, 2015, outlining what information they would like to see addressed in the Environmental Impact Assessment (EIA). Exhibit P-199 at p 2. "Subsequent emails and phone calls took place between [EGLE] and the Menominee providing updates on the process and answering questions." *Id.*

II. The Application Process

On November 12, 2015, the Permittee filed a 40,000-page MPA under Part 632.⁶ See Exhibit R-20 at p 2, 8 Tr 1252. By letter dated November 26, 2015, the OGMD

⁵ A copy of the Scoping Environmental Impact Assessment template letter is contained in Exhibit R-22.

⁶ See Exhibit R-2 (MPA (pp 1-94), Appendix A Regulatory Forms and Checklist (pp 95-112)), Exhibit R-3 (Appendix B Geochemical Investigation Report (Part 1 of 3) (pp 1-547)), Exhibit R-4 (Appendix B Geochemical Investigation Report (Part 2 of 3) (pp 1-20634)), Exhibit R-5 (Appendix B Geochemical Investigation Report (Part 3 of 3) (pp 1-2175)), Exhibit R-6 (Appendix C Pre-Feasibility Pit Slope Design (pp 1-329), Appendix D Memorandum on Back Forty Project Design of Cut-Off Wall Between the Menominee River and the Planned Open Pit (pp 330-371), Appendix E Storm Water Management Plan (pp 372-431), Appendix F Soil Erosion and Sedimentation Control Plan (pp 432-459), Appendix G Environmental Monitoring Plan (pp 460-505)), Exhibit R-7 (Appendix H Treatment and Containment Plan for Tailings and Waste Rock (pp 1-234), Appendix I Reclamation Plan (pp 235-270), Appendix J Contingency Plan (pp 271-307), Appendix K Financial Assurance Plan (pp 308-353)), Exhibit R-9 (EIA (pp 1-155), EIA

notified the Permittee that it had determined that the Application was administratively complete. Exhibit R-19. Consistent with § 63205(6), a Notice of Public Meeting was published by the OGMD on December 16, 2015, at the Lake Township Office and in the Menominee County Journal. Exhibit R-20, Exhibit R-21. See MCL 324.63205(6). This Notice scheduled the Public Meeting for 6:00 p.m. on January 5, 2016, at Stephenson High School in Stephenson, Michigan.⁷ *Id.* The Notice also provided that interested persons could submit written comments to EGLE until 5:00 p.m. on February 2, 2016. *Id.* The OGMD received public comments at the public meeting and accepted written comments throughout the review process. Exhibit R-43 at p 1.

In order to review the MPA and supporting documentation, the OGMD created a mining team to conduct the technical evaluation. 8 Tr 1243-1244. It consisted of Joe Maki, who served as the mine project coordinator; Melanie Humphrey, who was the primary mine team coordinator; Charles Thomas, who reviewed the hydrology; Margie Ring, who evaluated the design of the synthetic liners; Tamara Lipsey, who examined the aquatic surface water effects of the project; Kristi Wilson, who is a wetlands specialist; Dusty Arsnoe, who reviewed wildlife impacts; Jennifer Johnson, who reviewed impacts to fisheries; Michael Depa, who appraised the air quality of the project; and Dr. Dean Anderson, who examined the archaeological assessments. 8 Tr 1258-1265, 10 Tr 1694. By a letter dated May 9, 2016, the mining team requested additional information from the Permittee on 197 items. Exhibit R-28. This request incorporated pertinent public comments that had been received by the agency.⁸ Exhibit R-43 at p 1. The request also incorporated the additional information needed from the members of the mining team.

Appendix A EIA Checklist (pp 156-158), EIA Appendix B Surficial Soil Sampling Supplement (pp 159-252), EIA Appendix C The Geology of the Back Forty Polymetallic VMS Deposit (pp 253-340)); Exhibit R-10 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 1 of 6) (pp 1-939)), Exhibit R-11 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 2 of 6) (pp 1-6189)), Exhibit R-12 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 3 of 6) (pp 1-1039)), Exhibit R-13 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 4 of 6) (pp 1-1035)), Exhibit R-14 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 5 of 6) (pp 1-496)), Exhibit R-15 (EIA Appendix D Hydrogeology and Geochemical Modeling Reports (Part 6 of 6) (pp 1-486)), Exhibit R-16 (EIA Appendix E Biological Resources (pp 1-3608)), Exhibit R-17 (EIA Appendix F Cultural Resources (pp 1-307), EIA Appendix G Memorandum on Back Forty Project – Air Quality, Meteorological and Climatic Data (pp 308-994)), Exhibit R-18 (EIA Appendix H Baseline Noise Impacts (pp 1-61), EIA Appendix I Memorandum on Back Forty Project – Air Deposition and Water Quality Impact Analysis (pp 62-110)).

⁷ The initial statement read by an EGLE representative at this public meeting is contained in Exhibit R-23.

⁸ Public comments received by the agency and its responses to such comments are contained in Exhibit R-53.

See, e.g., Exhibit R-72. The Permittee's 297-page response to the OGMD's request for additional information was sent in June of 2016 and is contained in Exhibit R-30.

Under Part 632, the OGMD was obligated to reach a decision on the MPA by March 15, 2016. Exhibit R-43 at p 2. See MCL 324.63205. However, the Permittee granted three extensions of the deadline upon which the OGMD was obligated to issue a decision. Exhibit R-43 at p 2. During this time, the mining team was instructed that if they had concluded their review and believed that a permit could be issued, the members were requested to draft appropriate permit conditions. 8 Tr 1274. The mining team did provide such permit conditions. See, e.g., Exhibit R-93.

The requested permit conditions were incorporated into a draft permit which was supplied to the Director of the OGMD. Exhibit R-41. Consistent with § 63205(7), the public was provided notice of the proposed decision on the MPA in the form attached as Exhibit R-57. 8 Tr 1278. See MCL 324.63205(7). On October 6, 2016, a public hearing was held on the proposed decision in Stephenson, Michigan. 8 Tr 1279, Exhibit R-45, Exhibit R-46. In addition to the public hearing, the public was provided an opportunity to provide written comment on the proposed decision from September 1, 2016, through November 3, 2016. Exhibit R-45, Exhibit R-46. The public comment was provided to the mining team for their consideration. 8 Tr 1281. The permit was issued on December 28, 2016. Exhibit R-52. The permit is 22 pages in length and contains both General and Special Permit Conditions. *Id.* The Special Permit Conditions include the following:

- Special Permit Conditions A(1) – A(6) address General Special Permit Conditions and include two provisions of import. The first provision, Special Permit Condition A(2), provides that in the event that any archeological materials are unearthed by mining activities, the Unanticipated Discovery Plan shall be implemented. The second provision, Special Permit Condition A(3), provides that if work must proceed near such discovery, care must be taken to avoid the area and that the activity will be monitored by a qualified archaeologist until the discovery is resolved. Exhibit R-52 at page numbered 6.
- Special Permit Conditions B(1) – (B)12 address Other Permits and Requirements and include the requirement for a Spill Prevention Control and

Countermeasures (SPCC) Plan, and a Pollution Incident Prevention Plan (PIPP). Exhibit R-52 at page numbered 7.

- Special Permit Conditions C(1) – C(4) address the coverage of the permit while Special Permit Conditions D(1) – D(5) address the surface facilities. Exhibit R-52 at page numbered 8.
- Special Permit Conditions E(1) – E(12) address Mining and Beneficiation, and include a provision requiring the Permittee to prepare a Cyanide Management Plan prior to the receipt of cyanide in the mining area. Exhibit R-52 at page numbered 9.
- Special Permit Conditions F(1) – F(9) address the Tailings and Waste Rock Management Facilities (TWRMF) and include Special Permit Condition F(1) which requires the TWRMF to be constructed with a leak detection system. Exhibit R-52 at pages numbers 10-11.
- Special Permit Conditions G(1) – G(4) address Ore/Concentrate Transportation. Exhibit R-52 at page numbered 11.
- Special Permit Conditions H(1) – H(7) address Water Management and Treatment. Exhibit R-52 at page numbered 11.
- Special Permit Conditions I(1) – I(4) address Waste and Hazardous Materials Management. Exhibit R-52 at pages numbered 11-12.
- Special Permit Conditions J(1) – J(8) address Soil Erosion and Sediment Control. Exhibit R-52 at pages numbered 12-13.
- Special Permit Conditions K(1) – K(26) address Environmental and Facility Monitoring. Among the environmental monitoring provisions are Special Permit Condition K(7) which requires a sampling of legal-sized predator fish to monitor for various heavy metals; Special Permit Condition K(9) which requires regional hydrologic monitoring to evaluate stream flow and quality as well as regional groundwater elevations; Special Permit Condition K(12) which requires the monitoring of flora, fauna, fish, wildlife habitats, and biodiversity during mining operations; Special Permit Condition K(17) which requires monthly inspections of the leak detection system; Special Permit Condition K(18) which requires post-closure monitoring to occur for 50

years after approval of reclamation; and Special Permit Condition K(22) which requires monitoring the performance and integrity of the cut-off wall. Exhibit R-52 at pages numbered 13-17.

- Special Permit Conditions L(1) – L(21) address Contingencies and include Special Permit Condition L(21) requiring the grouting of geologic structures in the pit that have the potential to have greater impact to groundwater and surface water levels than predicted in the EIA. Exhibit R-52 at pages numbered 17-19.
- Special Permit Conditions M(1) – M(4) address Groundwater and Surface Water Sampling Procedures. Exhibit R-52 at pages numbered 19-20.
- Special Permit Conditions N(1) – N(2) address Financial Assurance and include Special Permit Condition N(1) requiring Financial Assurance under the current conditions of the project in the amount of \$28,600,000 prior to construction and \$118,500,000 prior to commencement of operations. Exhibit R-52 at page numbered 20.
- Special Permit Conditions O(1) – O(17) address Reclamation and include Special Permit Condition O(3) which provides that backfilled waste rock shall be placed within the mine pit below the weathered bedrock zone on the pit wall, and Special Permit Condition O(11) requiring a multi-layer composite cover system to be constructed over the Closure TWRMF. Exhibit R-52 at page numbered 20-22.

III. The Proposed Project

A. Project Site Plan

The proposed project, known as the “Back Forty Project,” is situated on undeveloped land that is predominantly upland forest. Exhibit R-2 (MPA) at p 14.⁹ The project area consists of approximately 865 acres of private and state mineral lands. Exhibit R-2

⁹ Due to the size of the exhibits, hard copies of certain exhibits are not contained within the record. The following exhibits are only stored in portable document format (PDF) on a compact disk (CD): Exhibits R-2, R-3, R-4, R-5, R-6, R-7, R-9, R-10, R-11, R-12, R-13, R-14, R-15, R-16, R-17, R-18, R-30, and P-47. All references to exhibit page numbers are to the PDF page number of the electronic exhibit, not the page number at the bottom of the exhibit.

(MPA) at p 23. It is in Lake Township, Menominee County, Michigan, approximately 35 miles south-southeast of Iron Mountain and 12 miles west of Stephenson. Exhibit R-9 (EIA Appendix C) at p 265, Exhibit R-2 (Figure 1-1) at p 72. The Menominee River, which flows from the northeast to the southwest, forms its western boundary. Exhibit R-2 (Figure 1-1) at p 72. The portion of the River adjacent to the project site is known as Sixty Islands due to numerous islands located within the center of the River. Exhibit R-2 (Figure 5-3) at p 82. A group of lakes (Osborn Lake, Long Lake, Resort Lake, East Lake, Bass Lake, and Spring Lake), which are collectively known as the Shakey Lakes, are situated approximately a mile and a half south of the project site. Exhibit R-2 (Figure 1-1) at p 72; Exhibit R-146 at p 12. The Shakey River, which flows approximately northeast to southwest, is located roughly two miles to the east of the project site. Exhibit R-2 (Figure 1-1) at p 72. Mr. Boerner's property is immediately adjacent to the project site on the north. Exhibit R-2 (Figure 3-1) at p 76. At least one small creek runs roughly west to east on Mr. Boerner's property. See, e.g., Exhibit R-2 (Figure 3-1) at p 76.

The project site contains a volcanogenic massive sulfide (VMS) deposit which includes gold, silver, zinc, copper, and lead. Exhibit R-2 (MPA) at p 13, Exhibit R-2 (Figure 4-1) at p 79, Exhibit R-9 (EIA Appendix C) at p 263. Other than the VMS deposit, the geology of the area consists of Quaternary sediments at the surface, which are unconsolidated glacial and alluvial deposits, overlying a weathered Precambrian bedrock zone which overlies a fresh Precambrian bedrock zone.¹⁰ Exhibit R-9 (Figures 3-6 and 3-8) pp 119, 121. The Quaternary sediments and the weathered Precambrian bedrock have higher permeability or conductivity, *i.e.*, the ability of water to flow through the rock, while the fresh Precambrian bedrock is of low permeability or conductivity. Exhibit R-9 (Figure 3-8) at p 121, 16 Tr 2723-2724, 2730.

The proposed project calls for the metallic ores to be extracted by an open-pit mining method. Exhibit R-2 (MPA) at p 17. The proposed pit is roughly circular in shape at the surface, measures approximately 83 acres in size, and will have a maximum depth

¹⁰ The project site also includes a Cambrian sandstone which "pinches out" and is only present on the eastern edge of the proposed pit. Exhibit R-9 (Figures 3-6 and 3-8) at pp 119, 121.

of about 700 feet.¹¹ Exhibit R-2 (MPA) at pp 17, 24. The surface dimensions of the pit are approximately 2,500 feet by 2,100 feet. Exhibit R-2 (MPA) at p 24. At its closest point, the proposed pit is to be positioned within 150 feet of the Menominee River. 17 Tr 2932, Exhibit 2 (Figure 2-1) at p 73. The project contemplates that seven years will be needed to reach maximum depth (Life of Mine or LOM). Exhibit R-2 (MPA) at p 25.

The project includes the construction of a 1300-foot cut-off wall which is contemplated to serve a dual purpose: (1) to impede the flow of groundwater into the pit from the Menominee River or Quaternary sediments during mining operations, and (2) to restrict water movement from the pit toward the River after mine closure. Exhibit R-2 (MPA) at p 34. The wall is to be 3 feet thick and is to be positioned approximately 100 feet landward from the ordinary high-water mark (OHWM) of the Menominee River which is the 100-year, 24-hour flood level. Exhibit R-6 (Appendix D) at pp 333-334, Exhibit I-109 at p 7. It is to be placed below the surface and is to terminate at least 6 feet into the weathered Precambrian bedrock. Exhibit R-2 (MPA) at p 34, Exhibit I-109 at p 13. The cut-off wall will be constructed as a low-permeability barrier from a soil, cement and bentonite mix. Exhibit R-2 (MPA) at p 34, Exhibit R-6 (Appendix D) at p 332.

The project contemplates the cutting and removal of trees, and the removal of overburden and topsoil from several areas during initial site development. Exhibit R-2 (MPA) at pp 26, 45. The overburden and topsoil are to be stockpiled for future reclamation events. Exhibit R-2 (MPA) at p 26. An overburden/topsoil storage area is located immediately south of the pit. Exhibit R-2 (Figure 2-1) at p 73. Additional topsoil stockpiles are located immediately northeast and southwest of the pit, and south of the TWRMF, described *infra. Id.* The overburden/topsoil stockpiles will be seeded with a grass mixture to prevent erosion. Exhibit R-2 (MPA) at pp 26-27.

The project also contemplates that a soil processing area and equipment/vehicle staging area will be located immediately east of the pit. Exhibit R-2 (Figure 2-1) at p 73. This area will be used to temporarily store materials and equipment such as piping and vehicles. Exhibit R-2 (MPA) at p 40. South of this staging area and east of the two stockpile areas, the project contemplates the inclusion of two contact water basins

¹¹ The MPA references measurements in meters. For purposes of this Final Decision and Order, meters have been converted into feet by multiplying each meter by 3.28084.

(CWB). Exhibit R-2 (Figure 2-1) at p 73. The northern CWB is L-shaped while the southern CWB is somewhat rectangular. *Id.* The CWBs are to be geomembrane lined and “are designed to store contact water prior to mill reuse or treatment by the on-site wastewater treatment facility.” Exhibit R-2 (MPA) at p 28. “Contact water” is defined as storm water that has potential contact with reactive materials. Exhibit R-2 (MPA) at p 44. Also, the site plan calls for two non-contact water basins (NCWB) to be located northwest and south of the overburden/topsoil stockpile. Exhibit R-2 (Figure 5-10) at p 89. The NCWBs will manage storm water runoff from non-contact areas. Exhibit R-2 (MPA) at p 44. Runoff will be directed into the NCWBs by earthen ditches. *Id.* Exhibit R-2 (Figure 5-10) at p 89.

East of the northern CWB is a group of three proposed buildings: the fuel station, the truck shop, and a building for mining equipment storage. Exhibit R-2 (Figure 5-4) at p 83. Several proposed buildings will also be located south of the CWBs: the wastewater treatment plant (WWTP),¹² the sewage treatment plant, the administration building, the mine dry building (which contains storage lockers, showers, wash basins and toilets for workers), and a warehouse. Exhibit R-2 (Figure 5-4) at p 83, Exhibit R-2 (MPA) at p 41. North of the fuel station but south of the soil processing area and equipment/vehicle staging area, the project proposes an equipment wash area, which is an enclosed system. Exhibit R-2 (MPA) at p 42. At this facility, an automatic wheel wash will direct high pressure water on the wheels, underbody and chassis of vehicles to reduce tracking mine waste from the contact area. *Id.*

A snow storage area is proposed east of the soil processing area and equipment/vehicle staging area. Exhibit R-2 (Figure 5-4) at p 83. South of the snow storage area, the plan contemplates a concrete-lined ore blending area (OBA) for temporary storage of ore before it is processed. Exhibit R-2 (MPA) at p 28, Exhibit R-2 (Figure 5-4) at p 83. The OBA is approximately 39,000 square feet. Exhibit R-2 (MPA) at p 28. South of the

¹² Treated wastewater from the WWTP will be discharged into the Menominee River from a pipe located west of the pit. Exhibit R-2 (Figure 2-1) at p 73. The point source discharge from the wastewater treatment plant is subject to a National Pollutant Discharge Elimination System (NPDES) permit. Exhibit I-233. This permit was issued by the Water Resources Division (WRD) of EGLE on April 5, 2017. *Id.* This permit may not be collaterally attacked in this contested case. *People v Howard*, 212 Mich App 366, 369; 538 NW2d 44 (1995) (A collateral attack is a challenge made to a decision in any manner other than through a direct appeal). See MCL 324.3113(3) for the relevant procedures for challenges to this permit.

OBA is the proposed crushing building where the ore is crushed. Exhibit R-2 (Figure 5-4) at p 83, Exhibit R-2 (MPA) at p 18. South of the crushing building, the site plan calls for two sets of belt conveyors to move the crushed material to two partially covered stockpiles: the oxide ore stockpile (on the west) and the flotation ore stockpile (on the east). Exhibit R-2 (MPA) at p 17, Exhibit R-2 (Figure 5-4) at p 83. Two sets of belt conveyors will transfer the crushed material to the ore processing plant building, which is to be located south of the stockpiles and east of the southern CWB. *Id.*

Reagent storage silos are to be located on the exterior of the ore processing building on both the west and east sides. *Id.* The plan also includes a reagents building located south of the ore processing building. *Id.* Chemicals used in the beneficiation and wastewater treatment processes will be stored in the reagents building. Exhibit R-2 (MPA) at p 41. The site plan further calls for a first aid building and a laboratory building to be located south of the reagents building. Exhibit R-2 (Figure 5-4) at p 83.

The site plan provides that the main power substation is to be located east of the partially covered ore stockpiles. *Id.* South of this structure is the proposed flotation thickener plant and the oxide thickener plant buildings. *Id.* Under the plan, thickened oxide and flotation tailings will be pumped from these buildings via high-capacity pressure displacement pumps to either the Oxide TWRMF or the Flotation TWRMF. Exhibit R-2 (MPA) at p 39. The tailings slurry pipelines from the thickener plants to the TWRMFs are to be constructed out of high-density polyethylene (HDPE) pipe. *Id.* For maintenance of this pipeline and containment of any released tailings, the project contemplates the construction of lined dump ponds positioned along the pipeline route. Exhibit R-2 (MPA) at pp 39-40.

Finally, the project contemplates the construction of two TWRMFs east of the foregoing facilities. The Oxide TWRMF occupies a stand-up rectangular area of about 40 acres. Exhibit R-7 (Appendix H) at p 17. The Oxide TWRMF is located in the northeast corner of the project area immediately adjacent to Mr. Boerner's property. Exhibit R-2 (Figure 2-3) at p 75, Exhibit R-2 (Figure 3-1) at p 76. The Flotation TWRMF has a footprint of approximately 180 acres. Exhibit R-7 (Appendix H) at p 17. The project calls for the construction of the Flotation TWRMF in two phases. Exhibit R-7 (Appendix H) at p 19. The northern portion of the Flotation TWRMF—which is a lay-down rectangular area with

the southwest corner truncated in order to avoid impact to wetlands—is to be constructed in phase 1. Exhibit R-7 (Figure 4-7) at p 68. The phase 2 portion of the Flotation TWRMF, with proposed construction to occur in Mine Year (MY) 2, is essentially a stand-up rectangular area to the west with a lay-down rectangular area to the east. The western rectangle has the southeast corner truncated while the eastern rectangle has the southeastern corner truncated to avoid impact to wetlands. Exhibit R-2 (Figure 2-3) at p 75, Exhibit R-7 (Figure 4-7) at p 68. Both TWRMF facilities are proposed to contain a geomembrane liner along with a geosynthetic clay liner.¹³ Exhibit R-7 (Appendix H) at p 21.

B. Mining Operations

Mine employment is anticipated to reach as high as 500 individuals during construction. Exhibit R-2 (MPA) at p 25. During the LOM, full-time employment is anticipated to range from 208 employees during MY7 to a maximum of 250 employees during MY3 and MY4. *Id.* In the mine closure period, employment will be limited to around 30 employees. *Id.* It is contemplated that the mine will operate 350 calendar days per year with two crews working 12-hour shifts. Exhibit R-2 (MPA) at p 34.

As part of operations, the pit will be dewatered. It is anticipated that pit water will be derived from (a) precipitation and snow melt, (b) groundwater seepage from the Quaternary sediments, and (c) groundwater seepage from the weathered Precambrian bedrock. Exhibit R-2 (MPA) at p 33. Dewatering is to commence during pre-development activities. *Id.* Dewatering facilities are contemplated to consist of submersible pumps located in the pit floor sumps. *Id.* These pumps are to be supplemented by booster pumps positioned at different bench levels as the mine deepens. *Id.* Water collected in the pit sumps is to be pumped to the CWBs for storage prior to mill use or treatment in the WWTP. Exhibit R-2 (MPA) at p 34.

The ore is to be removed from the pit by conventional drilling and blasting. Exhibit R-2 (MPA) at p 17. Blasting is to occur every three to four days. Exhibit R-2 (MPA) at p 35. Blasting is to be accomplished by use of ammonium nitrate/fuel oil (ANFO). *Id.* at p

¹³ In addition, Special Permit Condition F(1) requires the construction of a leak detection liner system below the entire composite liner. Exhibit R-52 at p 11.

36. ANFO is to be handled by a certified blasting contractor but will not be manufactured or stored on site. *Id* at p 42. ANFO is to be placed in drill holes. Exhibit R-2 (MPA) at p 36, 24 Tr 3764. To reduce noise, each drill hole is to be sequentially discharged within milliseconds from a preceding blast. 24 Tr 3764-3765. The sound of each blast is comparable to the firing of a .22 caliber rifle. 24 Tr 3788. Each charge has the equivalent published decibel (dB) level of 145 dB. *Id*.

After rock is blasted, it will be excavated by a backhoe. Exhibit E-2 (MPA) at p 31. A ten-cubic-meter diesel hydraulic shovel will be used to load 91-ton haul trucks with ore for transportation to the OBA. *Id*. Waste rock,¹⁴ on the other hand, will be hauled to the TWRMFs.¹⁵ *Id*. In the OBA, ore will be placed on the concrete pad and segregated into separate oxide ore and flotation ore crusher feed stockpiles. *Id*. Exhibit R-7 (Appendix H) at p 35. Loaders will remove the ore from the stockpiles and place them into a hopper which feeds the crushing equipment. Exhibit R-7 (Appendix H) at p 35. A three-stage crushing circuit will reduce the ores to less than 9.5 millimeters (or 0.37 inches). Exhibit R-2 (MPA) at p 36. Belt conveyers will move the crushed ore to two partially covered stockpiles. Exhibit R-2 (MPA) at p 17, Exhibit R-2 (Figure 5-4) at p 83, Exhibit R-2 (Figure 5-5) at p 84. Belt conveyers at each stockpile will transfer the crushed material to the ore processing building for the beneficiation process. *Id*.

C. The Beneficiation Process

The oxide and flotation plants will both be located within the ore processing building. Exhibit R-2 (MPA) at p 36, Exhibit R-2 (Figure 5-4) at p 83. At the oxide plant, which is the western portion of the building, crushed oxide ore (gold and silver) will be discharged into a slurry that feeds a ball mill. Exhibit R-2 (MPA) at p 37. The ball mill will operate in a closed circuit with hydro-cyclone classifiers to further reduce the particle size

¹⁴ Approximately 54 million metric tons (tonnes) of waste rock will be generated during mining and will be hauled to and placed in the TWRMFs. Exhibit R-2 (MPA) at p 27. Note that a tonne is equal to 1,000 kilograms or approximately 2,204 pounds. It is anticipated that the waste rock will be comprised of 13 different lithologies. *Id* at p 30. Waste rock will be returned to the pit during mine closure. See Reclamation, *infra*.

¹⁵ Both the Oxide and Flotation TWRMFs will contain rectangular disposal cells surrounded by a waste rock exterior containment shell. Exhibit R-7 (Appendix H) at p 19. Each disposal cell will contain alternating lifts of tailings and waste rock. *Id*. A lift of waste rock will be approximately 6.6-13.1 feet thick, while a lift of tailings will be 13.1 feet thick. *Id* at p 20.

of the ore. *Id.* The hydro-cyclone overflow feeds a pre-leach thickener tank. *Id.* The pre-leach thickener underflow reports to the leach circuit consisting of 5 pre-leach condition tanks. *Id.* The pre-leach thickener overflow reports back to the ball mill circuit. *Id.* Total slurry residence time through the leach tanks is approximately 36 hours. *Id.*

Cyanide solution is added to the first 3 pre-leach tanks in order to maintain a one gram per liter concentration in the slurry.¹⁶ *Id.* The precious metal-laden cyanide solution, known as the pregnant solution, is separated from the slurry by a four-stage thickener and counter wash system. *Id.* A zinc dust precipitation process, known as the Merrill-Crowe process, is used to precipitate gold and silver from the pregnant solution. Exhibit R-2 (MPA) at pp 18, 37. The resulting precipitate is refined in a tilt-pour furnace to produce a gold-silver product called doré which is further refined off-site. *Id.* Tailings from this procedure will undergo a cyanide destruction process before being sent to a high-capacity thickener for dewatering. *Id.* The dewatered tailings are then pumped to the Oxide TWRMF for permanent storage. *Id.*

At the flotation plant, which is the eastern portion of the ore processing building, crushed flotation ore (copper and zinc)¹⁷ will be discharged into a slurry that feeds a ball mill. Exhibit R-2 (MPA) at pp 18, 38. The ball mill will operate in a closed circuit with hydro-cyclone classifiers to further reduce the particle size of the ore. *Id.* The primary copper flotation circuit consists of a rougher, scavenger, and cleaner flotation cell banks. *Id.* Rougher and scavenger concentrates will be reground and then sent to the cleaner flotation cell banks. *Id.* The reground copper concentrate is then cleaned in three stages of smaller flotation cell banks. *Id.*

Tailings from the primary copper flotation circuit are fed to the zinc flotation circuits, which also consist of rougher, scavenger, and cleaner flotation cell banks. *Id.* Rougher and scavenger concentrates will be reground and then sent to the cleaner flotation cell banks. *Id.* Concentrates of both copper and zinc will be dewatered with high capacity thickeners and filter presses and are then loaded into individual bulk bags for transport to smelters. *Id.* Tailings from this process are sent to a high-capacity thickener for dewatering.

