

April 29, 2013

Refiled 9/20/13 with exhibit # NRC E22

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
DTE ELECTRIC COMPANY) Docket No. 52-033-COL
)
(Fermi Nuclear Power Plant, Unit 3))

PREFILED REBUTTAL TESTIMONY OF
J. PEYTON DOUB AND DAVID A. WEEKS REGARDING CONTENTION 8

Q1. Please state your name.

A1. [DAW] My name is David A. Weeks.

[JPD] My name is J. Peyton Doub.

Q2. Have you provided testimony in this proceeding before?

A2. [DAW, JPD] Yes, we provided testimony in the "Prefiled Direct Testimony of J. Peyton Doub and David A. Weeks Regarding Contention 8" (Staff Contention 8 Direct Testimony). In the Staff Contention 8 Direct Testimony, we described our occupations, experience and qualifications in A1 through A3 and our involvement and responsibilities with respect to NRC's review of the Fermi 3 COL application in A4. Our Statements of Professional Qualifications were submitted as Exhibits NRC E3 and NRC E4.

Q3. Are there any documents you considered in preparing your rebuttal testimony that you did not consider in your direct testimony?

A3. [DAW, JPD] Yes. In addition to documents filed with our direct testimony, we also reviewed the Intervenor's and Applicant's pleadings, testimony, and exhibits filed on March 29, 2013.

Q4. Do you agree with the Intervenor's that the FEIS does not discuss whether the temporarily disturbed onsite wetlands can be successfully restored to provide suitable eastern fox snake habitat (Intervenor's Direct Presentation¹ at 9)?

A4. [DAW, JPD] No. The FEIS and mitigation documents cited in the FEIS clearly indicate that the Applicant intends to restore temporarily disturbed onsite wetlands, as well as temporarily disturbed naturally vegetated uplands, to existing (pre-project) conditions once the disturbed areas are no longer needed for building Fermi 3. The FEIS itself indicates that the 146 acres of temporarily disturbed habitat on the Fermi site, including the temporarily disturbed wetlands, would be restored to their pre-project vegetative cover type. FEIS at 4-36 (Exhibit NRC E1A). The Applicant's proposed Wetland Mitigation Plan² cited in Section 4.3.1.5 of the FEIS and presented in Appendix K of the FEIS states that "Additional compensation will be realized by post-construction restoration of ... the impacted wetlands onsite [referring to the temporarily disturbed

¹ Intervenor's Direct Examination and Case-in-Chief Presentation of Contention 8 (Eastern Fox Snake) (Mar. 29, 2013) (ADAMS Accession No. ML13088A581) (Intervenor's Direct Presentation).

² The Applicant's Wetland Mitigation Plan is titled "Fermi 3 U.S. Army Corps of Engineers Mitigation Strategy and Final Design" and is presented in the FEIS (Exhibit NRC E1B) as Appendix K, titled "Detroit Edison's Proposed Compensatory Mitigation Plan for Aquatic Resources. The plan is referred to simply as the "Wetland Mitigation Plan" in this testimony.

wetlands].” FEIS at 4-46 (Exhibit NRC E1A) and FEIS at K-11 to K-12 (Exhibit NRC E1B). The Applicant’s proposed mitigation plan for the eastern fox snake (Mitigation Plan³) states that temporarily disturbed areas “... will be restored to natural habitat post construction with emphasis on creating eastern fox snake habitat” and that restoration features “will include foraging grounds, basking sites, shelter, snags, hibernacula, and nesting sites [for the eastern fox snake].” Mitigation Plan at Appendix C, page 1 (NRC Exhibit E5).

Furthermore, information included in the FEIS and cited mitigation documents provide evidence that the proposed efforts to restore eastern fox snake habitat would be successful. As we describe in A11 of our direct testimony, the eastern fox snake’s preferred habitat is emergent wetlands, even though it also uses other wetland and upland habitat close to the Lake Erie shoreline. The vegetation of emergent wetlands consists primarily of herbaceous (non-woody) plants, which typically establish cover more quickly than woody vegetation. Based on our experience with designing and monitoring mitigation wetlands, we expect that even once any woody vegetation is planted, the restored wetlands would remain predominantly herbaceous in character for the first several growing seasons until the woody vegetation has a chance to grow tall enough to produce substantial shade. The FEIS acknowledges this situation by stating that the temporarily disturbed areas “are expected to be rehabilitated to a condition of equivalent or better ecological value following completion of the project,” but that “forest and other habitat with woody vegetation would take years to re-establish many pre-project ecological functions.” FEIS at 4-36 (Exhibit NRC E1A). We therefore expect that the temporarily disturbed wetlands would be capable of providing eastern fox snake

