July 2, 2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033-COL
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

NRC STAFF ANSWER TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF CONTENTION 8

INTRODUCTION

Pursuant to 10 C.F.R. § 2.1205(b), the staff of the U.S. Nuclear Regulatory Commission (Staff) hereby answers the motion filed on June 11, 2012, by the Detroit Edison Company (Applicant or Detroit Edison), requesting summary disposition on Contention 8. *See* Applicant's Motion for Summary Disposition of Contention 8 (June 11, 2012) (Motion). For the reasons set forth below, the Staff agrees that there is no genuine issue as to any material fact relevant to the contention and that the Applicant is entitled to summary disposition on this contention.

BACKGROUND

By letter dated September 18, 2008, the Applicant submitted a combined license (COL) application (Application or COLA) for one Economic Simplified Boiling Water Reactor (ESBWR) to be located at the Fermi Nuclear Power Plant site in Monroe County, Michigan. Letter from Jack M. Davis, DTE, to NRC, Detroit Edison Company Submittal of Application for a Combined License for Fermi 3 (NRC Project No. 757) (Sept. 18, 2008) (ADAMS Accession No. ML082730763). The ESBWR design is the subject of a NRC rulemaking under Docket No. 52-010.

On March 9, 2009, Beyond Nuclear, Citizens for Alternatives to Chemical Contamination, Citizens Environmental Alliance of Southwestern Ontario, Don't Waste

Michigan, the Sierra Club, and numerous individuals (collectively "Intervenors") filed a Petition for Leave to Intervene in the COL proceeding, along with an attachment containing 14 contentions. Petition of Beyond Nuclear et al. for Leave to Intervene in Combined Operating License Proceedings and Request for Adjudication Hearing (Mar. 9, 2009) (ADAMS Accession No. ML090680881) (Petition). Following oral argument on May 15, 2009, the Licensing Board found that the Intervenors had standing in this proceeding and had filed four contentions that were admissible in part, including Contention 8.

As originally submitted by the Intervenors, Contention 8 asserted that "inadequate mitigation ha[d] been considered" for several endangered and threatened animal species and threatened plant species at the Fermi site. Petition at 89.[1] Specifically, Intervenors relied on an e-mail from a wildlife biologist with the Michigan Department of Natural Resources (MDNR)[2] which stated the eastern fox snake (classified as a threatened species in Michigan) had previously been sighted at the Fermi site. Relying on this e-mail, the Intervenors opined that construction would "not only kill snakes but destroy the habitat in which they live and possibly exterminate the species from the area." *Id*. at 89-90.

The Board construed Contention 8 as asserting that the Applicant's Environmental Report (ER) "failed to adequately discuss impacts on the eastern fox snake and alternatives that would reduce or eliminate those impacts[…]" in violation of NRC regulations implementing the National Environmental Policy Act (NEPA). *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-09-16, 70 NRC 227, 287 (2009). The Board found that the contents of the MDNR e-mail established a dispute of material fact "regarding the presence of the eastern fox snake at

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[1] The original Petition of March 9, 2009 was filed as separate, non-paginated documents. A single paginated version was re-filed on April 21, 2009. Page numbers reference the re-filed version. *See* ADAMS Accession No. ML091110726.

[2] The abbreviations "MDNR" and "MDNRE" are both used in this Motion as they are both used in filings by the Applicant, Board Orders, and NRC documents. The abbreviations refer to the MDNR (Michigan Department of Natural Resources) and the MDNRE (Michigan Department of Natural Resources and Environment), as appropriate. S*ee also* Motion at 3 n. 12.

the site and the potential impact of construction activities upon the snake." *Id*. at 288-89. The Board deemed the contention admissible solely in regards to the impacts on the eastern fox snake. *Id*. at 291.

On November 16, 2010, the Applicant submitted a Motion for Summary Disposition of Contention 8. Applicant's Motion for Summary Disposition of Contention 8 (Nov. 16, 2010) (ADAMS Accession No. ML103200342) (2010 Motion). The Applicant based the 2010 Motion on a revision to its ER, which acknowledged the presence of the eastern fox snake at the site and included a revised site layout and a draft mitigation plan to reduce impacts on the snake. 2010 Motion at 4-5. The Applicant claimed this new information effectively resolved the controversy within the admitted contention and thus rendered the contention moot. 2010 Motion at 4. NRC Staff did not oppose the motion; Intervenors opposed it. *Id.* at 1, n.1; Intervenors' Memorandum in Opposition to DTE's 'Motion for Summary Disposition of Contention 8,' (Dec. 6, 2010) (ADAMS Accession No. ML103400693).

The Board denied the Applicant's motion for summary disposition of Contention 8. *Detroit Edison Company* (Fermi Nuclear Power Plant Unit 3), LBP-11-14, 73 NRC __, __ (May 20, 2011) (slip op. at 1). In LBP-11-14, the Board stated that although the Applicant had "made significant modifications to the project and provided relevant new information, disputes of material fact remain concerning the adequacy of the ER's evaluation of the impact of Fermi Unit 3 on the eastern fox snake and the status of mitigation measures to reduce those impacts." *Id.* at 17. The Board also reasoned that "the contention was not limited to the omission and inconsistency upon which the [Applicant] focuses, but also concerned the overall adequacy of the ER's assessment of the project's impacts on the eastern fox snake and the sufficiency of its consideration of alternatives that would reduce or eliminate impacts to the species." *Id.* First, the Board noted that the revised ER did not address the MDNR's concerns with the original ER, nor did it provide information regarding MDNR's opinion of the new revisions. *Id*. at 19-20. Additionally, the Board believed that it was inconsistent for the Applicant to develop a draft

mitigation plan, yet continue to maintain in the ER that no mitigation would be necessary. *Id*. at 20. In this case, the Board stated, the ER "should explain, at a minimum, the mitigation measures [the Applicant] intends to take to protect the eastern fox snake, the effect [the Applicant] believes those measures will have if implemented, and the basis of that belief." *Id*. at 22.

On June 11, 2012, the Applicant filed another Motion for Summary Disposition of Contention 8 (Motion). The Applicant's Motion was accompanied by a Statement of Material Facts on Which No Genuine Dispute Exists (Statement of Facts), two supporting affidavits, and the *Fermi 3 Construction Habitat and Species Conservation Plan: Eastern Fox Snake (Elaphe gloydi), Revision 1*, dated March 2012 (Habitat Plan Revision 1). Also attached to the Motion was a letter from the State of Michigan Department of Natural Resources finding that the Habitat Plan Revision 1 adequately addressed the concerns for potential threatened and endangered species (i.e. the eastern fox snake) at the Fermi site. *See* Letter from L. Sargent, Endangered Species Specialist, MDNR, to R. Westmoreland, Detroit Edison, dated April 6, 2012 (MDNR Letter). Additionally, since the Board issued LBP-11-14 denying the Applicant's original motion for summary disposition of Contention 8, the Staff has issued its Draft Environmental Impact Statement (DEIS) for Fermi Unit 3.[3] These documents show that no genuine dispute on any material fact remains with respect to Contention 8 and, therefore, summary disposition is appropriate.

[3] NUREG-2105, *Draft Environmental Impact Statement for Combined License (COL) for Enrico Fermi Unit 3* (Oct. 2011) ("DEIS"). The DEIS was issued in October 2011 and is contained in two volumes. Volume 1 (ADAMS Accession No. ML11287A108) provides coverage through Chapter 8. Volume 2 (ADAMS Accession No. ML11287A109) provides coverage from Chapter 9 through Appendix L.

DISCUSSION

I. LEGAL STANDARDS

A. Summary Disposition Standards

The applicable standards for summary disposition in this Subpart L proceeding, 10 C.F.R. § 2.1205, are the same as those under 10 C.F.R. § 2.710(d)(2). 10 C.F.R. § 2.1205(c) ("In ruling on motions for summary disposition, the presiding officer shall apply the standards for summary disposition set forth in subpart G of this part"). A party is entitled to summary disposition as to all or any part of the matters involved in the proceeding "if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." 10 C.F.R. § 2.710(d)(2). These "…standards are based upon those the federal courts apply to motions for summary judgment under Rule 56 of the Federal Rules of Civil Procedure." *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 297 (2010) (citing *Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-93-22, 38 NRC 98, 102 (1993)).

The movant bears the initial burden of showing that there is no genuine issue as to any material fact, by means of a required statement of material facts not at issue and any supporting materials that accompany its dispositive motion. *See Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-93-22, 38 NRC 98, 102-03 (1993). If the opposing party fails to counter each adequately supported material fact with its own statement of material facts in dispute and supporting materials, the movant's facts will be deemed admitted. *Id*. Furthermore, "the mere existence of *some* alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment; the requirement is that there be no *genuine* issue of *material* fact." *Anderson v. Liberty Lobby*, 477 U.S. 242, 247-48 (1986) (emphasis in original); *see also* 10 C.F.R. § 2.710(b) ("[A] party opposing the motion may

not rest upon the mere allegations or denials of his answer," but rather, "must set forth specific facts showing that there is a genuine issue of fact."). "Only disputes over facts that might affect the outcome of a proceeding would preclude summary disposition." *Pilgrim*, CLI-10-11, 71 NRC at 297 (quoting *Liberty Lobby*, 477 U.S. at 248).

In addition, the Commission will reject attempts to add new arguments in an answer to a summary disposition motion that could have been raised earlier. *See Pilgrim*, CLI-10-11, 71 NRC at 310-11. Such arguments include those not fairly encompassed by the contention at issue in the motion for summary disposition, as originally pled and admitted, when the intervenor has not attempted to amend the contention to add the new arguments. *Id*.

B. Standards for Analyzing Environmental Impacts

Using the approach outlined in regulations promulgated by the Council on Environmental Quality, 40 C.F.R. § 1508.27, the Staff developed a three-level (*i.e.*, small, moderate, and large) standard system to guide its categorization of impact significance in environmental reviews. *See* 10 C.F.R. Part 51, Subpt. A, App. B, Table B-1 n.3. The Staff followed this approach in drafting the Fermi COL DEIS. DEIS at 1-3 to 1-4. As explained in Table B-1 n.3 and the DEIS, an impact is small if "environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource." 10 C.F.R. Part 51, Subpt. A, App. B, Table B-1 n.3; DEIS at 1-3. Impacts are moderate when they "are sufficient to alter noticeably, but do not destabilize, important attributes of the resource"; they are large when they are "clearly noticeable and are sufficient to destabilize important attributes of the resource". 10 C.F.R. Part 51, Subpt. A, App. B, Table B-1 n.3; DEIS at 1-4.

Under the National Environmental Policy Act of 1969, as amended (NEPA), the NRC is required to take a "hard look" at the environmental impacts of a proposed action, as well as reasonable alternatives to that action. *See Louisiana Energy Servs., L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 87-88 (1998). This "hard look" is tempered by a "rule of reason" that requires agencies to address only environmental impacts that are

reasonably foreseeable – not those that are remote and speculative. *See, e.g., Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-02- 25, 56 NRC 340, 348-49 (2002); *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836, 838 (1973). In addition, "NEPA gives agencies broad discretion to keep their inquiries within appropriate and manageable boundaries (citation omitted)." *LES*, CLI-98-3, 47 NRC at 103 (1998).

NEPA does not require the use of the "best scientific methodology" or the use of an alternative methodology just because it is "plainly better." *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (internal quotation omitted). "An environmental impact statement [is not] intended to be a 'research document,' reflecting the frontiers of scientific methodology, studies, and data. . . . [W]hile there 'will always be more data that could be gathered,' agencies 'must have some discretion to draw the line and move forward with decisionmaking.'[citation omitted]." *Id.*

II. THERE IS NO GENUINE ISSUE OF MATERIAL FACT REMAINING AS TO CONTENTION 8

Contention 8 raises the overarching issue of the adequacy of the Applicant's ER analysis of the project's potential impacts on the eastern fox snake and the adequacy of the Applicant's consideration of alternatives that would reduce or eliminate those impacts. LBP-09-16, 70 NRC at 286. The Intervenors assert that the ER does not "adequately discuss impacts on the eastern fox snake and alternatives that would reduce or eliminate those impacts, in violation of the requirements of 10 C.F.R. § 51.45(b) and (e)." *See* LBP-09-16, 70 NRC at 286. In LBP-11-14, in response to the Applicant's first motion for summary disposition, the Board identified two primary reasons why summary disposition was not warranted. As discussed below, both have been resolved, and the Staff accordingly agrees that the Applicant's Motion and Statement of Facts demonstrate that there is no longer a dispute with respect to any of the issues related to Contention 8.

First, the dispute regarding the Applicant's previous assertion that impacts to the eastern fox snake would be small and that no mitigative measures were needed has been addressed by the analysis in the DEIS and the Applicant's commitment to implement the Habitat Plan Revision 1 during construction. *See* LBP-11-14, 73 NRC at __ (slip op. at 19); Statement of Facts at ¶ 20, Staff Attachment 1, Affidavit of David A. Weeks and J. Peyton Doub (Joint Affidavit) at ¶¶ 8-13. These developments address the Board's concern that "the revised ER continues to maintain that no mitigation is necessary, which is inconsistent not only with the MDNRE's comments on the original ER but with the fact that DTE in fact developed a draft mitigation plan." LBP-11-14, 73 NRC at __ (slip op. at 20).

Second, the Board also focused on outstanding concerns that had been raised by MDNR. It cited "an unresolved conflict between the opinion of MDNRE and that of DTE concerning the impact of Fermi Unit 3 construction activities on the eastern fox snake and the need for mitigation of those impacts." LBP-11-14, 73 NRC at __ (slip op. at 20). However, this matter has been resolved by the MDNR's determination of the adequacy of the measures to minimize impacts of construction on that species, as documented in Attachment 2 to the Motion. MDNR Letter at 1; Joint Affidavit at ¶ 13.[4]

The attached joint affidavit of David A. Weeks, an environmental scientist for the Staff, and J. Peyton Doub, an environmental scientist and terrestrial ecologist for the Staff, supports the Staff's position that summary disposition is warranted. *See* Joint Affidavit.[5] Mr. Weeks and Mr. Doub, as part of their "official responsibilities as the technical reviewers on terrestrial ecology issues related to the Fermi 3 COL application…evaluated the potential incremental and cumulative effects of building and operating Fermi 3 on the eastern fox snake and its habitat."

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[4] The MDNR's determination thus also addresses the Board's related concern that discussion of the draft mitigation plan in the ER had left the Board "uncertain as to what mitigation measures, if any, DTE will actually take for the protection of the eastern fox snake during the construction of Fermi Unit 3, whether those measures have been reviewed or approved by MDNRE, and whether they will actually help prevent harm to the species during construction." LBP-11-14, 73 NRC at __ (slip op. at 21-22).

[5] The curricula vitae of Mr. Weeks and Mr. Doub are provided as Staff Attachment 2 and Staff Attachment 3, respectively.

Joint Affidavit at ¶ 7. The Joint Affidavit explains that the issues in Contention 8 related to the impacts of construction of Fermi 3 on the eastern fox snake have all been adequately addressed.

Paragraphs 1 through 4 of the Applicant's Statement of Facts set forth a number of historical issues related to Contention 8. Statement of Facts at ¶¶ 1-4. The Staff agrees that these paragraphs accurately describe the COLA, the DEIS, and the process through which Detroit Edison has provided updated information related to the presence of the eastern fox snake at the Fermi 3 site. Paragraphs 5 through 18 summarize Detroit Edison's plan to mitigate the impacts of construction on the eastern fox snake. *Id.* at ¶¶ 5-18. The Staff agrees that the Applicant has appropriately identified and characterized the material facts. Joint Affidavit at ¶ 8, 12. In sum, the Staff agrees that the Applicant's Motion and associated Statement of Facts demonstrate that there is no genuine dispute of material fact, and that summary disposition is warranted.