¹⁶ The project includes a Cyanide Management Plan. A draft of the plan dated June of 2016 is contained within Exhibit R-30 at p 84.

¹⁷ Lead will be produced as a bulk concentrate and shipped off-site. 17 Tr 2845-2846.

tering. *Id.* The dewatered tailings are then pumped to the Flotation TWRMF for storage. *Id.*

D. Monitoring of Surface Operations

In preparation for the filing of the MPA, the Permittee installed groundwater monitoring wells. Exhibit R-6 (Appendix G) at p 467. The existing well network will be supplemented by the installation of compliance and leachate monitoring wells. *Id.* The wells to be installed downgradient of the TWRMFs and the CWBs are referred to as leachate monitoring wells. *Id.* Four such wells will be installed. See, e.g., Exhibit R-6 (Table 2-2) at p 485. Additional compliance monitoring wells will be installed within 150 feet of the facility limits, both upgradient and downgradient of the Oxide and Flotation TWRMFs, CWBs, the mine and mill facilities. Exhibit R-6 (Appendix G) at p 468. A total of eleven compliance wells will be installed, and three existing monitoring wells will be used as compliance wells. *Id.* Exhibit R-6 (Table 2-2) at p 485. The compliance wells will be used to discern the occurrence of potential contaminants in the groundwater such as arsenic, cadmium, copper, cyanide, lead, mercury, and selenium. *Id.* Exhibit R-6 (Table 2-1) at p 483. In addition, a network of wells will be monitored quarterly for groundwater elevation. Exhibit R-6 (Appendix G) at p 468, Exhibit R-6 (Table 2-2) at p 485.

In addition, operations water will be sampled on a quarterly basis by collecting samples from the mine pit, the Oxide and Flotation TWRMFs, and the CWBs. Exhibit R-6 (Appendix G) at p 471. Moreover, wetlands within the project area will be monitored for water quality and groundwater elevations. Exhibit R-6 (Appendix G) at p 472, Exhibit R-6 (Table 4-1) at p 486. Further, surface water will be monitored in order to discern any impact on streams and lakes in the proximity of the project area. Exhibit R-6 (Appendix G) at p 473, Exhibit R-6 (Table 5-1) at p 488.

Upon closure of the mine, groundwater and surface water quality and elevation will be monitored until MY30 or 23 years post-closure.¹⁸ Exhibit R-6 (Appendix G) at p 479.¹⁹

¹⁸ The permit increased this period to 50 years. See Exhibit R-52 (Special Permit Condition K(18)) at p 15.

¹⁹ In addition to groundwater monitoring, the Permittee obtained a Permit to Install under Part 55, Air Pollution Control, of the NREPA. MCL 324.5501, *et seq.* This permit was issued by the AQD of EGLE on December 28, 2016. This permit may not be collaterally challenged in this contested case. *People v Howard*, 212 Mich App 366, 369; 538 NW2d 44 (1995) (A collateral attack is a challenge made to a decision in any manner other than through a direct appeal). See MCL 324.5505(8) for the relevant procedures for challenges to this permit.

E. Reclamation

According to the MPA, “[r]eclamation will extend over the entire Project timeline from construction through closure.” Exhibit R-2 (MPA) at p 20. However, the primary reclamation activities will occur during MY8. *Id.* Exhibit R-7 (Appendix I) at p 243. At that time, waste rock will be removed from the flotation TWRMF and relocated to the open pit. Exhibit R-2 (MPA) at p 20, Exhibit R-7 (Appendix H) at p 36. Waste rock will be removed from the TWRMF in lifts, which will also contain a calculated amount of limestone to reduce acidic conditions.²⁰ 15 Tr 2655; 23 Tr 3733, Exhibit R-7 (Appendix H) at p 36. To prevent acid rock drainage (ARD) from flowing into the conductive rock formations, the waste rock stored within the pit will be placed below the weathered Precambrian bedrock zone. 23 Tr 3735, Exhibit R-7 (Appendix H) at p 36, Exhibit R-14 (EIA Appendix D) at p 26. The backfilled waste rock will first be covered with a layer of compacted low-permeability soil and then covered with non-ARD overburden. Exhibit R-7 (Appendix H) at p 36, Exhibit R-7 (Appendix I) at p 247. The pit will take approximately 1.5 – 3 years to backfill. Exhibit R-7 (Appendix H) at p 36; Exhibit R-7 (Appendix I) at p 247, 315.

After the pit is backfilled, it will be flooded with groundwater. Exhibit R-30 at pp 52-53, 15 Tr 2662. Flooding of the pit reduces acid generation from waste rock, the pit walls, and the pit floor. Exhibit R-30 at p 54. It is estimated that it will take between 20 to 22 years for the pit to naturally flood with groundwater. 17 Tr 2864, 2945; Exhibit R-9 (EIA) at p 28; Exhibit R-30 at p 52. The flooding of the pit can be accelerated by using water from fresh water supply wells, or by adding treated water from the WWTP, or by adding water from the Menominee River. Exhibit R-9 (EIA) at p 28; Exhibit R-30 at p 53, 301; 17 Tr 2946. Before closure, faults and fractures in the walls of the pit will be grouted to prevent groundwater from escaping. 23 Tr 3684-3685, 3700.²¹

The Oxide TWRMF and that portion of the Flotation TWRMF located south and west of the Oxide TWRMF (forming a reversed L-shape) will be utilized in the closure process. Exhibit R-7 (Figure 7-1) at p 85. Following backfilling of the pit, the flotation

²⁰ High calcium limestone is added to the back-filled pit in order to reduce acidic conditions and prevent acid rock drainage. Exhibit R-7 (Appendix H) at p 36.

²¹ Special Permit Condition L(21) provides that “[t]he permittee shall grout geologic structures encountered in the pit that are determined to have potential to have greater impact to groundwater and surface water levels than predicted in the EIA.” Exhibit R-52 at page numbered 19.

tailings and remaining waste rock in the Flotation TWRMF will be relocated to this Closure TWRMF. Exhibit R-7 (Appendix H) at p 36-37. The tailings and waste rock on the surface at closure will be covered with a composite cover system consisting of compacted soil, geomembrane, a geosynthetic clay liner, and rooting soils. Exhibit R-9 (EIA) at p 28, Exhibit R-7 (Figure 4-19) at p 80. Because storm water cannot penetrate the geomembrane, storm water will be directed into sedimentation basins located periodically around the Closure TWRMF. Exhibit R-7 (Appendix H) at p 38, Exhibit R-7 (Figure 7-1) at p 85.

For post-closure storage of contact water, the two CWBs will be required for a period of five years following closure of the Closure TWRMF. Exhibit R-7 (Appendix I) at p 247. In MY16, the CWBs will close, and the contact water will be drained and treated in the WWTP. *Id.* The geomembrane liners from the CWBs will be removed and disposed off-site. *Id.* The WWTP will continue to operate until MY16. Exhibit R-7 (Appendix I) at p 243.

In addition to the closure of the pit and the TWRMFs, the following reclamation activities will occur: buildings and structures will be removed, overburden and topsoil stockpiles will be used for site restoration, roads will be graded to provide a natural pre-development condition, and the site will be re-vegetated. Exhibit R-7 (Appendix I) at pp 248-250.

PROCEDURAL MATTERS

I. Motions to Stay

Subsequent to closing the record, Mr. Boerner filed a Motion for a 90-day stay of this proceeding. Menominee also filed a Motion to Stay. These filings relate to Motions previously filed by the Petitioners. Specifically, on August 7, 2017, the Petitioners filed independent Motions requesting this contested case be held in abeyance until EGLE issued a ruling on the Permittee's Part 303 application. These Motions were denied by an Order entered on November 20, 2017.

Apparently, in order to obtain a Part 303 permit, the Permittee was required to submit a site plan in its Part 303 application that differs from the site plan in this contested case. As a result, Mr. Boerner filed a second Motion on December 27, 2017. In such

Motion, he requested that this Tribunal require EGLE to issue an amended Part 632 permit so that the site plan in this case is consistent with the site plan in the Part 303 application. Mr. Boerner's Motion was denied by an Order entered on March 8, 2018.²²

Menominee filed a Motion for Reconsideration of Mr. Boerner's Motion for an amended permit on March 22, 2018. Menominee's Motion was denied by an Order entered on April 9, 2018. In response to the April 9, 2018, Order, Menominee filed a Motion for Stay of Proceedings in order to allow for an interlocutory appeal to circuit court challenging such rulings. Menominee's Motion to Stay, which was filed two weeks before the commencement of the contested case hearing, was denied by an Order entered on April 13, 2018.

On or about November 8, 2018, the Permittee filed an application to amend the site plan in its Part 632 permit. Mr. Boerner's Motion for a 90-day stay of this proceeding argues that a stay is necessary so that he can determine whether the information contained in the proposed amendment is relevant to this proceeding. In its Motion, Menominee argues that an amendment to the mining permit is not appropriate because a final order on the MPA has not yet been issued. Citing MCL 324.63207(6). Menominee thus argues that any amendment of the site plan must occur in this contested case. In Response, the OGMD argues that there is no legal support for this argument. The Permittee argues, *inter alia*, that there is no need to stay these proceedings because the Petitioners will have an opportunity to challenge, in a separate proceeding, the Permittee's right to an amended Part 632 permit.

It should be noted that the contested case hearing in this matter occurred over thirty (30) days taking testimony from 31 witnesses. The Transcript is in excess of 4,300 pages. The evidence adduced at the hearing includes 152 exhibits. A group of such exhibits which comprise the MPA (Exhibits R-2, R-3, R-4, R-5, R-6, R-7, R-9, R-10, R-11, R-12, R-13, R-14, R-15, R-16, R-17, and R-18) is a 40,000-page document. The Parties were thus afforded ample opportunity to present evidence in this proceeding, and further

²² In Mr. Boerner's Closing Argument, he urges the reverse of this Motion: that the MPA should be denied because it does not accurately represent the Permittee's site plan. Argument 1 of Mr. Boerner's Closing Argument at pp 7-12. In the event a permit is issued, the Permittee will be required to operate its project based on the site plan described in detail *supra*. Any revisions to such site plan must be approved by the OGMD in accordance with §63207(6)(b). MCL 324.63207(6)(b). For such reason, Argument 1 of Mr. Boerner's Closing Argument is without merit.

delay is unnecessary. Therefore, principles of judicial economy dictate against re-opening the record in this case. See R 792.10102(1) (“These procedural rules shall be construed to secure a fair, efficient, and impartial determination of the issues presented in contested cases consistent with due process.”)

Moreover, the Petitioners’ interest is protected under the current statutory scheme. As noted by Menominee, § 63207 provides for an amendment of existing permits under Part 632. In the event a permit is issued as a result of a Final Decision and Order in this case, any amendment of such permit must be accomplished pursuant to the strictures of such statute. That section provides “[i]f the department determines that the request is a significant change from the conditions of the approved mining permit, the department may submit the request for amendment to the same review process as provided for a new permit application....” MCL 324.63207(6)(b). Hence, a contested case hearing will be conducted provided that the department determines that the proposed amendment is “a significant change from the conditions of the approved mining permit....” *Id.* The record in such case would be limited to the requested amendment. For such reason, the interests of judicial economy and the prevention of delay compels a denial of the requested Motions. Accordingly, the Motions to Stay are **DENIED**.

II. Motion to Reject Revisions to Transcript

One of the witnesses called by the Permittee is Dr. Castro, a Brazilian with a pronounced accent. Due to his accent, he was afforded the opportunity to read his testimony and provide a signed errata to be filed in the contested case. 19 Tr 3246. Instead of filing a signed errata, the Permittee filed a redlined version of the transcript on September 28, 2018. Menominee filed a Motion to Reject the revisions to the transcript. The OGMD and the Permittee filed Responses to the Motion. In its Motion, Menominee notes that “[t]he proposed revisions exceed the scope of the Tribunal’s instructions to ensure that the record accurately reflected his testimony.” I agree. The errata was contemplated to allow Dr. Castro the opportunity to correct words that were erroneously transcribed, not to re-write his testimony. For such reason, Menominee’s Motion is **GRANTED**, such that the revised transcript is stricken and will have no force and effect in this contested case.

III. Failure to Support Arguments with Citations to the Record

In his Closing Argument, Mr. Boerner presented a Brief containing 39 arguments, many of which address the facts in this contested case. However, Mr. Boerner did not cite to the record in support of such facts. As a result, many of the facts asserted by Mr. Boerner contain innuendo and hyperbole. For example, Mr. Boerner states:

It is an undisputed fact that this type of ore (volcanic massive sulfide ore) when processed creates ACID MINE DRAINAGE also known as ACID ROCK DRAINAGE: a type of pollution that causes a great deal of environmental harm. Sulfide ores are acid generating and always create hazardous and toxic byproducts that will be generated long after a mine is closed. There are mines of this type that are documented to have continually polluted for over 2000-years....

See Argument 3 of Mr. Boerner's Closing Argument at p 20-21.²³ In such colloquy, Mr. Boerner does not cite to any evidence in the record. Rather, Mr. Boerner argues an "undisputed" fact that has no basis in the record. He further opines that such ores "always" create hazardous byproducts. The assertion that ARD "always" occurs, again, is not supported by citation to the record. Moreover, though Mr. Boerner asserts that documentation exists regarding 2000-year-old pollution, such documentation was not proffered as an exhibit in this case. He is thus improperly referencing facts that are not in evidence in this case. See MRE 1002.

It is not the responsibility of this Tribunal to find evidence within the record that supports the arguments asserted by Mr. Boerner. See *Mitcham v City of Detroit*, 355 Mich 182, 203; 94 NW2d 388 (1959). This Tribunal will address only those arguments supported by evidence of record. Therefore, the following factual-based assertions within his Closing Arguments that are not supported by recitations to the record are rejected: Arguments 3, 4, 5, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 33 and 37.

²³ All references to Mr. Boerner's Closing Argument herein will be to the resubmission of such document filed on November 19, 2018.

PART 632 – NONFERROUS METALLIC MINERAL MINING

I. The Regulatory Framework

Under Part 632, “[a] person shall not engage in the mining of nonferrous metallic minerals except as authorized in a mining permit issued by the department.” MCL 324.63205(1). Under this statutory provision, EGLE has exclusive jurisdiction over nonferrous mineral mining in the state of Michigan. Part 632 and its Administrative Rules contain complex and rigorous requirements. Specifically, Part 632 requires the applicant to provide a \$5,000.00 application fee; an environmental impact assessment; a mining, reclamation, and environmental protection plan; a contingency plan; and financial assurance. MCL 324.63205(2). Section 63205 also provides the type of information to be contained within such documents. *Id.* For example: the mining, reclamation and environmental protection plan must include (a) a description of materials, methods, and techniques that will be utilized; (b) information that demonstrates that all methods, materials, and techniques proposed to be utilized are capable of accomplishing their stated objectives; (c) plans and schedules for final reclamation; (d) a description of the ore, waste rock, overburden, peripheral rock, and tailings; and (e) provisions for the prevention, control and monitoring of acid-forming waste products. MCL 324.63205(2)(c). Upon review of such information, EGLE shall issue a permit if it determines that (1) the permit application meets the requirements of Part 632; and (2) the proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or public trust in those resources. MCL 324.63205(11). In the Legislative findings, Part 632 provides that nonferrous metallic mineral mining will provide many important economic benefits to the state but “shall occur only under conditions that assure that the environment, natural resources and public health and welfare are adequately protected.” MCL 324.63202(e).

II. Jurisdiction

Under Part 632, “[a] person shall not engage in mining of nonferrous metallic minerals except as authorized in a mining permit issued by the department.” MCL 324.63205(1). As noted *supra*, the Parties stipulated that the Department has jurisdiction, the proposed activity is regulated, and a permit is required. Scheduling Order entered on

December 18, 2017. As a result of these stipulations, I find, as a Matter of Fact, that the OGMD has jurisdiction over the mining operations contemplated in the MPA, and a permit is required for its operation.

Despite his stipulation as to the OGMD's jurisdiction, Mr. Boerner contends that it does not have jurisdiction over the beneficiation process. See Argument 2 of Mr. Boerner's Closing Argument at p 14. However, under Part 632, the application for a permit is to include "[a] mining, reclamation, and environmental protection plan for the proposed mining operation, including beneficiation operations..." MCL 324.63205(2)(c). Also, the Administrative Rules define "mining activity" as including "beneficiation." R 425.103(a)(iv). Therefore, I conclude as a Matter of Law that the OGMD also possesses jurisdiction over the beneficiation processes proposed by the Permittee.

III. Administrative Completeness

As to the standard stipulations in contested cases, the Petitioners were unwilling to stipulate that the MPA was administratively complete. Scheduling Order entered on December 18, 2017. Challenges to administrative completeness were contained within Menominee's Petition and within Mr. Boerner's Rebuttal to Closing Arguments. Menominee's Petition at p 4, Mr. Boerner's Rebuttal at p 2. Administrative completeness is one of the four predicates for a contested case. *Petition of CCMS Associates, Inc.*, 2000 WL 1597733, *7 (Mich.Dept.Nat.Res.). Part 632 provides that a mining permit application shall be deemed administratively complete within 14 days of its filing unless the department notifies the applicant within such 14-day period that the application is not administratively complete. MCL 324.63205 (4) & (5). An application is administratively complete under Part 632 if it "contains all of the documents and information required under this part and any rules promulgated under this part." MCL 324.63201(a). In other words, an application is considered administratively complete when the applicant has provided enough information to review the project under the applicable statutory criteria.

Section 63205 sets forth the requisite contents of a mining permit application as follows:

- (a) A \$5,000.00 application fee;
- (b) An EIA;

- (c) A mining, reclamation, and environmental protection plan for the proposed mining operation;
- (d) A contingency plan;
- (e) Financial assurance; and
- (f) A list of other state and federal permits that are anticipated or required for the project.

MCL 324.63205(2)(a)-(f). The following evidence relates to a determination of administrative completeness in this case:

- (a) **\$5,000.00 Application Fee.** There was no testimony offered as to the payment of the \$5,000.00 application fee by the Permittee. However, the record includes a letter dated November 26, 2015, wherein the OGMD notified the Permittee that it had determined that the Application was administratively complete. Exhibit R-19. The Supreme Court has held that evidence includes reasonable inferences that can be drawn from the facts. *Zytkewick v Ford Motor Co*, 340 Mich 309, 318; 65 NW2d 813 (1954). Because none of the Parties claim that the fee was unpaid, a reasonable inference from the November 26, 2015, letter is that the Permittee paid the \$5,000.00 application fee.
- (b) **EIA.** The EIA is contained within Exhibit R-9 (pp 1-340), Exhibit R-10 (pp 1-939), Exhibit R-11 (pp 1-6189), Exhibit R-12 (pp 1-1039), Exhibit R-13 (pp 1-1035), Exhibit R-14 (pp 1-496), Exhibit R-15 (pp 1-486), Exhibit R-16 (pp 1-3608), Exhibit R-17 (pp 1-994), and Exhibit R-18 (pp 1-110).
- (c) **Mining Plan.** The Mining Plan is contained within the MPA. Exhibit R-2 (pp 25-52). Various aspects of the Mining Plan are also addressed in the Appendices to the MPA, such as: Pit Slope Design (Appendix C), Cut-Off Wall Design (Appendix D), and Treatment and Containment Plan for Tailings and Waste Rock (Exhibit H). Exhibit R-6 (pp 1-329), Exhibit R-6 (pp 330-371), Exhibit R-7 (pp 1-234).
Reclamation Plan. A Reclamation Plan is addressed in ¶ 7 of the MPA and in Appendix H to the MPA. Exhibit R-2 (p 55), Exhibit R-7 (pp 1-234).

Environmental Protection Plan. The Administrative Rules provide the following with respect to the Environmental Protection Plan:

The mining, reclamation, and environmental protection plan required under R 201(1)(d) shall contain a plan for the proposed mining operations. The plan shall include information that demonstrates that all methods, materials, and techniques proposed to be utilized are capable of accomplishing their stated objectives in protecting the environment and public health....

R 425.203. Hence, the Administrative Rules aggregate the mining, reclamation, and environmental protection plan into a single "plan." This Rule further provides that the "plan" shall include:

- (i) "Measures to minimize impacts to the volumes and rates of recharge, flow, and discharge of groundwater and surface waters in the mining area...";
- (ii) "A monitoring plan for monitoring of groundwater and surface water quality, groundwater levels, and surface water stage and discharge rates...";
- (iii) "A treatment and containment plan that describes proposed measures to prevent contamination of groundwater and surface water from leaching of acidic water or dissolved metals";
- (iv) "If a threatened or endangered species may be impacted, a plan to protect the threatened or endangered species that conforms to the requirements of state and federal endangered species laws"; and
- (v) "Plans to monitor, prevent, minimize, and mitigate any adverse impacts of the proposed mining operation on flora, fauna, fish or wildlife habitats, and biodiversity."

R 425.203(f), (g), (h), (j) & (k). The following evidence included in the record relates to these five categories of the "plan."

- (i) The requisite information regarding groundwater and surface water was contained within ¶ 5.8 of the MPA, and within the

Hydrogeology Modeling Reports. See, e.g., Exhibit R-2 (MPA) at pp 49-51, Exhibit R-10 (EIA Appendix D-1 (Part 1 of 2) (pp 2-939)), Exhibit R-11 (EIA Appendix D-1 (Part 2 of 2) (pp 1-6189)), Exhibit R-13 (EIA Appendix D-3 (pp 571-1035)), Exhibit R-14 (EIA Appendix D-4 (pp 1-82)), Exhibit R-14 (EIA Appendix D-5 (pp 83-154)), Exhibit R-14 (EIA Appendix D-6 (pp 155-197)), Exhibit R-15 (EIA Appendix D-9 (pp 1-457)), Exhibit R-15 (EIA Appendix D-11 (pp 474-486)), and Exhibit R-17 (Attachment 5 to EIA Appendix G (pp 977-994)).

- (ii) The requisite information regarding monitoring of groundwater and surface water is contained within the Environmental Monitoring Plan. Exhibit R-6 (Appendix G (pp 460-505)).
- (iii) The requisite treatment and containment plan is contained within ¶ 6 of the MPA and within Appendix H to the MPA. Exhibit R-2 (MPA) at pp 53-54, and Exhibit R-7 (Appendix H (pp 1-234)).
- (iv) The requisite information regarding threatened or endangered species is contained within MPA ¶ 5.9 and various portions of the EIA. See, e.g., Exhibit R-2 (MPA) at p 51, Exhibit R-16 (Appendix E-3 (pp 3373-3472)), and Exhibit R-16 (EIA Appendix E-4 (pp 3473-3481)).
- (v) The requisite information regarding impacts upon flora, fauna, fish or wildlife habitats, and biodiversity was contained within MPA ¶ 5.10, the Environmental Monitoring Plan, and in various portions of the EIA. See, e.g., Exhibit R-2 (MPA) at p 52, Exhibit R-6 (Appendix G (pp 460-505)), Exhibit R-16 (Appendix E-1 (pp 2-3325)), Exhibit R-16 (EIA Appendix E-2 (pp 3326-3372)), Exhibit R-16 (Appendix E-3 (pp 3373-3472)), Exhibit R-16 (EIA Appendix E-4 (pp 3473-3481)), and Exhibit R-16 (EIA Appendix E-5 (pp 3482-3608)).

- (d) **Contingency Plan**. The Contingency Plan is addressed in ¶ 9 of the MPA and is contained within Appendix J to the MPA. Exhibit R-2 (MPA) at p 57, Exhibit R-7 (Appendix J (pp 271-307)).
- (e) **Financial Assurance**. The Financial Assurance Plan is addressed in ¶ 10 of the MPA and is contained in Appendix K to the MPA. Exhibit R-2 (MPA) at p 58, Exhibit R-7 (Appendix K (pp 308-353)).
- (f) **List of Permits**. A list of other permits required for the project is contained within ¶ 1.3 of the MPA. Exhibit R-2 (MPA) at pp 15-16.

Based on the foregoing evidence contained within the record, I find, as a Matter of Fact, that the MPA was administratively complete in compliance with § 63201(a). MCL 324.63201(a).

Such a finding does not end the inquiry, however. As noted *supra*, Part 632 requires that before EGLE can issue a permit, it must determine that the MPA meets the requirements of Part 632. MCL 324.63205(11)(a). Administrative completeness relates to a determination that the applicant has provided enough information to review the project under the applicable statutory criteria. The analysis under §63205(11)(a), however, requires more of a substantive review of the information submitted by the applicant. Such a review will be conducted *infra*.

IV. Whether the MPA Meets the Requirements of Part 632

As noted *supra*, Part 632 contains two conditions for the issuance of a permit: (1) that the permit application meets the requirements of Part 632; and (2) that the proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or public trust in those resources. MCL 324.63205(11). In its Closing Brief, Menominee focuses on the following issues related to the first condition: (1) that the EIA failed to assess cumulative impacts, (2) that the Permittee failed to assess impacts to water resources, (3) that the financial assurance requirements are insufficient, and (4) that the contingency plan is insufficient. See Menominee's Brief at pp 12-95. Menominee also challenges the sufficiency of the Permittee's analysis of cultural, historical or archaeological resources. Each of these contentions will be addressed *infra*.

A. Cultural, Historical or Archaeological Resources

Menominee contends the EIA fails to provide enough information “to allow for an analysis of the project’s potential cumulative effect on the cultural, historical or archaeological resources within the project site and affected area.” Menominee’s Petition at p 8. The required contents of the EIA are set forth within Rule 202. R 425.202. Therein, for each condition or feature identified, the Rule provides that the applicant must, *inter alia*, (a) describe the feature as it currently exists within the mining area; (b) identify the proposed mining activities that may impact the feature; (c) provide an analysis of the potential impacts of the proposed mining activities on the feature; and (d) provide reference to the measures to be taken, if any, to reduce or mitigate the potential impacts upon the feature. R 425.202(1)(a)(i) – (iv). Among the features that must be described in the EIA are “cultural, historical or archaeological resources.” R 425.202(2)(ee). Before addressing the arguments raised by Menominee, it is helpful to review the record in this case for an understanding of the cultural resources which Menominee seeks to protect.