³ The term “Mitigation Plan” is used in this testimony to refer to the “Fermi 3 Construction, Habitat and Species Conservation Plan, Eastern Fox Snake (*Elaphe gloydi*)” (Exhibit NRC E5). The “Wetland Mitigation Plan” included as Appendix K to the FEIS is a separate document.

habitat within the same growing season that the wetlands are seeded, even prior to the long-term establishment of mature woody vegetation.

As also explained in A11 of our direct testimony, the eastern fox snake does not require highly specific habitat conditions and is instead tolerant of a wide variety of coastal habitats along western Lake Erie, ranging from wetlands to natural uplands to disturbed agricultural lands. FEIS at 2-53 (Exhibit NRC E1A). Consequently, we expect that eastern fox snakes may colonize the restored areas quickly without waiting for long-term establishment of precise environmental conditions. This is especially true because the Mitigation Plan calls for purposeful installation of habitat features conducive to the eastern fox snake, such as basking sites, snags, and hibernacula, rather than waiting for such features to develop naturally. Mitigation Plan at Appendix C, page 1 (NRC Exhibit E5).

It is also our professional opinion that if the temporarily disturbed areas are restored with the habitat features called for on Page 1 of Appendix C of the Mitigation Plan, the restored areas would be capable of supporting a greater number of eastern fox snakes than they would prior to disturbance. This increase in the carrying capacity of the restored habitats would help offset the effects of unavoidable permanent habitat losses on the regional population of eastern fox snakes inhabiting the Fermi site and surroundings.

Q5. Do you agree with the Intervenors that the FEIS did not consider whether relocating eastern fox snake individuals from the Fermi 3 construction footprint to other onsite and offsite habitat might cause an overcrowding effect (Intervenors Direct Presentation at 9)?

- A5. [DAW, JPD] No. The FEIS acknowledges that over-crowding (phrased as “competition with resident individuals”) may occur as wildlife moves from areas disturbed by building Fermi 3 to undisturbed “receiving habitats” on the Fermi site. FEIS at 4-27 (Exhibit NRC E1A). This statement addresses wildlife in general, including but not limited to the eastern fox snake. Increased competition with resident wildlife could likewise result from relocating eastern fox snake individuals to undisturbed receiving habitats, as called for the Mitigation Plan (See Exhibit NRC E5). The plan states that “As part of the effort to minimize loss or take of eastern fox snakes, some snakes may be relocated to completed and translocation-suitable mitigation areas to establish this rare species in additional areas.” Mitigation Plan at Appendix C, page 1 (NRC Exhibit E5). A potential for increased competition in receiving habitats therefore exists whether eastern fox snakes naturally move away from disturbed areas or they are purposefully relocated as a mitigation measure.

We recognize that if the number of eastern fox snakes and other wildlife with similar resource requirements (e.g., for food or cover) present in the receiving areas increases past a theoretical level commonly referred to by ecologists as the habitat’s “carrying capacity,” some of the relocated and/or resident (originally present) individuals could experience increased competition for needed resources and could as a result die or experience decreased capacity for reproduction. However, Appendix D of the Mitigation Plan calls for using passive integrated transponder (PIT) tags and radio transmitters to monitor relocated eastern fox snakes for five years past completion of site preparation. Mitigation Plan at Appendix D, Pages 2 to 3 (Exhibit NRC E5). The monitoring would assess “use [by eastern fox snakes] of on-site and off-site restored, enhanced, or created habitats and assess overall population health.” Mitigation Plan at Appendix D,

Page 3 (Exhibit NRC E5). We expect that the proposed monitoring would be capable of detecting adverse eastern fox snake population trends, including trends potentially caused by carrying capacity effects, in the receiving habitats. Furthermore, we expect that the enhancements of the onsite and offsite habitats proposed in Appendix C of the Mitigation Plan would increase the carrying capacity of those habitats and thereby help offset adverse effects of resource limitation. Mitigation Plan at Appendix C, page 1 to 2 (NRC Exhibit E5).