A. The DEIS Adequately Addresses Impacts of Construction of Fermi Unit 3 on the Eastern Fox Snake and the Intervenors' Dispute with the ER as to Whether Mitigation Measures Are Warranted

In denying summary disposition in LBP-11-14, the Board found a continuing dispute regarding the Applicant's assertion that impacts to the eastern fox snake would be small and that no measures to mitigate impacts to the species were necessary. *See* LBP-11-14, 73 NRC at __ (slip op. at 19-20). As described below, the DEIS adequately addresses the potential impacts of Fermi Unit 3 on the eastern fox snake, including the appropriateness of mitigation measures. Furthermore, the Applicant has committed to implementing those proposed mitigation measures. Statement of Facts at ¶ 20. Accordingly, no genuine dispute related to these impacts remains.

The DEIS analysis, performed by the NRC and U.S. Army Corps of Engineers, supersedes the Applicant's analysis in the ER. The DEIS was issued in October 2011, after the Board's decision in LBP-11-14 denying the Applicant's first motion for summary disposition of

Contention 8. At the time the DEIS was issued, "[t]he Endangered Species Coordinator for the Michigan Department of Natural Resources (MDNR) ha[d] not yet reviewed Detroit Edison's proposed Habitat and Species Conservation Plan for the eastern fox snake, and ha[d] not yet commented on whether the plan's mitigation measures would be adequate to protect the eastern fox snake (Hoving 2010)." DEIS at 5-22. However, as described further below in Section II.B, MDNR has reviewed Detroit Edison's Habitat Plan Revision 1 for the eastern fox snake during construction and determined that it adequately addresses the concerns for the eastern fox snake at the Fermi 3 site. MDNR Letter at 1; Joint Affidavit at ¶ 13.

Furthermore, the DEIS analysis, which has since been further supported by MDNR's determination, confirms that the NRC Staff has taken "the requisite hard look at potential construction impacts to the eastern fox snake and mitigation that might reduce those impacts," which the Board found in LBP-11-14 was still in material dispute for Contention 8. *See* LBP-11-14, 73 NRC at __ (slip op. at 22). Indeed, the DEIS analysis with respect to the eastern fox snake, prepared by Mr. Doub and Mr. Weeks, "provide[s]…an independent evaluation of mitigation proposed by the Applicant to reduce the potential for impacts to that species." Joint Affidavit at ¶ 9.

Pursuant to its independent analysis, the Staff agrees that the provisions of the Habitat Plan Revision 1 adequately address the issues presented by Contention 8 and therefore warrant granting the Applicant's Motion for Summary Disposition. When it denied summary disposition in LBP-11-14, the Board noted that "the revised ER continues to maintain that no mitigation is necessary, which is inconsistent not only with the MDNRE's comments on the original ER but with the fact that DTE in fact developed a draft mitigation plan." LBP-11-14, 73 NRC at __ (slip op. at 20). Since then, the Staff has reviewed the Applicant's mitigation measures for the eastern fox snake and concluded in the DEIS "that the potential impacts from construction of Fermi 3 would be SMALL, as long as various mitigation measures, including those proposed for the eastern fox snake, are implemented." DEIS at 4-44; Joint Affidavit at

¶ 11.[6] Because the Applicant has committed to implementing those proposed mitigation measures (proposed at the time of the DEIS's publication), the impacts on the eastern fox snake from the construction of Fermi 3 should be SMALL. Statement of Facts at ¶ 20.

The DEIS's analysis of the addition of the mitigation measures and the MDNRE's finding that the Habitat Plan Revision 1 is adequate thus also resolves a related concern that the Board previously found precluded summary disposition: "the conflict between the ER's claim that the project would only have a small impact on the snake and that no mitigation measures were necessary, and the opinion of MDNRE that 'going forward with the construction would not only kill snakes but destroy the habitat in which they live and possibly exterminate the species from the area,' and that mitigation should be considered [citation omitted]." LBP-11-14 73 NRC at __ (slip op. at 17-18); MDNR Letter at 1. The DEIS analysis renders immaterial the ER's claim that no mitigation measures were necessary by concluding that "…the review team recognizes that the Fermi 3 project…could…reduce the local population unless appropriate avoidance and mitigation measures are taken." Joint Affidavit at ¶ 10. *See also* Joint Affidavit at ¶ 11. The mitigation measures to which the applicant has committed (see Statement of Facts at ¶ 20) are summarized in the Statement of Facts in ¶¶ 5-18.

In sum, the Applicant's commitment to the Habitat Plan Revision 1 has been considered by the NRC Staff and the MDNR. The DEIS acknowledges the presence of the eastern fox snake at the Fermi site, the potential for impacts to the species from construction of Fermi 3, the need for appropriate avoidance and mitigation measures, the mitigation plan proposed by the applicant, and the expected small impacts if those measures are implemented as proposed. The analysis of and commitment to these measures has thus resolved the "substantial conflict"

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[6] Attachment 1 to the Applicant's Motion is the Fermi 3 Construction Habitat and Species Conservation Plan, Eastern Fox Snake (*Elaphe gloydi*)," Revision 1, dated March 2012 (Habitat Plan Revision 1), which includes a detailed proposal for monitoring the eastern fox snake on the Fermi site during construction of Fermi 3 and for a minimum of five years thereafter. The Staff analysis in the DEIS considered an earlier version of this conservation plan, Revision 0. Joint Affidavit at ¶ 11. The Staff notes that the revised plan "satisfies [the Staff] concerns expressed in the DEIS about the need to monitor the fox snake and conduct other mitigation measures and would adequately mitigate loss of fox snake habitat." *Id.*

that the Board had previously identified from the Applicant's assertion "that 'the impact to [the eastern fox snake] from the Fermi Unit 3] project is considered SMALL, and no mitigative measures are needed.'[citation omitted].". LBP-11-14, 73 NRC at __ (slip op. at 19).

B. The MDNR Has Confirmed the Adequacy of the Identified Mitigation Measures for Minimizing Impacts of Construction on the Eastern Fox Snake

Another of the Board's reasons for previously denying summary disposition was an asserted unresolved difference of opinion between MDNRE and the Applicant, as well as uncertainty as to the MDNRE's views on the mitigation measures the Applicant had proposed. LBP-11-14, 73 NRC at __ (slip op. at 20). The Board noted the Intervenors' observation that "neither the revised wetlands site layout nor the draft mitigation plan, Habitat and Species Conservation Plan: Eastern Fox Snake (Elaphe glyodi), has been approved by MDNRE, the NRC Staff, or the U.S. Army Corps of Engineers." LBP-11-14, 73 NRC at __ (slip op. at 16). The Board also noted that

> the revised ER provides no information whatsoever about MDNRE's views of Applicant's draft mitigation plan or revised site layout. We thus continue to have an unresolved conflict between the opinion of MDNRE and that of DTE concerning the impact of Fermi Unit 3 construction activities on the eastern fox snake and the need for mitigation of those impacts. At the very least, we cannot say that this conflict that led us to admit Contention 8 has been fully resolved, and, as DTE has the burden to convince us that summary disposition is appropriate, its motion must fail." LBP-11-14, 73 NRC at __ (slip op. at 19-20).

As shown in the MDNR Letter, the MDNR now finds that the information submitted by the Applicant on the treatment of the eastern fox snake at the Fermi site "adequately address[es] the concerns for potential threatened and endangered species at the site in question" and that "[b]ased on the provided information, [t]he proposed project should have minimal direct impacts on known special natural features at the location(s) specified if it proceeds according to the plans provided. [emphasis in original]." MDNR Letter at 1. The Staff notes that the MDNR Letter "supports [the Staff] conclusion in the DEIS that mitigation acceptable to the MDNR would be protective of the eastern fox snake." Joint Affidavit at ¶ 13..

These same developments also directly address the Board's prior concern that discussion of the draft mitigation plan in the ER had left the Board "uncertain as to what mitigation measures, if any, DTE will actually take for the protection of the eastern fox snake during the construction of Fermi Unit 3, whether those measures have been reviewed or approved by MDNRE, and whether they will actually help prevent harm to the species during construction." LBP-11-14, 73 NRC at __ (slip op. at 21-22). As the Joint Affidavit notes, the Staff agrees that as long as the Habitat Plan Revision 1 is implemented, the impacts on the eastern fox snake will be SMALL. Joint Affidavit at ¶ 11.

For these reasons, the Staff agrees that the Applicant has appropriately identified and characterized the material facts and that the Applicant's Motion and associated Statement of Facts demonstrate that there is no genuine dispute of material fact.[7] All disputed issues related to Contention 8 have been resolved by the Staff's DEIS, which adequately addresses the potential impacts on the eastern fox snake of construction of the proposed Fermi Unit 3, as well as the need for and adequacy of mitigation measures; by the Applicant's commitment to the measures in the Habitat Plan Revision 1; and by MDNR's determination that concerns about impacts to the species have been adequately addressed by the Applicant's plans.

[7] The Staff also notes that the restoration of temporarily disturbed eastern fox habitat to a condition of equivalent or better ecological value once construction is complete will take at least 5 and perhaps more than 20 years. Joint Affidavit at ¶ 12. However, "[t]his clarification does not alter [the Staff's] belief that the statements made in [the Applicant's Statement of Facts] are true." *Id.*

CONCLUSION

The NRC Staff agrees that there is no genuine issue remaining as to any material fact related to Contention 8 and that, pursuant to 10 C.F.R. § 2.710(d)(2) and 10 C.F.R. § 2.1205, the Applicant is entitled to summary disposition as a matter of law.

Respectfully Submitted,

/Signed (electronically) by/

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Dated at Rockville, Maryland
this 2nd day of July, 2012

STAFF ATTACHMENT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033-COL
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

AFFIDAVIT OF DAVID A. WEEKS AND J. PEYTON DOUB
CONCERNING MOTION FOR SUMMARY DISPOSITION OF CONTENTION 8

David A. Weeks (DAW) and J. Peyton Doub (JPD) do hereby state as follows:

1. (DAW) I am an environmental scientist with 32 years of experience in the assessment of the biological and physical effects of various land management practices on soil and water resources and the development of site remediation/restoration plans. As a specialist in resource management and the evaluation of impacts on ecological resources, I have investigated soil-related problems; worked with federal, state, and local agencies in the preparation of Environmental Assessments (EAs), Environmental Impact Statements (EISs), and Environmental Impact Assessments (EIAs) for pipeline, irrigation, watershed protection, and other soil and water conservation projects; and performed wetland delineations using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, in support of United States Army Corps of Engineers (USACE) Section 404 permits for construction projects. I also prepare the soil sections of EAs, EISs, and Environmental Reports (ERs) for natural gas pipelines; recommend soil erosion control/restoration measures; develop and implement soil-testing programs; and evaluate project-related impacts on agricultural lands.

2. (DAW) I am an NRC contractor tasked with preparing the terrestrial ecology portion of the EIS for the proposed construction of this nuclear power plant. I am currently employed by Ecology and Environment, Inc. Before that, I was employed by United States Department of Agriculture (USDA) Natural Resources Conservation Service, the International Paper Company, and the US Environmental Protection Agency. A statement of my professional qualifications is attached as Staff Attachment 2.

3. (DAW) I prepared Sections 2.4.1, 4.3.1, 5.3.1, 7.3.1, and terrestrial and wetland resources sections of Chapter 9 of the EIS for Combined License (COL) for Enrico Fermi Unit 3, in the Matter of Detroit Edison Co. (Fermi Nuclear Power Plant, Unit 3). I also contributed to a biological assessment of the potential impacts on several species of plants and animals in or near the project area that are designated as threatened or endangered species by the United States Fish and Wildlife Service.

4. (JPD) I am a terrestrial ecologist employed since June 2008 in the Division of Site Safety and Environmental Analysis (DSEA) in the Nuclear Regulatory Commission (NRC) Office of New Reactors. Prior to my employment with NRC, I had been employed for more than 20 years as an environmental consultant performing wetland delineations and assessments, wetland mitigation designs, environmental impact analyses, forest and vegetation studies, and other environmental and ecological investigations. A statement of my professional qualifications is attached as Staff Attachment 3. Since 2008, I have served as the technical reviewer for terrestrial ecology issues on three completed EISs prepared as a part of NRC's review of applications for combined licenses for new reactors. I am currently serving as the technical reviewer for terrestrial ecology issues for four additional new reactor license applications, including the COL

application for Fermi 3. I maintain active certifications as a Professional Wetland Scientist (PWS) and Certified Environmental Professional (CEP). I am the lead author of the current version of NRC's Regulatory Guide 4.11, which provides technical guidance to prospective new reactor license applicants on preparing technical background papers on terrestrial ecology. Prior to employment with NRC, I prepared the terrestrial ecology sections of an Environmental Report submitted by Unistar to NRC as part of its application for a combined license for a new reactor at the Calvert Cliffs site in Lusby, Maryland. I also performed wetland delineations and forest stand delineations for that project. I also led or contributed to EISs and environmental assessments as a contractor for energy development and other projects in various states, including an EA for control of non-native plant species on the Ottawa National Forest in Michigan.

5. (JPD) I have been assigned as the NRC technical reviewer for terrestrial ecology and land use issues for the Fermi 3 combined license application since November 2008. I participated in a pre-application review of Detroit Edison's (Applicant's) data on terrestrial ecology. I have reviewed technical data on terrestrial ecology and land use submitted by Detroit Edison as a part of its application for Fermi Unit 3 and participated in a site audit that included a visit to the Applicant's proposed site and expected route for the associated transmission line. I worked with NRC contractor staff to develop Requests for Additional Information needed to complete our review of terrestrial ecology and land use issues and to review the Applicant's responses. I have reviewed other pertinent technical data on those issues, including the Applicant's proposed plans to protect and mitigate adverse impacts to the eastern fox snake. I have also reviewed sections in the draft and final EISs on land use and terrestrial ecology and the biological assessment for Fermi 3. Specific sections under my review include Sections 2.2, 2.4.1,

4.1, 4.3.1, 5.1, 5.3.1, 7.1 and 7.3.1, as well as the portions of Sections 9.2 and 9.3 concerning land use and terrestrial ecology.

6. (DAW, JPD) We are familiar with Contention 8 as it relates to the eastern fox snake. We are also familiar with the Applicant's Motion for Summary Disposition of Contention 8 (Threatened and Endangered Species Have Not Been Properly Mitigated) with Regard to the Eastern Fox Snake, filed on November 16, 2010; the Applicant's Motion for Summary Disposition of Contention 8, filed on June 11, 2012 (Motion); the attached "Statements of Material Facts on which No Genuine Dispute Exists" ("Applicant Statement of Facts") and the Affidavits of Peter W. Smith and David Misfud. We are also familiar with two other documents attached to the Motion, Attachments 1 and 2, respectively: the Fermi 3 Construction Habitat and Species Conservation Plan, Eastern Fox Snake (*Elaphe gloydi*)," Revision 1, dated March 2012 (Habitat Plan Revision 1), and a Letter from L. Sargent, Endangered Species Specialist, MDNR, to R. Westmoreland, Detroit Edison, dated April 6, 2012 (MDNR Letter).

7. (DAW, JPD) As part of our official responsibilities as the technical reviewers on terrestrial ecology issues related to the Fermi 3 COL application, we evaluated the potential incremental and cumulative effects of building and operating Fermi 3 on the eastern fox snake and its habitat. Our assessment is discussed in Sections 4.3, 5.3, and 7.3 of NRC's draft EIS (DEIS). We also evaluated potential impacts from use of alternative sites to build the Fermi 3 project in Section 9.3 of the DEIS.

8. (DAW, JPD) We have reviewed the statements (Paragraphs 1 through 20) of the Applicant's Statement of Facts and have determined that the statements of material fact

are accurate. Specifically, eastern fox snakes are present at the Fermi 3 site and construction of the Fermi 3 project, without mitigation, would reduce eastern fox snake habitat. We also agree that Detroit Edison revised the site layout to minimize impacts on the snake's primary habitat. Furthermore, we agree that Detroit Edison's Habitat Plan Revision 1 includes several provisions to restore eastern fox snake habitat at the Fermi 3 site and to create eastern fox snake habitat off-site as part of its wetlands mitigation efforts. We agree that implementing Detroit Edison's Habitat Plan Revision 1 will result in an increase in the quantity and quality of eastern fox snake habitat in the project vicinity.