1. A Description of the Features

The cultural resources that are involved in this case are garden ridges²⁴ and burial mounds.²⁵ See generally 6 Tr 955-1081. These two features are located along the Menominee River in the Sixty Islands area in an archaeological site identified as 20ME61. 6 Tr 962, 987. These features were likely created prior to European incursion into the upper Great Lakes area. 6 Tr 1006. The southern boundary of 20ME61 has been a contested issue in this case. See Exhibit P-15; Exhibit R-9 at pp 149, 151, 152; Exhibit I-242 at p 66. It should be noted that 20ME61 is not listed as a national historic landmark, is not listed on the National Register of Historic Places (NRHP) or the state register of historic sites and is not recognized on a locally established historic district. R 425.102(1)(g), 6 Tr 1074, 13 Tr 2333-2334. Finally, during her rebuttal testimony,

²⁴ A garden ridge is a combination of ridge and furrow upon which the Menominee people grew crops, possibly to extend the growing season. 6 Tr 994, 1001, 1007, 1018; 7 Tr 1161. Garden ridges are difficult features to recognize upon the landscape but are easier to see in the winter due to snow-cover. 6 Tr 980.

²⁵ Many burial mounds have been potted, meaning a non-archaeologist has dug into the top of the mound to extract buried items. 6 Tr 990.

Dr. Buckmaster testified that she believes there may also be storage pits located further upland from the garden ridges, although she has neither looked for nor found any at the project site. 30 Tr 4318-4319.

2. Distinction Between Listed or Eligible for Listing

On August 7, 2017, the Permittee filed a Motion for Partial Summary Disposition. It sought summary disposition on Menominee's claims that the EIA was insufficient in its analysis of cultural, historical or archaeological resources. The Permittee's Motion was granted, in part, by an Order entered on November 20, 2017. The Order relied upon the definition of "cultural, historical or archaeological resources" set forth in Rule 102(1)(g), which requires such features to be listed as a national historic landmark, in the NRHP, in the state register of historic sites, or to be recognized on a locally established historic district. R 425.102(1)(g). The Order held that the definition of "cultural, historic, or archaeological resource" in Rule 102(1)(g) is unambiguous and that the Supreme Court has expressly held that when the language is unambiguous, no judicial construction is required or permitted. *People v Stone*, 463 Mich 558, 562; 621 NW2d 702 (2001). Because Rule 102 expressly provides that only listed or recognized features can be considered a cultural, historical, or archaeological resource, summary disposition was granted in favor of the Permittee.

As a result of the Order entered on November 20, 2017, the Permittee filed a Motion in Limine, seeking to preclude the testimony of five of Menominee's witnesses (Mr. Cox, Dr. Overstreet, Dr. Buckmaster, Mr. Grignon, and Mr. Teller). 1 Tr at 105. Oral argument was offered on the Permittee's Motion on the first day of hearing. 1 Tr 1, *et seq.* Menominee argued that it was entitled to present evidence related to those features that are "eligible" to be listed under the state and federal statutes enumerated in Rule 102.²⁶ R 425.102(1)(g); 1 Tr 113. On April 27, 2018, the undersigned orally ruled that evidence of eligible archaeological sites was not admissible in this contested case. 5 Tr pp 865-867.

²⁶ In response to the Permittee's Motion in Limine, Menominee also contended that unlisted archaeological sites are features that are admissible in evidence under portions of the EIA describing topography, soil series, or historic land use trends. R 425.202(2)(a), (2)(b), & (2)(x). See *infra*.

In its Closing Brief, Menominee once again contends that the distinction between listed and eligible for listing is irrelevant. Menominee suggests that “[a]ll sites eligible and potentially eligible for listing on the NRHP within the proposed project boundary must be identified and protected from destruction.” Menominee’s Closing Brief at p 44. Menominee’s assertion will be considered a request for reconsideration of the April 27, 2018 ruling.²⁷

The confusion regarding the dichotomy between listed and eligible for listing began with a memorandum concerning the Back Forty Project prepared by the State Archaeologist. In Exhibit P-174, Dr. Anderson stated:

Site 20ME61, the garden bed site, is considered eligible for listing on the National Register of Historic Places (NRHP). The other five sites (20ME3, 20ME4, 20ME10, 20ME17 and 20ME23) may be eligible, but have not been evaluated for NRHP eligibility.

* * *

Based on the archaeological survey work completed for the project, there are 18 archaeological sites within the project area that may be eligible for the NRHP. Determining eligibility for these sites would require additional field investigation of the site to determine whether they hold sufficient research potential to make them eligible for the NRHP. Conducting those investigations is one option. Any of the sites that proved to not hold sufficient research potential would be considered not eligible. Sites judged to be not eligible would not have to be avoided nor would they warrant any further consideration.

Exhibit P-174 at pp 2-3. In its Closing Brief, Menominee argues that, under the NRHP, eligible and listed sites are afforded the same level of protection. Menominee’s Brief at 44, citing Dr. Overstreet’s testimony at 28 Tr 4162-4163.

However, Ms. Payette, a field archaeologist, explained the difference between eligible for listing and listing. She explained that there are three categories of archaeological sites. First, a site could be formally determined to be eligible, which is a site examined by the Keeper of the Register (also known as the Keeper of the NRHP). Second, the relevant parties (such as the applicant and consulting parties) may informally

²⁷ Requests for reconsideration are governed by Rule 135. R 792.10135. That Rule provides that a request for reconsideration must be filed within 14 days after the issuance of the order upon which reconsideration is sought. R 792.10135(3). While its request for reconsideration is not timely, the issues raised by Menominee will nevertheless be addressed herein.

agree that the site is eligible for listing which avoids the more formal process of determining eligibility. Third, the site is formally listed by the Keeper of the Register. 27 Tr 4051-4052.

The legal effect of listing an archaeological site under the National Historic Preservation Act of 1966 (NHPA), as set forth in the Code of Federal Regulations, is consistent with the testimony of Ms. Payette. 16 USC § 470 *et seq.*; 54 USC §§ 302101-302108; 36 CFR § 60.1, *et seq.* Specifically, § 60.2 provides that “[t]he National Register is an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment.” 36 CFR § 60.2. To be listed, an “eligible” site must be nominated for listing. 36 CFR § 60.4. See 36 CFR § 36.3 for a definition of “determination of eligibility.” Nominations may be presented by the State Historic Preservation Officer, federal agencies, or any individual may request the State Historic Preservation Officer or the Federal Preservation Officer to submit a nomination. 36 CFR §§ 60.6, 60.9, & 60.11.

The facts in this case indicate that 20ME61 was discovered by Dr. Buckmaster almost 50 years ago. 6 Tr 957-958. In addition to her dissertation, Dr. Buckmaster published at least one paper 20 years ago regarding 20ME61. 6 Tr 959. Although Dr. Buckmaster worked with this archaeological site for almost 50 years, it has never been listed on the NRHP. Even though the registry is intended to protect listed sites from destruction or impairment, 36 CFR § 60.2, no testimony was proffered by any party that they attempted to nominate this site for registration on the NRHP.²⁸

Rule 102 unambiguously defines “cultural, historical or archaeological resource” as a resource that is (i) “listed” as a national historic landmark, (ii) “listed” on the NRHP, (iii) “listed” on the state register of historic sites, or (iv) “recognized” on a locally established historic district. R 425.102(1)(g). Therefore, I conclude, as a Matter of Law, that mining applicants are required to include information regarding cultural, historical or archaeological resources within an EIA when such features are either listed or recognized

²⁸ The fact that 20ME61 is not listed on the NRHP is significant because Dr. Overstreet testified that the burial mounds located on the Chalk Hill Girl Scout Camp on the Wisconsin side of the Menominee River are, in fact, listed on the NRHP. 7 Tr 1162-1163.

under one of the four enumerated state and federal statutes. Because 20ME61 was not listed or recognized in accordance with such statutes, I find, as a Matter of Fact, that 20ME61 is not a “cultural, historical or archaeological resource” within the definition of Rule 102(1)(g). R 425.102(1)(g).

3. Analysis of Unlisted Archaeological Sites in the EIA

The next question that must be addressed is whether surveys of unlisted archaeological sites, such as 20ME61, must be described within the EIA. Menominee contends that known but unlisted archaeological sites are features that must be described under either Rule 202(2)(a) concerning topography, Rule 202(2)(b) concerning soil series, or Rule 202(2)(x) concerning historic land use trends. R 425.202(2)(a), (2)(b), & (2)(x). In response, both the OGMD and the Permittee argue that only listed archaeological sites are required to be described under Rule 202(2)(ee), and that known but unlisted archaeological sites, such as 20ME61, cannot be identified as topography, soil series, or historic land use trends. See OGMD’s Response to Petitioner’s Closing Briefs at Arguments I(A)(1) and I(A)(4), Permittee’s Response to Petitioners’ Closing Arguments at Argument II(A). In answering this question, it is important to review the prior decisions under Part 632.

To date, there have been four (4) permits issued under Part 632, including the permit in this case. 8 Tr 1242. Prior to the instant case, only one of such permits has been reviewed by the courts. Specifically, a contested case was held in *Petition of Keweenaw Bay Indian Community*, 2010 WL 276664 (Mich.Dept.Nat.Res.) (cited as *Keweenaw Bay*). The Final Determination and Order in *Keweenaw Bay* held that the purpose of Rule 202 is “to provide the agency and public with notice of potential impacts by the proposed mine.” 2010 WL 276664 at *4. That decision was upheld on appeal to the Circuit Court in *National Wildlife Fed’n v Department of Env’tl Quality*, Case No. 11-123-AA (Ingham Co Cir Court Nov 21, 2011).²⁹ The decision of the Circuit Court was also affirmed by the Court of Appeals in *National Wildlife Fed’n v Department of Env’tl Quality (No. 1)*, 306 Mich App 336; 856 NW2d 252 (2014). Of import, the Court of Appeals held

²⁹ The Slip Opinion was attached as Exhibit 2 to the Permittee’s Brief in Support of Partial Summary Disposition against Menominee.

that an EIA must contain a description of those features of which the mining applicant knew or should have known. 306 Mich App at 358-359. In this case, the Permittee knew or should have known of the existence of 20ME61.

Specifically, Dr. Anderson testified that the State of Michigan maintains an archaeological site file for each recorded site in the state. 13 Tr 2336. The sites are identified by a trinomial number. 13 Tr 2335. With respect to 20ME61, the first number, 20, identifies Michigan; the two-letter designation, ME, signifies Menominee County; and the final number, 61, identifies that it is the sixty-first archaeological site identified in Menominee County. *Id.* The State of Michigan's archaeological site files include reports, documents and data that relate to the site. 13 Tr 2336. The information contained within the archaeological site files are provided to the state by professional archaeologists; state employees, such as employees of the Department of Natural Resources (DNR); and private citizens. 13 Tr 2337. Based upon the archaeological site file, the Permittee had constructive knowledge of the existence of 20ME61. Because the purpose of the EIA is to provide both the agency and the public with notice of potential impacts of proposed mining operations upon known features, sound logic suggests that information regarding the potential impacts of the mining operation on 20ME61 should reasonably be contained within the EIA.

Additional grounds for inclusion of such information within the EIA exist. Under Part 761, archaeological surveys may be requested by the State Archaeologist. Specifically, § 76102(1) provides:

The state reserves to itself the exclusive right and privilege ... of exploring, surveying, excavating, and regulating through its authorized officers, agents, and employees, all aboriginal records and other antiquities, including mounds, earthworks, forts, burial and village sites, mines or other relics, and abandoned property of historical or recreational value found upon or within any of the lands owned by or under control of the state.

MCL 324.76102(1). Because the state reserves the exclusive right of exploration and excavation of antiquities upon state of Michigan lands, § 76105(1) provides that a permit must be obtained from the department before such activities may be undertaken. MCL 324.76105(1).

For example, in 2009, the Permittee conducted preliminary geotechnical soil borings and exploration drilling within the project area. Exhibit I-242 at pp 279-280. To determine if a Part 761 permit was required, the Permittee performed an archaeological survey. The State Archaeologist noted that the survey “was designed to determine whether such ... activities conducted as part of the Aquila Back Forty project would affect archaeological resources present on state land.” *Id* at p 279. In fact, during his testimony, Dr. Anderson was asked to describe his role as State Archaeologist when reviewing applications for drilling or exploration under the NREPA, including applications under Part 632. He testified that when a project like the Back Forty Project affects an area with “archaeological sensitivity,” he would recommend an archaeological survey be conducted within the project area. 13 Tr 2331-2332.

It is unclear from the record whether the archaeological survey performed by the Permittee was conducted at the behest of the State Archaeologist. Nevertheless, the project area consists of approximately 865 acres of private and state mineral lands. Exhibit R-2 (MPA) at p 23. In fact, the surface location of the pit is, at least in part, on state of Michigan lands. Exhibit R-2 (Figure 3-1) at p 76. Because the pit is in an area with “archaeological sensitivity” due to the existence of 20ME61, it is likely that such a request was made by the State Archaeologist. Nevertheless, the State Archaeologist requested a survey in 2009, and the results of such survey should be contained within the EIA. Therefore, I conclude, as a Matter of Law, that the EIA must analyze and reference, under the strictures of Rule 202(1)(a)(i) – (v), the potential impacts to those unlisted archaeological sites within the project area of which the mining applicant knew or should have known. R 425.202(1)(a)(i) – (v); *National Wildlife Fed’n (No. 1)*, 306 Mich App at 358-359.

The next question is where such information should be included within the EIA. Because unlisted archaeological features are not, as a matter of law, “cultural, archaeological, or historical” features, R 425.102(1)(g), the OGMD and the Permittee argue that such features should not be included under such category in the EIA. R 425.202(2)(ee). In arguing the admissibility of such evidence at the hearing, Menominee suggested that unlisted archaeological features should be described under those sections of the EIA addressing topography, soil series, or historic land use trends. R 425.202(2)(a), (2)(b), &

(2)(x). Because known but unlisted archaeological sites do not entirely fit within the categories of topography, soil series, or historical land use trends, it makes the most sense to include such information under the “cultural, archaeological, or historical resource” category of the EIA. See, e.g., 8 Tr 1351. That portion of the EIA could merely contain two sections addressing “listed” features and “unlisted” features. Therefore, I conclude, as a Matter of Law, that descriptions of known but unlisted archaeological sites should be described under Rule 202(2)(ee). R 425.202(2)(ee).

4. Protection of Archaeological Sites from Impairment

Menominee next suggests that the unlisted archaeological sites should be protected from impairment during mining operations. To address this argument, a closer review of Rule 202 is warranted. That Rule requires an applicant to provide an analysis of the potential impacts to all identified features. R 425.202(1)(a)(iii). The Rule also requires the applicant to provide the following:

A reference to the measures proposed to be taken under the mining, reclamation, and environmental protection plan to reduce or mitigate the potential impacts, and the predicted effects of those measures. If the measures are not required under part 632 of the act, then the environmental impact assessment shall identify other statutes or regulations, if any, under which the measures are required.

R 425.202(1)(a)(iv). In this provision, EGLE acknowledges that impacts to certain features described within the EIA are not subject to mitigation measures. This is because “[t]he purpose of Part 632, which R 425.202 was promulgated to implement, is to assure that the environment, natural resources, and public health and welfare are protected.” *National Wildlife Fed’n*, slip opinion at pp 90-91. As a result, Rule 202 requires the applicant to identify “other statutes or regulations, if any,” which may require mitigation of the impacts of mining operations. R 425.202(1)(a)(iv). One such “other statute” is the NRHP referenced *supra*. Therefore, implicit in this Rule is the acknowledgement that impacts to some of the features identified in Rule 202(2) need not be mitigated. In fact, in *Keweenaw Bay*, the decision provided that “measures to reduce or mitigate impacts to certain features listed in Rule 202(2)(p) are outside of the regulatory framework of Part 632.”

2010 WL 276664 at *4. Rather, the purpose of Rule 202 is “to provide the agency and public with notice of potential impacts by the proposed mine.” *Id.*

Hence, I conclude, as a Matter of Law, that the EIA is intended to provide the public with notice of the proposed mining operations. *Keweenaw Bay*, 2010 WL 276664 at *4. I further conclude, as a Matter of Law, that the EIA is intended to provide the public with notice of the intended measures to be taken to mitigate effects of the mining operation upon natural resources. R 425.202(1)(a)(iv). I also conclude, as a Matter of Law, that the EIA is intended to provide the public with notice as to those features which may be entitled to protection in the court system under other statutory schemes such as the NHPA. *Id.*

Notwithstanding the foregoing, Menominee contends that Part 761 of the NREPA provides a substantive basis for protection of unlisted cultural, historical or archaeological resources. While Part 761 stipulates that “a person shall not ... destroy abandoned property which is in, on, under, or over the bottomlands of the Great Lakes,” no similar language is contained within Part 761 with respect to antiquities found upon state of Michigan lands. MCL 324.76107(1). Thus, contrary to Menominee’s contention, Part 761 does not expressly provide that antiquities cannot be impaired when conducting nonferrous metallic mineral mining operations under Part 632. This Tribunal cannot graft onto Part 761 a requirement that does not exist. See *York v Detroit*, 438 Mich 744; 475 NW2d 346 (1991) (“an administrative agency may not ... enlarge its authority or exceed the powers given to it by the statute”). Rather, Part 761 provides that a permit must be obtained prior to conducting exploration and excavation of antiquities upon state of Michigan lands. MCL 324.76105(1). Therefore, I conclude, as a Matter of Law, that Part 761 requires a mining applicant to obtain a permit before conducting mining operations under Part 632 on state of Michigan lands when antiquities may be impacted by such operations.

Finally, it should be noted that cultural resources located within the project area are, in fact, being voluntarily protected by the Permittee. During its phase one and phase two archaeological surveys, the Permittee identified those sites which are cultural in origin. See Exhibit R-9 (EIA) at p 152. The Permittee has elected to refrain from disturbing such sites when it grades the project area or otherwise constructs its facilities

at the project site. 17 Tr 2934. In fact, the Permittee has placed a 30-meter (or 98-foot) buffer around each of these identified cultural sites to prevent them from possible degradation. 27 Tr 4074, Exhibit R-9 (EIA) at p 152, Exhibit I-242 at p 240. In addition, the project includes an Unanticipated Discovery Plan which provides for the protection of cultural resources that are discovered during groundwork. Exhibit R-30 at pp 277-281, Exhibit I-242 at pp 6-10. Therefore, I find, as a Matter of Fact, that cultural resources located within the project area will be protected from impact from mining operations.

Nevertheless, Menominee challenges the Permittee's determination with respect to four identified features. During the Permittee's phase one archaeological survey work, it identified four features as potential archaeological sites. 27 Tr 4069-4070. A phase one archaeological survey is to determine if any feature could potentially be a cultural resource. 27 Tr 4069. These four features were assigned trinomial numbers 20ME112, 20ME113, 20ME114, and 20ME115. 27 Tr 4069-4070, Exhibit R-17 at p 62. A phase two evaluation of these features was later performed. 27 Tr 4071. The phase two evaluation employed either ground penetrating radar or archaeological excavation. 27 Tr 4072-4073. Specifically, 20ME113 and 20ME115 were identified as potential mounds and were subjected to ground penetrating radar, while 20ME112 and 20ME114 were identified as potential garden ridges and were subjected to excavation. 27 Tr 4072-4073, 27 Tr 4120-4121. Ground penetrating radar is used for potential mounds because invasive shovel testing is inappropriate with respect to potential burial mounds. 27 Tr 4072. As a result of phase two examinations, the Permittee determined that these four features are not cultural resources, *i.e.*, they are not eligible to be listed on the NRHP. 27 Tr 4120-4121.

However, Menominee challenges the Permittee's determination that these four features are not cultural resources. Nevertheless, this Tribunal does not have jurisdiction to determine whether these four features are cultural in origin. A basic tenet of administrative law provides that an agency has only those powers provided to it by statute. *York, supra*; *Coffman v State Board of Examiners in Optometry*, 331 Mich 582; 50 NW2d 322 (1951). All such jurisdiction must be grounded in either a statute or administrative rule because for an administrative agency "doubtful power does not exist." *In re Quality Service Standard*, 204 Mich App 607, 611; 516 NW2d 142 (1994). Absent that lawful authority to perform its function, this Tribunal lacks subject matter jurisdiction and "any

action with respect to such a cause, other than to dismiss it, is absolutely void." *Fox v Board of Regents of the University of Michigan*, 375 Mich 238, 242; 134 NW2d 146 (1965).

This proceeding "is an extension of the initial application process for the purpose of arriving at a single final agency decision on the application...." *National Wildlife Fed'n v Department of Environmental Quality (No. 2)*, 306 Mich App 369, 379; 856 NW2d 394 (2014). The purpose of this proceeding is not to determine whether certain features are cultural in origin. Such a determination is akin to a property line dispute, which is beyond the scope of this Tribunal's jurisdiction. *York, supra*. Should Menominee disagree with the Permittee's determination that 20ME112, 20ME113, 20ME114, and 20ME115 are not cultural in origin, such a challenge must be brought in circuit court and not before this Tribunal.

5. Adequacy of the EIA

Menominee also contends that the EIA is deficient in numerous ways related to cultural, historical or archaeological resources. The EIA's analysis of cultural resources is contained within Appendix F to the EIA, which is a 307-page document. Exhibit R-17 (Appendix F) at pp 1-307. In addition, Exhibit I-242 is a 548-page document regarding the Permittee's investigations of cultural resources at the protect site. Such Exhibits and the testimony of witnesses at the hearing will be referenced in making the determination of the sufficiency of the EIA regarding cultural resources.

a. The Southern Boundary of 20ME61

Menominee first challenges the areal extent of 20ME61 referenced in the documentation. Specifically, Menominee proffered into evidence the map of 20ME61 with boundaries consistent with those on file with the State Archaeologist. Exhibit P-15, 7 Tr 1207, 13 Tr 2351. When comparing Exhibit P-15 to the maps proffered by the Permittee, the southern boundary espoused by the Permittee terminates at the border of the project area. Exhibit R-9 (Figures 3-36, 3-38, and 3-39) at pp 149, 151, 152; Exhibit I-242 at p

66. Menominee contends that the EIA is insufficient, because its analysis does not accurately reflect the southern boundary of 20ME61.

However, Dr. Anderson testified that he was comfortable with the Permittee's identification of archaeological sites across the project area. 13 Tr 2350. While it may appear that the Permittee arbitrarily terminated 20ME61 at the project's border, it has nevertheless identified additional archaeological sites south of the southern border within the project area. Specifically, the Permittee identified 20ME99, 20ME100, 20ME101, 20ME102, 20ME103, 20ME105, 20ME108, 20ME109, 20ME110 and 20ME111. See Exhibit R-9 (Figure 3-39) at p 152. Each of these archaeological sites are located within the putative boundary of 20ME61 that was contained on Exhibit P-15. Moreover, Menominee never identified what, if anything, was missed by the Permittee in its examination of the southern boundary of 20ME61. Rather, Dr. Buckmaster admitted that, "while I know where the northern end of the site is, the southern end remains a little difficult." 30 Tr 4297-4298. This is because she was denied permission to enter on the private property at the southern border. 30 Tr 4297. She also noted that some of the property owners at the southern border had leveled their garden beds because they didn't want ridges in their yards. 30 Tr 4299. Because Menominee has not identified any archaeological site that was left out of the EIA, I find, as a Matter of Fact, that the Permittee's EIA is sufficient with respect to its analysis and description of the southern border of 20ME61.

b. The Sensitivity Model

It must be recalled that the project area consists of approximately 865 acres. Exhibit R-2 (MPA) at p 23. In order to analyze such a large area, the Permittee used a sensitivity model which anticipated where archaeological sites would and would not be found. 26 Tr 3983. Employing this model, the Permittee focused on areas with higher probability of locating an archeological site. 27 Tr 4064. Under the model, the Permittee determined that any area within roughly 1,600 feet of the Menominee River and any area within approximately 98 feet of a trail or historic road have higher sensitivity. 27 Tr 4065; Exhibit R-9 (Figure 3-37) at p 150; Exhibit I-242 at p 83. With reference to the Permittee's map, those areas identified with bright yellow were subject to pedestrian reconnaissance

where the archaeologist walked over the ground surface to observe what was at their feet, accompanied by shovel tests every 50 feet.³⁰ 27 Tr 4066, Exhibit R-9 (Figure 3-37) at p 150, Exhibit I-242 at p 83. In the goldenrod-colored area of the map, the same process was employed, but shovel tests were conducted approximately every 66 feet. 27 Tr 406; Exhibit R-9 (Figure 3-37) at p 150, Exhibit I-242 at p 83. With respect to those areas in purple on the map, which represent historic roads and trails, only visual reconnaissance was conducted to determine if any vestiges of historic features or structures were present. *Id.* This proposed procedure for conducting field archaeological work within the project area was approved by the State Archaeologist. 26 Tr 3983, 27 Tr 4067.

Dr. Overstreet criticized the sensitivity model because watercourses change over long periods of time. 28 Tr 4138. See also 30 Tr 4327-4328. He objected to the use of historic roads and trails because they are largely associated with recent historical events and not ancient transportation routes. 28 Tr 4138-4139. Dr. Overstreet also disapproved of the sensitivity model because it ignored the entire eastern half of the project area for subsurface investigation. 28 Tr 4141. In support of his objections to the sensitivity model, Dr. Overstreet referenced a 10,000-year-old archaeological site he discovered under six feet of lake sediment. 28 Tr 4144.