Q6. Do you agree with the Intervenorers that the FEIS does not discuss existing soil properties, environmental contamination, or other site conditions that might affect the success of the Applicant's proposed offsite wetland mitigation (Intervenorers Direct Presentation at 9)?

A6. [DAW, JPD] No. The existing soil properties and other baseline site conditions at the proposed offsite wetland mitigation site are described in Detroit Edison's Wetland Mitigation Plan cited in Section 4.3.1.5 of the FEIS and provided in Appendix K. See FEIS at Appendix K (Exhibit NRC E1B). Specifically, the baseline conditions at the offsite wetland mitigation site are described in Section 3.0 of the Wetland Mitigation Plan, "Baseline Information", Subsection 3.2 "Mitigation Area". FEIS at K-19 to K-21 (Exhibit NRC E1B). Soils on the site are characterized using the U.S. Department of Agriculture county soil survey as Warners silt loam and Lenawee silty clay loam. FEIS at K-20 (Exhibit NRC E1B). Soils in the Warners soil series are described as "very deep, very poorly drained soils on nearly level floodplains and seepage areas of hillsides" and soils in the Lenawee soil series are described as "very deep, very poorly drained soils in lacustrine [lake-derived] deposits." FEIS at K-20 (Exhibit NRC E1B). The plan states

that soils in both soil series are suitable for wetland restoration or creation. FEIS at K-20 (Exhibit NRC E1B).

We additionally note that the Wetland Mitigation Plan and MDEQ Permit require that a layer of high-quality topsoil cover the entire wetland mitigation area at a minimum thickness of six inches. FEIS at K-28 (Exhibit NRC E1B); MDEQ Permit at 9 (Exhibit NRC E16). This topsoil layer will help facilitate the establishment of desirable wetland vegetation even in areas where underlying soils might have been previously compromised. Other baseline site conditions described for the proposed offsite wetland mitigation site in Section 3.2 of the Wetland Mitigation Plan include land use, topography, vegetation and wildlife, and existing wetlands. FEIS at K-19 to K-21 (Exhibit NRC E1B).

The FEIS, including the Wetland Mitigation Plan in Appendix K, does not specifically address the potential for past environmental contamination at the proposed offsite wetland mitigation site. However, the Wetland Mitigation Plan states that “historical maps and aerial photos indicate the land has been in agricultural use with no structures present.” FEIS at K-19 (Exhibit NRC E1B).

[JPD] I attended a briefing on August 9, 2011 by the contractor hired by the Applicant to prepare the Wetland Mitigation Plan. See Doub Report (Exhibit NRC E6). That briefing included a description of the contractor’s review of a navigation chart dated 1897 and aerial photographs dating back to the 1950s showing the proposed site. *Id.* at 10. I summarized the historical land use information for the site as follows:

A historical 1897 navigation chart indicated that the site was largely wetlands with orchards occupying the western one-third, except for a waterway that flowed through the southwest. Historical aerial photographs from the 1950s indicate that this natural waterway, termed the Davis Drain, still flowed through the western part of the site and entered into La Plaisance Creek, which flows into Lake Erie to the south. Most of the site was still farmed. By the 1960's it appears that dikes completely encompassed the site and that flow in Davis Drain had been rerouted south. Drainage ditches had been built elsewhere. Tile drains had been installed. Most of the site is still farmland today, except for dikes, drainage ditches, a drainage area that bisects the western two-thirds of the site and the former natural channel of Davis Drain, and an area at the foot of an old fill pile and forested wetlands in the northwest corner of the site.

Id. at 10. This information suggests that the development history of the proposed mitigation site is likely limited to agriculture.

[DAW] Although low concentrations of chemical fertilizers, agricultural pesticides, and their breakdown products can be expected to occur in site soils, soil chemical conditions can be expected to be typical of agricultural lands. Based on my experience as an agricultural conservation consultant and Certified Crop Advisor, I recognize that chemical fertilizers tend to be quickly bioaccumulated (taken up) by crop plants, lost to air or water, or deactivated by adsorption (adhesion) to soil particulates. Residual pesticides are unlikely to affect plants seeded or planted after abandonment of agricultural land because they tend to

breakdown quickly or become deactivated by adsorption to soil. Residual chemical fertilizers, pesticides, or their breakdown products are therefore not likely to interfere with establishment of the proposed wetlands and other natural habitats favorable to the eastern fox snake or substantially harm wildlife using those habitats.