9. (DAW, JPD) In its ruling denying summary disposition to the Applicant for Contention 8, the Board stated that the Applicant's Environmental Report (ER) lacks "the requisite hard look at potential construction impacts to the eastern fox snake and mitigation that might reduce those impacts." *Detroit Edison Company* (Fermi Nuclear Power Plant Unit 3), LBP-11-14, 73 NRC _, _ (May 20, 2010) (slip op. at 22). We believe that the sections we prepared for the DEIS for issuing a COL for Fermi 3, in particular Section 4.3.1, do provide an analytical evaluation of possible effects from construction of Fermi 3 on the eastern fox snake and an independent evaluation of mitigation proposed by the Applicant to reduce the potential for impacts to that species. The DEIS constitutes the NRC staff's technical evaluation of the potential environmental impacts from issuing a COL for Fermi 3. In preparing the DEIS, the staff drew on technical information contained in the ER and other relevant sources.

10. (DAW, JPD) Section 4.3.1 of the DEIS acknowledges the known presence of the eastern fox snake and its habitat on the Fermi site. It states that "more than 15

documented sightings of the eastern fox snake have been made on the Fermi site since 1990, including two sightings in 2008 during the wetland delineation survey" and that "Fermi 3 building activities would affect approximately 197 ac [acres] of potential fox snake habitat." DEIS at 4-34 and 4-35. In addition to acknowledging the possible loss of habitat for the eastern fox snake, the DEIS acknowledges the potential for increased traffic during the building of Fermi 3 "to increase wildlife mortality, including mortality of eastern fox snakes, resulting from vehicle-wildlife interactions." DEIS at 4-35. The DEIS concludes that "given the extent of potential eastern fox snake habitat that would be disturbed, albeit temporarily, and the increased construction traffic during construction and preconstruction, the review team recognizes that the Fermi 3 project could result in mortality of some [individual snakes] and reduce the local population unless appropriate avoidance and mitigation measures are taken." DEIS at 4-36.

11. (DAW, JPD) Section 4.3.1 also provides an evaluation of the Applicant's proposed mitigation measures addressing the eastern fox snake during Construction of Fermi 3, as contained in Revision 0 of the "Fermi 3 Construction Habitat and Species Conservation Plan, Eastern Fox Snake (*Elaphe gloydi*)" as transmitted to the NRC on February 15, 2010. DEIS at 4-35 to 4-36 and at 4-43. This is an earlier version of the Habitat Plan Revision 1. The NRC Staff's analysis in the draft EIS concludes that the potential impacts from construction of Fermi 3 would be SMALL, as long as various mitigation measures, including those proposed for the eastern fox snake, are implemented. DEIS at 4-44. The DEIS analysis specifically notes that for the proposed mitigation to be effective, in addition to any mitigation measures the MDNR might require, there would need to be monitoring of the eastern fox snake on the site during the construction period and for an unspecified time after the facilities are built. DEIS at

4-36. Revision 0 of the Habitat Plan did not address the need for monitoring. However, we subsequently reviewed a revision to the plan, Rev. 1, dated March 2012, that does include a detailed proposal for monitoring the eastern fox snake on the Fermi site during construction of Fermi 3 and for a minimum of five years thereafter. Habitat Plan Revision 1 at Appendix D. We agree with the Applicant's Statement of Facts with respect to the measures identified in the Habitat Plan Revision 1. Therefore, the Habitat Plan Revision 1 satisfies our concerns expressed in the DEIS about the need to monitor the eastern fox snake and conduct other mitigation measures and would adequately mitigate loss of eastern fox snake habitat.

12. (DAW, JPD) However, we offer a clarification, presented below, related to Paragraphs 5 and 8 of the Applicant's Statement of Facts. Paragraph 5 states that "the areas [of temporarily disturbed eastern fox snake habitat] will be restored to a condition of equivalent or better ecological value once construction is complete." Paragraph 8 states that "Overall habitat availability and quality for the fox snake will be greater after restoration and enhancement efforts than at present." We note that several years, at least 5 and perhaps more than 20, may be needed for the restored habitat to reach or exceed its pre-project quality. This time may be needed for planted vegetation, especially woody vegetation, to become established and mature, as well as for complex ecological interrelationships to become reestablished. This clarification does not alter our belief that the statements made in the subject paragraphs are true.

13. (DAW, JPD) The MDNR Letter, dated April 6, 2012, supports our conclusion in the DEIS that mitigation acceptable to the MDNR would be protective of the eastern fox snake. The Habitat Plan Revision 1 proposed by Detroit Edison and approved by

MDNR,when implemented, would result in measures that would protect the eastern fox snake. MDNR concluded that the information provided by Detroit Edison would "… adequately address the concerns for potential threatened and endangered species at the site in question." *See* MDNR Letter at 1.

14. (DAW, JPD) This concludes our testimony.

15. (DAW) I hereby certify under penalty of perjury that the foregoing is true and complete to the best of my knowledge, information, and belief.

16. (JPD) I hereby certify under penalty of perjury that the foregoing is true and complete to the best of my knowledge, information, and belief.

Executed in Accord with 10 CFR § 2.304(d)
David A. Weeks
Environmental Scientist
Ecology and Environment, Inc.
Lancaster, NY 14086
(716) 684-8060 Ext. 2550
dweeks@ene.com

Executed in Lancaster, NY
this 2nd day of July, 2012

Executed in Accord with 10 CFR § 2.304(d)
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Environmental Scientist
Division of Site Safety & Environmental Analysis
Office of New Reactors
U.S. Nuclear Regulatory Commission
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Executed in Rockville, MD
this 2nd day of July, 2012

DAVID A. WEEKS

EDUCATION

M.S., Forestry, University of Massachusetts at Amherst

B.S., Resources Management, cum laude, State University of New York College of Environmental Science and Forestry at Syracuse

A specialist in resource management and the evaluation of impacts on ecological resources, Mr. Weeks has 32 years' experience in the assessment of the biological and physical effects of various land management practices on soil and water resources and the development of site remediation/restoration plans. He has investigated soil-related problems; worked with federal, state, and local agencies in the preparation of Environmental Assessments (EAs), Environmental Impact Statements (EISs), and Environmental Impact Assessments (EIAs) for pipeline, irrigation, watershed protection, and other soil and water conservation projects; and performed wetland delineations using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, in support of United States Army Corps of Engineers (USACE) Section 404 permits for construction projects. He also prepares the soil sections of EAs, EISs, and Environmental Reports (ERs) for natural gas pipelines; recommends soil erosion control/restoration measures; develops and implements soil-testing programs; and evaluates project-related impacts on agricultural lands.

Mr. Weeks has investigated emerging and international soil- and water resource-related problems and has participated in watershed planning to protect water quality and biodiversity. He has produced project plans and National Environmental Policy Act (NEPA) EA/EIS documents that incorporate public involvement and early, extensive coordination with federal and state agencies to address issues including threatened and endangered (T/E) species and to obtain various project-required permits.

EMPLOYMENT:

Ecology and Environment, Inc., Buffalo, New York, 2007-present
United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Little Rock, Arkansas, Resource Conservationist, 2005-2007 and Assistant State Conservationist for Natural Resources Planning, 1999-2005; Culpeper, Virginia, Natural Resources Team Leader, 1996-1998; Warwick, Rhode Island, Assistant State Resource Conservationist, 1991-1996 and Resource Conservationist, 1990-1991; Westport, New York, District Conservationist, 1987-1990; and Walton and Watertown, New York, Soil Conservationist, 1984-1987
International Paper Company, Conway, South Carolina/Camden and Malvern, Arkansas, Project Forester/Soil Surveyor, 1981-1984
University of Massachusetts at Amherst, Department of Forestry and Wildlife Management, Graduate Research Assistant, 1978-1979; Graduate Teaching Assistant, 1977-1978
United States Environmental Protection Agency, Region 2, New York, New York, Ecologist, 1975-1976

PROFESSIONAL AFFILIATIONS:

American Water Resources Association (Member, Hydrology and Watershed Management Committee)
Soil and Water Conservation Society
American Society of Agronomy
Soil Science Society of America

BIBLIOGRAPHY:

Weeks, D.A., 1980, The Responses of Upland Oaks to Simulated Residential Construction Impacts, Master's Thesis, University of Massachusetts at Amherst.

ED. DATES: MS 1980, BS 1975

Courses: NRCS/USACE wetlands 1991; NRCS team facilitator 1998, NRCS areawide conservationplanning. 2004, NRCS ArcGIS software 2005

Ecology & Environment, Inc. (E & E) NEPA documents course 2007

Buffalo River Ecological Restoration Master Plan (ERMP). As part of a $450,000 project for the Great Lakes National Program Office (GLNPO), Mr. Weeks managed a team of E & E scientists that characterized habitat conditions in the Buffalo River Area of Concern (AOC), conducted stakeholder coordination, developed site-specific habitat restoration goals and actions, and developed the quality assurance (QA) project plan for the Buffalo River Ecological Restoration Master Plan (ERMP). His team developed detailed site descriptions and conceptual habitat restoration measures for 26 sites along more than 37 miles of channel in the lower Buffalo River watershed. The work included development of habitat restoration measures for four habitat zones, quantification of restoration features, and development of installation cost estimates for each site. Local stakeholders used the ERMP to prepare project funding proposals.

Aquatic Invasive Species Plant Control, Great Lakes AOCs. For the USACE Buffalo District, Mr. Weeks is serving as Quality Manager for this project that will affect up to 12 Great Lakes AOCs. The project objective is to develop tools to support AOC delisting by supporting ecosystem restoration projects where aquatic invasive species (AIS) are a significant concern. As required, the project will include adaptive management support, preparation of monitoring plans and conceptual designs, permit coordination, development of NEPA documentation, and preparation of fact sheets detailing AIS concerns for ongoing and proposed ecosystem restoration efforts in AOCs. Mr. Weeks' role will be to review all primary deliverables to ensure that the quality management objectives specified in the Quality Control Plan are met. He will coordinate with the project manager and the task managers to ensure that QA is integrated at the beginning of the planning process and is sustained throughout the project.

Cayuga Creek Watershed Restoration Roadmap, Western New York. Under E & E's multisite, multiyear program for the USACE Kansas City District, Mr. Weeks coordinated production of a synthesis of all available information regarding known impairments within the Cayuga Creek watershed, for submission to the USACE Buffalo District and the Cayuga Creek Restoration Steering Committee, which includes the Buffalo Niagara Riverkeeper; watershed residents; and representatives of local, state, and federal agencies. Cayuga Creek is a tributary to the Niagara River and is included in the Niagara River AOC. The compiled summary ("restoration roadmap") covered three decades of studies and publications on topics including water quality and quantity issues, contaminated sediment, aquatic habitat degradation and loss, and remediation efforts and identified solutions and potential projects to improve the health of the watershed while eliminating or remediating impairments in the AOC. It included proposed solutions for destabilized stream banks, loss of habitat, degraded benthos, localized flooding, and contaminated sediment, among other problems .

The USACE Buffalo District judged the final Cayuga Creek watershed restoration roadmap document to be of "exceptional" quality. The document already has been used to develop proposals for restoration projects in the watershed.

Rochester Embayment AOCs, Monroe County, New York. For the GLNPO, Mr. Weeks led E & E's preparation of five documents providing beneficial use impairment (BUI) delisting criteria for the Rochester Embayment

AOC and other Rochester area AOCs, for submission to EPA and the New York State Department of Environmental Conservation (NYSDEC) on behalf of the Rochester AOC Oversight Committee. The draft documents were well received by the public and the agencies.

Tuscarora Nation Wetland Habitat Restoration/Enhancement, Niagara County, New York. For the Tuscarora Nation, Mr. Weeks was a member of the E & E team of specialists that investigated the potential for restoring or enhancing various types of wetland habitat in a large swamp with organic soil. The primary goal was to reestablish and enhance habitat and restore the area's cultural aspects to conditions similar to what existed prior to the construction of the New York Power Authority's hydropower reservoir. Mr. Weeks worked with ecologists, engineers, and geologists to determine the hydrology, vegetative communities, soil types, and other factors that had influenced changes in the project area over several decades.

Fermi 3 Nuclear Power Plant, Detroit, Michigan. For the Nuclear Regulatory Commission (NRC), Mr. Weeks is preparing the terrestrial ecology portion of the EIS for the proposed construction of this nuclear power plant. He is preparing biological assessments of the potential impacts on several species of plants and animals in or near the project area that are designated as T/E species by the State of Michigan and/or USFWS.

Belleayre Ski Center, Shandaken, New York. In support of the high-profile expansion initiative for this facility operated by NYSDEC in Catskill Park, Mr. Weeks was a member of the E & E team that prepared a draft EIS relating to the unit management plan, in accordance with requirements of the State Environmental Quality Review Act. He developed estimates of greenhouse gas production caused by the clearing of forested areas.

LNG/Pipelines

Temple LNG Project, Reading, Pennsylvania. For the Federal Energy Regulatory Commission (FERC), Mr. Weeks prepared the geology and soils sections of E & E's third-party EA addressing the proposed expansion of this LNG facility of UGI LNG, Inc.

Fayetteville Express Pipeline, Arkansas to Mississippi. For FERC, Mr. Weeks managed E & E's preparation of the third-party EA for 185 miles of natural gas pipeline and construction of associated aboveground facilities proposed by Fayetteville Express Pipeline, LLC. As the main point of contact for FERC and interested regulatory stakeholders, he provided overall technical direction and document QA. As third-party environmental report project manager, Mr. Weeks contributed to FERC's decision to produce an EA instead of an EIS.

Texas Gas Pipeline Expansion Project, Arkansas and Mississippi. For FERC, Mr. Weeks had a key role in E & E's preparation of the third-party EIS for 260 miles of pipeline extensions and construction of associated aboveground facilities proposed by Texas Gas Transmission, LLC. He provided liaison with FERC and interested regulatory stakeholders and provided expert reviews of project deliverables Key natural resource issues included potential impacts on National Wildlife Refuges and the Natchez Trace National Parkway.

Ruby Natural Gas Pipeline, Wyoming to Oregon. For El Paso Corporation (now Kinder Morgan, Inc.), Mr. Weeks helped prepare the FERC 7(c) application environmental documents for this 675-mile, four-state natural gas pipeline crossing private, state, and federal lands, including those managed by Department of Interior (DOI)'s Bureau of Land Management and the USDA Forest Service. He provided a senior technical review of the draft soil resource report and contributed to the agricultural impacts and mitigation section of the land use resource report.

Sentinel Pipeline, Eastern Pennsylvania and New Jersey. For Williams Gas Pipelines, Mr. Weeks prepared the soil impact and mitigation section of the third-party FERC EA addressing the planned Sentinel Expansion Project of Transcontinental Gas Pipe Line Corporation (Transco). He addressed 17.9 miles of pipeline looping

and replacement and assisted E & E's project manager during a site visit to discuss routing alternatives and variations with area residents.

Connector Pipeline, New Jersey. Located in a highly urbanized area with extensive transportation infrastructure, this project for a confidential client was proposed to connect major interstate gas pipelines. As project manager, Mr. Weeks worked with the certificate applicant and local, state, and federal authorities to obtain access to rail yards and interstate highways for ecological field studies and delineation of wetlands and bodies of surface water.

Wind Energy

Arkwright Summit Wind Farm, Chautauqua County, New York. For Arkwright Summit Wind Farm, LLC, Mr. Weeks managed completion of the report on wetlands and bodies of surface water for this 42-turbine, 79-Megawatt (MW) wind farm project located within a nearly 6,000-acre project area. The client submitted the report to the USACE Buffalo District and NYSDEC for jurisdictional determinations. Mr. Weeks also managed E & E's development of the joint application for permits and a detailed wetland mitigation plan. Under his leadership, the E & E team helped the client avoid or minimize project-related impacts on wetlands—thereby enabling project construction under a nationwide permit instead of individual wetland permits.