However, in this Final Determination and Order, *supra*, I concluded, as a Matter of Law, that a mining applicant is required to describe within the EIA those unlisted archaeological sites of which it knew or should have known. Said differently, a mining applicant is under no duty to identify and describe those archaeological sites of which it has no actual or constructive knowledge. In this case, Menominee is objecting to the sensitivity model because it is insufficient in locating previously undiscovered archaeological sites. Since there is no evidence in the record that the Permittee failed to identify and describe those archaeological sites of which it had actual or constructive knowledge, Menominee's objection to the sensitivity model is without merit. Moreover, as noted *supra*, the Permittee's archaeological survey of the project area was, at least in part, conducted at the behest of the State Archaeologist. Since the proposed procedure for conducting field

³⁰ A shovel test is an excavation that is approximately 14 inches across, which is the width of an average garden spade, and has a depth of approximately 14 inches below ground. 27 Tr 4066. Once a spade of soil is removed, it is sieved through a ¼-inch mesh to determine if cultural materials have been recovered. *Id.* at 4066-4067.

archaeological work within the project area was approved by the State Archaeologist (26 Tr 3983, 27 Tr 4067), I am unwilling to find that a survey which met his approval was somehow deficient. Therefore, I find, as a Matter of Fact, that the sensitivity model employed by the Permittee was adequate.

c. Use of Ground Penetrating Radar

Menominee contends that the EIA is insufficient because the Permittee employed ground penetrating radar in making determinations of whether features are cultural resources. As noted *supra*, the phase two archaeological surveys employed either ground penetrating radar or archaeological excavation. 27 Tr 4072-4073. Because 20ME113 and 20ME115 were identified as potential mounds, they were subjected to ground penetrating radar because invasive shovel testing is inappropriate with respect to potential burial mounds. 27 Tr 4072-4073, 4120-4121. However, Menominee's objection to ground penetrating radar fails to recognize the purpose of the EIA. As noted *supra*, its purpose is "to provide the agency and public with notice of potential impacts by the proposed mine." *Keweenaw Bay*, 2010 WL 276664 at *4. The EIA analyzed 20ME113 and 20ME115. Specifically, 20ME113 was described on pages 5-38 and 5-39 of Appendix F to the EIA. Exhibit R-17 (Appendix F) at pp 97-98. Moreover, 20ME115 was described on pages 5-39 and 5-40 of Appendix F to the EIA. Exhibit R-17 (Appendix F) at pp 98-99. The use of ground penetrating radar on 20ME113 and 20ME115 was described on pages 7-1 to 7-74 of Appendix F to the EIA. Exhibit R-17 (Appendix F) at pp 134-197. Based upon these portions of the EIA, I find, as a Matter of Fact, that the public was placed on notice with respect to 20ME113 and 20ME115 and the potential impacts of the mine on such features.

Based upon the evidence in the record, I find, as a Matter of Fact, that the EIA was adequate in its identification and analysis of cultural, historical or archaeological resources, including unlisted archaeological sites.

6. The Unanticipated Discovery Plan

Menominee contends that the Unanticipated Discovery Plan should be amended to afford more protections for archaeological sites. Specifically, Menominee argues that the Plan should be revised with respect to the disposition and custody of human remains. Menominee's Closing Brief at p 51. Also, Menominee contends that the Guidelines for Public Archaeology in Wisconsin should be incorporated into the Plan. *Id* at p 52. Finally, during the hearing, Menominee also suggested that an archaeologist should be present at all ground excavations occurring within the project area. See, e.g., 6 Tr 1023. In its Closing Arguments, the Permittee contends that it voluntarily submitted the Unanticipated Discovery Plan and agreed to a Special Permit Condition requiring adherence to the Plan. Permittee's Closing Arguments at p 57. As a result, the Permittee contends that this Tribunal does not have jurisdiction to amend the Plan. Finally, Menominee contends that the Plan was not voluntarily submitted, but was provided at the behest of the OGMD. A review of the record is warranted.

First, an Unanticipated Discovery Plan is not required under the strictures of Part 632. MCL 324.63201, *et seq.* Nor is such a Plan required under Rule 202. R 425.202. On May 9, 2016, the OGMD sent a letter to the Permittee requesting additional information to assist the agency in the review of the MPA. See Exhibit R-28. Among the questions, the OGMD asked the Permittee to "[p]rovide a mitigation plan for discovered archeological sites." Exhibit R-28 at p 23 of the letter. In response, the Permittee stated that "[a]n unanticipated discovery plan has been completed to provide guidance for appropriate response in the event that any previously unknown cultural resources are inadvertently discovered during construction of the project." Exhibit R-30 at p 77. The Unanticipated Discovery Plan appears in the record at Exhibit R-30, pp 277-281. See also Exhibit I-242 at pp 6-10. The Plan was incorporated into the permit through Special Permit Condition A(2), which provides:

The permittee shall immediately suspend relevant mining activities, and shall promptly notify the [OGMD] Upper Peninsula District Geologist, in the event that any materials of possible archaeological, historic, or cultural value are unearthed by mining activities, and the permittee shall implement the Unanticipated Discovery Plan. If a qualified archaeologist determines that materials discovered are in fact cultural, the permittee shall notify the State Archeologist. In the event that pre-contact cultural materials are dis-

covered, the permittee or the State Archaeologist will notify appropriate tribal groups.

Exhibit R-52 at page numbered 6. In its Closing Brief, the OGMD notes that the Legislature charged EGLE with administering Part 632, which includes an approval of the materials, methods, and techniques that will be utilized. OGMD's Closing Brief at pp 46-47, citing MCL 324.63205(2)(c)(i). Because mining operations involve the removal of significant quantities of soil, the OGMD argues that such operations may result in the discovery of human remains or archaeological artifacts. *Id.* As a result, the OGMD contends that the agency has jurisdiction to address situations where archaeological discoveries are made during mining operations. *Id.*

From a review of the foregoing, I find, as a Matter of Fact, that the Unanticipated Discovery Plan was submitted to the OGMD as a mitigation plan for archaeological sites. Because the Unanticipated Discovery Plan was the Permittee's choice of mitigation, and because the OGMD has clear jurisdiction over mining operations including unanticipated archaeological discoveries, I find, as a Matter of Fact, that such Plan was not voluntary. Therefore, because a mitigation plan was required by the OGMD, this Tribunal has jurisdiction to review the adequacy of such Plan.

First, Menominee contends that the Plan should be revised with respect to the disposition and custody of human remains. See Exhibit R-30 at pp 280-281, Exhibit I-242 at pp 9-10. Menominee's requested revisions are unclear from its Closing Arguments. However, during the hearing, three of its witnesses first testified that an archaeologist should be on site when earth moving operations are ongoing. 6 Tr 1023, 1030; 7 Tr 1137; 7 Tr 1214. Dr. Overstreet also testified that it is important that the on-site archaeologist have authority to stop construction and to address any unanticipated discovery. 7 Tr 1215. Second, Mr. Grignon, the Tribal Historic Preservation Officer, testified that the Unanticipated Discovery Plan is unclear as to the disposition of any skeletal remains discovered in the project area. 7 Tr 1113; 7 Tr 1131. Mr. Grignon's concerns regarding skeletal remains are that it has been determined that there is a cultural affiliation between the Menominee people and the human remains found at the Backlund site which is within

the boundaries of 20ME61.³¹ 7 Tr 1114. See also 14 Tr 2376-2378, 2407. Finally, Dr. Buckmaster suggested that an archaeologist should be utilized instead of a coroner because the archaeologist could make the determination as to the age of the remains. 6 Tr 1038. Dr. Buckmaster testified, in essence, that the archaeologist who is on site could make the determination as to whether the remains are historic or contemporary and thus determine if a coroner need be called. 6 Tr 1038.

In response, Dr. Anderson testified that he prefers having archaeological surveys performed before project construction begins so that all sites get identified beforehand. 13 Tr 2345. Therefore, if adequate surveys are performed, archaeological monitoring is unnecessary. *Id.* Ms. Payette similarly testified that archaeological monitoring is used when monitoring is more practical than archaeological surveying. 27 Tr 4088-4089. Finally, Dr. Anderson provided proposed revisions to the Unanticipated Discovery Plan, most of which were not adopted by the Permittee. See Exhibit R-103. Among his proposed revisions to the Plan, Dr. Anderson recommended that local law enforcement be notified of the discovery of human remains instead of the coroner.³² *Id.* However, neither

³¹ The Backlund site has the trinomial number 20ME2 and is located within 20ME61. See Exhibit P-15, 7 Tr 1106.

³² The revisions to the Unanticipated Discovery Plan proposed by Dr. Anderson are as follows:

Cultural Resources

* * *

5. Once the archaeologist has developed an assessment of the significance of the cultural resource, either based on photographs and descriptions or on a visit to the discovery location, the archaeologist will notify the State Archaeologist. The on-site archaeologist, in consultation with the State Archaeologist, will determine the need for further action; and if needed an action plan will be developed and implemented including any necessary protection or mitigation measures.

Human Remains, Burial, or Grave Site

* * *

6. If the archaeologist confirms that human remains or graves are present, either based on interviews with on-site personnel or from on-site study, he or she will notify local law enforcement and the State Archaeologist.
7. If law enforcement, in consultation with the on-site archaeologist, determines that the human remains or grave may be a crime scene, law enforcement will treat it as such.
8. If law enforcement, in consultation with the on-site archaeologist, determines that the human remains or grave are not a crime scene, an action plan will be developed and implemented

Dr. Anderson nor Ms. Payette addressed Mr. Grignon's concerns regarding the disposition of human remains.

From a review of the record, I agree that there has been a significant amount of archaeological surveys performed by the Permittee in this case which eliminates the need for monitoring by an on-site archaeologist during earth-moving operations. See Exhibit R-17 (EIA Appendix F), Exhibit I-242. Therefore, I find, as a Matter of Fact, that there is no need for the Unanticipated Discovery Plan to provide for an on-site archaeological monitor.

With respect to Menominee's concerns regarding the coroner's involvement with human remains, it appears that Dr. Anderson had similar concerns. See Exhibit R-103. His proposed revisions to the Unanticipated Discovery Plan would have alleviated Menominee's concerns. The record is devoid of any testimony by either the Permittee or the OGMD with respect to why his proposed revisions were not adopted. As noted from his testimony, the State Archaeologist is the top official within the state of Michigan over archaeological preservation on state lands. See 13 Tr 2325-2329. Because Dr. Anderson has reviewed dozens of Unanticipated Discovery Plans, 13 Tr 2328, it is troubling that his proposed revisions were apparently ignored. Therefore, I find, as a Matter of Fact, that the Unanticipated Discovery Plan should be amended consistent with the suggested revisions of Dr. Anderson as set forth in footnote 32.

With respect to Mr. Grignon's concerns regarding the disposition of human remains, they are well-founded. The Unanticipated Discovery Plan is, in fact, devoid of any provisions covering the disposition of human remains discovered in the project area. Menominee contends that, if discovered, human remains should be repatriated in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA). 25 USC §§ 3001, *et seq.* See Menominee's Closing Brief at p 51. However, NAGPRA applies to human remains found on federal or tribal lands, or in the possession of a museum. See 25 USC §§ 3002(a), 3003(a); *Western Mohegan Tribe & Nation of New York v New York*, 100 F Supp 2d 122, 125 (NDNY 2000). Menominee cites to *Brown v*

including any necessary protection or mitigation measures in coordination with appropriate third parties as needed.

Hawaii, 2009 WL 330209 (D Hawaii 2009), arguing that NAGPRA applies to state lands under certain circumstances. In *Brown*, the district court apparently held that the State Historic Preservation Office could fall within the NAGPRA definition of "museum," *i.e.*, it receives federal funds and has possession or control of Native American remains. 2009 WL 330209 at *14-18. While the district court did not dismiss Brown's NAGPRA claims under jurisdictional grounds, the Ninth Circuit Court of Appeals upheld the denial of his requested relief on other grounds. *Brown v Hawaii*, 424 Fed Appx 642, 2011 WL 1097754 (CA 9 2011).

Initially, NAGPRA should only be applied if human remains or associated funerary objects are in the possession of a party subject to NAGPRA. 25 USC §§ 3001(3), 3003. In this case, no party has possession of such cultural items. Second, the unpublished district court decision in *Brown* does not provide persuasive authority for the contention that NAGPRA should be applied to state lands. For these reasons, the Unanticipated Discovery Plan will not be amended to require compliance with NAGPRA. Rather, from a review of the record, I find, as a Matter of Fact, that the Unanticipated Discovery Plan should be amended to provide that both the Menominee Tribal Historic Preservation Officer and the State Archaeologist should be consulted with respect to appropriate disposition and potential repatriation of any human remains or associated funerary objects discovered in the project area.

As to Menominee's contention that the Guidelines for Public Archaeology in Wisconsin should be incorporated into the Unanticipated Discovery Plan, Dr. Overstreet testified that he and the Tribal Historic Preservation Officer requested that these guidelines be followed in this case. 7 Tr 1183. Dr. Overstreet also stated that a set of recommendations or stipulations was forwarded to Mr. Maki, but the recommendations came out of the Wisconsin Guidelines. *Id.* Exhibit P-131. He further noted that it was his belief that these Guidelines provided an acceptable set of standards. 7 Tr 1189. He also testified that, "I don't think most of them were incorporated." *Id.* However, a copy of the Guidelines for Public Archaeology in Wisconsin was not proffered by Menominee for admission into the record.

This Tribunal cannot incorporate Guidelines into the terms and conditions of a permit when such Guidelines have not been provided for review as part of the record. To

the extent that the Guidelines were set forth in Exhibit P-131, Menominee failed to prove, by a preponderance of the evidence, how the existing Unanticipated Discovery Plan was deficient and how the requested stipulations of Exhibit P-131 remedied such inadequacies. Menominee has simply failed to support this objection to the Plan with competent evidence. Its request for inclusion of such Guidelines in the Plan is therefore rejected.

Finally, during the hearing, Menominee objected to Special Permit Condition A(3), which provides that upon the discovery of materials of archaeological, historic, or cultural value, “the activity shall be monitored by a qualified archaeologist until the disposition of the discovery is resolved.” Exhibit R-52 at page numbered 6. Dr. Buckmaster testified that her concern with this provision is that the phrase “qualified archaeologist” is not defined. 6 Tr 1026-1027. She suggested that a qualified archaeologist is an individual who is listed on a list of qualified consultants maintained by the State Archaeologist. *Id.* I agree. Therefore, I find, as a Matter of Fact, that Special Permit Condition A(3) should be amended to provide that “the activity shall be monitored by a qualified archaeologist, as identified on a list of qualified candidates maintained by the State Archaeologist, until the disposition of the discovery is resolved.”

B. Cumulative Impacts

Menominee challenges the EIA’s analysis of cumulative impacts. Discussion of cumulative impacts is required by Rule 202(1)(b). R 425.202(1)(b). That Rule provides that the EIA is to contain an analysis of the potential cumulative impacts on each of the features described in the EIA, including an analysis of the “additive effects, and the assessment of significant interactions between chemical and physical properties of any discharges, with reference to the physical and chemical characteristics of the environment into which the discharge may be released.” *Id.* Thus, cumulative impacts analysis relates to “discharges” into the environment. A “cumulative impact” is defined as “the environmental impact that results from the proposed mining activities when added to other past, present, and reasonably foreseeable future activities.” R 425.102(1)(h).

The prior case construing Part 632 also addressed cumulative impacts analysis. Specifically, in *Keweenaw Bay*, the Administrative Law Judge (ALJ) noted that “[t]here is

no generally accepted scientific protocol for evaluating cumulative impacts, but the only evidence in the record is that best practice is to accumulate as much data about individual stressors as practicable and to use the data to reach conclusions regarding overall potential impacts.” *Keweenaw Bay*, 2010 WL 276664 at *147. The ALJ’s application of this standard was upheld in the Final Determination and Order in the Circuit Court and in the Court of Appeals. *Keweenaw Bay, supra*; *National Wildlife Fed’n*, slip opinion at *93-95; *National Wildlife Fed’n (No. 1)*, 306 Mich App at 359-360.

In examining cumulative impacts, the Permittee’s discussion of cumulative impacts in its EIA will be reviewed. Thereafter, each of Menominee’s challenges to the Permittee’s analysis of cumulative impacts will be considered.

1. Impacts addressed by the Permittee

Cumulative impacts were addressed in ¶ 4 of the EIA. Exhibit R-9 (EIA) at p 66. See also Exhibit R-18 (EIA Appendix I) at pp 62-110. Therein, the Permittee analyzed “the effects of deposition of particulate matter on the surrounding environment.” Exhibit R-9 (EIA) at p 66. Specifically, the particulate matter was assumed to contain five selected constituents: copper, zinc, lead, mercury, and sulfur. *Id.* The analysis considered that during the course of a year, such particulate matter would fall directly on surface water bodies including the Menominee River and the northern-most of the Shakey Lakes (Spring Lake). *Id.* The Permittee concluded that “[t]he deposition analysis shows that for constituents copper, lead, and zinc, water quality is currently compliant with water quality standards ... and remains compliant with the estimated deposition of those constituents from the Project.” *Id.* With respect to mercury, the EIA notes that the two waterbodies (Menominee River and Spring Lake) currently exceed the mercury water quality standard such that “[a]dding a deposition increment of mercury results in a *de minimis* change to this baseline condition.” *Id.*

In addition to this portion of the EIA, three individuals offered testimony that relate to cumulative impacts analysis performed by the Permittee. First, Mr. Donohue explained the Permittee’s methodology for analyzing cumulative impacts. Specifically, he noted that this criterion was approached in a way to address those types of impacts that are reasonably foreseeable and that are not otherwise regulated under other provisions of

Part 632 or other environmental statutes or administrative rules. 17 Tr 2830. Mr. Donohue also testified that the Permittee's analysis was restricted to impacts that were reasonably foreseeable to occur instead of addressing features where no foreseeable impacts would occur. 17 Tr 2830-2831. He stated that depositional impacts from particulate matter on soils and water is not otherwise regulated or monitored. 17 Tr 2830-2831. For this reason, these depositional effects were addressed within the EIA. 17 Tr 2831.

Second, Ms. Martin similarly testified that the Permittee focused "on the cumulative impacts that potentially could happen on aspects of the project that are not directly permitted." 17 Tr 2992. She noted that the Part 55 Permit to Install addresses air discharges, the NPDES permit addresses water discharges, and the Part 632 permit addresses impacts from the facility, but no permit covered air to water or air to soil. 17 Tr 2992-2993. To address air deposition impacts, the Permittee reviewed the toxic constituents in the dust. 17 Tr 2993. In making this determination, the Permittee started with an air emissions inventory which is a tabulation of all the activities that generate emissions at the facility. 17 Tr 2993-2994. The emissions were modeled for dispersion to estimate the pollutant concentration. 17 Tr 2994. The model then estimated the deposition of the pollutant in soil and water. 17 Tr 2994-2995. To determine cumulative impacts, information regarding the background levels of these pollutants in the soil and water was necessary. 17 Tr 2997. For the constituent copper, the Permittee created a map showing its anticipated concentrations at the project site. *Id.* Exhibit I-194 at p 36. This map displays a bull's-eye around the facility where the deposition loads are the highest and indicates that they taper off in the surrounding area.³³ *Id.*

As to the results of the Permittee's study, Ms. Martin testified that, in two respects, the study amounted to a conservative determination of cumulative impacts using "worst-case" scenarios. 18 Tr 3006-3007. First, the study assumed maximum emissions. 18 Tr 3007. Second, the study took mathematical numbers that represented the highest concentrations for each constituent rather than using an average. 18 Tr 3008. Except

³³ Mr. Boerner objects to this map and argues that it "shows the Boerner property ... will be impacted as much, and in some cases more, than within the project area." Argument 31 of Mr. Boerner's Closing Arguments. Because Mr. Boerner did not provide or cite to any evidence or testimony to corroborate his arguments, they must be rejected.

for mercury, the current baseline conditions indicate that both the Menominee River and Spring Lake meet the quality standard. 18 Tr 3009. The depositional increment, when added to the background, still demonstrates that these two water bodies will meet water quality standards. *Id.* With respect to mercury, the increase in the Menominee River concentrations attributable to deposition amounts to a 0.03% increase. *Id.* In Spring Lake, the mercury increase indicated a 3% increase in concentrations from the depositional study. 18 Tr 3010. Ms. Martin opined that considering how conservative the analysis was, “[w]e are highly confident that you actually will not be seeing an increase in concentrations in sampling in those two water bodies.” *Id.*

With respect to soil depositional analysis, the Permittee considered the fence boundary line of the project area and reviewed the data with respect to the receptors at the boundary line. 18 Tr 3010, Exhibit I-194 at p 39. These receptors constitute the best indicators of potential offsite impacts. 18 Tr 3011. Viewing these receptor locations, “the deposition analysis looks at mass loading of the particular parameter and assumes that the loading mixes with the top centimeter [0.4 inches] of soil at that location.” *Id.* Ms. Martin further testified that, “when we hypothetically incorporate that deposition increment and compare it to the protective soil standards, we find that on all of these locations we do not see an exceedance of the protective soil standards.” *Id.* In other words, the Permittee does not believe that there will be any off-site depositional impacts because the computed impacts at the property boundary is within protective soil standards. Ms. Martin opined that, over the 7-year LOM, none of these locations will exceed soil standards.³⁴ *Id.*

Finally, Ms. Martin testified regarding the discharges that are required to be analyzed for cumulative impacts analysis. R 425.202(1)(b), 18 Tr 3016. Specifically, Ms. Martin addressed storm water discharges—both contact water and non-contact water. 18 Tr 3016-3017. With respect to non-contact storm water, it will run off the

³⁴ Mr. Boerner challenges the Permittee’s air depositional impacts analysis in Argument 8 of his Closing Argument. Mr. Boerner’s Closing Argument at p 33. He challenges the Permittee’s contention that there will not be any off-site depositional impacts because the computed impacts at the property boundary is within protective soil standards. The only evidence he points to in the record in support of his contention is that the Permittee utilized a “conservative” approach and did not consider plant and soil uptake of constituents. Citing to Exhibit R-9 (EIA) at p 66. Because Mr. Boerner did not provide any evidence regarding how the Permittee’s conservative analysis is defective or would yield differing results, his contention in Argument 8 is rejected.

revegetated overburden stockpile and report to the NCWBs. 17 Tr 2850. These basins will collect sediment while clean water is released back into the environment. 17 Tr 2852.

With respect to contact water, recall that it is “water that comes in contact with mine materials or the processing area ... that could affect water quality if it wasn’t managed appropriately.” 15 Tr 2599-2600. All storm water that encounters the contact areas of the project site – which are the areas where potentially reactive materials are found, such as tailings or ore – is routed to the CWBs. 18 Tr 3017-3018. The storage capacity of the CWBs were designed to handle a 100-year storm event.³⁵ 17 Tr 2848. Water that is required in the mill will be drawn from the CWBs. 17 Tr 2851. Contact water is either used in the mill and exits the facility in the concentrate, or it gets treated in the WWTP and is thereafter discharged into the Menominee River. 18 Tr 3017-3018. The treated contact water is subject to the NPDES permit, which contains standards for water quality of the discharges. 18 Tr 3018. Ms. Martin opined that her understanding of the process is that, if there are no discharges into the environment, there are no cumulative impacts. 18 Tr 3019.

Next, Mr. Depa, a toxicologist, testified regarding impacts from four metals in the project: copper, lead, mercury and zinc, as well as a sulfur deposition analysis. 10 Tr 1790, 1791. While he was called as a witness by the OGMD, his testimony is relevant to cumulative impacts analysis. Mr. Depa evaluated the air impacts from the mine. 10 Tr 1787. In performing his analysis, he used a worst-case impact and evaluated its effects on the environment and human health. 10 Tr 1792. This conservative approach was three-fold. First, he utilized a mixing depth in the soil of one centimeter (0.4 inches) instead of the required two-centimeters (0.8 inches). *Id.* The shallower mixing depth would yield a higher impact from the project. *Id.* Second, he assumed that the maximum deposition of the constituents that would have the highest impact was on the property lines of the project area. 10 Tr 1793. Mr. Depa noted that, in actuality, “the farther you go from the facility the lower the impacts.” *Id.* Third, he assumed that the emission rates

³⁵ In Argument 30 of his Closing Argument, Mr. Boerner contends that the CWBs are inadequate to contain a 500-year flood event. Mr. Boerner’s Closing Argument at p 85. However, during extreme storm events where a 100-year storm is followed by another significant storm event, the Contingency Plan provides that contact water can be stored within the pit itself. 17 Tr 2897, Exhibit R-7 (Appendix J) at p 281. For this reason, Mr. Boerner’s argument is rejected.

from the facility are always the highest emission rates instead of using an average rate. *Id.* In his opinion, the impacts to soil met all the health-based criteria. 10 Tr 1794. With respect to sulfur acid deposition, the impact was less than the standard that is protective for ecological effects. 10 Tr 1795.

With respect to water impacts, Mr. Depa also made conservative assumptions. He assumed a drought condition for water volume which overestimates the constituents in the water. 10 Tr 1795-1796. His results indicated that expected impacts from the mine are lower than water quality standards. 10 Tr 1796. Water impacts were estimated for the Menominee River and Spring Lake. *Id.* Mr. Depa specifically testified that "the metals and sulfate impacts to the water for Menominee River and Spring Lake were very much lower than background concentrations and that they would only increase the concentration of that pollutant in the water by a very small amount." *Id.*

Finally, Mr. Depa testified regarding mercury. He also made conservative assumptions regarding mercury. Specifically, he assumed that all mercury was particle bound which means the mercury deposits locally. 11 Tr 1878. If the mercury is in the vapor phase, it is lost to the "global cycle," meaning that it gets caught up in the jet stream that circles the globe. 11 Tr 1879, 1895. He testified that 98% of elemental mercury is lost to the global cycle. 11 Tr 1878. Because so much of elemental mercury is caught in the global cycle, Mr. Depa conceded that he overestimated impacts from mercury. 11 Tr 1879. He opined that mercury becomes a problem when it is deposited in the soils because it converts into methyl mercury, which washes into water, and then is taken up by benthic organisms and gets passed up the food chain. 11 Tr 1895-1896. Mr. Depa also testified that analysis of mercury deposition is important because it bioaccumulates in fish. 10 Tr 1797.

At Spring Lake, the background mercury concentration is .011 micrograms per liter ($\mu\text{g/l}$), and the background mercury in the Menominee River is .009 $\mu\text{g/l}$. *Id.* Both water bodies have background mercury concentrations above the water quality standard for mercury. *Id.* Mr. Depa concluded that the mine will have a very, very small impact on the water concentration of mercury such that it is not a significant change to the water concentration. 10 Tr 1798. As to the remaining metals (copper, lead, and zinc) and sulfur, the impact to the water is well below their background and below the standard. *Id.*

Therefore, based on his analysis, Mr. Depa concluded that the deposition of dust particles emitted from the project is not expected to harm public health or the environment. *Id.* Exhibit R-117 at p 1. Moreover, based on the facility's short life and the small amount of mercury emitted from the facility, estimated at 2.25 pounds, no adverse impacts to the environment or any organisms in the environment would be caused. 11 Tr 1895-1896.³⁶

Before making a finding on the adequacy of the Permittee's cumulative impacts analysis, the impacts alleged by Menominee will be reviewed.

2. Impacts alleged by Menominee

Menominee challenges the sufficiency of the cumulative impacts analysis of the EIA on the grounds that it contained inadequate analysis of (a) impacts to lake sturgeon and its habitat, Menominee's Closing Brief at pp 21-33; (b) impacts from ARD, Menominee's Closing Brief at pp 15-18; (c) impacts from radon, uranium, and other radioactive elements, Menominee's Closing Brief at p 15; (d) impacts to wildlife, flora and fauna, Menominee's Closing Brief at p 33; (e) impacts to threatened or endangered species, Menominee's Closing Brief at p 33; (f) impacts to Shakey Lakes Park and other recreational areas, Menominee's Closing Brief at p 56; (g) impacts to infrastructure and utilities, Menominee's Brief at p 58; and (h) impacts from noise or light, Menominee's Closing Brief at p 59. Each of Menominee's allegations will be addressed *infra*.

a. Impacts to Lake Sturgeon and its Habitat

Menominee challenges the Permittee's analysis of impacts to lake sturgeon because it is ten years old. Menominee's Closing Brief at p 22. Menominee asserts that there would be impacts in three respects: (1) impacts upon lake sturgeon adjacent to the project site, (2) physiological impacts of metals or other pollutants from the project on lake sturgeon and its food supply, and (3) impacts of noise upon lake sturgeon. Menominee's Closing Brief at pp 21-22, 28. Each of these potential impacts will be addressed. However, before focusing on the allegations of impact, a brief review of lake sturgeon is warranted.