[DAW, JPD] Additionally, Section 7.0 of the Wetland Mitigation Plan establishes specific performance standards for evaluating whether mitigation is successful. FEIS at K-28 to K-31 (Exhibit NRC E1B). Performance Standard Number 11 states that “At the end of the monitoring period, the mitigation wetland shall be free of oil, grease, debris, and all other contaminants.” FEIS at K-31 (Exhibit NRC E1B). This performance standard is incorporated into the MDEQ permit. See MDEQ Permit at 9 (Exhibit NRC E16). To meet this performance standard and the associated MDEQ permit condition, any chemical contamination present at the mitigation site, including but not limited to contamination originating from agricultural fertilizers or pesticides, would have to be absent by the close of the monitoring period. Considering the unlikely presence of adverse contamination at the start of the mitigation process, as discussed in the preceding paragraph, and the requirement that no contamination be present at the close of the monitoring period, as discussed in this paragraph, adverse effects of chemical contamination on eastern fox snakes using the wetland mitigation site are not expected.

Q7. Do you agree with the Intervenors that the FEIS contains no description of the process and timetable by which the proposed offsite wetland mitigation would be accomplished (Intervenors Direct Presentation at 9-10)?

- A7. [DAW, JPD] No. The Wetland Mitigation Plan cited in Section 4.3.1.5 of the FEIS and presented as Appendix K presents the process and timetable for the proposed offsite mitigation in Section 5.0, "Mitigation Work Plan." FEIS at K-22 to K-27 (Exhibit NRC E1B). The proposed process for establishing the desired topography, hydrology, and soils is outlined in Subsection 5.1, "Construction and Planned Hydrology." FEIS at K-23 to K-24 (Exhibit NRC E1B). The proposed process for establishing the desired vegetation and habitat features and structures is outlined in Subsection 5.2, "Planned Vegetation and Habitat Features." FEIS at K-24 to K-27 (Exhibit NRC E1B).

The applicant would begin implementing the proposed wetland mitigation prior to or concurrent with wetland impacts at the Fermi site when all necessary permits are in place. FEIS at K-22 (Exhibit NRC E1B). The proposed timetable for the offsite mitigation is presented in Subsection 5.3 of the Wetland Mitigation Plan. FEIS at K-26 to K-27 (Exhibit NRC E1B). The timetable is presented as a detailed sequence of actions implemented over 4 years. The description of the sequence begins with a statement that "The grading, planting, and introduction of hydrology at the offsite mitigation area will be constructed prior to or concurrent with initiating any Fermi 3 permitted activities." FEIS at K-26 (Exhibit NRC E1B). The sequence is proposed for a four-year period to "accommodate site preparation primarily in regards to eradicating existing invasive species and establishing planned hydrology." FEIS at K-26 (Exhibit NRC E1B). The sequence includes initiating site preparation work and invasive species control in the first year, establishing most final grades and seeding in the second year, establishing final hydrology by hydraulic connection of the new wetlands to Lake Erie in the third year, and planting nursery stock in the fourth year. FEIS at K-26 to K-27 (Exhibit NRC E1B). Staggering activities such as grading, topsoiling, seeding, and planting nursery stock over multiple years is common practice in wetland mitigation today. It allows for interim

topographic or hydrological adjustments without damaging costly wetland plant nursery stock.

Once the offsite mitigation project is complete, the Wetland Mitigation Plan calls for a minimum of five years of monitoring for emergent wetlands and ten years of monitoring for scrub-shrub and forested wetlands, or until performance standards are met. FEIS at K-32 (Exhibit NRC E1B). Those performance standards are established in Section 7.0 of the plan. FEIS at K-28 to K-31 (Exhibit NRC E1B). The performance criteria establish success criteria that drive corrective action and prevent premature termination of monitoring. FEIS at K-31 (Exhibit NRC E1B). We expect that the performance standards would lead to the ultimate success of the offsite mitigation wetlands and their suitability as potential habitat for the eastern fox snake.