Wind Energy Project, Lake and Colusa Counties, California. For a confidential client with a wind project proposed for location on 8,000 acres of land administered by DOI's Bureau of Land Management (BLM), Mr. Weeks was the task manager responsible for preparing the sections of E & E's EIS addressing soil and geology, minerals, and geologic hazards.

Barre and Hamlin Wind Projects, Western New York. For Iberdrola Renewables, Mr. Weeks coordinated the E & E critical issue analyses for two wind farms. Key natural resource concerns included migratory birds, the proximity of nearby Important Bird Areas, and the presence of T/E species in portions of the project area.

Ripley-Westfield Wind Farm, Chautauqua County, New York. Mr. Weeks prepared the soil resource section of E & E's EIS for this 52-turbine, 125-MW wind generation project of Pattern Renewables Development.

Black Fork Wind Farm, Crawford and Richland Counties, Ohio. He wrote the soil section of E & E's EIS for this proposed 200-MW facility.

Navy

Townsend Bombing Range, Townsend, Georgia. For the Southwest Division of the Naval Facilities Engineering Command (NAVFAC), Mr. Weeks prepared the forest resource, existing conditions, and environmental consequences sections of E & E's EIS addressing an expansion of this existing bombing range. He also developed the methodology for determining the value of forest products produced on the potential acquisition areas, which could noticeably affect the local economy.

Outlying Landing Field EIS, Virginia and North Carolina. For the NAVFAC Atlantic Division (NAVFAC Atlantic), Mr. Weeks prepared the soil resource, topographic, and agricultural impact sections of E & E's EIS addressing five site alternatives for construction and operation of a 2,000-acre Field Carrier Landing Practice Facility. He analyzed impacts on organic soil and other soil with low strength and other limitations, impacts on local topography from construction of an 8,000-foot-long runway, and impacts on agricultural operations on and near the facility.

Naval Air Station (NAS) Brunswick, Maine. For NAVFAC Atlantic, Mr. Weeks prepared the soil resource section of E & E's EIS addressing the closure and reuse of this 3,300-acre NAS under base realignment and closure legislation.

Agricultural Energy Management Auditing/Training, Arecibo, Puerto Rico and Quincy, Washington. For the Natural Resources Conservation Service, Mr. Weeks conducted energy audits of dairy and row crop farm field operations and trained agency staff in the methods of collecting the data required for future audits.

International

Tai Lake Basin, Jiangsu Province, China. For China Development Bank, Mr. Weeks analyzed data and prepared analyses for a multidisciplinary study addressing the causes of severe pollution of Tai Lake west of Shanghai. His evaluations focused on the role of nonpoint-source pollution in degrading the lake's water quality and ecological health. He also helped develop proposed measures to effectively reduce pollution and allow for long-term restoration of the lake.

Watershed Planning Support, Republic of Macedonia. In autumn 2006, at the invitation of the Republic of Macedonia and the United States State Department, Mr. Weeks was a United States Embassy Science Fellow in Skopje, Macedonia, providing consultation with the Ministry of Environment of the Republic of Macedonia. He assessed the status of watershed planning and natural heritage protection in Macedonia and made recommendations to the Ministry, its cooperating agencies, and various foreign government officials regarding how they could improve the effectiveness of their programs.

USDA: Arkansas

As the Assistant State Conservationist for Natural Resources Planning with the USDA Natural Resources Conservation Service (NRCS) in Arkansas for over six years (1999 to 2005), Mr. Weeks managed water resource planning projects and the preparation of several EA/EISs. He supervised a multidisciplinary team that conducted engineering, hydrological, ecological, and economic investigations and developed project-specific remedial alternatives/mitigation measures.

White River West Fork Stream Corridor Restoration, Washington County, Arkansas. From early 2006 to early 2007, Mr. Weeks was NRCS' technical representative for this project of the Watershed Conservation Resource Center, which was funded by a Conservation Partnership Initiative grant. He provided technical guidance to Center representatives as they assessed over 30 miles of stream corridor; quantified relative stability and risk of failure; ranked stream sections for treatment using fluvial geomorphological principles; and, in support of public involvement/community outreach efforts, coordinated with stakeholders and the wider community in planning workable, cost-effective solutions.

Statewide Watershed Protection/Flood Prevention Program, Arkansas. For over six years (early January 1999 through mid-2005), Mr. Weeks managed an NRCS program that provided financial and technical assistance to individuals and local governments to address a wide range of soil and water conservation needs, including nonpoint-source water pollution management, irrigation water conservation, flood control, and municipal and industrial water supply. Under his management, NRCS provided over $12 million in financial assistance for the construction of five flood control structures and the installation of on-farm measures for agricultural waste management and irrigation water conservation on over 100 farms. He also managed over $3 million that was earmarked to plan projects for flood control and public and irrigation water supply and conservation.

In addition, Mr. Weeks was the NRCS liaison with Arkansas state agencies on projects involving nonpoint-source pollution, agricultural water use, and other water resource issues. On behalf of NRCS, he prepared agreements with local government agencies and other project sponsors that involved supplementing NRCS staff to facilitate the planning and implementation of structural and land management activities on a watershed level. As part of his project planning responsibilities, Mr. Weeks directed NRCS' public participation/community outreach efforts and gave numerous presentations to organizations and agencies at both local- and state-level meetings.

Statewide Emergency Watershed Protection (EWP) Program, Arkansas. From 1999 to 2005, Mr. Weeks also managed NRCS' provision of financial and technical assistance to local governments to alleviate emergencies resulting from natural disasters. From 1999 through mid-2005, NRCS provided over $5 million in financial assistance to give local governments the technical capability to return conditions in watersheds to acceptable standards in most of Arkansas's 75 counties.

Under the EWP Program, he directed multidisciplinary teams throughout the state in responding to disasters that involved activities such as the safe disposal of seven million chickens after heavy snow collapsed over 500 poultry houses; the reduction of wildfire hazard on tens of thousands of acres of commercial forest land when an historic ice-storm devastated forest stands and dramatically increased fuel loads; the reduction of public health hazards as a result of the cleanup and disposal of tornado debris strewn across thousands of properties after an historic tornado outbreak; and various streambank stabilization projects to protect homes, businesses, and infrastructure. Mr. Weeks was able to achieve quick, effective responses to these disasters by ensuring that field-level personnel were properly trained and prepared to respond—in close coordination with federal, state, and local emergency management officials—and by initiating the innovative use of locally led contracts to decentralize and expedite the contracting of services.

Upper Petit Jean River Watershed Site No. 3, Logan County, Arkansas. From early 2003 to mid-2005, he worked with NRCS project planning staff to assess the potential to add water supply to a planned flood control dam that was proposed for construction in the range of the endangered American Burying Beetle (*Nicrophorus americanus*). Under his supervision, NRCS inventoried the project area. When specimens of the beetle were found, his staff coordinated with the Arkansas Natural Heritage Commission and USFWS to minimize impacts.

Walnut Bayou Irrigation Project, Little River County, Arkansas. From mid-2002 through mid-2005, Weeks managed preparation of the draft project plan and EIS for this irrigation water supply and conservation project that was intended to reduce agricultural crop damages from drought. The potential impact of water withdrawals from the Red River on nesting areas of the interior least tern (*Sterna antillarum athalassos*) was a key concern. During the project planning stage, Mr. Weeks discussed habitat protection issues with involved agencies; and led formal consultation with USFWS officials concerning potential impacts that could not be avoided; and coordinated with USACE, USFWS, and state regulatory agencies for the necessary permits.

Southeast Arkansas Water Supply Study, Southeast Arkansas. From late 2002 to mid-June 2005, he was NRCS' primary point of contact for a water supply study led by the USACE Vicksburg District, addressing agricultural water needs for over 800,000 acres in six counties. He planned and budgeted NRCS activities in coordination with USACE and managed the NRCS project team that provided planning support for the development of agricultural water budgets for over 500,000 acres of cropland and assessed feasibility of alternatives for distribution of surface water to supplement existing groundwater sources. Major goals of the study were to develop alternative measures to reduce and prevent groundwater overdrafting from the alluvial aquifer, and to prevent damages to soil and crops from saline water intrusion into the aquifer. In addition to assessing irrigation water conservation and the diversion of surface water to supplement groundwater sources, Mr. Weeks was a member of the NRCS team that investigated the potential for converting cropland to other uses such as forest land in areas where saline water already had intruded into the aquifer.

Little Red River Irrigation Project, White County, Arkansas. From late 2002 to mid- 2005, Mr. Weeks worked closely with the Little Red River Irrigation District (project sponsor) to develop the draft project plan and EIS for an irrigation water supply/conservation project that involved supplying surface water to about 30,000 acres of cropland and on-farm facilities, in order to help farmers manage irrigation water more efficiently. He and the project sponsor coordinated closely with USFWS to address the controversy and concerns associated with potentially adverse impacts on White River National Wildlife Refuge, then coordinated with USACE, USFWS, and state regulatory agencies to obtain the necessary permits.

Watershed Rehabilitation Program, Arkansas. From late 2001 through mid-2005, Mr. Weeks managed an NRCS program for four northeastern and northwestern Arkansas counties to provide technical assistance to sponsors of flood control dams built with USDA assistance since 1954. He performed a statewide assessment of over 200 dams, raised awareness of the issue of aging watershed infrastructure statewide, and convinced local governments to seek assistance from NRCS to plan solutions for dams that did not meet current dam safety standards. He obtained over $1 million in funding, completed one project plan/EA, and initiated planning on five other projects. As part of this program, Mr. Weeks collaborated with the state dam safety agency to develop criteria for ranking priorities for watershed dam rehabilitation funding and technical assistance.

Grand Prairie Area Demonstration Project, East Central Arkansas. From late 2000 to early 2004, he managed the NRCS portion of this $325-million irrigation project that was administered by the USACE Memphis District. He worked closely with USACE to develop processes for implementing farm-level water conservation measures through technical and financial assistance provided by NRCS. He worked with NRCS officials in the identification of project features that provide habitat improvements for upland and wetland wildlife, such as reseeding disturbed areas with native prairie vegetation; and he supported NRCS coordination with a local university to salvage native prairie sod from a construction right-of-way, for use in propagating seed for the habitat restoration efforts. Under his management, NRCS developed plans and engineering specifications for $35 million of on-farm irrigation water management and conservation practices on over 200 farms over two years. Mr. Weeks also participated in initial planning efforts for a proposed 3,000-acre, lesser prairie chicken habitat restoration project in the Grand Prairie area.

Departee Creek Watershed Project, Independence County, Arkansas. From early 1999 through mid-2004, Mr. Weeks worked closely with the USFWS district office to resolve project plan and EIS issues concerning potential impacts on wetland habitat. He incorporated conservation easements for restoration of bottomland habitat on land converted to cropland in previous decades into the project plan. His coordination of the response to USFWS concerns resulted in Congressional approval of the project for funding. Mr. Weeks also ordered field investigations to determine if threatened freshwater mussels were located in the project area; oversaw archaeological field investigations to identify historic/prehistoric sites; and coordinated with USACE, USFWS, and state regulatory agencies to obtain the necessary permits.

Poinsett Watershed Project Channel Segment 7, Poinsett and Craighead Counties, Arkansas. After flash flooding caused over $5 million in damages to the City of Jonesboro, in Summer 2003, Mr. Weeks worked closely with federal, state, and officials to plan the extension of an ongoing flood control channel project into the affected area. As a result of his innovative, cost-effective use of local contractors and close coordination of the planning, design, and funding efforts, the supplemental project plan and EA for the project were completed in time for the 2005 federal fiscal year funding cycle. Project construction was completed in late 2005.

Emergency Watershed Protection/Floodplain Easement Program, Eastern Arkansas. From late 1999 to mid-2002, Mr. Weeks directed NRCS biologists involved in the restoration of wetland hydrology and vegetation on 3,500 acres of previously converted cropland. Several of the restored areas are located near an area where the ivory billed woodpecker (*Camephilus principalis*) was subsequently sighted in 2005.

USDA: Virginia, Rhode Island, and New York

Virginia. From early 1996 to late 1998, Mr. Weeks completed projects involving the conservation of agricultural and rural soil and water resources in nine Virginia counties. He supervised NRCS employees and four conservation district employees and coordinated agency activities with two multicounty conservation districts, helping to set conservation priorities and resolve soil and water resource issues at both the farm and watershed levels. For example, after several powerful storms caused millions of dollars in damage in five counties, Mr. Weeks coordinated agency responses to assess damages to streams and rivers resulting from flooding and debris flows. In close cooperation with local governments, he and his staff helped garner over $1 million in financial assistance to the affected communities. He provided technical assistance to farmers, local agencies, and special use districts regarding the management of agricultural, forest, and other rural lands in order to improve soil productivity, reduce soil erosion and consequent damages from sedimentation, reduce pollution from pathogens and nutrients, stabilize streambanks, and improve wildlife habitat through the restoration of native vegetation.

Rhode Island. From mid-1990 through early 1996, as NRCS' Assistant State Resource Conservationist in Rhode Island, Mr. Weeks initiated and facilitated a multiagency process to streamline wetland permit acquisition in support of agricultural water quality improvement projects. He also coordinated the development of a successful, unified process/protocol that the three southern New England states could use to implement the Wetlands Memorandum of Agreement between NRCS and USACE. In addition, Mr. Weeks managed the Pawcatuck River Hydrologic Unit Area water quality project from 1990 through 1995, serving as chair of the multiagency project steering committee for two years. The project provided several hundred thousand dollars in financial and technical assistance to farmers in the project area to help address resource issues including nutrient and pathogen management and irrigation water conservation.

New York State. For over six years (early 1984 through mid-1990), Mr. Weeks provided NRCS technical assistance to farmers, local government agencies, and conservation districts regarding the management of agricultural, forest, and other rural lands to improve soil productivity, reduce soil erosion and consequent damages from sedimentation, reduce pollution from pathogens and nutrients, conserve irrigation water, stabilize streambanks, and improve wildlife habitat through the restoration of native vegetation. He planned conservation and water management solutions at both the farm and watershed levels; and he administered USDA financial assistance programs to share the cost of implementing conservation practices with individual farmers.

In 1985, Mr. Weeks also was a member of one of several teams of NRCS soil and ecological scientists that conducted an acid precipitation study under a grant awarded by EPA to the USDA Soil Conservation Service (now NRCS). The grant funded the mapping of soils and vegetative cover type in approximately 25 New York State watersheds. Mr. Weeks produced maps and associated project data that EPA used to determine how soil and vegetation influenced the response of surface waters to acid precipitation.

International Paper Company, South Carolina and Arkansas

As a forester and soil surveyor with International Paper Company from mid-1981 to early 1984, Mr. Weeks mapped 100,000 acres of coastal plain forest soil, led soil sampling and classification, delineated map units on aerial photographs, and participated in quarterly field reviews of existing maps to facilitate correlation and legend development. He inspected the maps and provided QC, prepared photographs for publication, and wrote map unit descriptions and the soil physical properties sections of the soil survey report. He also presented two workshops for foresters and technicians to instruct them in the use of the soil survey results and provided field training. Mr. Weeks obtained site productivity data for all map units, established and inspected 100 plots and performed stem analysis, and described and sampled all horizons on 30 plots as part of a soil-site multivariate regression study on loblolly pine (*Pinus taeda*). He helped senior research foresters develop map unit-specific silvicultural and forest management recommendations and site limitation interpretations. The results of his work were published in three survey reports.

EPA Region 2

In 1975 and 1976, with EPA Region 2, Mr. Weeks reviewed wastewater treatment projects to evaluate the potential environmental impacts resulting from the construction and operation of wastewater treatment plants. In particular, he evaluated siting and construction methods, impacts on wetlands, soil erosion and sedimentation controls, and construction site restoration/revegetation.