³⁶ Dr. Zamzow testified that mercury is "not expected to leach in any kind of quantity" in the mine. 2 Tr 275.

(i) **A Description of Lake Sturgeon**

Menominee has a unique relationship with lake sturgeon which is part of their creation story. 7 Tr 1121. Lake sturgeon is a primitive species. 12 Tr 2000. The fish can live for 80 to 100 years, while some can live for 150 years, compared to channel catfish whose life expectancy is around 40 years. 4 Tr 616, 12 Tr 2001. They can grow to a length of seven to nine feet. 12 Tr 2000. They are relatively late at maturing and begin spawning around the age of 25. 4 Tr 616, 12 Tr 2002. Habitually, adult sturgeon return to spawn in the streams in which they were born. Exhibit P-108 at p 2. Rocky substrate is ideal habitat for spawning. 12 Tr 2002. Young sturgeon remain in their natal rivers for the first summer of life. Exhibit P-108 at p 2. They are benthivores, *i.e.*, bottom-feeders, whose diet includes small invertebrates such as insect larvae, crayfish, snails, clams, and leeches. Exhibit P-108 at p 2. The long barbels on their nose help them find potential food items. 12 Tr 2001. They prefer water temperatures in the range of low 50 to mid-60 degrees Fahrenheit. Exhibit P-108 at p 2.

In the 1950s, there were over two million lake sturgeon in the waters of Lake Michigan, but their current adult population is around 3,000 which is 0.2% of its historical abundance. 4 Tr 595-596. Currently, it is estimated that there are 570 adult lake sturgeon living between the White Rapids and Grand Rapids Dams, which is the locale of the proposed mine. Exhibit P-108 at p 3. Lake Sturgeon is listed as a threatened species in Michigan and as a species of concern by Wisconsin and the United States Fish & Wildlife Service. 4 Tr 597, Exhibit P-215 at p 13. Their abundance has decreased due to over-fishing, poaching, habitat loss along their spawning streams, and the invasion of the sea lamprey. 4 Tr 596. Habitat loss has been caused, in part, by the construction of electricity-generating dams along their spawning streams such as the Menominee River.³⁷ 4 Tr 596-597. These dams have also been responsible for a 26% mortality rate due to fish moving through hydroelectric turbines. 4 Tr 591. In order to prevent sturgeon deaths in such turbines, the United States Fish & Wildlife Service, in conjunction with the Michigan

³⁷ The following six dams have been constructed along the Menominee River: The Menominee Dam, the Park Mill Dam, the Grand Rapids Dam, the White Rapids Dam, the Chalk Hills Dam, and the Sturgeon Falls Dam. Exhibit P-107 at p 12.

DNR and the Wisconsin DNR, created a fish passage on the Park Mill and Menominee Dams which are the first two dams on the Menominee River upstream from Green Bay. 4 Tr 582, 587, 589. The fish passage program was created to allow fish to get around the dams without going through the turbines. 4 Tr 594.

(ii) Impacts Adjacent to the Project Site

In its Closing Brief, Menominee first contends that increased sedimentation in the Menominee River from the project will decrease lake sturgeon spawning within the River. Menominee's Closing Brief at p 26. As a basis for this allegation, Menominee alleges that the Soil Erosion and Sedimentation Control Plan is not finalized. Menominee's Closing Brief at 21, 26. It argues that mine construction, removal of wetlands, and loss of vegetation will all increase sedimentation in the River. Citing 12 Tr 2068-2069. Also, Dr. Gunderson testified that five millimeters of sediment can result in mortality of fish eggs. 12 Tr 2073. However, Dr. Gunderson did not testify as to the amount of sedimentation in the Menominee River to be expected from this project.³⁸

The project's Soil Erosion and Sedimentation Control Plan is set forth in Exhibit R-6 (Appendix F) at pp 432-459. Therein, the Plan provides that "[p]rior to stripping the topsoil additional silt fence will be construction [sic] down gradient of the disturbed areas." Exhibit R-6 (Appendix F) at p 442. Topsoil will be stockpiled which will be track walked to create a rough surface. *Id.* The track walked surface will enhance the ability of the soil to withstand erosion. *Id.* These stockpiles will also be seeded to prevent erosion. *Id.* According to the Plan, temporary measures will be put in place during the first 158 days of the project. Exhibit R-6 (Figure 2-6) at p 456. Also, silt fences will be installed in the first 4 days of the project prior to any land clearing. *Id.* In addition, the permit also contains soil erosion and sediment control measures. See Special Permit Conditions J(1) to J(8) of Exhibit R-52 at pages numbered 12-13. Specifically, silt fencing is to be installed before clearing may occur at the project site. Special Permit Condition J(4)(e), Exhibit R-52 at page numbered 12. Topsoil stockpiles are to have a maximum slope of three to

³⁸ Mr. Boerner also challenges the EIA on the basis that pollution will result from the removal of trees and vegetation from the project area. Argument 29 of Mr. Boerner's Closing Argument. However, he cited to no evidence in support of this allegation which must therefore be rejected.

one and are to be surrounded by a silt fence. Special Permit Condition J(4)(g), Exhibit R-52 at page numbered 12. Moreover, Ms. Lipsey, a fisheries biologist with the DNR, served on the mining team. 8 Tr 1262-1263. Numerous inquiries were made by the mining team related to lake sturgeon. See Exhibit R-28 at pages numbered 11-13. However, no concerns were raised related to sedimentation from the project site. *Id.* For the Permittee's responses to the mining team's inquiries see Exhibit R-30 at pp 41-45.

Menominee presented no evidence that the Soil Erosion and Sedimentation Control Plan will fail or the amount of sediment that would be deposited in the Menominee River as a result of such failure. Therefore, based upon the evidence in the record, I find, as a Matter of Fact, that the Permittee's cumulative impacts analysis was not deficient with respect to the Soil Erosion and Sedimentation Control Plan.

Menominee also contends that a "mixing zone" will occur at the point of discharge for the WWTP which will impact juvenile lake sturgeon.³⁹ 12 Tr 2044-2045, citing Exhibit P-69. In support of this argument, Menominee relies upon the testimony of Dr. Gundersen. Specifically, Dr. Gundersen based his testimony upon one study involving bass and bluegill where there was a 100 percent mortality of the species in the mixing zone due to metals precipitating out of solution onto the gill surfaces of the fish. *Id.* However, Dr. Gundersen conceded that bluegill are a lot smaller than lake sturgeon and that he was not certain if the mixing zone would have a similar mortality level on larval sturgeon or young sturgeon. 12 Tr 2048. On cross-examination, Dr. Gundersen also conceded that this study was performed "in an acid mixing zone" in an area known for ARD since the early 1960s. 12 Tr 2105-2106. Dr. Gundersen further conceded that this study involved a river containing "high concentrations of dissolved metals and low pH." 12 Tr 2106. Dr. Gundersen additionally conceded that the "mixing zone" involved in this study occurred when the highly acidic river flowed into another river downstream. 12 Tr 2106-2107. Therefore, this study is inapposite for comparison in this case.

Rather, the so-called "mixing zone" in this case is the outlet of the pipe from the WWTP. Once the project is constructed, the Permittee's discharge of constituents must be in compliance with the concentration limits of its NPDES permit. Exhibit I-233. Thus,

³⁹ In response, Dr. Adams testified that this location would not be ideal sturgeon spawning habitat due to woody debris, the depth of the water and the amount of existing sedimentation. 20 Tr 3382.

the highest concentration within the mixing zone is at the outfall of the pipe. There was no testimony offered by any witness that the discharge from the pipe would exceed the limits set forth in the NPDES permit. If the discharge is within permit limits, these constituents will be further diluted within the mixing zone. Any finding that this discharge causes impacts on juvenile sturgeon would be a collateral attack of the NPDES permit. See *People v Howard*, 212 Mich App 366, 369; 538 NW2d 44 (1995). Therefore, with respect to discharges within the mixing zone, I find, as a Matter of Fact, that compliance with the NPDES permit standards will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

(iii) Impacts from Metals

In its Closing Brief, Menominee contends that the following metals will detrimentally impact lake sturgeon: copper, selenium, and mercury.⁴⁰ Menominee's Closing Brief at pp 29-31. With respect to copper, the NPDES permit authorizes 0.58 pounds per day to be discharged into the Menominee River. Exhibit I-233 at p 3. Menominee cites to Dr. Gundersen's testimony, wherein he testified that "[r]ecent studies indicate that copper, even at the level deemed safe under Michigan's Water Quality Standards, could kill 50% of larval sturgeon." Menominee's Closing Brief at p 29, citing 12 Tr 1228-1229. In other words, Dr. Gundersen testified that Michigan's water quality standards for copper cause impacts to lake sturgeon. If the Permittee complies with its NPDES permit, this Tribunal is unwilling to find that there will be cumulative effects on lake sturgeon from the project. Moreover, this Tribunal is unable to find that discharges consistent with Michigan's existing water quality standards would cause an impact upon lake sturgeon due to copper generated by the project. *Micu v City of Warren*, 147 Mich App 573, 584; 382 NW2d 823 (1985) ("the rules made by an agency to govern its activity cannot be violated or waived by the agency that issued the rules"). Therefore, with respect to copper, I find, as a Matter of Fact, that compliance with the NPDES permit standards for copper will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

⁴⁰ It should be noted that Special Permit Condition K(7) requires a sampling of legal-sized predator fish to monitor for various heavy metals. Exhibit R-72 at page numbered 14.

With respect to selenium, the NPDES permit authorizes 1.5 pounds per day to be discharged into the Menominee River. Exhibit I-233 at p 3. On cross-examination, Dr. Gundersen was asked what concentration of selenium was needed in the tissue of larval sturgeon to see effects from selenium. 12 Tr 2145. He did not recall the number. *Id.* He was also asked what concentration of selenium in the water column was necessary to see effects in larval sturgeon. *Id.* Again, he could not provide a number. *Id.* Hence, there is no evidence in the record which demonstrates that 1.5 pounds per day of selenium discharged into the Menominee River is harmful to lake sturgeon. Therefore, if the Permittee complies with its NPDES permit, this Tribunal is unwilling to find that there will be cumulative effects on lake sturgeon from the project. Moreover, this Tribunal cannot collaterally attack the NPDES permit to find that it would cause an impact upon lake sturgeon due to selenium generated by the project. *People v Howard, supra.* Therefore, with respect to selenium, I find, as a Matter of Fact, that compliance with the NPDES permit standards for selenium will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

With respect to mercury, the NPDES permit authorizes 0.000016 pounds per day or 1.3 nanograms per liter (ng/l) weekly.⁴¹ Exhibit I-233 at p 4. Menominee's contention is that the Menominee River already exceeds the water quality criterion for mercury. Menominee's Closing Brief at p 31, 11 Tr 1871. Therefore, it contends that any mercury added to the River would cause cumulative impacts to the River. Menominee did not present evidence that the Permittee would exceed the mercury limits of its NPDES permit. If the Permittee complies with its NPDES permit, this Tribunal is unwilling to find that there will be cumulative effects on lake sturgeon from the project. Moreover, this Tribunal cannot collaterally attack the NPDES permit to find that it would cause an impact upon lake sturgeon due to mercury generated by the project. *People v Howard, supra.* Accordingly, with respect to mercury, I find, as a Matter of Fact, that compliance with the NPDES permit standards for mercury will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

⁴¹ A nanogram is one billionth of a gram.

(iv) Impacts from Noise

Menominee contends that lake sturgeon will be detrimentally impacted due to noise at the project site. Menominee's Closing Brief at p 28. In support of this contention, Menominee submitted into evidence a scientific report which purports to address the effects of pile-driving sounds on lake sturgeon, Nile tilapia and hogchoker. Exhibit P-83. Therein, the authors subjected the fish to 960 pile strikes, each having a single strike sound exposure level of 186 dB or a cumulative sound exposure level of 216 dB. Exhibit P-83 at p 3. During the testing, the fish were kept within a container 17.7 inches x 9.8 inches. *Id.* After being subjected to the noise, 80 percent of the fish exhibited damage to either their swim bladder and/or their kidneys. 12 Tr 2085. However, Dr. Gundersen admitted that "fish avoid areas where there's lots of noises." *Id.*

In response to this study, Dr. Adams testified that the fish used in the study were extremely small. 20 Tr 3397. He also noted that during the study, the fish could not escape. *Id.* It is his experience that fish are very sensitive to noise and would leave the area. *Id.* Ultimately, Dr. Adam's opinion is that the study is not reliable because the fish were much smaller than the lake sturgeon found in the Menominee River and that the fish would leave the area. *Id.* Instead of being subjected to 960 pile-strikes, the fish would be subjected to blasting two days per week, and they would not be prevented from leaving the area during blasting. *Id.*

I find the testimony of Dr. Adams credible and compelling. In this case, each ANFO blast is approximately 145 dB, but at the Menominee River the sound will be 140 dB. 20 Tr 3788. The 140 dB level per blast is less than the 186 dB level of the pile-strikes. Plus, the fish will not be captive in a 17.7" x 9.8" container. As both Dr. Gundersen and Dr. Adams agree, fish will avoid areas where there are noises. In accordance with the testimony of Dr. Adams, I find, as a Matter of Fact, that lake sturgeon in the Menominee River will not be adversely impacted by noise from the mine.

b. Acid Rock Drainage

The Petitioners have raised two issues related to ARD. Specifically, they contend that there will be (a) ARD from the backfilled pit resulting from the project, and (b) leaching of arsenic and other constituents caused by amendment with lime. Menominee's Closing Brief at pp 15-18, Mr. Boerner's Closing Argument at Argument 27 and 28.

(i) By Flooding the Backfilled Pit

Menominee's first concern is that the backfilled pit will take 20 to 22 years to fill with water. 17 Tr 2864, 2945; Exhibit R-9 (EIA) at p 28; Exhibit R-30 at p 52. After the mine has exhausted its supply of ore, believed to occur at the end of MY7, Exhibit R-2 (MPA) at p 25, waste rock will be moved from the TWRMF to the pit. Exhibit R-2 (MPA) at p 20, Exhibit R-7 (Appendix H) at p 36. When sulfides in the rock contact oxygen and water, it starts a process of creating sulfuric acid. 2 Tr 181. Dr. Zamzow opined that this process will be ongoing in the 20 to 22 years during which the backfilled pit is being filled with groundwater. 2 Tr 142, 199. However, once the backfilled pit is fully flooded, the reactions that cause ARD should stop. 2 Tr 188, 200. Nevertheless, the concern is that the water within the backfilled pit will contain contaminants (including cadmium, copper, zinc, arsenic, selenium, aluminum, iron, manganese, lead, mercury, silver and antimony) that will make its way to the Menominee River. 2 Tr 195-196. Dr. Zamzow's concern is that the level of these contaminants will be higher than anticipated by the Permittee if they are allowed to seep from the waste rock over a 20- to 22-year period. 2 Tr 201.

The MPA provides for several contingencies in order to prevent ARD. First, waste rock will be placed in the backfilled pit below the weathered bedrock zone. Exhibit R-7 (Appendix I) at p 244, Exhibit R-7 (Figure 3-1) at p 265, Exhibit R-14 (Figure 3-5) at p 138, 15 Tr 2656, 23 Tr 3674. See also 2 Tr 189-190. The Treatment and Containment Plan for Tailings and Waste Rock expressly provides that "[t]he mine pit will be filled to one meter below the low groundwater level...." Exhibit R-7 (Appendix H) at p 36. In fact, Special Permit Condition O(3) requires that "waste rock shall be placed within the mine pit so that it is not in direct contact with the weathered bedrock zone on the pit wall."

Exhibit R-52 at page numbered 21. The placement of waste rock below the conductive water zones prevents ARD from flowing laterally into groundwater.

Second, Dr. Zamzow opined that ARD can flow through fractures or fissures that are created in the pit walls during blasting. 2 Tr 200. However, fractures are grouted to prevent water flow into the pit during mining, and these fractures are identified and grouted for the closure of the pit as well. 23 Tr 3684, 3732. Indeed, Special Permit Condition L(21) provides that “[t]he permittee shall grout geologic structures encountered in the pit that are determined to have the potential to have greater impact to groundwater and surface water levels than predicted in the EIA.” Exhibit R-52 at page numbered 19.

Third, Dr. Zamzow testified that the groundwater coming off the waste rock will be acidic with a pH of 3 or less. 2 Tr 195. However, when backfilling the pit, “[h]igh calcium limestone or other suitable buffering material will be added to the backfilled material to reduce the acidic conditions in the pit.” Exhibit R-7 (Appendix H) at p 36. The limestone amendment is anticipated to yield a circumneutral pH near 7.9. Exhibit R-14 (Appendix D-5) at pp 95, 110. Indeed, Dr. Zamzow conceded that “the point of adding alkali [limestone] is to make a neutral pH and also to provide carbonate that can bind up some of these metals that have been released and mobilized.” 2 Tr 297.

Fourth, waste rock with limestone amendment will be removed from the TWRMF in lifts. 15 Tr 2655, 23 Tr 3733, Exhibit R-7 (Appendix H) at p 36. The lifts of waste rock, which are approximately 6.6-13.1 feet thick, will be compacted. 18 Tr 3126, Exhibit R-7 (Appendix H) at p 20. Waste rock will be further compacted by bulldozer when placed in the pit. 15 Tr 2656, 23 Tr 3734. Physical compaction serves as a mechanism to limit oxygen ingress into the waste rock. 18 Tr 3126. The limitation of oxygen is a limitation on the generation of ARD.

Fifth, Dr. Hyndman was critical of the capping of the backfilled pit. He stated that he would prefer a geomembrane liner placed over the pit. 3 Tr 539, 4 Tr 657. However, the backfilled waste rock will first be covered with a layer of compacted low-permeability soil and then covered with non-ARD-generating overburden. Exhibit R-7 (Appendix H) at p 36, Exhibit R-7 (Appendix I) at p 247. “[T]he placement of the low permeability cover will serve as another mechanism to control oxygen ingress into the waste rock.” 18 Tr 3127. In addition, Dr. Zamzow conceded that “[t]he purpose of the cover is to slow the

rate of flow out of the pit and that provides greater dilution from the aquifer because you're slowing the water down. So it's more of a drip and the aquifer is diluting it so that it meets water quality criteria at the river."⁴² 2 Tr 60.

Sixth, after pit closure, groundwater is to be monitored on a quarterly basis. Special Permit Condition K(3), Exhibit 52 at p 13. In addition to quarterly monitoring, upon closure groundwater and surface water quality and elevation will be monitored until MY30 or 23 years post-closure. Exhibit R-6 (Appendix G) at p 479. The permit increased this period to 50 years. Exhibit R-52 (Special Permit Condition K(18)) at p 15.

Finally, with respect to the flooding of the pit, the MPA anticipates that it will occur during backfilling. Exhibit R-14 (EIA Appendix D-5) at p 105. It is anticipated to occur from water seeping into the pit and from precipitation. *Id.* The MPA provides that "pit pore water will evolve as weathering products are flushed continuously from additional waste rock being placed in the pit and as the pit gradually floods." Exhibit R-14 (EIA Appendix D-5) at p 105. Moreover, "[t]he quality of water in the backfilled pit will be contributed to by the weathered load retained on the wall rock and floor, by the composition of groundwater, and by precipitation...." Exhibit R-14 (EIA Appendix D-5) at p 109. Hence, flooding of the pit reduces acid generation from waste rock, the pit walls, and the pit floor. Exhibit R-30 at p 54.

However, the Permittee estimated that it will take between 20 to 22 years for the pit to naturally flood with groundwater. Exhibit R-30 at p 52. The flooding of the pit can be accelerated by using water from fresh water supply wells or by adding treated water from the WWTP or by adding water from the Menominee River. Exhibit R-30 at p 53, 17 Tr 2946. On questioning from the undersigned, Dr. Zamzow testified that based on oxidation, seven years for the flooding of the pit would be adequate to prevent ARD. 2 Tr 307. Mr. Donohue, in fact, testified that the accelerated flooding of the pit could occur within two to four years. 17 Tr 2864. Nevertheless, the Permittee's "model assumes that flooding occurs instantaneously and that all pore space within the backfilled material is 100% saturated." Exhibit 14 (EIA Appendix D-5) at p 105. The assumption of instan-

⁴² The Permittee's contaminant transport model will be addressed *infra* when addressing Impacts to Water Resources.

taneous flooding of the backfilled pit is critical because the geochemical model similarly assumes that the maximum concentration of contaminants will be achieved instantaneously. 19 Tr 3190. This concentration is also assumed to exist over all points of time. *Id.* The maximum concentration of contaminants is set forth in Exhibit R-14 (Table 5-2) at p 128.

Menominee challenges the Permittee's model because it did not estimate a rate of discharge from the backfilled pit. Menominee's Closing Brief at p 73. The backfilled pit will take 20 to 22 years to fill. However, the Permittee's model is based on an instantaneous flooding of the pit. While Mr. Ciardelli testified that the maximum concentration of contaminants is assumed to occur instantaneously in this model, he did not know the level of contaminants within the backfilled pit between MY8 and MY22. 18 Tr 3136. Therefore, the record is unclear whether the maximum concentration of contaminants assumed by the Permittee is equal to or more than the amount that will naturally occur between MY8 and MY22. However, the testimony of Dr. Zamzow is persuasive that seven years for the flooding of the pit would be adequate to prevent ARD. 2 Tr 307. Accordingly, based on this evidence in the record, I find, as a Matter of Fact, that accelerated flooding of the backfilled pit is necessary to prevent an accumulation of contaminants within the pore water of the pit. The water source for accelerated flooding of the pit is left to the discretion of the OGMD in its approval of the final closure plan. In order to prevent a release of contaminants into the surrounding environment, I further find, as a Matter of Fact, that Special Permit Condition K(3) should be amended to provide for monthly monitoring of groundwater after pit closure during flooding. Exhibit 52 at page numbered 13. I additionally find, as a Matter of Fact, that Special Permit Condition K(3) should be amended to provide that after the pit is flooded, groundwater monitoring may occur on a quarterly basis. Exhibit 52 at page numbered 13.

(ii) From Arsenic Leaching

Menominee also raised a concern over arsenic leaching from the backfilled pit. Two of Menominee's witnesses addressed this issue. First, Dr. Zamzow testified that, after flooding of the pit, "[i]t is potentially possible depending on what's in the rock matrices for arsenic to be released, but that will depend on a lot of things." 2 Tr 200. She further

testified that arsenic releases under water more readily than other contaminants. 2 Tr 203. Although Dr. Zamzow did not provide an analysis of the quantity of arsenic that could be released into the pore water, she opined that she would expect it could exceed water quality standards. 2 Tr 214. However, in her written report, Dr. Zamzow opined:

Pit-impacted groundwater discharge at the river is expected to have copper concentrations of 7µg/L, below the surface water criteria [sic] of 10 µg/L. Given the expected concentrations to the river no impact on aquatic life is expected. Even if the dilution of pore water by groundwater is underestimated, if the volume of pore water and groundwater discharge is relatively accurate, the volume is very small relative to river flow. If groundwater dilution underestimates contaminant concentrations by a factor of 10, arsenic and copper will exceed surface water quality criteria, but will be quickly diluted by the river flow. Drinking water and the ability to meet water quality criteria should essentially remain unchanged.

Exhibit P-5 at pp 18-19; 2 Tr 293-294.

Second, Mr. Kuipers testified regarding arsenic within ARD. Specifically, he stated that when lime or some other neutralizing agent is added to a backfilled pit, "what happens when we bring that pH up above seven, in fact, arsenic, selenium, and other what are typically called metalloids or semi-metals, become, in fact, more soluble." 3 Tr 361. He further testified that, in his experience, the addition of lime to prevent ARD may cause arsenic to be discharged from the mine. 3 Tr 371. However, he noted that the addition of lime is "something that can be done, but it's just got to be done carefully." *Id.* Mr. Kuipers further stated:

So, again, it's not to say that this isn't a practice that we wouldn't suggest, but we also would put a pretty big boundary of uncertainty around what will actually happen. And I believe that the [EGLE] has recognized that in that they have suggested that we have a look for a 50-year period during which time we would look at the water quality and they have to come up with a final plan based on all the information.

3 Tr 371-372. Mr. Kuipers did not testify regarding the quantity of arsenic or selenium that is expected to be discharged from the backfilled pit.

In response to this testimony, Mr. Ciardelli testified that he agrees that arsenic is not impacted by the addition of limestone as a buffering material. 18 Tr 3123. He noted that the Permittee's model assumed that 100 percent of the arsenic within the waste rock dissolves into the pore water in the backfilled pit and remains at that concentration. *Id.*

However, he opined that less than 100 percent of arsenic will remain in solution for two reasons. First, 100 percent of the weathering product will not dissolve into solution. 18 Tr 3124. Second, arsenic has a high affinity for minerals like iron oxides, so it is likely that some of the arsenic will bind with the iron oxide present in the system. *Id.* Because the model used by the Permittee did not include absorption and coprecipitation, he opined that it is further likely that less than 100 percent of the arsenic will be present in the pore water of the pit due to these processes. 18 Tr 3124-3125.

Finally, Mr. Donohue testified regarding potential impacts to the Menominee River from the backfilled pit. 16 Tr 2790; 29 Tr 4197. Essentially, he testified that pore water from the backfilled pit will be required to migrate up through the low-permeability cap “into the hydraulically active zone, which is the reclaimed overburden over the pit that is receiving groundwater flow through it from the surrounding area.” 23 Tr 3735. The potential impact of the pore water from the pit is reduced by diffusion through the low-permeability cap. 23 Tr 3674. There is additional diffusion of these constituents by groundwater such that when it reaches the Menominee River at the groundwater/surface water interface (GSI), the maximum concentration of constituents will be less than the maximum concentrations under Michigan’s water quality standards.⁴³ 23 Tr 3676-3679. See also Exhibit R-9 (Table 3-7) at p 87. Mr. Donohue also reiterated that the concentration of contaminants used in the model was conservatively estimated by Mr. Ciardelli to be the maximum potential concentration of such constituents. 23 Tr 3675.