Q8. Do you agree with the Intervenor's that the FEIS does not provide evidence that the proposed habitat restoration and improvement at the offsite wetland mitigation project would be available contemporaneously with physical disturbance of habitat on the Fermi site, and hence be available for relocation of affected individuals (Intervenor's Direct Presentation at 10)?

A8. [DAW, JPD] No. The Wetland Mitigation Plan included in Appendix K of the FEIS clearly expresses an objective of minimizing any time lag between loss of wetland functions at the Fermi site and reestablishment of those functions at the mitigation site. The plan states that "Mitigation activities will commence *prior to or concurrent with* [emphasis added] wetland impacts at the Fermi site to reduce temporal losses of aquatic functions." FEIS at K-9 (Exhibit NRC E1B). The plan also states:

It is recognized that there is typically a time lag between loss of wetland functions due to wetland impacts and the gain of wetland functions at the mitigation site. As stated above, mitigation activities will commence prior to or concurrent with impacts to reduce temporal loss. The additional functional capacity projected for the planned wetland over and above impact wetlands, existing mitigation site wetlands and stated wetland goals will provide further compensation for temporal loss associated with both temporary and permanent impacts at the Fermi site.

FEIS at K-11 (Exhibit NRC E1B). As we state in A4, the new and restored wetlands would initially be dominated by herbaceous vegetation, the wetland vegetation preferred by the eastern fox snake. Habitat features favorable to the eastern fox snake would be purposefully introduced rather than waiting for such features to develop naturally over time. The new and restored wetlands would therefore be available to the eastern fox snake soon after establishment without having to wait for slow-growing woody vegetation to mature or for slow successional processes to proceed. Any eastern fox snakes that might have to be relocated prior to the availability of new or restored habitat could be relocated to the approximately 636 acres of suitable eastern fox snake habitat on the Fermi site that would be undisturbed by the Fermi 3 project.

Q9. Do you agree with the Intervenors that the FEIS contains no discussion of the anticipated rate of recovery of the eastern fox snake following impacts from construction of Fermi 3 (Intervenors Direct Presentation at 10)?

A9. [DAW, JPD] No. While it is not certain that the local eastern fox snake population would actually decline as a result of building Fermi 3, we expect that any decline would be

temporary. Although the FEIS does not directly discuss the anticipated rate of recovery, it does state that the Mitigation Plan (Exhibit NRC E5) calls for a minimum of 5 years monitoring of eastern fox snakes once the proposed Fermi 3 facilities are built. FEIS at 4-37 (Exhibit NRC E1A). The Mitigation Plan calls for yearly reports throughout the monitoring period that summarize the results of the eastern fox snake mitigation efforts. Mitigation Plan at 9 (Exhibit NRC E5). The Mitigation Plan outlines a Habitat Restoration and Enhancement Program that establishes specific measures of habitat restoration, enhancement, and mitigation success. See Mitigation Plan at Appendix C (Exhibit NRC E5). These measures include:

1. Documented survival of marked and relocated snakes within restored, enhanced, or created habitat areas.
2. Continued survival and long-term viability of Fermi eastern fox snake population through presence of multiple age classes within targeted areas post construction and use of habitat features and structures for intended purposes.
3. Use of restored and enhanced habitat by eastern fox snakes and other native wildlife and establishment of eastern fox snakes within the offsite mitigation area (pending MNDR approval).
4. Reduction in number of eastern fox snake deaths post construction.

Mitigation Plan at Appendix C, Page 2 (Exhibit NRC E5). In our opinion, favorable results from these measurements of success would indicate a strong

recovery of the localized population of eastern fox snake. In particular, attainment of multiple age classes as required by criterion 2 above would indicate a robust local population capable of long-term sustainment. Attainment of the measures of success outlined in the Mitigation Plan would ensure that the regional eastern fox snake population recovers from any possible temporary adverse effects caused by the Fermi 3 project.

Q10. Does this conclude your testimony?

A10. [DAW, JPD] Yes.

Q11. Do you declare under penalty of perjury that your statements in this prefiled rebuttal testimony are true and correct to the best of your knowledge and belief?

A11. [DAW] Yes, I do.

[JPD] Yes, I do.

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