Additional Training

Mr. Weeks has completed a three-day training program in NEPA document preparation (E & E), three-day courses in ArcGIS 9.x Basics software and areawide conservation planning (NRCS), a four-day course in effective team facilitation (NRCS), and a four-day course in wetland regulations and methodologies (NRCS/USACE).

STAFF ATTACHMENT 3

JOSEPH PEYTON DOUB, CEP, PWS
ENVIRONMENTAL SCIENTIST
US NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS, DIVISION OF SITE AND ENVIRONMENTAL REVIEWS

EDUCATION: M.S., Botany, University of California at Davis, 1984
B.S., Plant Sciences, Cornell University, 1982

CERTIFICATIONS: Certified Environmental Professional (CEP), No. 96050338; October 1996
Professional Wetland Scientist (PWS), No. 000358; July 1995
Forest Conservation Act Qualified Professional, Md., December 2004
Wetland Delineator, COE Baltimore, WDCP93MD0510029B, June 1993
NRC Certified Environmental Technical Reviewer, April 2009

TRAINING: Introductory Health Physics, NRC TTC, November 14-18, 2011
Cooling Towers 101, SPX Cooling Technologies, Inc., August 26-27, 2010
Current & Emerging Issues in Environmental Policy, Duke/NRC, Aug. 17-21, 2009
Reactor Concepts, NRC PDC, October 15-16, 2008
Site Access Training, NRC PDC, October 7-8, 2008
Project Management Level 2, Tetra Tech, April 12-14, 2007
ITRC Internet Course, "Jump Starting Ecological Restoration", Sep. 8, 2005
Cornell Home Study Course in Bird Biology, March - August 2005
Principles of DoD Partnering, The Management Edge, June 14-15, 2005
ITRC Internet Course, "Wastewater Treatment Wetlands", March 30, 2004
ITRC Internet Course, "Phytotechnologies", December 9, 2003
OSHA 1910.120 40-Hour HAZWOPER; May 1991 & refreshers to 2008
Due Diligence at Dawn (Phase I ESAs), EDR, Inc.; December 1999
Risk Assessment for Superfund, US EPA; October 1996 and May 2004
Project Management, Brown & Root Environmental, May 1995
Wetlands Identification and Delineation, Penn State C. Ed.; June 1990
Wetlands Delineation, Maryland DNR; July 1988

SECURITY CLEARANCE: L, Active

EXPERIENCE SUMMARY:

Currently serving as a environmental scientist/terrestrial ecologist with the NRC, Mr. Doub has over 20 total years of professional experience in environmental science, environmental planning, and natural resource management. He has performed wetland delineations and other natural resource investigations in over 15 states in all regions of the United States since 1988. He has also prepared wetland mitigation plans for tidal and nontidal wetlands and designed restorations of streams and other sensitive natural habitats in most of the mid-Atlantic, southeastern, and northeastern states and in California. He has lead, or contributed natural resources expertise to, dozens of environmental assessments (EAs) and environmental impact statements (EISs) prepared in accordance with the National Environmental Policy Act (NEPA) by the Air Force, Navy, Coast Guard, Forest Service, and Department of Energy. He has also prepared Phase I environmental site assessments (ESAs) and environmental baseline surveys (EBSs) for Army,

Navy, and Air Force installations and for private property proposed for construction of cellular communications towers. He has published or presented more than a dozen papers emphasizing methods for improving and streamlining NEPA, wetland science, and natural resource management.

PRESENT POSITION: Environmental Scientist/Terrestrial Ecologist
US Nuclear Regulatory Commission, NRO-DSER-RENV
June 23, 2008 – Present
T-7J5, Mail Stop T-7F27; (301) 415-6703

SPECIFIC ACTIVITIES:

Lead Author; Preparation of Revision 2 to Regulatory Guide 4.11, Terrestrial Environmental Studies for Nuclear Power Stations, July 2008 to Present. Expanded and updated Regulatory Guide last revised in 1977 that provides guidance to license applicants on preparing terrestrial ecological studies in support of license applications. Made guide more relevant to terrestrial ecology issues and challenges faced by applicants in today's regulatory environment. Specific topics included mapping and describing terrestrial habitats and wetlands, performing flora and fauna inventories and rare species surveys, and assessing impacts such as salt drift effects on vegetation and noise effects on terrestrial wildlife. Circulated draft revision to other ecologists in NRC and incorporated comments and suggestions. Coordinated with NRC Research to produce Draft Guide (DG) 4016. Presented draft revision to ACRS Radiation Protection and Nuclear Safety Subcommittee on December 16, 2009 and to ACRS Full Committee on March 4, 2010. Published for public comment on August 12, 2011. Presently preparing document for final publication.

Terrestrial Ecology Technical Reviewer; Combined License (COL) and Early Site Permit (ESP) Applications for New Reactors; July 2008 to Present. Serving as NRC technical reviewer for Terrestrial Ecology for the following applications (the dates in parentheses refer to Mr. Doub's involvement in the application review):

- VC Summer Units 2 and 3 COL (September 2008 to May 2011)
- Levy Units 1 and 2 COL (September 2008 to Present)
- Comanche Peak Units 3 and 4 COL (December 2009 to May 2011
- Bell Bend (September 2008 to Present)
- WS Lee Units 1 and 2 (September 2008 to Present)
- Shearon Harris Units 2 and 3 (September 2008 to Present)
- Turkey Point Units 6 and 7 (July 2009 to Present)
- Fermi Unit 3 (November 2008 to Present)

Activities involve participation in the acceptance review, site audit, development of requests for additional information (RAIs), review of RAI responses, review of contractor-prepared draft EIS text, participation in public scoping and DEIS public comment processes, and issuance of final EISs.

Land Use Technical Reviewer; Combined License (COL) and Early Site Permit (ESP) Applications for New Reactors; July 2008 to Present. Serving as NRC technical reviewer for Land Use for the following applications:

- VC Summer Units 2 and 3 COL (September 2008 to May 2011)
- Comanche Peak Units 3 and 4 COL (December 2009 to May 2011)
- Bell Bend(September 2008 to Present)
- WS Lee Units 1 and 2 (September 2008 to Present)
- Shearon Harris Units 2 and 3 (September 2008 to Present)
- Turkey Point Units 6 and 7 (July 2009 to Present)
- Fermi Unit 3 (November 2008 to Present)

Activities involve participation in the acceptance review, site audit, development of requests for additional information (RAIs), review of RAI responses, review of contractor-prepared draft EIS text, participation in public scoping and DEIS public comment processes, and issuance of final EISs.

Instructor; NRC Wetlands Orientation Session to Pacific Northwest National Laboratory; November 14, 2008. Prepared one-day presentation addressing wetland issues relevant to new reactor licensing. Topics included wetland delineation, wetland mitigation, wetland functional assessment, Clean Water Act jurisdiction and Section 404 permits, Rivers and Harbors Act, and recent changes in wetland jurisdiction under the Clean Water Act. Delivered all topics with a focus on nuclear power plant licensing.

PAST POSITION: Senior Environmental Scientist
Tetra Tech NUS, Inc. (Formerly Halliburton NUS Corp. and NUS Corp.)
August 19, 1989 – June 20, 2008

SPECIFIC ACTIVITIES:

Terrestrial Ecology Task Leader; Environmental Report for Proposed UniStar Nuclear Calvert Cliffs Units 3 and 4; Lusby, Maryland; UniStar Nuclear Energy (Subcontract to Bechtel); May 2006 to June 2008. Planned and conducted field investigations, wrote supporting background papers, and prepared terrestrial ecology text sections for Environmental Report (ER) supporting Constellation's combined license application (COLA) to the Nuclear Regulatory Commission (NRC). Field investigations included a wetland delineation, flora survey, fauna survey, and rare plant survey for an undeveloped tract of approximately 500 acres on the 2,200-acre Calvert Cliffs Nuclear Power Plant (CCNPP) Site. The wetland delineation was followed the methodology for a routine onsite delineation in the 1987 Corps of Engineers (COE) Wetlands Delineation Manual. Mapped and characterized plant communities and generated comprehensive plant list. Listed each mammal, bird, reptile, amphibian, and insect species observed over more than 10 site visits spread over the entire 2006 growing season as well as the 2006-2007 winter season. Investigated potentially suitable habitats at appropriate times during the growing season for more than 30 rare plants identified as occurring in Calvert County by the Maryland Natural Heritage Program. Identified locations of 4 rare plants discovered by the survey efforts. Prepared mitigation plan for restoring approximately 2,000 square feet of forest to compensate for the disturbance of forest-interior bird (FIB) habitat in the Chesapeake Bay Critical Area. Accompanied Baltimore District COE to site to obtain Clean Water Act Jurisdictional Determination.

Wetlands Permitting Task Leader; Environmental Services for Proposed Exelon Nuclear Texas Project; Matagorda and Victoria Counties, Texas; Exelon Nuclear, Inc.; June 2007 to June 2008. Planned and conducted wetland delineation to support environmental permitting and

combined license application (COLA) to the Nuclear Regulatory Commission (NRC) for new nuclear generation facility proposed for coastal Texas. Performed delineations at 7,000-acre primary site in Victoria County in January 2008 and at 600-acre alternate site in Matagorda County in August 2007. The wetland delineations followed the methodology for routine onsite delineation in the 1987 Corps of Engineers (COE) Wetlands Delineation Manual. Mapped and characterized plant communities and listed each wildlife species observed over two site visits to the Matagorda County site in June and August 2007 and the Victoria County Site in December 2007 and January 2008. Prepared wetland report and draft Jurisdictional Determination forms addressing issues raised in *SWANCC v. United States* and *Rapanos v. United State*s.

Task Leader; Community Environmental Response Facilitation Act (CERFA) Reports for BRAC PMO Northeast Closing Bases; Various Locations; US Navy BRAC Project Management Office Northeast, Philadelphia, Pennsylvania; September 2006 to June 2007). The project involved preparing reports identifying and documenting uncontaminated real property environmentally suitable for immediate transfer out of Government ownership within 6 Navy or Marine Corps bases identified for closure in the 2005 Base Realignment and Closure Act (BRAC) list. Served as lead author for reports for the Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Pennsylvania and the Instructor-Inspector Staff, Marine Corps Reserve Center West Trenton, New Jersey. Directed team of 3 scientists visiting Willow Grove for a week to review file data, conduct visual site inspections, and conduct interviews. Inspected over 50 buildings on more than 910 acres, including hangars, laboratories, runways, administrative buildings, on-base and off-base military housing, and raw land. Conducted research independently for smaller West Trenton property. Prepared preliminary draft reports on expedited 6-week schedule following the site visits and draft reports on expedited 2-week schedule to meet fast-track schedule established in the 2005 BRAC round.

Task Leader; Phase I Environmental Baseline Survey (EBS)/Environmental Condition of Property Survey (ECOP) for GM-38 Tract; Bethpage, New York; NAVFAC Atlantic; January 2007 to February 2007). Prepared report characterizing the environmental condition of a tract of approximately 1 acre in a residential area situated down-gradient of the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage. The Navy proposed to construct and operate a groundwater pump and treat facility on the site for 10 years to remediate a plume of contaminated groundwater originating at NWIRP Bethpage and other aircraft manufacturing facilities formerly operated by Northrop Grumman Corporation. Conducted visual site inspection on January 12, 2007; searched environmental databases, conducted interviews, and wrote report.

Project Manager; Forest Stand Delineation and Forest Conservation Plan for Fort George G. Meade Uncontrolled Waste Site; Anne Arundel County, Maryland; January 2007 to February 2007). Prepared forest stand delineation (FSD) and forest conservation plan (FCP) for the Uncontrolled Waste Site, which was formerly associated with Fort Meade and is now located within the North Tract of the Patuxent Research Refuge (on land excessed by Fort Meade in early 1990s). Measured basal area, stem density, canopy closure, and shrub and groundcover cover in representative tenth-acre circular plots in forest areas subject to clearing in order to excavate and remove debris and contaminated soils. Used plot data as basis for designing plans and specifications for restoring forest vegetation to disturbed areas. Restoration involved soil stabilization, seeding, and planting tubelings of native trees and shrubs.

Task Manager; Wetland Delineation of Military Tract; Pennsylvania; U.S. Army; February 2006 to June 2006. Delineated wetlands under jurisdiction of the Federal Clean Water Act on a tract of approximately 720 acres in south-central Pennsylvania. Followed procedures for a routine onsite wetland delineation in the 1987 *Corps of Engineers Wetlands Delineation Manual*. Flagged the boundaries of 10 wetland occurrences. Collected vegetation, soil, and hydrology data needed to complete field data forms documenting the rationale for placement of each wetland boundary. Used hand-held GPS unit to record coordinates of points on each wetland boundary for entry into GIS layer. Also wrote two EAs for minor construction projects on the tract.

Task Manager; Ecological Communities Survey and Terrestrial Mammal Survey; Engineer Proving Ground, U.S. Army Garrison, Fort Belvoir, Virginia; Baltimore District, U.S. Army Corps of Engineers; June 2006 to September 2006. Quantitatively characterized ecological communities (terrestrial habitats) by measuring basal area, stem density, canopy cover, and other forest metrics in more than 100 random twentieth-acre circular quadrats on a forested tract of more than 600 acres. Calculated importance values for each tree and shrub species by summing relative dominance, relative density, and relative frequency data. Recorded sightings and sign (e.g., scat, calls, or distinctive vegetation chewing) of terrestrial mammals at ten monitoring stations. Wrote reports summarizing data and management recommendations.

Task Leader; Ecological Risk Assessment for Aberdeen Proving Ground (APG) Open Burn (OB) and Open Detonation (OD) Units; Aberdeen, Maryland; US Army Corps of Engineers, Mobile District; February 2005 to December 2007. Wrote Ecological Risk Assessment for inclusion in application for RCRA Subpart X Permit. Reviewed available ecological documentation for APG and selected 15 representative locations where emissions from OB and OD operations could adversely affect sensitive ecological receptors. Described ecological conditions at each location, which included estuarine aquatic, tidal wetland, forested wetland, and forested upland habitats. Developed problem formulation and presented it to APG and regulatory staff. Directed modelers using software to generate emissions, fate and transport, and exposure data. Developed risk characterization and presented data and tentative conclusions to APG and regulatory staff.

Task Manager; Monitoring of Wetland Mitigation Projects on Naval District Washington, West Area, Dahlgren Site; J.M. Waller Associates; Dahlgren, Virginia; November 2003 to June 2008. Monitored wetlands constructed on six Installation Restoration (IR) Program sites cleaned up by the Navy. Developed monitoring plan in 2002 in consultation with the EPA Region III Biological Technical Advisory Group (BTAG). The plan called for annual Spring and Fall site visits, beginning in November 2003 and continuing until October 2007, to evaluate how the constructed wetlands are meeting specific performance criteria. Accompanied by biologists from J.M. Waller, visited each site in November 2003, April and October 2004, and April and October 2005 to record vegetation data (percent cover and woody stem counts), hydrology data (soil inundation or saturation), and wildlife use observations. Proposed interim recommendations to control patches of the invasive plant Phragmites (*Phragmites australis*). Prepared annual reports and oral briefings summarizing data from each of 2003, 2004, and 2005.

Wetlands Task Leader; Wetland Delineation and Mitigation Design for Installation Restoration (IR) Program Site 37 on Naval Support Facility Dahlgren; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; Dahlgren, Virginia; July 2004

to December 2005. Delineated wetlands on more than 1,000 feet of tidal shoreline. Gun butt sand used at an adjoining ammunition firing range had been deposited over many years on the shoreline. Followed routine wetland delineation procedures in the *Corps of Engineers Wetlands Delineation Manual* (1987), completed field data sheets, and flagged the boundary for survey. Characterized the vegetation, soils, and hydrology of the delineated wetlands and evaluated the functions and values of the wetlands using the *Highway Methodology* developed by the U.S. Army Corps of Engineers (July 2004). Designed plan to restore approximately 2,600 square feet of temporarily disturbed tidal wetlands and to establish approximately 12,800 square feet of tidal wetland vegetation over the top of a polymeric marine mattress and within interstices of riprap used to cover and stabilize the gun butt sand.