I note that the testimony of both Dr. Zamzow and Mr. Kuipers was qualified. Specifically, Dr. Zamzow testified that the arsenic levels “could” exceed water quality standards. 2 Tr 214. Nevertheless, she opined in her report that even if the Permittee’s computations were off by a factor of 10, arsenic levels in the Menominee River will meet water quality standards. Exhibit P-5 at pp 18-19. Her testimony is thus consistent with the testimony of Mr. Donohue. 23 Tr 3676-3679. Mr. Kuipers did not rebut this testimony, and he conceded that the closure practice is one that he may suggest. 3 Tr 371-372. Most importantly, neither Dr. Zamzow nor Mr. Kuipers provided evidence of a concentration of arsenic which they believe would reach the River. Therefore, based upon the

⁴³ Dr. Hyndman’s challenges to the Permittee’s contaminant transport model will be reviewed *infra* when addressing Impacts to Water Resources.

evidence in the record, including the foregoing, I find, as a Matter of Fact, that arsenic from the backfilled pit will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

c. Contaminant Loading from TWRMF Liners

In its Closing Brief, Menominee contends that there will be contaminant loading from the TWRMF liners. Menominee's Closing Brief at p 16. As support for this assertion, Menominee states that "[i]t is understood that even the best liners will leach some level of constituents into the ground and, here, into the groundwater." *Id.* Similarly, Mr. Boerner is concerned that Special Permit Condition F(7) authorizes the release of 25 gallons per acre per day (g/a/d) from the TWRMF leak detection system. Mr. Boerner's Closing Argument at Arguments 5 and 21. See also Arguments 24 and 26 of Mr. Boerner's Closing Argument.

However, neither Menominee nor Mr. Boerner provided any evidence of contaminant loading in the record. In fact, this issue was raised by the Petitioners for the first time in their post-hearing Closing Arguments. By failing to raise this issue at the hearing, the Permittee and the OGMD have been prejudiced because they have been unable to provide a response to such allegations on the record. For such reason, the Petitioners' argument is rejected.

Nevertheless, their argument of contaminant loading is inconsistent with the evidence in the record. The TWRMF is designed so that the leachate, which consists of infiltrating precipitation and tailings bleed, is able to flow through the waste rock to the collection and extraction system. Exhibit R-7 (Appendix H) at p 32. "The leachate collection system for the TWRMF relies on the gravel drainage layer to convey TWRMF leachate to sumps at the perimeter of each TWRMF where it is collected and pumped to the CWBs." *Id.* at p 25. The collection system includes trenches and pipes. *Id.* See Exhibit R-7 (Figure 4-15) at pp 76. The leachate extraction system, which includes collection sumps and suction lift pumps, provides for the extraction of the leachate from the TWRMFs. Exhibit R-7 (Appendix H) at p 26. The leachate extraction system also pumps the leachate to the CWBs. Exhibit R-7 (Appendix H) at p 23. The CWBs will be used to collect water that continues to discharge to the TWRMF sumps after the facility

has been capped. Exhibit R-7 (Appendix D to Appendix H) at p 151. After the flow to the sumps subsides, the CWBs and the WWTP will be removed. *Id.*

Therefore, based upon the evidence in the record, I find, as a Matter of Fact, that contaminant loading from the TWRMF liners will not cause a reasonably foreseeable environmental impact. R 425.102(1)(h).

d. Impacts from Radioactive Elements

Menominee contends that “there was no radioactive analysis or radon analysis, despite the presence of uranium in the soils at the site.” Menominee’s Closing Brief at p 15. Radon, uranium, and other radioactive elements are not among the features required to be analyzed under Rule 202(2). R 425.202(2). Menominee presented no evidence demonstrating that the mining activities will cause reasonably foreseeable environmental impacts due to radon, uranium, and other radioactive elements. R 425.102(1)(h). Also, no evidence of impacts is contained in the record. See, e.g., 11 Tr 1876-1877, Exhibit R-28 at page numbered 5, Exhibit R-30 at p 24. Therefore, I find, as a Matter of Fact, that the Permittee’s cumulative impacts analysis was not deficient for omitting an analysis of radon, uranium or other radioactive elements.

e. Impacts to Wildlife, Flora and Fauna

Menominee contends that the Permittee failed to analyze impacts to wildlife, flora and fauna.⁴⁴ Menominee’s Closing Brief at p 33. However, other than lake sturgeon, Menominee presented no evidence demonstrating that the mining activities will cause reasonably foreseeable environmental impacts to wildlife, flora and fauna. R 425.102(1)(h). Contrary to Menominee’s allegation, the Permittee analyzed potential impacts to wildlife, flora and fauna. Specifically, aquatic biota and habitats were analyzed in ¶ 3.13 of the EIA. Exhibit R-9 (EIA) at p 37. In addition, the EIA includes an Aquatic Biota Report, Environmental Baseline Studies in Appendix E-1. Exhibit R-16 (EIA Appendix E-1) at pp 2-3325. The EIA also includes a Freshwater Mussel Survey for the

⁴⁴ It should be noted that Special Permit Condition K(12) requires the monitoring of flora, fauna, fish, wildlife habitats, and biodiversity during mining operations. Exhibit R-52 at page numbered 15.

Proposed WWTP Outfall in Appendix E-2. Exhibit R-16 (EIA Appendix E-2) at pp 3326-3372. Terrestrial biota and habitats and ecosystems were analyzed in ¶ 3.14 of the EIA. Exhibit R-9 (EIA) at p 41. In addition, the EIA includes a Vegetation Habitat Survey and Rare Species Report in Appendix E-3. Exhibit R-16 (EIA Appendix E-3) at pp 3373-3472. The EIA also contains a 2015 Habitat Assessment and Rare/Invasive Plant Survey in Appendix E-4. Exhibit R-16 (EIA Appendix E-4) at pp 3473-3481. The EIA additionally contains a Final Report on Assessment of Amphibians, Reptiles, Birds, and Mammals in Appendix E-5. Exhibit R-16 (EIA Appendix E-5) at pp 3482-3608.

Mr. Boerner also raised concerns regarding aquatic biota and habitats in Argument 9 of his Closing Argument. Mr. Boerner's Closing Argument at p 36. Therein, he cites to ¶ 3.13.2 of the EIA, which provides:

The mining activities that could potentially affect aquatic biota and habitats include the discharge of treated water into the Menominee River, the surface water runoff from various mine structures and groundwater contamination from waste piles or spills that could transport mining related constituents into surrounding aquatic resources. Additionally, deposition from particulate emissions could potentially affect water quality of the surrounding waterways and damage the aquatic biota.

Exhibit R-9 (EIA) at p 50. Mr. Boerner argues that "[i]t is a reasonable expectation that ... private property including the Boerners, should not have to endure pollution." Mr. Boerner's Closing Argument at p 37.

Contrary to Mr. Boerner's assertion that his property will be polluted, Rule 202 requires for each condition or feature addressed in the EIA to identify how the proposed mining activities may impact the feature as well as "[a] reference to the measures proposed to be taken in the mining, reclamation, and environmental protection plan to reduce or mitigate the potential impacts...." R 425.202(1)(ii) & (iv). While Mr. Boerner cited to those portions of the EIA where potential impacts are described, he ignored those portions of the EIA where the mitigation measures were discussed. See, e.g., ¶ 3.13.3 of Exhibit R-9 (EIA) at pp 50-51. Based upon the evidence in the record, I find, as a Matter of Fact, that the Permittee's cumulative impacts analysis was not deficient in its analysis of wildlife, flora or fauna, including its analysis of aquatic biota and habitats.

f. Impacts to Threatened or Endangered Species

Menominee contends that the Permittee failed to analyze impacts to threatened or endangered species. Menominee's Closing Brief at p 33. However, other than lake sturgeon, Menominee presented no evidence demonstrating that the mining activities will cause reasonably foreseeable environmental impacts to threatened or endangered species. R 425.102(1)(h). Threatened, endangered species and species of special concern were addressed in ¶ 3.15 of the EIA. Exhibit R-9 (EIA) at p 54. This portion of the EIA also relied upon the various appendices to the EIA referenced *supra*. Exhibit R-16 (EIA Appendix E-1) at pp 2-3325, Exhibit R-16 (EIA Appendix E-2) at pp 3326-3372, Exhibit R-16 (EIA Appendix E-3) at pp 3373-3472, Exhibit R-16 (EIA Appendix E-4) at pp 3473-3481, and Exhibit R-16 (EIA Appendix E-5) at pp 3482-3608. Impacts to threatened and endangered species as well as mitigation measures are set forth in ¶ 3.14.3. Exhibit R-9 (EIA) at p 56. For example, the EIA explains that "[t]he mussel survey provided in Appendix E-2 also indicates the need for rescue and relocation of listed mussels at the treated water discharge outfall."⁴⁵ *Id.* Based upon the evidence in the record, I find, as a Matter of Fact, that the Permittee's cumulative impacts analysis was not deficient in its analysis of threatened or endangered species.

g. Impacts to Recreational Areas

Menominee contends that the Permittee failed to analyze impacts to Shakey Lakes Park and other recreational areas. Menominee's Closing Brief at p 56. Under Rule 202, the EIA is to address impacts of the project upon "[a]reas actively maintained for public recreation." R 425.202(2)(r). Impacts to recreational areas were addressed by the Permittee in ¶ 3.11 of the EIA. Exhibit R-9 (EIA) at p 45. Therein, it notes that "Shakey

⁴⁵ In its Reply Brief, Menominee argues for the first time that the project will adversely impact mussels. Menominee's Reply Brief at p 18. The EIA provides that mussel relocation will be performed in accordance with permit conditions. Exhibit R-9 (EIA) at p 56. Special Permit Condition M(1)(r) provides that "[p]rior to operations, the permittee shall submit and obtain approval for a finalized [Sampling and Analysis Plan (SAP)] that includes ... details for ... relocation of native freshwater mussels." Exhibit R-52 at page number 19. While Menominee argues that "there is no analysis of whether or not such relocation will be protective of the listed mussel species," Menominee's Reply Brief at p 19, it did not present any evidence that the rescue and relocation plan would be ineffective. Therefore, Menominee's argument is therefore rejected.

Lakes County Park... [is] located approximately 2 km [or 1.2 miles] south of the Project Area....” *Id.* Moreover, it further notes that Whisker Lake Wilderness, which is a Federal Wilderness Area, is “located approximately 70 km [or 43.5 miles] northwest of the Project Area....” *Id.* Menominee has not identified any other recreational area that should have been addressed. The EIA further recites that “[t]here are no public recreation and natural areas ... that will be affected by the proposed mining activities.” *Id.* With respect to mitigation activities, the Permittee noted:

Mitigation for potential impacts to Shakey Lakes County Park and community include the engineering controls and practices that are incorporated into the project design such as lined facilities, groundwater monitoring networks, contingency plans, particulate suppression practices, and final reclamation of the site.

Exhibit R-9 (EIA) at p 45.

In addition to the foregoing, the Permittee’s cumulative impacts analysis considered the effects of the deposition of particulate matter upon the northern-most Shakey Lake (Spring Lake). Exhibit R-9 (EIA) at p 66. In this analysis, noted *supra*, the Permittee determined that “[t]he deposition analysis shows that for constituents copper, lead, and zinc, water quality is currently compliant with water quality standards ... and remains compliant with the estimated deposition of those constituents from the Project.” *Id.* See also 18 Tr 3009. Similarly, Mr. Depa testified that “the metals and sulfate impacts to the water for Menominee River and Spring Lake were very much lower than background concentrations and that they would only increase the concentration of that pollutant in the water by a very small amount.” 10 Tr 1796. Indeed, his results indicated that expected impacts from the mine are lower than water quality standards. *Id.* Finally, Mr. Depa testified that at Spring Lake, the background mercury concentration is .011 µg/l, and that the mine will have a very, very small impact on the water concentration of mercury such that it is not a significant change to the water concentration. 10 Tr 1797-1798.

Dr. Hyndman testified that the Permittee has “not characterized the potential contaminant flux to the Shakey River and Shakey Lakes system via surface water carrying sediments and contaminants, via groundwater, and also via airborne deposition.” 4 Tr 653. Contrary to Dr. Hyndman’s testimony, both the Permittee’s analysis and Mr. Depa’s testimony related to airborne deposition of contaminants, noted *supra*. Also,

Dr. Hyndman did not provide any corroboration for his testimony that there may be contaminant flux in the Shakey Lakes system. In fact, there was no substantive evidence proffered by Menominee of any impacts to the Shakey Lakes Park or other recreational areas. Based on the record before me, I find, as a Matter of Fact, that the Permittee's cumulative impacts analysis was not deficient in its analysis of impacts to Shakey Lakes Park and other recreational areas.

h. Impacts to Infrastructure and Utilities

Menominee contends that the Permittee failed to address impacts to infrastructure and utilities caused by the proposed project. Menominee's Closing Brief at p 58. Menominee argues that the Permittee did not address the status of River Road which runs through the project site and through the pit itself. *Id.* Similarly, in Argument 1 of his Closing Argument, Mr. Boerner contends that the Permittee does not have any agreement with the Menominee County Road Commission with respect to the re-routing of River Road. Mr. Boerner's Closing Argument at p 11. Mr. Boerner also challenges the infrastructure of the project site in Argument 36 of his Closing Argument. Under Rule 202, existing and proposed infrastructure and utilities are to be addressed. R 425.202(2)(q).

In this case, infrastructure and utilities were addressed at ¶ 3.10 of the EIA. Exhibit R-9 (EIA) at p 43. Therein, the Permittee noted that "[t]he majority of the route between the Project Area and Stephenson (including County Roads 356, 577, G12) is suitable for semi-trailer traffic. River Road may have to be upgraded in areas to allow for all season travel." *Id.* at p 44. Further, the EIA notes that "[t]he project access will be routed via River Road to the main access road on the southwest side of the facility." *Id.* The EIA does not expressly recite that River Road will be closed at the north and south borders of the proposed project, but this implication can be derived from the maps within the EIA. Specifically, Figure 2-1 indicates that River Road runs northeast inside the western edge of the pit. Exhibit R-9 (Figure 2-1) at p 110. See also Exhibit R-2 (Figure 2-3) at p 75. It is presumed that River Road will truncate at both the northern and southern boundaries of the project. Mr. Boerner, whose property is located north of the proposed project along River Road, will be required to access his property via River Road from the north. See Exhibit R-9 (Figure 1-1) at p 109.

In order to close a portion of River Road, the Permittee may be required to obtain some form of a permit from the Menominee County Road Commission. The fact that a permit was not obtained prior to the commencement of this contested case is irrelevant because a Part 632 permit is not contingent upon the issuance of such permit. Moreover, Part 632 is a resource protection statute, not a statute for protection of infrastructure and utilities. In fact, EGLE has previously held that measures to reduce or mitigate impacts to certain features listed in Rule 202(2), such as infrastructure and utilities, are outside of the regulatory framework of Part 632.⁴⁶ *Keweenaw Bay*, 2010 WL 276664 at *4. Therefore, I conclude, as a Matter of Law, that the Permittee's cumulative impacts analysis was not deficient in its analysis of impacts to infrastructure and utilities.

i. Impacts from Noise or Light

Menominee contends that the EIA failed to analyze the project's impacts from noise and light. Menominee's Closing Brief at p 59. Similarly, in his conclusions, Mr. Boerner requests this Tribunal to modify the existing permit in order to reduce negative impacts to property outside the mine footprint from noise and light. Mr. Boerner's Closing Argument at p 5. See also Argument 38 of Mr. Boerner's Closing Argument. Rule 202(2)(ii) & (jj) require an applicant's EIA to address impacts from noise and light, respectively. R 425.202(2)(ii) & (jj). Impacts from noise and light were addressed in ¶¶3.19 of the EIA. Exhibit R-9 (EIA) at p 53. In addition, noise generating activities from the project were addressed in Appendix H to the EIA. Exhibit R-18 (EIA Appendix H) at pp 1-61. In addition, the Permittee proffered the testimony of Ms. Arlaud who provided evidence regarding the dB level of anticipated ANFO blasting during mining operations. 24 Tr 3764-3788.

In addition to noise and light, Mr. Boerner also argued that the removal of trees and vegetation from the project area will affect his property aesthetically. Argument 29 of Mr. Boerner's Closing Argument. See also Argument 39 of Mr. Boerner's Closing Argument. Aesthetics of the project site and the surrounding area is not a condition or feature that must be analyzed by an applicant under Rule 202. R 425.202(2). The

⁴⁶ Because infrastructure and utilities are outside the regulatory reach of Part 632, I did not include an analysis of the evidence proffered in the record with respect to impacts to utilities. See Permittee's Response Brief at pp 34-36.

Petitioners' challenges to the project on the grounds of noise or light or aesthetics are without merit. Part 632 is a resource protection statute, not a statute to protect against noise or light or aesthetics. In fact, EGLE has previously held that measures to reduce or mitigate impacts to certain features listed in Rule 202(2), such as noise or light or aesthetics, are outside of the regulatory framework of Part 632. *Keweenaw Bay*, 2010 WL 276664 at *4. Therefore, I conclude, as a Matter of Law, that the Permittee's cumulative impacts analysis was not deficient in its analysis of impacts from noise or light or aesthetics. Based upon the evidence in the record, including the foregoing, I find, as a Matter of Fact, that the Permittee's analysis of cumulative impacts was adequate.

C. Impacts to Water Resources

Menominee raises numerous challenges to the MPA based on its analysis of impacts to water resources. For example, Menominee challenges the steady state hydrogeological model employed by the Permittee. Each of Menominee's challenges will be addressed *infra*.

1. Groundwater Modeling

Menominee contends that the Permittee should have used a transient model instead of a steady state model when performing its hydrogeologic modeling. Menominee's Closing Brief at pp 61-62. In support of this contention, Menominee relies upon the testimony of Dr. Hyndman. His main assertion is that the Permittee's groundwater model is inadequate because it employed a steady state model. 3 Tr 522-523. See also Exhibit P-211 at pp 24-25. Dr. Hyndman did not prepare a model to counter the one presented by the Permittee. 4 Tr 674-675. In support of his opinion, Dr. Hyndman criticized the calibration of the model. Exhibit P-211 at p 28. He testified that the calibration indicates that the difference between the model and observation was 10 feet, which he contends is a large difference in a groundwater model. 4 Tr 641-643.

While Dr. Hyndman argued that a transient model was more appropriate than a steady state model, both Mr. Donohue and Mr. Andersen testified that the steady state model employed by the Permittee was appropriate. 17 Tr 2890; 21 Tr 3516; 29 Tr 4191. Mr. Andersen also testified that the Permittee's calibration of the model indicates an

acceptable fit. 21 Tr 3515. Exhibit I-93 at p 29. Therefore, from the record, there is conflicting expert testimony on the adequacy of the Permittee's hydrogeologic modeling.

It is axiomatic that the weight given to testimony is not dependent upon the number of witnesses. *Dewey v Perkins*, 295 Mich 611, 616; 295 NW 333 (1940). In cases tried without a jury, the trier of fact may give such weight to which the testimony, in his opinion, is entitled. *Lather v Michigan Public Service Co*, 332 Mich 683, 690; 52 NW2d 551 (1952). Moreover, the resolution of conflicting expert testimony falls within the province of the trier of fact. See *Goodman v Stafford*, 20 Mich App 631, 637; 174 NW2d 593 (1969).

In this case, both Menominee and the Permittee presented expert witnesses to testify as to the appropriate model to be employed. The expert witnesses on both sides were professionals in their fields and were highly credentialed. However, Dr. Hyndman's testimony amounts to a critique of the model offered by the Permittee. Since Dr. Hyndman did not prepare his own model, there is no evidence in the record to demonstrate that a transient model would yield any different results than the steady state model employed by the Permittee. More importantly, there is no evidence in the record to corroborate Dr. Hyndman's testimony. As a result, I am unwilling to reject the model employed by the Permittee based solely upon the uncorroborated testimony of Dr. Hyndman. Therefore, based on the record in this case, I find, as a Matter of Fact, that the Permittee's steady state model is entitled to receive greater weight than the testimony offered by Dr. Hyndman. Accordingly, I reject Menominee's claim that a transient model is more appropriate than a steady state model in this case.

Finally, Menominee is precluded from arguing that the Permittee somehow prevented it from preparing its own model. Menominee argued that it could not prepare a model, because it was not provided with a copy of the Permittee's model. Indeed, Dr. Hyndman stated on several occasions that he was not provided with the Permittee's model so he could not quantify the data. See, e.g., 4 Tr 692.

The evidence reveals that on January 26, 2016, Menominee sent a letter to both the OGMD and the Permittee requesting the MODFLOW2000 model employed by the Permittee in its MPA. Exhibit P-157. A similar request for the model was made by Menominee on March 29, 2016. Exhibit P-159. Mr. Cox, the Chairman of Menominee,

testified that “[w]e were told that the information wasn’t available from DEQ.” 9 Tr 1470-1470. However, in Exhibit P-166, an exhibit admitted by Menominee, Mr. Maki stated:

On January 26, 2016, the Menominee sent a letter addressed to the MDEQ and the Company requesting the MODFLOW2000 groundwater model used in the application. I phoned the Menominee to discuss the nature of the request, and informed them that the MDEQ did not have the actual model **but had all the input parameters** and output files that were included in the original application. The Menominee informed me that they did not have anyone knowledgeable in groundwater modeling so I suggested a meeting with our hydrogeologist.

Exhibit P-166 at p 3 (emphasis supplied). Hence, Dr. Hyndman could have employed the input parameters into his model. Moreover, if the requested information was necessary for the prosecution of its case, Menominee should have filed a Motion seeking discovery, which it did not do.⁴⁷ In fact, upon cross-examination, Dr. Hyndman admitted that he was not asked to prepare a model. 4 Tr 747. Therefore, any claim by Menominee that it was prevented from preparing its own model is rejected.

2. Impacts to Wetlands

Menominee contends that the Permittee’s EIA failed to assess impacts to wetlands. Menominee’s Closing Brief at p 79. In support of this contention, Menominee offered the testimony of Dr. Hyndman. He testified regarding potential impacts to wetlands caused by mining operations. His testimony addressed wetland losses and contamination of wetlands.⁴⁸ 3 Tr 517-518, 528-531; Exhibit P-211. While this contested case concerns whether the Permittee is entitled to a permit under Part 632, Menominee contends that wetland impacts should also be addressed. The Permittee and the OGMD contend that such impacts are more appropriately addressed in the permitting process for the Permittee’s application under Part 303. In order to answer this question, a review of Part 303 is warranted.

⁴⁷ The only request for discovery in this case was filed by Mr. Boerner, seeking answers to 149 requests for admissions. See Order entered on October 6, 2017. Such Motion was denied, in part, on the grounds that “most of the requests cannot be reasonably construed as seeking information that will lead to admissible evidence.” *Id* at p 2.

⁴⁸ Dr. Hyndman also challenged the Permittee’s use of a “river package” in its hydrogeologic model. He opined that the “river package” created an infinite source of water underlying the wetlands thereby understating impacts to wetlands. 3 Tr 528-529; 4 Tr 695.

A permit under Part 303 is required when a party seeks to (a) deposit fill material in a wetland; (b) dredge or remove soil or minerals from a wetland; (c) construct, operate, or maintain any use or development in a wetland; and (d) drain surface water from a wetland. MCL 324.30304. Because the Permittee's proposed project may do all of the foregoing, a Part 303 permit is necessary. If a Part 303 permit is necessary, the next question to address is whether any evidence of wetland impacts is relevant in this contested case under Part 632.

Initially, it should be noted that § 63205(11) provides that a permit may be issued by the department if it determines that “[t]he proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or the public trust in those resources....” MCL 324.63205(11). That statute further provides that, “[i]n making this determination, the department shall take into account the extent to which other permit determinations afford protection to natural resources.” *Id.* As noted *supra*, Dr. Hyndman testified regarding wetland losses and contamination of wetlands. 3 Tr 517-518, Exhibit P-211. Part 303 affords protection for wetland losses. MCL 324.30304. Menominee contends that the EIA is inadequate because it underestimates the amount of such losses. See 3 Tr 532. If the EIA inadequately addresses wetland losses, such an issue is more appropriately raised in the Part 303 case because Part 303 affords protections for wetland losses. For such reason, evidence of wetland losses is irrelevant in this case.

However, Part 303 does not afford protection for wetland contamination. Rather, under Part 632, a mining permit can be issued only if the project does not pollute natural resources. MCL 324.63205(11), R 425.201(7)(b). Hence, protection against contamination is afforded by Part 632. Therefore, evidence of wetland contamination is relevant and will be reviewed and addressed in this contested case.

Regarding wetland contamination, Dr. Hyndman suggested that “extreme rainfall events” may occur which could overwhelm the contact water containment system causing contamination in adjacent wetlands. 4 Tr 667. He criticized the Permittee's modeling because it relied upon a 100-year flood in its analysis. 3 Tr 537. He suggested that the Permittee should have used a thousand-year flood event. 4 Tr 658, 704. However, Dr. Hyndman did not supply any evidence attempting to quantify the amount of contamination that would occur in the wetlands.

The Administrative Rules provide that, under the mining plan, the “[p]lans and schedules for regulating or controlling drainage of water, including surface runoff, ... shall ensure that 24-hour 100-year precipitation events do not cause releases of water that are not in compliance with the conditions of the mining permit.” R 425.203(c)(xx). Hence, by Rule, the Permittee is not obligated to model an extreme rainfall event greater than a 100-year event. Nevertheless, the OGMD requested the Permittee to “[p]rovide a risk analysis for a flood that inundates the mine area” and to “[e]xplain what contingencies will be in place if the mine area is flooded.” Exhibit R-28 at page numbered 18. In response, the Permittee stated:

A flood frequency analysis of the Menominee River was conducted and is presented in Attachment 143. The analysis shows that the risk of a flood of sufficient magnitude to exceed the banks of the river in the Project Area is exceedingly small. Flood stage is shown to be 215 meters [705 feet] above mean sea level (m amsl) before Project Area inundation occurs. The return period for a flood large enough to reach a flood stage of 215 m amsl adjacent to the Project Area is shown to be in excess of 100,000 years. This means there is less than a 1 in 100,000 chance of a flood inundating the site in any given year. Conservatively, assuming a small and more frequent event, namely the 10,000-year event, has sufficient stage elevation to inundate the site, the probability of inundation over an assumed 50-year Project life is found to be very small at 0.5%. The 50-year Project life was chosen to include a conservatively long assumed duration for project construction, operation, reclamation and postclosure monitoring.

Exhibit R-30 at p 57. See also 16 Tr 2748-2749, 17 Tr 2896-2897. In addition, the Permittee noted that the following protective measures would be mobilized in the event of such a flood contingency:

- Armoring of overburden and topsoil stockpiles with waste rock to minimize erosion.
- Removal of reagents and related chemical processing compounds from the Mine Site and transport to safe storage.
- Suspension of operations and drawdown of CWB volumes to reduce the volume of contact water subject to mixing with flood waters.
- Other measures as deemed appropriate.

Exhibit R-30 at p 58.

Based on the foregoing, I find, as a Matter of Fact, that the Permittee's model is adequate with respect to its analysis of contamination of wetlands.

3. Recharge and Conductivity

Menominee also challenges the recharge assessment and conductivity determinations made by the Permittee. Menominee's Closing Brief at pp 63, 65. In support of this contention, Menominee relies upon the testimony of Dr. Hyndman. He was critical that the Permittee utilized 7 inches per year as the amount of recharge because he believed that this number is low. 3 Tr 545. He recommended a recharge of 9 or 12 inches per year. *Id.* Exhibit P-211 at p 34. In support of his higher recharge numbers, Dr. Hyndman testified that he had created a model to compute recharge. 4 Tr 712, Exhibit P-211 at p 34. However, Dr. Hyndman conceded that the 7 inches per year recharge figure is the volume recommended by the United States Geological Survey (USGS). 4 Tr 696. The Permittee should not be penalized for using the amount of recharge recommended by the USGS. Nevertheless, the Permittee re-ran its model using Dr. Hyndman's average recharge rate of 8.5 inches (4 Tr 712, 714; 26 Tr 3957), and the effect was negligible. 21 Tr 3531-3532. Therefore, I find, as a Matter of Fact, that the Permittee's model is not defective for use of 7-inches as the volume of recharge.

With respect to conductivity, Menominee once again relies upon the testimony of Dr. Hyndman. He testified that the Permittee underestimated the conductivity of the water-bearing formations in its model. 4 Tr 631. He asserted that the Permittee did not account for certain pump tests. *Id.* He also testified that the Permittee's model did not consider fracturing from explosives in the low-permeability bedrock.⁴⁹ 4 Tr 632. As a result, Dr. Hyndman opined that the Permittee underestimated hydraulic conductivity. 4 Tr 631.

⁴⁹ Contrary to Dr. Hyndman's testimony, fractures are to be grouted to prevent water flow into the pit during mining, and these fractures are identified and grouted for the closure of the pit as well. 23 Tr 3684, 3732. Also, Special Permit Condition L(21) provides that "[t]he permittee shall grout geologic structures encountered in the pit that are determined to have the potential to have greater impact to groundwater and surface water levels than predicted in the EIA." Exhibit R-52 at page numbered 19.

In response, the Permittee points to the testimony of Mr. Donohue. He testified that to determine conductivity, the Permittee employed slug tests and pump tests on the glacial overburden (or Quaternary sediments). 16 Tr 2730. With respect to the Cambrian sandstone, the Permittee similarly utilized slug tests and pump tests in order to compute conductivity. 16 Tr 2730-2731. With respect to the weathered bedrock zone, which consists of fractured Precambrian bedrock, Mr. Donohue stated that the methods for establishing conductivity was more rigorous because the conductivity was due to hydraulic features such as fractures. 16 Tr 2731. Conductivity of the weathered bedrock zone was determined through optical imagers and through hydrophysical profiling by use of fluid electrical conductance. 16 Tr 2732. Once the fractures were identified, the Permittee conducted packer tests to pressurize/depressurize the formation to arrive at the rate at which the system responds. 16 Tr 2733. Finally, the permittee conducted pump tests to identify the characteristics of the weathered Precambrian bedrock. 16 Tr 2733.

I find the testimony of Mr. Donohue both detailed and credible. Therefore, based upon the evidence in the record, I find, as a Matter of Fact, that the Permittee's model is not defective in its determination of formation conductivities.

4. Contaminant Transport Model

As noted *supra*, Mr. Donohue testified regarding potential impacts to the Menominee River from the backfilled pit. 16 Tr 2790, 29 Tr 4197. He testified that pore water from the backfilled pit will be required to migrate up through the low-permeability cap "into the hydraulically active zone, which is the reclaimed overburden over the pit that is receiving groundwater flow through it from the surrounding area." 23 Tr 3735. The potential impact of the pore water from the pit is reduced by diffusion through the low-permeability cap. 23 Tr 3674. There is additional diffusion of these constituents by groundwater such that when it reaches the Menominee River at the GSI, the maximum concentration of constituents will be less than the maximum concentrations under Michigan's water quality standards. 23 Tr 3676-3679, Exhibit R-9 (Table 3-7) at p 87.

Menominee challenges this contaminant transport model. Menominee's Closing Brief at p 75. Menominee relies upon the testimony of Dr. Hyndman. Specifically, he testified that the Permittee's model only deals with diffusion of contaminants. 26 Tr 3943.

He noted that the most important mechanism of contaminant transport is advection which means moving with the velocity of the water. 26 Tr 3944, 3946. Since there was no solute transport model with advection, he opined that the Permittee did not adequately assess the transport of contaminants. 26 Tr 3944-3945. Dr. Hyndman testified that advection would occur by flow of water through the pit. 26 Tr 3947. On cross-examination, Dr. Hyndman conceded that he had not performed an independent contaminant transport model. 26 Tr 3959.

In response, Mr. Donohue explained that advection cannot occur through the pit, because it would be required to flow through solid Precambrian bedrock. 29 Tr 4193-4194. Mr. Donohue testified regarding two permitted mine sites in Michigan that involved similar Precambrian rocks: the Eagle Mine and the Humboldt Mine. 29 Tr 4194-4195. His experience with these mine sites indicated that there was insignificant advective transport of groundwater through the unweathered bedrock. 29 Tr 4195.

I give greater weight to the testimony of Mr. Donohue. Dr. Hyndman did not testify whether he considered the grouting of the pit. Recall that Mr. Donohue testified that fractures are to be grouted to prevent water flow into the pit during mining, and these fractures are identified and grouted for the closure of the pit as well. 23 Tr 3684, 3732. Also, Special Permit Condition L(21) provides that “[t]he permittee shall grout geologic structures encountered in the pit that are determined to have the potential to have greater impact to groundwater and surface water levels than predicted in the EIA.” Exhibit R-52 at page numbered 19. Absent pathways for the groundwater to flow through the solid bedrock, advection would be insignificant. 29 Tr 4195. Therefore, based upon the evidence in the record, I find, as a matter of fact, that the Permittee’s contaminant transport model is not defective for omitting advection through the unweathered bedrock.

5. Impacts to Surface Waters

In its Closing Brief, Menominee contends that the Permittee failed to assess impacts to surface waters. Menominee’s Closing Brief at pp 65-71. Specifically, the argument is that the Permittee failed to assess impacts to the Menominee River, the Shakey Lakes watershed, and small streams. Mr. Boerner also alleged that the Permittee failed to address impacts from dewatering the pit. Argument 32 of Mr. Boerner’s Closing

Argument. From a review of their briefing, the Petitioners challenge three types of impacts that could occur to surface waters: (1) impacts due to drawdown of groundwater during mining operations, (2) impacts from contaminants released during mining operations, and (3) impacts from contaminants released after closure of the backfilled pit and the Closure TWRMF. Potential impacts from these three phases of the mining operation are addressed *infra*.

(a) Impacts Due to Drawdown

As noted in the Findings of Fact, the pit will be dewatered during mining operations. It is anticipated that pit water will be derived from (a) precipitation and snow melt, (b) groundwater seepage from the Quaternary sediments, and (c) groundwater seepage from the weathered Precambrian bedrock. Exhibit R-2 (MPA) at p 33. Dewatering is to commence during pre-development activities. *Id.* Dewatering facilities are contemplated to consist of submersible pumps located in the pit floor sumps. *Id.* These pumps are to be supplemented by booster pumps positioned at different bench levels as the mine deepens. *Id.* Water collected in the pit sumps is to be pumped to the CWBs for storage prior to mill use or treatment in the WWTP. Exhibit R-2 (MPA) at p 34.

The dewatering creates a “cone of depression” or drawdown area around the mine. 17 Tr 2887. Current groundwater conditions have groundwater flowing toward the Menominee River. *Id.* Pit dewatering will cause groundwater flow to instead converge on the pit. *Id.* See Exhibit R-9 (Figure 3-12) at p 125. According to Figure 3-12, most of the drawdown will impact lands within the project boundary. *Id.* East of the project area, drawdown will be less than one meter (or 3.3 feet) of water. *Id.* The 1300-foot cut-off wall is contemplated to impede the flow of groundwater into the pit from the Menominee River or Quaternary sediments during mining operations. Exhibit R-2 (MPA) at p 34. Mr. Donohue testified that during drawdown, the groundwater divide will remain in place, and there will still be groundwater flowing toward the Shakey River system in the east and toward the Shakey Lake system in the south. 17 Tr 2888.

With respect to the Shakey River system, Mr. Donohue testified that there would be 671 cubic meters per hour (m^3/hr) of water going into that system pre-mine development. 16 Tr 2796, Exhibit R-14 (Figure 3) at p 167. Post-development, Mr. Donohue

opined that there would be 654 m³/hr of water going into that system. 16 Tr 2797, Exhibit R-14 (Figure 5) at p 169. He characterized this change in waterflow caused by the drawdown as “unmeasurable.”⁵⁰ *Id.*

Dr. Hyndman agreed that water from the Menominee River will flow toward the pit. 3 Tr 520. However, he incorrectly noted that the cut-off wall is only planned to be built into the sandstone and not the Precambrian bedrock. *Id.* While he testified that the cone of depression may occur under the Menominee River, 3 Tr 521, or may draw water from the River through river bottom conductance, 4 Tr 635, he did not opine as to any adverse environmental impact from such occurrence. Dr. Hyndman testified as to wetland losses due to the drawdown, 3 Tr 517-518, 531-532, but he did proffer an opinion as to impacts to the Menominee River or other surface water bodies caused by the drawdown. Therefore, based upon the evidence in the record, I find, as a Matter of Fact, that the Permittee did not fail to assess adverse impacts to surface water bodies due to the drawdown.

(b) Impacts During Mining Operations

With respect to impacts to surface waters from contaminants released during mining operations, potential contamination caused by the deposition of particulate matter on the surrounding environment was addressed *supra*. See Section IV(B)(1) Impacts Addressed by the Permittee, *supra*. Potential impacts caused by contaminant loading from the TWRMF liners were also reviewed *supra*. See Section IV(B)(2)(c) Contaminant Loading from TWRMF Liners, *supra*. Wetland contamination caused by extreme storm events was additionally analyzed *supra*. See Section IV(C)(2) Impacts to Wetlands, *supra*. Finally, contamination from contact water during operations was also assessed *supra*. See Section IV(B)(1) Impacts Addressed by the Permittee, *supra*. No additional impacts related to contamination of surface waters during mining operations were raised by the Petitioners. Therefore, based on the evidence in the record, I find, as a Matter of Fact, that the Permittee did not fail to assess adverse impacts to surface waters from contaminants released during mining operations.

⁵⁰ In Argument 35 of his Closing Argument, Mr. Boerner argues that the water recharge rate will be drastically altered as a result of the dewatering of the pit. Mr. Boerner's Closing Argument at p 92. However, Mr. Boerner did not offer or cite to any testimony or evidence to rebut the testimony of Mr. Donohue. Therefore, his arguments are rejected.

(c) Postclosure Impacts

With respect to postclosure impacts to surface waters, potential contamination caused by ARD from the backfilled pit was addressed *supra*. See Section IV(B)(2)(b)(i) By Flooding the Backfilled Pit, *supra*. Potential contamination of the Menominee River from the backfilled pit based on the Permittee's contaminant transport model was also reviewed *supra*. See Section IV(C)(4) Contaminant Transport Model, *supra*. Potential impacts caused by contaminant loading from the TWRMF liners were also considered *supra*. See Section IV(B)(2)(c) Contaminant Loading from TWRMF Liners, *supra*.

In addition to such potential contamination, Dr. Hyndman also testified regarding contamination caused by erosion. He testified about channel cut-bank erosion along the Menominee River. Exhibit P-211 at p 19, 3 Tr 559-560. He stated that, "if you get a large flood and the river level rises and has a lot of energy to erode sediment, it could cut over and get closer to where the pit material is." 3 Tr 559-560. Dr. Hyndman also testified regarding erosion from a large flood event that may inundate the site. Exhibit P-211 at p 19, 3 Tr 559-560. The risk of a large flood event was addressed *supra*. See Section IV(C)(2) Impacts to Wetlands, *supra*.

Mr. Bocking analyzed the flood plain adjacent to the project site. He noted that east of the Menominee River, the land terraces to an elevation of 214 meters (702 feet). 19 Tr 3307, Exhibit I-109 at p 10. The bottom of the cut-off wall is noted to be at an elevation of 198 meters (or 649.6 feet) which is coincident with the bedrock level at the pit. *Id.* A 100-year flood is estimated to reach an elevation of 211.7 meters (or 694.6 feet). 19 Tr 3308. A thousand-year flood advocated by Dr. Hyndman is estimated to reach an elevation 0.7 meters higher than a 100-year flood or an elevation of 212.4 meters (or 696.9 feet). *Id.* Mr. Bocking testified that the cut-off wall that is built into the land terrace on the east of the river is above almost any conceivable flood level. *Id.*

Even if a large flood event were able to inundate the project area, Dr. Hyndman did not opine as to the manner by which contaminants could be eroded through the geomembrane cover of the Closure TWRMF. Exhibit R-9 (EIA) at p 28, Exhibit R-7 (Figure 4-19) at p 80. Similarly, with respect to the backfilled pit, waste rock will be placed below the weathered bedrock zone. Exhibit R-7 (Appendix I) at p 244, Exhibit R-7 (Figure

3-1) at p 265, Exhibit R-14 (Figure 3-5) at p 138, 15 Tr 2656, 23 Tr 3674. Dr. Hyndman's theory would thus require contaminants to pass through low-permeability bedrock.⁵¹ Finally, Dr. Hyndman did not present evidence to counter Mr. Ciardelli's testimony regarding the maximum level of contaminants contained within the backfilled pit. 19 Tr 3190, Exhibit R-14 (Table 5-2) at p 128.

From the evidence in the record, I find, as a Matter of Fact, that the Permittee did not fail to assess postclosure contamination impacts to surface waters.

6. Seasonal and Long-Term Variations

Menominee also contends that the Permittee failed to provide the information required by Rule 202(2)(e). R 425.202(2)(e). That Rule requires an applicant to provide the following information:

Natural or artificial lakes, ponds, impoundments, rivers, streams, creeks, drains, seeps, and springs, including both of the following:

- (i) Observed levels or discharge rates.
- (ii) Predicted seasonal and long-term variations of levels or discharge rates.

Id. This information was supplied by the Permittee in ¶ 3.5 of the EIA. Exhibit R-9 (EIA) at pp 31-38. Therein, the Permittee notes that a surface water baseline study was completed for the project which analyzed such surface water features. *Id.* at p 31. It also noted that this baseline study included (1) observed water elevation or discharge rates, and (2) predicted seasonal and long-term variations of water elevation or discharge rates. *Id.* The baseline study is located in Appendix D-1 of the EIA. See Exhibit R-10 (EIA Appendix D-1 (1 of 2)), Exhibit R-11 (EIA Appendix D-1 (2 of 2)).

In claiming that the Permittee "Failed to Consider and Predict Seasonal Variations," Menominee does not address "discharge" rates from lakes or streams as required by Rule 202(2)(e). Rather, Menominee argues "recharge" rates related to the Permittee's groundwater model. See Menominee's Closing Brief at p 70. Hence,

⁵¹ The Permittee's contaminant transport model, where contaminants pass through the low-permeability cap of the backfilled pit, was addressed *supra*. See Section IV(C)(4) Contaminant Transport Model, *supra*.

Menominee has argued apples instead of oranges. The balance of Menominee's arguments relating to "discharge" (Menominee's Closing Brief at pp 71-72) incorrectly argue that the Permittee did not address drawdown or stream flows which were reviewed *supra*. See Section IV(C)(5)(i) Impacts Due to Drawdown, *supra*. Therefore, from a review of the evidence in this case, I find, as a Matter of Fact, that the Permittee did not fail to assess predicted seasonal and long-term variations related to surface water bodies.

7. Water Balance

Menominee also challenges the water balance employed by the Permittee in its groundwater model. Menominee's Closing Brief at p 72. In this regard, it relies upon the testimony of Dr. Hyndman. Dr. Hyndman's disapproval of the Permittee's water balance relates to its use of a steady state model instead of a transient model. 3 Tr 541-542, Exhibit P-211 at p 9. Similarly, Dr. Hyndman's criticism of the Permittee's model with respect to evapotranspiration is based on recharge rates discussed *supra*. 3 Tr 541. See Section IV(C)(3) Recharge and Conductivity, *supra*. Hence, Dr. Hyndman's challenge to the Permittee's water balance is based on issues which have already been addressed *supra*. Therefore, based on the evidence in this case, I find, as a Matter of Fact, that the Permittee did not fail to perform an adequate water balance.

8. Groundwater Monitoring Sites

On May 9, 2016, the OGMD sent a letter to the Permittee, requesting additional information to assist the agency in the review of the MPA. See Exhibit R-28. Therein, the OGMD requested the Permittee to "[p]rovide a plan for additional surface water quality sampling ... prior to operations, to confirm baseline conditions...." Exhibit R-28 at p 9. Two of the proposed sampling sites were to be located on Mr. Boerner's property. *Id.* In its Response, the Permittee proposed one year of water quality monitoring prior to construction, provided that the property owners grant access for the placement of the monitoring wells. Exhibit R-30 at pp 34-35.

In Argument 34 of his Closing Argument, Mr. Boerner contends that accurate groundwater monitoring is necessary for the project. Despite this concession and the fact

that he contends that the project will pollute the groundwater on his property, Mr. Boerner's Closing Argument at p 37, he avows that no permission for groundwater monitoring wells on his property will be granted. Mr. Boerner's Closing Argument at p 91. Mr. Boerner's refusal to grant permission to place groundwater monitoring wells on his property is not fatal to the project. Alternative locations for monitoring wells can be obtained by the Permittee.

In addition, during his testimony, Dr. Hyndman suggested three additional locations for groundwater monitoring wells. He noted that there are a series of small streams to the south and the west of the pit that are not in the monitoring plan. 3 Tr 537-538. He suggested that if this is the headwaters for these streams, the majority of the water that flows into the headwater can come from under or adjacent to the project area. 3 Tr 538. As a result, he suggested that these streams should be monitored for potential contamination. 3 Tr 538, 4 Tr 698-699. By reference to Exhibit 9 (Figure 3-16) at p 129, he identified three streams that should have associated groundwater monitoring wells. 3 Tr 550, 4 Tr 657. The first stream is located west of the MSG-15 monitoring site, while the second stream is located directly east of MSG-15.⁵² 3 Tr 550. The third small stream he suggested for a monitoring well is the stream located on Mr. Boerner's property, located south of MSG-8. 3 Tr 550-551.

I agree with Dr. Hyndman's concerns regarding groundwater monitoring. In accordance with the OGMD's request, the Permittee should conduct groundwater sampling to provide a baseline prior to construction. In addition to the locations identified by the OGMD, I find, as a Matter of Fact, that the permit should be amended to provide for groundwater monitoring locations at those locations identified by the OGMG on page 9 of Exhibit R-28, as well as the three locations identified by Dr. Hyndman – near the small streams west of MSG-15, east of MSG-15, and south of MSG-8 identified on Exhibit 9 (Figure 3-16) at p 129, provided that the property owners grant access for the placement of the monitoring wells. Mr. Boerner is encouraged to acquiesce to the placement of groundwater monitoring wells on his property to ensure that harmful levels of contaminants do not flow onto his property during operations.

⁵² In his testimony, Dr. Hyndman erroneously described the second stream as west of MSG-15. 3 Tr 550.

D. Financial Assurance

The Petitioners challenge the Financial Assurance provided by the Permittee. By statute, the MPA is required to contain Financial Assurance. MCL 324.63205(2)(e). Financial Assurance is described in § 63211. MCL 324.63211. That statute provides that a mining operator is to maintain financial assurance during mining operations until the department determines that all reclamation and post-closure monitoring has been completed. MCL 324.63211(1). The required amount of assurance must “be sufficient to cover the cost to administer, and to hire a third party to implement, reclamation under the mining, reclamation, and environmental protection plan as well as necessary environmental protection measures, including remediation of any contamination of the air, surface water, or groundwater that is in violation of the mining permit.” MCL 324.63211(2). Financial assurance is to be accomplished by “a conformance bond, escrow, cash, certificate of deposit, irrevocable letter of credit, or other equivalent security, or any combination thereof, covering at least 75% of the total required amount.” *Id.* Financial Assurance must be updated every three years or as the department considers necessary. MCL 324.63211(3).

Financial Assurance is also addressed in Rule 301. R 425.301. That Rule provides:

The amount of financial assurance shall be determined as follows:

- (a) The operator shall provide an itemized list of reclamation, remediation, and postclosure monitoring activities and costs associated with all of the following:
 - (i) Mining activities subject to the mining permit where reclamation has not yet been completed.
 - (ii) Mining activities that are anticipated to occur under the mining permit.

R 425.301(2). In this case, the MPA provides that “[t]he derived financial assurance cost estimate has been developed for two periods; at completion of construction and at the end of the LOM operating period. The estimated financial assurance cost estimate is \$24.8 million and \$105 million for end of construction and end of LOM operating period,

respectively.” Exhibit R-2 (MPA) at p 58. The Permittee supported its estimates with Appendix K to the MPA. Exhibit R-7 (Appendix K) at pp 308-353. The MPA also provides that the Permittee “will issue a Surety Bond for the amount agreed to by the Department....” Exhibit R-2 (MPA) at p 58.

According to Special Permit Condition N(1), “[t]he total financial assurance required for the Back Forty Project as of the date of this permit is \$28,600,000 prior to construction; \$118,500,000 prior to commencement of operations.” Exhibit R-52 at page numbered 20. With respect to the construction period, the OGMD’s required Financial Assurance exceeded the Permittee’s proposed amount by \$3.8 Million. With respect to operations, the OGMD’s required Financial Assurance exceeded the Permittee’s proposed amount by \$13.5 Million.

Menominee’s challenge to Financial Assurance is on the grounds that it does not consider the potential need for site remediation due to a potential accident. Menominee’s Closing Brief at p 92. In support, Menominee’s Closing Brief cites to the testimony of Ms. Humphry. 10 Tr 1718-1721. In response, the Permittee recites that its cost estimates included costs for reclamation; remediation of any contamination of the air, surface water, or groundwater; administrative oversight; reasonable contingencies and other necessary environmental protection measures. Permittee’s Response to Closing Arguments at p 55. The Permittee also cites to Exhibit R-7 (Appendix K) at p 319. However, that page notes that “no remediation actions are anticipated.” As a result, no costs attributable to remediation were included within the Financial Assurance. See Exhibit R-7 (Table 4-1) at p 323, Exhibit R-7 (Table 4-2) at p 324.

Of import is the fact that the Petitioners do not proffer a revised cost estimate for Financial Assurance. Hence, they do not suggest what dollar amount would be appropriate. Rather, in its conclusion Menominee merely contends that the cost estimates “need to be recalculated based upon the estimated costs of identifying and hiring contractors to close and remediate a site that may involve contamination.” Menominee’s Closing Brief at p 93. Mr. Boerner, on the other hand, asks “that Financial Assurance is increased to cover the potential costs to mitigate issues caused to adjacent and property in proximity to the mine site.” Mr. Boerner’s Closing Argument at p 5.

Nevertheless, Ms. Humphry testified that because Financial Assurance is required to be updated at a minimum of three years or as necessary, an update would be conducted at the time a required cleanup occurs. 10 Tr 1718. She further testified:

I disagree that they're not taken into consideration because the financial assurance requires remediation of any contamination of air, surface water and groundwater that is in violation of the mine permit. And there is no violation at this time, so there would be no way to assess that. However, every three years or as the Department considers necessary, if there was a violation or an issue, then the financial assurance would have to be reevaluated and updated as necessary.

10 Tr 1720-1721. Based upon this testimony and due to the fact that the permit provides for financial assurance in the amount of \$28,600,000 prior to construction and \$118,500,000 prior to commencement of operations, I find, as a Matter of Fact, that the amount of financial assurance, under the current conditions at the project, is appropriate.

E. The Contingency Plan

A Contingency Plan is required under § 63205(2)(d). MCL 324.63205(2)(d). Specifically, the plan is required to include "an assessment of the risk to the environment or public health and safety associated with potential significant incidents or failures and describes the operator's notification and response plans." *Id.* The requisite contents of the Plan are more specifically described in Rule 205. R 425.205.

Menominee contends that the Contingency Plan is inadequate. Menominee's Closing Brief at p 93. Specifically, it argues that it failed to assess the risk to the environment and public health and safety, that it failed to identify response measures, and that it failed to analyze risk to the environment or public health and safety. *Id.* Specifically, it contends that the Plan failed to identify response measures for several potential environmental failures. Citing *National Wildlife Fed'n (No. 1)*, *supra*. Among the potential failures, Menominee points to (1) liner leaks, (2) side slope failure of the open pit, (3) breach of the perimeter dam of the wastewater treatment system, or (4) failure of the embankment of the TWRMF. Menominee's Closing Brief at p 93.

In support of its objection to the Contingency Plan, Menominee proffered the testimony of Mr. Kuipers. 3 Tr 421, *et seq.* In his report, Mr. Kuipers opines that “[t]he contingency plan requirements provided by Michigan’s regulations are extremely limited and not consistent with industry practice....” Exhibit P-51 at p 3. He further opines that “Michigan’s regulations provide a minimum and somewhat confusing list of failure modes and effects, and are not based on an approach that is recognizable in the context of an effective risk management framework and currently favored by industry and regulators, as well as stakeholders.” *Id.*

He testified that, “What I’m really trying to explain is you can just do a contingency plan, or you can do one that fulfills a higher purpose, if you will, than just producing a piece of paper.” 3 Tr 429. Although stakeholder involvement is not required under Rule 205, R 425.205, Mr. Kuipers argued that the Permittee’s contingency plan was deficient due to lack of stakeholder involvement. 3 Tr 431-433. He suggested that the Permittee’s Contingency Plan “needs a complete overhaul” and should be prepared consistent with the Contingency Plans utilized in Canada. Exhibit P-51 at p 3.

The Permittee’s Contingency Plan is addressed in ¶ 9 of the MPA. Exhibit R-2 (MPA) at p 57. It is set forth in Appendix J to the MPA. Exhibit R-7 (Appendix J) at p 271. From a review of the Contingency Plan, it appears to be detailed and robust. It addresses the following risk items:

- Potential for acidic leachate generated from the TWRMF, Exhibit R-7 at p 279;
- Potential for leachate contact water reaching the environment from the CWBs, *id* at p 280;
- Potential contamination risks associated with the OBA, *id* at p 281;
- Potential for contact water reaching the environment from the contact water stored in the oxide and flotation ore stockpiles, *id* at p 282;
- Potential for contact water reaching the environment from groundwater infiltrating into the open pit, *id* at p 283;
- Potential risks associated with ore blasting activities, *id* at p 284;

- Potential risks associated with diesel fuel storage tank failures, fuel spills from mishandling or leaking hoses, or from a fuel spill from a mobile storage tank during construction or reclamation, *id* at pp 285-286;
- Potential risk of fire within the mine pit, or a surface area fire, *id* at pp 286-288;
- Potential risk of contamination from the WWTP, *id* at 288;
- Potential risk of failure of a containment berm on one of the settling ponds or a TWRMF embankment failure, *id* at p 289;
- Potential risk of air emissions from an emission control device, from vehicular traffic, or from dust generated during a blast, *id* at p 290;
- Potential risk of a hazardous substance spill, *id* at pp 290-291;
- Potential risks caused by natural occurrences, such as earthquakes, floods, severe thunderstorms or tornadoes, and blizzards, *id* at pp 291-292;
- Potential risks caused by power disruption, *id* at p 292; and
- Potential risks from leaks from containment systems or storage or disposal facilities, *id* at pp 292-294.