Task Manager; Environmental Baseline Surveys for Transfer (EBSTs) for IR Parcels on Former Naval Weapons Industrial Reserve Plant (NWIRP) Calverton; Calverton, New York; November 2004 to December 2005. Wrote EBST reports addressing the environmental condition of multiple parcels of real property that were retained by the Navy for purposes of environmental investigation and remediation following the transfer of the remainder of NWIRP Calverton to non-federal ownership. Followed guidance in ASTM D 6008-96. Conducted visual site inspections, interviewed persons involved in environmental activities, and reviewed environmental documentation. Updated information relevant to the parcels from the Basewide EBS completed in 1997. Completed reports for the Zone II agricultural area (approximately 5.8 acres) in December 2004, for Parcel D (IR Sites 1 and 9, approximately 145 acres) in January 2005, and for Site 10A (approximately 1 acre with former Jet Fuel Systems Laboratory Building) in December 2005.

Task Manager; Benthic Macroinvertebrate Investigation of Constructed Wetlands at Naval Support Facility Dahlgren; Dahlgren, Virginia; April 2005 to June 2006. Compared benthic macroinvertebrate communities in four constructed tidal wetland projects against those in adjoining undisturbed tidal wetlands (reference wetlands). Collected sediment samples from random representative locations in each constructed wetland and corresponding reference wetland and passed the samples through a 500-micron mesh to collect benthic macroinvertebrates. Shipped the organisms overnight on ice to a laboratory for taxonomic analysis (to the lowest practicable taxonomic level). Prepared tables quantifying the numbers of each taxon at each site and calculated similarity indices (SIs) comparing each constructed wetland against its corresponding reference site. Reported the findings in a written report and in an oral briefing to the Navy Partnering Team.

Task Leader, Ecological Characterization of NASA Wallops Island Flight Center Site 15; Engineering Field Activity North; Wallops Island, Virginia; October 2003 to December 2004. Described natural habitats on site contaminated by photographic solution tank. Developed a comprehensive list of plants and wildlife and identified jurisdictional wetland boundaries. Habitats included upland pine-oak forest, tidal high marsh, and tidal low marsh. Performed functional assessment of the wetlands using the Highway Methodology and the Wetland Evaluation Technique, Version 2.0.

Task Leader; Wetland Delineation and Mitigation Plan for NCBC Gulfport Site 8 and Off-Base Properties; Southern Division, Naval Facilities Engineering Command; Gulfport, Mississippi; October 2002 to September 2005. Conducted wetland delineation of 50 acre

forested site situated down-gradient to the installation. The site, which supported a mixture of pine flatwoods and cypress-gum forest, had experienced pesticide contamination originating on the base and is slated for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Staked the wetland boundary, completed data sheets, and reported the delineation in a report (December 2002). Prepared a mitigation plan describing restoration of natural forest habitat in the wetlands following the cleanup (April 2003). Met with local representatives of conservation parties in June 2005 to discuss wetland mitigation.

Instructor; Tetra Tech NUS Internal Brown Bag Seminars on Environmental Topics; Germantown, Maryland; March 2002 to February 2005. Delivered five one-hour seminars to co-workers in multiple Tetra Tech office using multimedia technology. Topics include Phytoremediation (March 25, 2002); Phase I Environmental Site Assessments and Environmental Baseline Surveys (August 5, 2002); NEPA (June 16, 2003); Wetland Delineation and Mitigation (December 1, 2003); and Non-Native Invasive Plants (February 28, 2005).

Environmental Scientist; Visual Site Inspection of Solid Waste Management Units on Fort Belvoir; Fort Belvoir, Virginia; US Army Corps of Engineers, Mobile District; September 1, 2005 to October 31, 2005. Conducted visual site inspections of 44 contaminated sites on the 800-acre former Fort Belvoir Engineer Proving Grounds as well as 20 inactive landfill sites on the Fort Belvoir Main Base. Prior to each inspection, reviewed previous environmental documentation for each site, including available information from earlier RCRA Facility Assessments and RCRA Facility Investigations as well as agency correspondence. Summarized current environmental status of each SWMU, described the potential for remaining contamination, and developed specific recommendations for further investigation. Developed inspection protocol and trained other Tetra Tech personnel to conduct similar visual site inspections for over 250 other SWMUs on the Fort Belvoir Main Base. Work performed on an expedited basis so that the Army could address environmental contamination throughout Fort Belvoir in anticipation of receiving missions called for under the 2005 round of the Base Realignment and Closure Act (BRAC).

Environmental Scientist; Phase II Environmental Baseline Survey for Abandoned Military Structure on Fort Detrick; U.S. Army; Undisclosed Location; March 2005 to May 2005. Conducted Phase II sampling activities to investigate potential environmental concerns identified in Phase I report prepared in 2004. Specific concerns addressed by the sampling included potential POL contamination in groundwater in the basement of the structure, potential lead-based paint on interior and exterior walls, potential lead contamination in soil adjoining exterior painted surfaces, and potential asbestos-containing material in interior pipe wrap. Prepared sampling work plan, directed sampling crews, and prepared report.

Instructor; Introductory Risk Assessment Guidance for Superfund (IRAGS); U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; Various Locations; May 2004 to May 2005. Served as a member of a team of instructors offering a three-day class introducing students to the principles of performing risk assessments for contaminated sites following guidance developed by the EPA. Classes were offered free of charge monthly to EPA employees and employees of other federal and state agencies and for a fee to other personnel (e.g., contractor employees). Two instructors plus the Course Director were assigned to teach at each course offering; Mr. Doub was assigned to classes on June 22-24, 2004; October 19-21, 2004; February 1-3, 2005; and April 19-21, 2005. Presented lectures on

data collection and evaluation and ecological risk assessment, exposure assessment, toxicity assessment, and risk characterization.

Task Leader; Wetland Design for Site 5 (L-04) – Old Batch Plant at Marine Corps Base (MCB) Quantico; Naval Facilities Engineering Command Washington; Quantico, Virginia; April 2004 – September 2005. Prepared plans and specifications for a 4,000-square foot tidal wetland where a ditch carrying stormwater runoff entered the tidal Potomac River. The ditch carried surface runoff from the former location of a concrete mixing plant as well as discharges from several storm sewers draining adjoining developed areas. Electrical transformers had been stored on an exterior pad at the concrete mixing plant in the 1970s and had released low concentrations of PCBs to the storm sewers. The wetland was designed to capture and treat the runoff before it reaches the Potomac River. Assessed the geometry of the ditch and its watershed; evaluated chemical and physical parameters of water samples; estimated bankfull flow and other hydraulic properties of the ditch, and prepared a white paper summarizing the results and proposing a wetland to treat the runoff. Developed a grading and planting plan and specifications for the wetland. Inspected the wetland following construction and planting to evaluate whether design objectives were met.

Wetland Scientist; Technical Review of Durakon Industries Wastewater Treatment Wetland; Durakon Industries, Inc. (Subcontract to Geotrans, Inc.); Flint Muchigan; May 2005. Reviewed operational assessment of wastewater treatment wetland and developed recommendations for improving treatment performance. The wetland, which was constructed in 2000, receives process and sanitary wastewater from a facility that manufactures truck bed liners and discharges the water to the Flint River via an NPDES-permitted outfall. The chief problem with the wetland has been poor treatment performance during winter months. Recommended reducing the water depth to allow replacement of non-persistent wetland vegetation whose tops decompose over the winter with persistent wetland vegetation whose tops remain standing (and hence capable of detaining and filtering wastewater) over the winter.

Wetland Scientist; Conceptual Design for Treatment Wetlands and Phytoremediation at Ammunition Burning Ground at NSWC Crane; Southern Division, Naval Facilities Engineering Command; Crane, Indiana; November 2004 to January 2005. Developed concepts for establishing treatment wetlands and phytoremediation plantings to treat RDX-contaminated groundwater originating at ammunition burial ground. Visited the site, developed four treatment alternatives, and presented sketches depicting each alternative to Navy personnel. Some of the alternatives involved constructing wetlands directly over springs that discharge contaminated groundwater, and others involved directing stream flow into adjoining wetland treatment cells. All alternatives were based on combining the ability of wetland plants to detain and filter surface water (as in traditional treatment wetlands) with the ability of certain plant species reported in the scientific literature as capable of accumulating and sequestering RDX molecules (a form of phytoremediation termed phytoaccumulation).

Curriculum Developer; Ecological Risk Assessment Lectures for Introductory Risk Assessment Guidance for Superfund (IRAGS); U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; No Specific Location; December 2004. Worked with Course Director to revise ecological risk assessment lecture modules in the course, which is offered monthly to EPA employees and other interested individuals. The course

previously included an overview lecture module on ecological risk assessment and two consecutive 1.5-hour lecture modules covering specifics of EPA's Ecological Risk Assessment for Superfund (ERAGS) document. The revision consisted of replacing the latter two modules with three one-hour lecture modules. The first new module focused on ERAGS Steps 1 and 2, the Screening Level Ecological Risk Assessment (SLERA). The second focused on ERAGS Steps 3, 4, 5, and 6, consisting of refining the contaminants of potential ecological concern followed by the design and conduct of a Baseline Ecological Risk Assessment (BERA). Specific BERA activities discussed included toxicity tests, bioaccumulation and field tissue residue studies, and population and community evaluations. The third new module focused on ERAGS Steps 7 and 8, including risk characterization and risk management.

Environmental Scientist; Phase I Environmental Baseline Survey for Abandoned Military Structure on Fort Detrick; U.S. Army; Undisclosed Location; August 2003 to December 2005. Served as lead author of report investigating the environmental condition of a Cold War era military structure at an undisclosed location in Pennsylvania. The investigation followed ASTM D 6008-96 using environmental condition of property classifications in ASTM D 5746-98. Conducted a visual site inspection of the structure and surrounding property on August 12, 2004 and interviewed personnel familiar with the operational history of the structure. Reviewed historical as-built drawings of the structure. Because of the structure's history of classified operations, few other relevant records were available. The report outlined specific recommendations for further environmental investigation and management activities, including formal closure of an undocumented underground storage tank, closure of a septic system, and sampling of the structure's interior for asbestos, lead-based paint, and radon.

Wetland Scientist; Design of Treatment Wetlands for Landfill A at Westover Air Reserve Base; Air Force Center for Environmental Excellence; Chicopee, Massachusetts; June 2003 to September 2003. Prepared plans and specifications for establishing approximately 1.0 acre of wetlands designed to treat runoff and leachate from a capped landfill and to restore approximately 1.9 acres of forested wetland disturbed by capping activities. The treatment wetland was designed to pass water through a series of basins densely planted with common cattail (*Typha latifolia*), separated by baffles planted with regionally indigenous grasses, trees, and shrubs. The restored wetlands were designed to be planted with indigenous wetland trees and shrubs and seeded with a mix of regionally indigenous wetland grasses, sedges, and rushes.

Ecologist; Conceptual Design of Truxton Park Marina; City of Annapolis; Annapolis, MD; May 2004 to July 2004. Served as wetland scientist on multidisciplinary Tetra Tech team reviewing conceptual plans for upgrading a public marina in a city park on Spa Creek (part of the Chesapeake Bay). Summarized required natural resource permits, including permits under Section 404 of the Clean Water Act, the Maryland Tidal Wetlands Act, the Maryland Non-Tidal Wetlands Protection Act, the Maryland Forest Conservation Act, the City of Annapolis Chesapeake Bay Critical Area, and the City of Annapolis Tree Ordinance. Prepared matrix comparing permit requirements and ease of permitting for three conceptual design alternatives.

Deputy Project Manager; Updated Environmental Baseline Survey for Naval Industrial Reserve Operations Plant (NIROP) Fridley; Southern Division, Naval Facilities Engineering Command; Minneapolis, Minnesota; July 2004 – October 2004. Lead professional for updating an environmental baseline survey for a weapons manufacturing facility operated by

United Defense, Inc. Reviewed Navy records since the previous EBS (1997), performed an updated visual site inspection of the property, and interviewed United Defense personnel who had managed shops on the property since 1997. Evaluated environmental cleanup actions completed since 1997, including closure and cleanup of an electroplating shop, excavation of contaminated surface soils from an exterior storage area, and pumping and treatment of groundwater. Assigned updated environmental condition of property ratings to each part of the property following ASTM D 5746-98. Prepared report following ASTM D 6008-96.

Deputy Project Manager; Environmental Condition of Property Report; U.S. Navy Nebraska Avenue Complex; Naval Facilities Engineering Command Washington; Washington, DC; January 2004 – June 2004. Led team of three environmental professionals assessing the environmental condition of property on the former Naval Security Station campus, which was slated for transfer to the Department of Homeland Security. Reviewed environmental records, interviewed site employees, and conducted a visual site inspection of over 30 buildings. Evaluated completed cleanup actions, including excavation of PCB-contaminated sediments in two stream reaches and lead-contaminated soil at one location. Assigned environmental condition of property ratings to each part of the campus using ASTM D 5746-98.

Project Manager; Environmental Assessment (EA) for Non-Native Invasive Plant Control on the Ottawa National Forest; U.S. Forest Service; Bessemer, Michigan; October 2003 to March 2005. Served as Project Manager for a subcontract to a small business, Environmental Planning and NEPA Services, Inc. (EPNS), who was tasked by the Forest Service to write an EA for controlling non-native invasive plants on approximately 987,000 acres of federal forest land. The Proposed Action consisted of mechanical, chemical (herbicide), and biological control of invasive plants such as garlic mustard (*Alliaria petiolata*), glossy buckthorn (*Rhamnus frangula*), purple loosestrife (*Lythrum salicaria*), and introduced honeysuckles (*Lonicera* spp.). Researched the ecological and toxicological impacts from specific mechanical, chemical (herbicide), and biological control agents; wrote sections of the EA addressing biological resources; and served as lead author for a biological evaluation (assessment) assessing impacts on rare, threatened, and endangered species. The biological evaluation served to comply with Section 7 of the federal Endangered Species Act as well as Forest Service internal directives. It addressed 3 mammal, 10 bird, 1 amphibian, 1 reptile, 3 fish, 4 mollusk, 7 insect, 54 plant, and 4 lichen species.

Wetlands Task Leader; Remedial Design for NSWC Indian Head Sites 12 and 42; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; Charles County, Maryland; July 1999 to February 2004. Performed wetland evaluation and design taks for investigation and remedial design for two landfill sites on military base on the Potomac River near Washington, DC. Tasks included wetland delineation, Joint Permit Application, and design of onsite wetland mitigation. Both wetland mitigation projects consisted of planting regionally indigenous grasses, graminoids, and forbs along the water-ward edge of the landfills following installation of the caps. The wetlands were designed to help stabilize the landfill cap edges, slow and filter surface runoff, and provide enhanced aquatic and terrestrial wildlife habitat.

Wetland Scientist; Wetland Delineation of NAS Cecil Field Site 15; Southern Division, Naval Facilities Engineering Command; Jacksonville, Florida; September 2003 to December 2003. Delineated wetlands under Federal and state jurisdiction on a roughly 100-acre site in the pine flatwoods of a closed military base. Used methodologies recognized by the U.S. Army Corps

of Engineers and the St. John's Water Management District. Flagged six wetland occurrences and prepared wetland delineation report. The report included an assessment of the delineated wetlands using Florida's Wetland Rapid Assessment Procedure (WRAP).

Co-Instructor; NEPA Advanced Tools Training Class; 28th Annual Conference of the National Association of Environmental Professionals (NAEP), San Antonio, Texas; Volunteer; June 22, 2003. Assisted Mr. Charles Eccleston in teaching a class introducing innovative tools and techniques to streamline and improve the NEPA decision-making process. Examples included the Sufficiency Test, a flowchart-like process for determining whether adding additional detail to a NEPA document is appropriate, and the Smithsonian Solution, a process for determining whether a NEPA document must be supplemented when elements of the action are changed subsequent to the Record of Decision. A key concept in the course is "Decision-Based Scoping", a process that uses Value Engineering principles to define the decisions that must be made and the range of reasonable alternatives. Mr. Doub used the class as an opportunity to introduce a proposed new tool, the Specialized Expertise Tool, developed for ascertaining the need for specialized expertise when addressing issues in a NEPA document. The tool was published in the December 2003 issue of *Environmental Practice*.

Task Leader; Environmental Baseline Survey (EBS) of Military Family Housing Area, Fort Drum, New York; U.S. Army Corps of Engineers, Mobile District; Watertown, New York; July 2003 to September 2003. Served as task leader for evaluating 15 parcels of undeveloped land totaling over 1,000 acres of mostly forested undeveloped land slated for new privately-sponsored residential development under the Army's Residential Communities Initiative (RCI) to privatize military housing. Reviewed historical aerial photographs and environmental records, conducted interviews with base personnel, and wrote EBS sections.

Wetland Scientist; Wetland Delineation and Mitigation for Naval Weapons Station Earle Site 13 – Defense Property Disposal Office Yard; Engineering Field Activity North, Naval Facilities Engineering Command; Colts Neck, New Jersey; April 2003 to July 2003. Conducted wetland delineation of 20-acre site slated for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Followed the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989), which is still required by the New Jersey Department of Environmental Protection (NJDEP). Identified two wetland features, including a seasonally saturated palustrine forested wetland dominated by red maple and black gum and a ditch qualifying as a state open water. Staked wetland boundaries and completed field data sheets and report. Developed recommendations for re-vegetating the wetlands and adjoining transition areas following disturbed during implementation of the remedy.

Ecologist, Level I Ecological Risk Assessment (ERA) for Naval Weapons Industrial Reserve Plant (NWIRP) Toledo; Southern Division, Naval Facilities Engineering Command, Toledo, Ohio; March 2003 to April 2003. Wrote report characterizing ecological habitats, receptors, stressors, and exposure pathways on 29-acre industrial site in Toledo. Although the facility consisted only of buildings, paved areas, and lawns, it adjoined forested habitats to the north. Documented the absence of potentially significant exposure pathways affecting ecological receptors.

Deputy Project Manager; Route Selection for Proposed Oakland Park-Conservation 230kV Electric Transmission Line; Florida Power and Light; Broward County, Florida; February 2003 to May 2003. Used aerial photographs, field observations, and published geographic and environmental data to develop candidate routes for constructing a 230kV electric transmission line across a predominantly suburban landscape. Developed a network of nearly 150 "links", linear segments potentially suitable for transmission line construction, across a study area of more 30 square miles. Each sequence of links connecting the proposed endpoint substations constituted a potential route. Tetra Tech used the links to compile a geographic information system (GIS) identifying specific environmental opportunities and constraints throughout the study area.

Project Manager; Environmental Assessment (EA) for Managing Flight Obstructions To Preserve Safety at Andrews AFB; U.S. Air Force Air Mobility Command (AMC); Prince Georges County, Maryland; November 2000 to January 2003. Developed and evaluated alternative actions for removing trees encroaching into imaginary flight surfaces at the ends of two runways. Most of the trees requiring attention were located on the Suitland Parkway, a scenic roadway into Washington, DC that is administered by the National Park Service (NPS). Worked with AMC and the NPS to prepare a statement of purpose and need and a description of the proposed action and alternatives (DOPAA). The alternatives differed with respect to various vegetation management strategies and possible reconfigurations of the runways. Assisted in the preparation of a script, slides, and visuals for a public scoping hearing to foster public involvement in the Air Force environmental impact analysis process. Wrote Draft EA for publication. Prepared responses to comments received on the Draft EA during a 30-day comment period. Coordinated a subcontractor preparing a Phase IA archaeological survey.

Task Leader; Functional Assessment and Permit Application for Wetlands at West Gate Landfill and Rubble Disposal Area; Engineering Field Activity North, Naval Facilities Engineering Command; South Weymouth, Massachusetts; December 2002 to August 2003. Prepared written assessment of the functions and values of wetlands at two sites undergoing cleanup of hazardous materials on a former naval installation closed under the Base Realignment and Closure Act (BRAC). Used the *Wetland Functions and Values Descriptive Approach* developed as part of the Highway Methodology by the New England District of the U.S. Army Corps of Engineers. Functions assessed included groundwater recharge and discharge, floodflow abatement, shoreline stabilization, sediment/toxicant retention, nutrient removal, production export, and wildlife habitat. Values assessed included aesthetics, recreation, educational/scientific value, uniqueness/heritage, and endangered species habitat. Visited the wetlands in January 2003 to collect field observations and review of published data sources.

Task Leader, Screening-Level Ecological Risk Assessment (ERA) for Valmont Trichloroethylene (TCE) Site; US Environmental Protection Agency Region III; Hazleton, Pennsylvania; September 2002 to April 2004. Inspected the site of suspected TCE contamination and prepared a technical memorandum describing terrestrial, wetland, and aquatic habitats. Obtained written consultations from the US Fish & Wildlife Service and state agencies responsible for threatened and endangered species. Prepared screening level ecological risk assessment (Steps 1 and 2, and the screening refinement stage of Step 3 of the EPA ecological risk assessment process). Addressed terrestrial plant, soil invertebrate, terrestrial wildlife, sediment invertebrate, and small fish endpoints. Performed food chain modeling addressing mammalian and avian herbivorous and insectivorous wildlife.

Task Leader; Environmental Baseline Survey (EBS) of Harry S. Truman Animal Import Center on NAF Key West; Southern Division, Naval Facilities Engineering Command; Key West, Florida; June 2002 to October 2002. Wrote EBS report following ASTM D 6008-96 and Navy guidance for a 15-acre animal quarantine facility on Fleming Key, a man-made island. The facility had been leased from the Navy to the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS). Researched the environmental history of the property, reviewed historic aerial photographs, interviewed current and past Navy and APHIS employees, reviewed Navy and APHIS files, and conducted a visual site inspection of buildings and grounds.

Task Leader; Ecological Risk Assessment (ERA) for Northeast Ordnance Site; U.S. Environmental Protection Agency, Region 3; Northeast, Maryland; February 1998 to October 2002. Inventoried ecological resources on roughly 60-acre site formerly used by ordnance manufacturing operation. The site included three streams, forested areas, widely scattered small buildings, and overgrown fields. Mapped and characterized values and functions of wetlands and upland habitats on the site and generated plant and wildlife species lists. Performed food chain modeling to estimate contaminant doses to mammals and birds. Wrote screening-level ERA identifying ecological receptors and exposure pathways and comparing exposure data against ecotoxicological benchmarks.

Wetland Scientist and Ecologist; Design of Landfill Consolidation Remedial Action at Operable Unit 2 (Sites 1 and 2) at Former NSWC White Oak; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; February 2001 to September 2002. Prepared plan to restore approximately 500 feet of a first-order, nontidal stream channel adjoining two abandoned landfills. Characterized baseline conditions such as channel geometry, watershed, bank condition, and substrate (using a Wohlman pebble count). Outlined use of live stakes, rooted cuttings, seedlings, and other bioengineering techniques (February 2001 to March 2001). Developed similar plan for restoring approximately 1,000-feet of another first-order, nontidal stream on NSWC White Oak (Site 47) that required excavation of contaminated sediments (November 2001 to December 2001). Inspected the planted sites in September 2002 as part of a follow-up monitoring program.

Task Leader; Wetland Delineation of Town of Dudley, Massachusetts Wastewater Treatment Plant Site; Boyle Engineering; Dudley, Massachusetts; May 2002 to July 2002. Conducted wetland delineation of a 15-acre tract occupied by sewage treatment facilities and undeveloped buffer grounds. Followed Federal and Commonwealth of Massachusetts wetland delineation guidance. Staked the boundaries of wetlands and ordinary high water marks, completed wetland delineation data sheets, and wrote wetland delineation report. Investigated wetlands permitting requirements for upgrading and expanding the sewage facilities.

Environmental Scientist; Review of Environmental/NEPA Compliance Checklists; U.S. Air Force; August 2001 to February 2002. Served on a team of environmental scientists tasked to review electronic checklists developed to standardize environmental and NEPA compliance at two Department of Defense (DoD) installations. Proposed recommendations for expanding the scope of the checklists for national application. The two checklists selected for the review had each been developed independently by the Patuxent Naval Air Station in Maryland and Warner-Robbins Air Force Base in Georgia. The checklists prompted users for “yes” or “no” responses to

a chain of electronic questions and uses the responses to automatically identify specific environmental compliance requirements. Where appropriate, questions include links to geographic information system (GIS) map layers containing data on wetlands, cultural resources, rare or endangered species locations, and other environmentally sensitive resources. The team interviewed the personnel who developed the checklists, conducted "dry runs" of the checklists, and proposed approaches for transforming the checklists into a "national checklist" that could be implemented at any military installation within the United States.

Task Leader; Tier I Ecological Risk Assessment (ERA) for Fort Knox Open Burn/Open Detonation (OB/OD) Site; U.S. Army Corps of Engineers, Mobile District; Fort Knox, Kentucky; January 2002 to February 2002. Wrote Tier I (screening level) ERA in accordance with guidance developed by Region IV of the U.S. Environmental Protection Action (EPA) and national guidance developed by the EPA Office of Solid Waste for hazardous waste combustion facilities.

Task Leader, Screening Level Ecological Risk Assessment (ERA) for Open Burn/Open Detonation (OB/OD) Site, Tooele Army Depot; U.S. Army Corps of Engineers, Mobile District; Tooele, Utah; June 1999 to March 2002. Reviewed draft screening-level ERA prepared by another author in 1999 and responded to EPA comments. Wrote final SLERA following guidance provided by EPA. Used computer model to estimate chemical concentrations in soils, sediment, and water affected by emissions from OB/OD operations and to predict exposures through the food chain to various functional feeding guilds of birds and mammals.

Task Leader; Environmental Baseline Survey for Transfer (EBST) and Finding of Suitability to Transfer (FOST) for Plant 20 Transportation Maintenance Facility at NWIRP Bethpage; Engineering Field Activity North, Naval Facilities Engineering Command; Bethpage, New York; December 2001 to February 2002. Wrote an EBST and FOST supporting the transfer of a 4.5-acre vehicle maintenance facility from the U.S. Navy to Nassau County, New York in accordance with CERCLA Section 120(h). Conducted new visual site inspection of Plant 20 and updated relevant information in Phase I and Phase II Basewide EBS reports for NWIRP Bethpage.

Task Leader; Joint Permit Application for Installation Restoration (IR) Program Sites on Naval Surface Warfare Center Dahlgren Site; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; Dahlgren, Virginia; July 2001 to December 2002. Prepared Joint Permit Application for wetland impacts resulting from remediation of 6 contaminated sites on a Navy base in Northern Virginia. Four of the sites contained tidal wetlands bordering tributaries of the Potomac River and two of the sites contained nontidal wetlands. The application summarized wetland impacts and the proposed mitigation projects for each site in the permit application. The permit application quantitatively tracked losses and gains of wetlands. Contributed to Habitat Equivalency Analysis (HEA) performed by the National Oceanographic and Atmospheric Administration (NOAA) to model the appropriate level of wetland mitigation accounting for past and projected future losses of wetland services.

Project Manager; Freshwater Wetlands Permit Application for Remediation of Former Calgon Corporation Metasol Plant; Merck and Company; Hawthorne, New Jersey; April 2001 to October 2001. Prepared application to the New Jersey Department of Environmental Protection (NJDEP) for statewide general freshwater wetlands permit and stream encroachment permit for impacts resulting from excavation of contaminated soils on abandoned industrial site. The project involved temporary disturbance of approximately 0.4 acre of freshwater wetlands and approximately 2.5 acres in the 100-year floodplain. Completed forms, coordinated drawings and public notification, documented compliance with applicable terms and conditions established by NJDEP for Statewide General Freshwater Wetland Permit #4, and wrote an environmental report supporting the request for a stream encroachment permit. Permit received 2002.

Task Leader; Biological Assessment (BA) for Lower Meramec Basin Wastewater Management Plan; St. Louis, Missouri; U.S. Environmental Protection Agency Region 7; February 2001 to April 2001. Prepared BA under Section 7 of the Endangered Species Act for a proposed regional wastewater treatment plant project. The BA addressed the proposed right-of-way for a 1-mile buried water discharge line crossing the floodplains of the Meremac and Mississippi Rivers. The BA specifically addressed the running buffalo clover, Indiana bat, bald eagle, and American bittern (the latter is not federally listed but is designated as endangered by the State of Missouri). Conducted pedestrian survey, described habitats, assessed habitat suitability for each species considered, and developed recommendations for minimizing impacts.

Project Manager, Multiple Environmental Baseline Survey (EBS) Reports for Andrews AFB; Air Force Center for Environmental Excellence; Prince Georges County, Maryland; September 2000 to March 2001. Wrote five EBS reports for five properties on Andrews AFB that were scheduled for leases to other government agencies. Properties addressed included a hangar, a garage, a credit union, an office building, and a tract of land in an area containing wetlands and several rare, threatened, and endangered plants. Followed procedures in AFI 32-7066, which included conducting visual site inspections, interviews, and records reviews.

Task Leader; Conceptual Plan for Landfill Shoreline Stabilization Using Constructed Tidal Marshes; Portsmouth Naval Shipyard; Northern Division, Naval Facilities Engineering Command; Kittery, Maine; March 2000 to September 2000. Developed conceptual plan for using constructed tidal marshes to stabilize the shoreline where a landfill abuts the estuarine Piscataqua River. The conceptual plan evaluated the feasibility, advantages, and disadvantages of using tidal wetlands alone, tidal wetlands plus a rock breakwater, or riprap to stabilize the subject areas. Presented the conceptual plan at a public meeting on August 3, 2000.

Botanist; Preliminary Phytoremediation Analysis of Contaminated Site at NIROP Fridley; Fridley, Minnesota; Southern Division, Naval Facilities Engineering Command; September 2000 to October 2000. Evaluated the possible use of phytoremediation to clean up groundwater contaminated by trichloroethylene (TCE). Concluded that phytoremediation may not be a good alterative to traditional remedies for this site because of the high depth to groundwater and small land area available for planting phreatophytic trees and other plants.

Task Leader; Land Suitability Studies for Davidsonville Transmitter Station and Brandywine GLOBECOM Receiving Station; Mobile District, Corps of Engineers; Anne Arundel and Prince Georges Counties, Maryland; October 1999 to June 2000. Prepared

letter reports assessing the environmental suitability of two tracts for outleasing for purposes such as grazing, agriculture, mining, urban development, and recreation. The tracts were outparcels containing communications facilities associated with nearby Andrews AFB. The various towers and other facilities were clustered in fields in the center of each parcel surrounded by large buffers of forestland. The sizes of the parcels were approximately 1,100 and 1,600 acres, respectively. Sensitive environmental resources on each parcel included wetlands, threatened and endangered plants, and steep and erodible soils.

Task Leader; Design of Interim Removal Action for Site 3 at Former NSWC White Oak; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; December 1999 to December 2001. Prepared plan for restoring approximately 250 feet of first-order, nontidal stream channel adjoining abandoned landfill. The stream had been temporarily diverted through a diversion ditch or pipe to allow for excavation of a landfill directly abutting the channel. The plan called for returning the stream to a reconfigured channel stabilized using live stakes, rooted cuttings, seedlings, and other bioengineering techniques. The Navy implemented the plan in November 2000.

Wetlands Discipline Lead; EA for Disposal and Reuse of Grand Junction Office; U.S. Department of Energy (DOE); Grand Junction, Colorado; September 1999 to January 2000. Wrote sections addressing wetlands, floodplains, and ecological resources. Conducted ecological risk assessment (ERA) using DOE procedures. The EA was included as one of three sample EA reports presented as appendices in the textbook *Effective Environmental Assessments: How to Manage and Prepare NEPA EAs* by Charles H. Eccleston.