The analysis of each of these potential risks included a mitigation of risks section and a risk response measures section. See Exhibit R-7 (Appendix J) at pp 279-294. In addition to the foregoing, Ms. Martin testified with respect to the Permittee's Contingency Plan. 17 Tr 2969-2973. She noted that contrary to the assertion by Mr. Kuipers, the Permittee's Contingency Plan has failure analysis in it. 17 Tr 2969.

Based upon the evidence in the record, I find, as a Matter of Fact, that the Contingency Plan prepared by the Permittee is adequate.

F. Feasible and Prudent Alternatives

In argument 14 of his Closing Argument, Mr. Boerner contends that the Permittee failed to address feasible and prudent alternatives in its MPA. Mr. Boerner's Closing Argument at pp 58-60. By statute, the EIA is required to "address feasible and prudent alternatives." MCL 324.63205(2)(b). Similarly, under Rule 202(1)(c), a mining applicant must provide:

An analysis of feasible and prudent alternatives for the mining activities consistent with the reasonable requirements of the public health, safety, and welfare. The analysis shall include all of the following:

- (i) A description of feasible and prudent alternatives.
- (ii) A description of alternatives considered but not carried forward for further evaluation.
- (iii) A description of why the chosen alternatives are preferred.

R 425.202(1)(c).

The Permittee addressed feasible and prudent alternatives in ¶ 5 of the EIA. Exhibit R-9 (EIA) at pp 67-71. For example, the Permittee considered underground mining as an alternative to open pit mining. *Id* at p 67. It determined that underground mining was not a prudent alternative due to the shallowness of the ore body. *Id*. In addition, by a letter dated May 9, 2016, the mining team requested additional information from the Permittee on 197 items. Exhibit R-28. Included within this request was information regarding feasible and prudent alternatives. Exhibit R-28 (at pages numbered 21 and 22 of the OGMD's letter). The Permittee's 297-page response to the OGMD's request for additional information was sent in June of 2016 and is contained in Exhibit R-30. The Permittee's responses regarding feasible and prudent alternatives are set forth at pages 71-73. For example, the OGMD inquired "[w]ere alternatives considered for the use [of] chemicals other than cyanide for ore processing?" Exhibit R-28 at page numbered 22. The Permittee responded that "[c]yanide is used through the flotation process as a depressant. Other depressant additives were considered; however were rejected due to less than optimum concentrate recovery." Exhibit R-30 at p 73. From a review of the evidence in the record, I find, as a Matter of Fact, that the EIA adequately addressed feasible and prudent alternatives.

G. Whether the Project Will Require Perpetual Care

In its Closing Brief, Menominee asserts for the first time that the Permittee has failed to demonstrate that the project will not require perpetual care. Menominee's

Closing Brief at p 87. Menominee relies upon § 63209(8) which provides that “[b]oth the mining area and the affected area shall be reclaimed and remediated to achieve a self-sustaining ecosystem appropriate for the region that does not require perpetual care following closure....” MCL 324.63209(8). See also R 425.204(b)(vi). However, Menominee presented no evidence or witnesses on this subject at the 30-day hearing. By failing to raise this issue at the hearing, the Permittee and the OGMD have been prejudiced because they have been unable to provide a response to such allegations on the record. For such reason, the Petitioners’ argument is rejected.

Nevertheless, Menominee’s argument is inconsistent with the evidence in the record. With respect to the backfilled pit, the Permittee estimated that it will take between 20 to 22 years for the pit to naturally flood with groundwater. Exhibit R-30 at p 52. As noted *supra*, the permit issued by EGLE is to be amended to provide for accelerated flooding of the pit. See Section IV(B)(2)(b)(i) By Flooding the Backfilled Pit, *supra*. Mr. Donohue testified that the accelerated flooding of the pit could occur within two to four years. 17Tr 2864. Notably, Dr. Zamzow testified that based on oxidation, seven years for the flooding of the pit would be adequate to prevent ARD. 2 Tr 307. Therefore, the accelerated flooding of the pit should prevent ARD.

With respect to arsenic leaching from the backfilled pit, the Permittee’s contaminant transport model indicates that diffusion will occur in two instances. First, arsenic levels in the pore water from the backfilled pit will be diffused when flowing through the low permeability cap on the backfilled pit. 23 Tr 3674, 3735. There is additional diffusion of these constituents in the reclaimed overburden over the pit that is receiving groundwater flow through it from the surrounding area. 23 Tr 3735. When this groundwater reaches the Menominee River at the GSI, the maximum concentration of constituents will be less than the maximum concentrations under Michigan’s water quality standards. 23 Tr 3676-3679. See also Exhibit R-9 (Table 3-7) at p 87. There is nothing within this model which contemplates perpetual care related to constituents from the backfilled pit.

With respect to the Closure TWRMF, the CWBs will be used to collect water that is discharged to the TWRMF sumps after the facility has been capped. Exhibit R-7 (Appendix I) at p 151. Contact water will be treated in the WWTP. Exhibit R-7 (Appendix H) at p 25. After the flow to the sumps subsides, the CWBs and the WWTP will be

removed. Exhibit R-7 (Appendix I) at p 151. The CWBs are scheduled to close in MY16. Exhibit R-7 (Appendix I) at p 247. The WWTP is also scheduled to operate until MY16. *Id.* Exhibit R-7 (Appendix I) at p 243. Hence, the flow of leachate from the Closure TWRMF is expected to subside in MY16.

In support of its argument that the backfilled pit may require perpetual care, Menominee points to the testimony of Mr. Donohue. Specifically, on cross-examination, Mr. Donohue was asked what contingency plan was in place if the contaminants within the pore water of the backfilled pit is higher than predicted. 17 Tr 2870. Mr. Donohue explained that “the water treatment system could be used to in essence treat what’s called the first flush or the initial concentration of constituents that’s in the pore water....” 17 Tr 2871. Mr. Donohue continued that “[i]t would be a pump and treat system for a period of time to lower the concentrations down to a level that are no longer a concern from a long-term environmental protection standpoint....” *Id.* Initially, Mr. Donohue’s testimony was based upon a contingency that the Permittee does not believe will occur. Second, Mr. Donohue did not testify that this pump and treat contingency would be a perpetual occurrence but would continue for “a period of time.” Therefore, based on the record, I find, as a Matter of Fact, that the project will not require perpetual care.

V. Air, Water, Other Natural Resources and the Public Trust

As noted *supra*, EGLE shall issue a permit if it determines that the proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or public trust in those resources. MCL 324.63205(11). Therefore, it is necessary to review the evidence in this case to determine whether the proposed mining operation will cause any such pollution of natural resources.

A. Air

Permit to Install No. 205-15 was issued to the Permittee under Part 55, Air Pollution Control, of the NREPA. MCL 324.5501, *et seq.* This permit was issued by the AQD of EGLE on December 28, 2016. In Argument 7 of Mr. Boerner’s Closing Argument, he cites to the MPA which explains that the project will consume 3,000 gallons of diesel fuel

and 100 gallons of gasoline per day. Exhibit R-2 (MPA) at p 49. See Mr. Boerner's Closing Argument at p 31. Mr. Boerner is concerned with the air quality effects from such hydrocarbon consumption. Mr. Boerner did not present any evidence at the hearing of air pollution. In addition, air quality effects of the project are subject to this air quality permit. This permit may not be collaterally challenged in this contested case. *People v Howard*, 212 Mich App 366, 369; 538 NW2d 44 (1995). In addition, the effects of deposition of particulate matter on the surrounding environment were also addressed in Section IV(B)(1) Impacts Addressed by the Permittee, *supra*. Based upon the evidence within the record, I find, as a Matter of Fact, that the proposed mining operation will not pollute, impair, or destroy the air.

B. Water

Treated wastewater from the WWTP will be discharged into the Menominee River from a pipe located west of the pit. Exhibit R-2 (Figure 2-1) at p 73. The point source discharge from the wastewater treatment plant is subject to an NPDES permit. Exhibit I-233. This permit was issued by the WRD of EGLE on April 5, 2017. *Id.* Potential impacts upon water from the mining operation were also addressed in Section IV(B)(2)(b) Acid Rock Drainage, *supra*; Section IV(B)(2)(c) Contaminant Loading from TWRMF Liners, *supra*; and Section IV(C) Impacts to Water Resources.

Menominee has also raised two additional issues contending that the proposed mine will pollute, impair, or destroy the water. Specifically, Menominee first contends that the backfilled pit should be capped with an impermeable geomembrane cover. Menominee's Closing Brief at p 90. In support of its contention, Menominee points to the testimony of Ms. Ring. She did not testify, however, that the backfilled pit requires a geomembrane cover. Instead, she stated that "[i]t depends on the nature of the rock itself in the pit. I mean, if it's not fractured, it's not likely to go anywhere.... So it depends on the nature of the geology there." 11 Tr 1940. As noted *supra*, the waste rock will be placed within the backfilled pit below the weathered bedrock zone. Exhibit R-7 (Appendix I) at p 244, Exhibit R-7 (Figure 3-1) at p 265, Exhibit R-14 (Figure 3-5) at p 138, 15 Tr 2656, 23 Tr 3674. From the record, I find, as a Matter of Fact, that the closure plan for the backfilled pit is not deficient by electing to forego use of a geomembrane cover.

Second, Menominee also contends that the cut-off wall is not designed to isolate leachate from ground water. Menominee's Closing Brief at p 91. In its Brief, Menominee misconstrues the testimony. It contends that water will flow through the impenetrable bedrock. Citing 19 Tr 3327-3328. However, the cited testimony concerned the weathered bedrock, which is a conductive zone rather than the fresh bedrock which is a low conductivity zone. Exhibit R-9 (Figures 3-6 and 3-8) pp 119, 121; 16 Tr 2723-2724, 2730. As noted *supra*, the waste rock will be placed within the backfilled pit below the weathered bedrock zone, and "[t]he mine pit will be filled to one meter below the low groundwater level..." Exhibit R-7 (Appendix H) at p 36, Exhibit R-7 (Appendix I) at p 244, Exhibit R-7 (Figure 3-1) at p 265, Exhibit R-14 (Figure 3-5) at p 138, 15 Tr 2656, 23 Tr 3674. Moreover, the performance of the cut-off wall is irrelevant for the Permittee's contaminant transport model. See Section IV(C)(4) Contaminant Transport Model, *supra*. Indeed, the flow of water from the pit around the cut-off wall is not anticipated to increase diffusion of constituents. 23 Tr 3738. Therefore, I find, as a Matter of Fact, that the performance of the cut-off wall after closure does not affect the Permittee's contaminant transport model.

Accordingly, based upon the evidence in the record, I find, as a Matter of Fact, that the proposed mining operation will not pollute, impair, or destroy the water.

C. Fish and Wildlife

Impacts upon fish and wildlife were addressed in Section IV(B)(2)(a) Impacts to Lake Sturgeon and its Habitat, *supra*; Section IV(B)(2)(e) Impacts to Wildlife, Flora and Fauna, *supra*; and Section IV(B)(2)(f) Impacts to Threatened or Endangered Species, *supra*. Based upon the evidence in the record, I find, as a Matter of Fact, that the proposed mining operation will not pollute, impair, or destroy the fish and wildlife.

D. Public Trust

Under the common law, the public trust ensures the public's right to navigate, fish, and fowl on the waters of the state. *Collins v Gerhardt*, 237 Mich 38; 211 NW 115 (1926). The "public-trust doctrine applies only to *navigable* waters and not to all waters of the

State.” *Bott v Natural Resources Comm’n*, 415 Mich 45, 71; 327 NW2d 838 (1982) (emphasis in original). Mr. Landwehr operates a fly-fishing business on the Menominee River and testified that his company offers guided fishing trips on the Menominee River. 5 Tr 757. Based upon this testimony, I find, as a Matter of Fact, that the Menominee River is a navigable river. Other than the Menominee River, there was no evidence presented in the record with respect to which surface waters located near the project site are navigable waters. In addressing the public trust doctrine, I will presume that the Shakey Lakes are comprised of navigable lakes.

However, there was no evidence presented in this case that the public’s right to navigate, fish or fowl on the Menominee River or the Shakey Lakes will be adversely impacted by the proposed mining operation. Rather than arguing that the “right” to fish will be impacted, both Mr. Landwehr and Mr. Liegeois raised concerns over the “quality” of the fishing in the Menominee River as a result of mining operations. See 5 Tr 786, 6 Tr 931. Impacts to fish that may affect the quality of fishing were addressed in the Fish and Wildlife section, *supra*. Therefore, based upon the evidence in the record, I find, as a Matter of Fact, that the proposed mining operation will not adversely affect the public’s right to navigate, fish, and fowl on the Menominee River and the Shakey Lakes.

E. MEPA

Section 63205(11) provides, in part, that the department shall approve a mining permit if “[t]he proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or the public trust in those resources, in accordance with part 17 of this act.” MCL 324.63205(11)(b). Hence, § 63205(11) requires an examination of the project under Part 17, which is the Michigan Environmental Protection Act (MEPA). MCL 324.1701, *et seq.* That Part concerns the protection of the air, water, and other natural resources, and the public trust in those resources, from pollution, impairment, or destruction. See MCL 324.1701(1). All of the findings under Part 632 apply equally under MEPA. Therefore, based on the evidence in the record, I find, as a Matter of Fact, that the proposed mining operation will not pollute, impair, or destroy the air, water, and other natural resources, or the public trust in those resources.

VI. Summary

To summarize the Findings of Fact, Aquila Resources Inc. is the proper applicant for a permit. The OGMD has jurisdiction over the mining operations contemplated in the Mining Permit Application, and a permit is required for its operation. The Mining Permit Application was administratively complete.

With respect to cultural, historical and archaeological resources, archaeological site 20ME61 is not a "cultural, historical or archaeological resource" within the definition of Rule 102(1)(g). Cultural resources located within the project area will be protected from impacts from mining operations. The Permittee's Environmental Impact Assessment is sufficient with respect to its analysis and description of the southern border of 20ME61. The sensitivity model employed by the Permittee was adequate. The public was placed on notice with respect to 20ME112, 20ME113, 20ME114, and 20ME115, and the potential impacts of the mine on such features. The Environmental Impact Assessment was adequate in its identification and analysis of cultural, historical or archaeological resources, including unlisted archaeological sites. The Unanticipated Discovery Plan was submitted to the OGMD as a mitigation plan for archaeological sites and was not voluntary. Because adequate archaeological surveys were performed, there is no need for the Unanticipated Discovery Plan to provide for an on-site archaeological monitor. The Unanticipated Discovery Plan should be amended consistent with the suggested revisions of Dr. Anderson as set forth in footnote 32. The Unanticipated Discovery Plan should be amended to provide that both the Menominee Tribal Historic Preservation Officer and the State Archaeologist should be consulted with respect to appropriate disposition and potential repatriation of any human remains or associated funerary objects discovered in the project area. Special Permit Condition A(3) should be amended to provide that "the activity shall be monitored by a qualified archaeologist, as identified on a list of qualified candidates maintained by the State Archaeologist, until the disposition of the discovery is resolved."

With respect to cumulative impacts, the Permittee's cumulative impacts analysis was not deficient with respect to the Soil Erosion and Sedimentation Control Plan. Compliance with the NPDES permit standards for discharges within the mixing zone will not cause a reasonably foreseeable environmental impact. Compliance with the NPDES

permit standards for copper will not cause a reasonably foreseeable environmental impact. Compliance with the NPDES permit standards for selenium will not cause a reasonably foreseeable environmental impact. Compliance with the NPDES permit standards for mercury will not cause a reasonably foreseeable environmental impact. Lake sturgeon in the Menominee River will not be adversely impacted by noise from the mine. Accelerated flooding of the backfilled pit is necessary to prevent an accumulation of contaminants within the pore water of the pit. The water source for accelerated flooding of the pit is left to the discretion of the OGMD in its approval of the final closure plan. In order to prevent a release of contaminants into the surrounding environment, Special Permit Condition K(3) should be amended to provide for monthly monitoring of groundwater after pit closure during flooding. Special Permit Condition K(3) should be further amended to provide that after the pit is flooded, groundwater monitoring may occur on a quarterly basis. Arsenic from the backfilled pit will not cause a reasonably foreseeable environmental impact. Contaminant loading from the TWRMF liners will not cause a reasonably foreseeable environmental impact. The Permittee's cumulative impacts analysis was not deficient for omitting an analysis of radon, uranium or other radioactive elements. The Permittee's cumulative impacts analysis was not deficient in its analysis of wildlife, flora or fauna, including its analysis of aquatic biota and habitats. The Permittee's cumulative impacts analysis was not deficient in its analysis of threatened or endangered species. The Permittee's cumulative impacts analysis was not deficient in its analysis of impacts to Shakey Lakes Park and other recreational areas. Finally, with respect to noise or light or aesthetics, the Permittee's analysis of cumulative impacts was adequate.

With respect to impacts to water resources, the Permittee's steady state model is entitled to receive greater weight than the testimony offered by Dr. Hyndman. The Permittee's model is adequate with respect to its analysis of contamination of wetlands. The Permittee's model is not defective for use of 7 inches as the volume of recharge. The Permittee's model is not defective in its determination of formation conductivities. The Permittee's contaminant transport model is not defective for omitting advection through the unweathered bedrock. The Permittee did not fail to assess adverse impacts to surface water bodies due to the drawdown. The Permittee did not fail to assess adverse impacts

to surface waters from contaminants released during mining operations. The Permittee did not fail to assess postclosure contamination impacts to surface waters. The Permittee did not fail to assess predicted seasonal and long-term variations related to surface water bodies. The Permittee did not fail to perform an adequate water balance. Finally, the permit should be amended to provide for groundwater monitoring locations at those locations identified by the OGMG on page 9 of Exhibit R-28, as well as the three locations identified by Dr. Hyndman, being the small streams west of MSG-15, east of MSG-15, and south of MSG-8, provided that the property owners grant access for the placement of the monitoring wells.

The amount of financial assurance under the current conditions at the project is appropriate. The Contingency Plan prepared by the Permittee is adequate. The EIA adequately addressed feasible and prudent alternatives. The project will not require perpetual care.

With respect to the proposed mining operation's impacts upon air, water, or other natural resources or public trust in those resources, the proposed mining operation will not pollute, impair, or destroy the air. The closure plan for the backfilled pit is not deficient by electing to forego use of a geomembrane cover. The performance of the cut-off wall after closure does not affect the Permittee's contaminant transport model. The proposed mining operation will not pollute, impair, or destroy the water. The Menominee River is a navigable river. The proposed mining operation will not adversely affect the public's right to navigate, fish, and fowl on the Menominee River and the Shakey Lakes. In accordance with MEPA, the proposed mining operation will not pollute, impair, or destroy the air, water, and other natural resources, or the public trust in those resources.

CONCLUSIONS OF LAW

Based on the Findings of Fact, I conclude, as a Matter of Law:

1. The OGMD possesses jurisdiction over the beneficiation processes proposed by the Permittee. R 425.103(a)(iv).
2. Mining applicants are required to include information regarding cultural, historical or archaeological resources within an Environmental Impact Assessment when such features are either listed or recognized on one of the four enumerated state and federal statutes. R 425.102(1)(g).

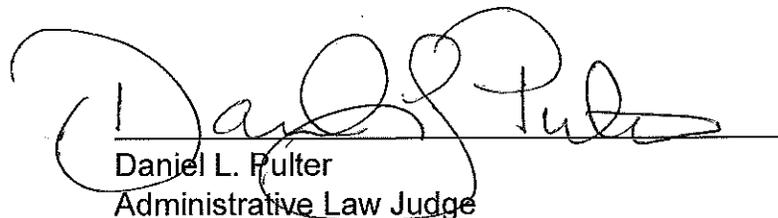
3. An Environmental Impact Assessment must analyze and reference the potential impacts to those unlisted archaeological sites within the project area of which the mining applicant knew or should have known. R 425.202(1)(a)(i) – (v); *National Wildlife Fed'n v Department of Env'tl Quality (No. 1)*, 306 Mich App 336, 358-359; 856 NW2d 252 (2014).
4. Descriptions of known but unlisted archaeological sites should be described under Rule 202(2)(ee). R 425.202(2)(ee); *National Wildlife Fed'n (No. 1)*, *supra*.
5. The Environmental Impact Assessment is intended to provide the public with notice of the proposed mining operations. *Petition of Keweenaw Bay Indian Community*, 2010 WL 276664, *4 (Mich.Dept.Nat.Res.).
6. The Environmental Impact Assessment is intended to provide the public with notice of the intended measures to be taken to mitigate effects of the mining operation upon natural resources. R 425.202(1)(a)(iv).
7. The Environmental Impact Assessment is intended to provide the public with notice as to those features which may be entitled to protection in the court system under other statutory schemes, such as the National Historic Preservation Act of 1966. R 425.202(1)(a)(iv); 16 USC § 470 *et seq.*; 36 CFR § 60.1, *et seq.*
8. Part 761 requires a mining applicant to obtain a permit before conducting mining operations under Part 632 on State of Michigan lands when antiquities may be impacted by such operations. MCL 324.76105(1).
9. Because measures to reduce or mitigate impacts to infrastructure and utilities are outside of the regulatory framework of Part 632, the Permittee's cumulative impacts analysis was not deficient in its analysis of such features. *Keweenaw Bay*, 2010 WL 276664 at *4; R 425.202(2)(q).
10. Because measures to reduce or mitigate impacts from noise or light or aesthetics are outside of the regulatory framework of Part 632, the Permittee's cumulative impacts analysis was not deficient in its analysis of such features. *Keweenaw Bay*, 2010 WL 276664 at *4; R 425.202(2)(ii) & (jj).

FINAL DECISION AND ORDER

Based upon the Findings of Fact and Conclusions of Law, the activity described in the Mining Permit Application (Exhibits R-2, R-3, R-4, R-5, R-6, R-7, R-8, R-9, R-10, R-11,

R-12, R-13, R-14, R-15, R-16, R-17, and R-18) submitted by Aquila Resources Inc. is **APPROVED**, and Permit No. MP-01-2016 issued on December 28, 2016 (Exhibit R-52) is **MODIFIED** as follows:

1. The Unanticipated Discovery Plan should be amended consistent with the suggested revisions of Dr. Anderson, as set forth in footnote 32.
2. The Unanticipated Discovery Plan should be amended to provide that both the Menominee Tribal Historic Preservation Officer and the State Archaeologist should be consulted with respect to appropriate disposition and potential repatriation of any human remains or associated funerary objects discovered in the project area.
3. Special Permit Condition A(3) should be amended to provide that “the activity shall be monitored by a qualified archaeologist, as identified on a list of qualified candidates maintained by the State Archaeologist, until the disposition of the discovery is resolved.”
4. The permit should be amended to provide for accelerated flooding of the backfilled pit. The water source for accelerated flooding of the pit is left to the discretion of the OGMD in its approval of the final closure plan. In addition, Special Permit Condition K(3) should be amended to provide for monthly monitoring of groundwater after pit closure during flooding; but after the pit is flooded, groundwater monitoring may occur on a quarterly basis.
5. The permit should be amended to provide for groundwater monitoring locations at those locations identified by the OGMD on page 9 of Exhibit R-28, as well as the three locations identified by Dr. Hyndman, being the small streams west of MSG-15, east of MSG-15, and south of MSG-8 identified on Exhibit 9 (Figure 3-16) at p 129, provided that the property owners grant access for the placement of the monitoring wells.



Daniel L. Fulter
Administrative Law Judge

PETITION FOR REVIEW

Consistent with § 1317 of the NREPA, this is a Final Decision and Order (FDO) for the EGLE. MCL 324.1317(1). The Parties have the right to file a Petition for Review of this FDO with the EGLE Director within 21 days of receiving this FDO. Upon the timely and proper filing of a Petition for Review, the EGLE Director will convene an Environmental Permit Review Panel, and this FDO will be treated as a Proposal for Decision.

A Petition for Review must be filed with EGLE Director in one of two manners: either by mail to Department of Environment, Great Lakes, and Energy at Executive Office, Attn: Director Clark, 525 West Allegan Street, P.O. Box 30473, Lansing, Michigan 48909-7973; or electronically at EGLE-PermitAppeal@michigan.gov. (See form at www.michigan.gov/egle website). A copy of the Petition for Review must also be sent to the Michigan Office of Administrative Hearings and Rules (MOAHR) either by mail to 611 West Ottawa Street, P.O. Box 30723, Lansing, Michigan 48909-7973; or electronically at MOAHR-EGLE-PermitPanel@michigan.gov.

PROOF OF SERVICE

I hereby state, to the best of my knowledge, information and belief, that a copy of the foregoing document was served upon all parties and/or attorneys of record in this matter by Inter-Departmental mail to those parties employed by the State of Michigan and by UPS/Next Day Air, facsimile, and/or by mailing same to them via first class mail and/or certified mail, return receipt requested, at their respective addresses as disclosed below this 3rd day of May, 2019.



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APPENDIX OF ABBREVIATIONS

ALJ.....	Administrative Law Judge
ANFO.....	ammonium nitrate/fuel oil
APA.....	Administrative Procedures Act
AQD.....	Air Quality Division
ARD.....	acid rock drainage
CD.....	compact disk
CWB.....	contact water basin
dB.....	decibels
DNR.....	Department of Natural Resources
EGLE.....	Department of Environment, Great Lakes, and Energy
EIA.....	Environmental Impact Assessment
EIS.....	Environmental Impact Statement
EPA.....	Environmental Protection Agency
ETSC.....	endangered, threatened, and special concern species
FDO.....	Final Decision and Order
g/a/d.....	gallons per acre per day
GSI.....	groundwater/surface water interface
HDPE.....	high-density polyethylene
Kennecott.....	Kennecott Eagle Minerals Company
LOM.....	life of mine
m ³ /hr.....	cubic meters per hour
mg/l.....	milligrams per liter
Menominee.....	Menominee Indian Tribe of Wisconsin
MEPA.....	Michigan Environmental Protection Act
MPA.....	Mining Permit Application
MY.....	mine year

APPENDIX OF ABBREVIATIONS, CONT.

NAGPRA.....	Native American Graves Protection and Repatriation Act
NCWB.....	non-contact water basin
ng/l.....	nanograms per liter
NHPA.....	National Historic Preservation Act of 1966
NPDES	National Pollutant Discharge Elimination System
NREPA	Natural Resources and Environmental Protection Act
NRHP.....	National Register of Historic Places
OBA.....	ore blending area
OGMD.....	Oil, Gas and Minerals Division
OHWM.....	ordinary high-water mark
Permittee	Aquila Resources Inc.
Petitioners.....	Tom Boerner and the Menominee Indian Tribe of Wisconsin
PDF.....	portable document format
pH	potential hydrogen
Ph.D.....	Doctor of Philosophy
PIPP.....	Pollution Incident Prevention Plan
SAP.....	Sampling and Analysis Plan
SPCC.....	Spill Prevention Control and Countermeasures Plan
tonnes.....	metric tons
Tr	Transcript
TWRMF	Tailings and Waste Rock Management Facility
µg/l.....	micrograms per liter
USGS.....	United States Geological Survey
VMS.....	volcanogenic massive sulfide
WWTP	wastewater treatment plant
WRD	Water Resources Division