Task Leader; Wetland Delineation and Permit Application for Drum Burial Sites on Martin State Airport; Lockheed Martin, Inc.; Baltimore, Maryland; June 1999 to September 1999. Performed wetland delineation and completed permit application for grading necessary to investigate possible contamination from buried drums on an active airfield. The delineation identified the boundaries of nontidal and tidal wetlands and other regulated areas. Completed Joint Permit Application for submittal to the US Army Corps of Engineers and Maryland Department of the Environment. Prepared an application for a variance under Baltimore County codes dealing with Chesapeake Bay critical areas.

Task Leader; Environmental Assessments (EAs) for Station Port Huron and Station Ashtabula; U.S. Coast Guard; Port Huron, Michigan and Ashtabula, Ohio; April 1999 to August 1999. Assisted preparing an EA for construction of a new station building at Station Port Huron and served as the lead author of a separate EA covering the closure of existing station facilities at Station Ashtabula and construction of a new modular station at a nearby location. Key issues in both EAs included potential impacts to aquatic and benthic biota, threatened and endangered species, historic and archaeological resources, and urban planning issues. Coordinated consultations with the U.S. Fish & Wildlife Service, State Natural Heritage Programs, and State Historic Preservation Officers.

Task Leader; Phytoremediation Design for NSWC Dahlgren Site 17; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; King George County, Virginia; January 1999 to November 2000. Developed phytoremediation plan addressing groundwater contaminated with mercury at abandoned landfill facility on a Navy base in northern

Virginia. The plan involved planting hybrid poplar and other trees on a capped landfill to increase transpiration of groundwater contaminated by mercury. The intent was to thereby reduce the migration of mercury-contaminated groundwater into adjoining streams and wetlands. Reviewed the phytoremediation literature to identify tree species that are deep-rooted, fast-growing, and have high rates of transpiration. In contrast to phytoremediation projects that use uniform stands of a single species, designed a planting scheme that utilized mixed stands of high-transpiration species that also simulated the ecological structure and functions of natural forests. Also performed a wetland delineation of the site and integrated wetland mitigation into the phytoremediation design. Formed basis of presentation titled "Integration of Phytoremediation, Wetland Mitigation, and Ecological Restoration" at the 26th Annual Conference of the National Association of Environmental Professionals.

Environmental Scientist; Environmental Baseline Survey (EBS) for Naval Weapons Industrial Reserve Plant (NWIRP) St. Louis; Southern Division, Naval Facilities Engineering Command; St. Louis, Missouri; November 1998 to February 1999. Served on six-member team of professionals preparing an EBS following methodology in ASTM D 6008 and associated Navy guidance. Spent two weeks at the plant reviewing environmental records, conducting visual site inspections, and interviewing current and former Navy and contractor (Boeing) staff who worked at the plant. The EBS addressed a large aircraft manufacturing plant and several ancillary structures owned by the Navy within a larger manufacturing complex owned by Boeing, Inc. The Navy planned to transfer the plant to Boeing. Contributed to writing the EBS report, especially sections addressing the main aircraft manufacturing plant. The Phase I EBS was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA).

Wetland Scientist; Clean Water Act Assessment for Golf Course Addition on Andrews AFB; Mobile District, Corps of Engineers; Prince Georges County, Maryland; June 1998 to October 1999. Mapped and characterized ten wetland occurrences on a recently completed 18-hole extension to the Andrews golf course, conducted functional assessment of each wetland, and developed management recommendations for each wetland. The recommendations focused on minimizing bird-aircraft strike hazards (BASH) in addition to the normal objectives of wetland management, such as water quality protection and improving wetland habitat. The Air Force ultimately included the plan as a component volume to the Integrated Natural Resources Management Plan (INRMP) for Andrews AFB.

Task Leader; Ecological Risk Assessment (ERA) for Crossley Farm Site; U.S. Environmental Protection Agency, Region 3; Huffs Church, Pennsylvania; June 1998 to June 2001. The Crossley Farm site consists of over 200 acres of agricultural land and deciduous forests on highlands adjoining a series of sloping springs. Drums of organic solvents had been buried on the site and had resulted in groundwater contamination. Visited the site, described and sketched the approximate boundaries of natural habitats, and wrote a technical memorandum that inventoried ecological resources on roughly 200-acre site formerly used to bury drums of industrial solvents (completed September 1998). As part of the field effort, mapped and characterized the values and functions of wetlands associated with springs and seepages on the site. Mapped ecological habitats on the site and generated species of plants and wildlife. Used data from the technical memorandum to identify ecological receptors and exposure pathways. Performing food

chain modeling for representative mammalian and avian herbivores, insectivores, and carnivores. Wrote screening-level ERA report using soil, sediment, and surface water data generated by Tetra Tech for a Remedial Investigation (RI) of the site.

Environmental Scientist; National Pollutant Discharge Elimination System (NPDES) Permit Application for AES Warrior Run Cogeneration Plant; AES Warrior Run, Inc.; Cumberland, Maryland; May 1998 to August 1998. Prepared application to the Maryland Department of the Environment for AES to discharge wastewater generated by operation of a 180-MW coal-fired electric power plant. Wastewater sources included cooling tower blowdown water, demineralizer system regeneration wastes, and industrial and coal pile runoff. All wastewater was to be recycled to the extent possible and any remaining wastewater was to be extensively pretreated in new, state-of-the-art facilities prior to discharge.

Environmental Scientist; Environmental Baseline Surveys for Transfer (EBSTs) for Naval Air Station Dallas; Southern Division, Naval Facilities Engineering Command; Dallas, Texas; January 1998 to December 1999. Served on a team of environmental professionals evaluating the environmental condition of property on a Navy base closed under the Base Closure and Realignment Act (BRAC). The base included an airfield, flight line operations buildings, construction and maintenance shops, and administration buildings. The team wrote separate EBSTs for each of six areas of the base termed “Categories A through F”. Assisted the team in reviewing environmental records, conducting visual site inspections, and interviewing base personnel. Each EBST served to update portions of a basewide EBS prepared by another contractor in 1994; thus the emphasis of the EBSTs was on the period from 1994 to 1999.

Ecologist; Ecological Risk Assessment (ERA) for Former Naval Ordnance Station Louisville; Southern Division, Naval Facilities Engineering Command; Louisville, Kentucky; January 1998 to January 1999. Prepared a report documenting the lack of significant ecological receptors at the densely developed industrial station. Reviewed information on threatened and endangered species and obtained verification from US Army Corps of Engineers that there are no wetlands on the station. Evaluated the potential for transmission of contaminants through the food chain to predators that incidentally visit a series of drainage ditches on the station.

Task Leader; Ecological Validation Study for Aerojet Open Burn Facilities; GenCorp Aerojet, Inc.; Sacramento, California; December 1997 to June 1999. Conducted ecological risk validation study for open burn activities on 8,000-acre Aerojet facility. Evaluated a preliminary (Tier I) ERA prepared by another contractor, identified assumptions requiring validation, and designed and implemented a field sampling program to generate data validating the assumptions. Wrote report presenting the findings of the validation effort.

Task Leader; Phase I Environmental Site Assessments (ESAs) for Fort Wingate Depot Activity; Bureau of Land Management; Gallup, New Mexico; November 1997 to March 2000. Wrote Phase I ESAs for discreet parcels within former Army depot closed under the Base Closure and Realignment Act (BRAC). Parcels included a 5,600-acre tract of forest land formerly used for missile test launches, an area of former workshops used to service explosives, clusters of explosives storage igloos, and several tracts of buffer land. Followed procedures from ASTM E 1527-97 to identify recognized environmental conditions for the parcels. Presented a paper titled

Conducting Environmental Baseline Surveys for Large Manufacturing Facilities and Large Tracts of Undeveloped Land at the 1999 Annual Meeting of the National Association of Environmental Professionals based, in part, on experiences from this project.

Environmental Scientist; Phase I Environmental Site Assessment (ESA) Reports for Telecommunications Sites in Philadelphia Metropolitan Area; Sprint PCS; August 1997 to December 1997. Completed Phase I ESAs on selected sites in southeastern Pennsylvania and central New Jersey proposed for construction of monopoles and other telecommunications equipment. Conducted visual site inspections, interviews, and record searches following ASTM E 1527-94. Obtained and reviewed series of historical aerial photographs covering each site.

Task Leader; Ecological Risk Assessment (ERA) of Naval Weapons Industrial Reserve Plant (NWIRP) Calverton; Northern Division, Naval Facilities Engineering Command; Calverton, New York; May 1997 to October 1997. Characterized habitats at four Installation Restoration (IR) sites in naturally vegetated areas of a closed Navy base in eastern Long Island. Delineated and characterized wetlands on each site. Described ecological receptors and exposure pathways at each site and prepared screening-level ecological risk analyses. Collected and screened sediment samples for benthic macroinvertebrates, preserved and shipped organisms to a laboratory for taxonomic identification, and evaluated diversity of the benthic macroinvertebrate community.

Wetlands Task Leader; Remedial Design for NSWC Dahlgren Site 9; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; King George County, Virginia; June 1997 to January 1999. Designed a wetland mitigation plan for creating approximately 0.9 acres of tidal wetlands in an area adjoining an abandoned landfill (Site 9) on the banks of Gambo Creek, a tidal tributary to the Potomac River. The wetlands served to offset the loss of approximately 2.3 acres of tidal wetlands that had to be permanently filled in order to cap contaminated sediment. The plan also called for planting native warm season grasses and shrubs on the cap to enhance wildlife habitat. Investigated a series of alternative locations on NSWC Dahlgren that could potentially suitable for restoring or creating additional wetlands. Wrote a technical memorandum proposing a wetland mitigation bank to cover wetland losses on Site 9 and other contaminated sites requiring remediation. The memorandum presented a short-list of sites that could potentially be used to restore or create wetlands.

Task Manager; Basewide Environmental Baseline Survey (EBS) of Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage; Northern Division, Naval Facilities Engineering Command; Bethpage, New York; February 1997 to January 1998. Coordinated the preparation of an EBS following methodology in ASTM D 6008, which includes a review of public records, interviews with site and agency representatives, and visual site inspection. The EBS addressed over 100 industrial and administrative buildings on NWIRP Bethpage, including a large aircraft manufacturing building, various warehouses and laboratories, an industrial wastewater treatment plant, a vehicle maintenance facility, and other buildings and land areas. The EBS was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA). As Task Manager, planned and coordinated field work by a four-person team and served as primary author of draft and final reports.

NEPA Analyst; Telecommunications Sites in Philadelphia Metropolitan Area; Sprint PCS; Philadelphia, Pennsylvania; February 1997 to December 1997. Visited selected sites in southeastern Pennsylvania and central New Jersey to assess whether construction of monopoles and other telecommunications equipment complied with siting criteria established by the Federal Communications Commission under the National Environmental Policy Act (47 CFR 1.1307 et seq.). Wrote letter reports addressing each site. The reports provided information on wilderness areas, wildlife preserves, threatened and endangered species; cultural resources; floodplains and wetlands, surface waters; Indian religious sites; and high-intensity lighting.

Project Manager; Design of Fernald Ecological Restoration Park; Fluor-Daniel Fernald, Inc.; Cincinnati, Ohio; January 1997 to December 1998. Prepared plans and specifications for establishing a 1-acre park demonstrating the types of natural vegetation that could be established following remediation of contaminated soils at a closed U.S. Department of Energy nuclear materials production facility undergoing environmental cleanup. The park consists of a mulched nature trail passing through small areas of restored vegetation types indigenous to southwestern Ohio, including tallgrass prairie, old field scrub, deciduous forest, and nontidal wetlands. Following completion of the plan, Assisted Fluor-Daniel Fernald in overseeing construction of the park. Voluntarily developed an unofficial website to publicize the park: http://members.aol.com/jpeytond/fernpark.html. Also contributed to conceptual plan for ecological restoration of the entire Fernald site and updated an ecological risk assessment (ERA) started by other staff in 1994.

Wetlands Task Leader; PCB Removal Action Design for Naval Security Station; Engineering Field Activity Chesapeake; Washington, DC; December 1995 to August 1996. Sesigned a plan for restoring riparian vegetation to two freshwater stream segments in a forested stream valley east of the Naval Security Station in northwest Washington, DC. The stream valley was within Glover Archbold Park, administered by the National Park Service. Sediments in both stream segments were contaminated by PCBs originating from the Naval Security Station. Delineated wetlands and waters of the United States and obtained Jurisdictional Determination from the U.S. Army Corps of Engineers. Mapped trees over 4 inches in diameter at breast height in accordance with National Park Service procedures. Prepared plans and specifications for reconstructing the stream channel and replanting native trees and shrubs.

Task Manager; Mapping of Wetlands, Playas, and Other Waters of the United States on Sierra Army Depot; HAZWRAP; Herlong, California; September 1995 to April 1996. Developed sitewide map of areas regulated under the Clean Water Act on 96,421-acre installation. Analyzed 1:10,000 color infrared aerial photographs and then organized two 2-man field teams to ground truth the photographs over a 2-week period. The teams collected data necessary to complete field data forms from the 1987 Corps of Engineers Wetlands Delineation Manual. Features delineated included a desert saltgrass dominated wetland bordering the seasonally dry Honey Lake, several riparian areas, a seep, and numerous salt-encrusted playas (seasonally inundated depressions). Assisted Depot staff in obtaining a Jurisdictional Determination from Sacramento District of U.S. Army Corps of Engineers. Subsequently developed a publication in a peer-reviewed journal based on this work.

Environmental Scientist; Basewide Environmental Baseline Survey (EBS) of Naval Ordnance Station Louisville; Southern Division, Naval Facilities Engineering Command; September 1995 to May 1996. Served as one of eight professionals who reviewed records, conducted interviews, and visually inspected real property to prepare an EBS following methodology in ASTM D 6008. The EBS addressed over 100 industrial and administrative buildings on an intensively developed 144-acre site. The EBS was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA).

Ecologist; Marine Mammal Incidental Take Permit Application for Rocket Launches at Vandenberg AFB; Air Force Center for Environmental Excellence; June 1995 to September 1995. Contributed to permit application for "incidental take" of marine mammals due to noise impacts from rocket launching activities. The trajectories of launches from Vandenberg AFB sometimes pass over offshore islands that provide habitat for large numbers of marine mammals. "Incidental take" referred to indirect impacts to the populations from noise, not to direct efforts to kill or remove individual specimens.

Task Leader; Burton Mesa Chaparral (BMC) Restoration Plan; Air Force Center for Environmental Excellence; Lompoc, California; May 1995 to January 1996. Developed a conceptual plan for restoring rare chaparral vegetation to compensate for losses due to expansion of military family housing. BMC harbors several rare, threatened, and endangered species. Analyzed preliminary plans for the military housing project and recommended adjustments to the construction footprint that reduced impacts to BMC by several acres. Researched the scientific literature to assess the potential for success for planting BMC plant species in areas of disturbed annual grassland. Developed a conceptual plan and planting specifications for restoring over 40 acres of BMC.

Task Manager; Basewide Environmental Baseline Survey (EBS) of Naval Weapons Industrial Reserve Plant (NWIRP) Calverton; Northern Division, Naval Facilities Engineering Command; Calverton, New York; March 1995 to January 1997. Coordinated preparation of an EBS following methodology in ASTM E 1527, which includes a review of public records, interviews with site and agency representatives, and visual site inspection. The EBS addressed over 80 industrial and administrative buildings and over 6,000 acres of mostly wooded lands. It was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA). As Task Manager, planned and coordinated field work by a six-person team and served as primary author of draft and final reports.

Wetland Scientist; Land Use and Land Cover Mapping for Suwannee River Water Management District; subcontract to WOOLPERT; Live Oak, Florida; February 1995 to October 1996. Served as the lead wetland scientist and technical reviewer on a team responsible for mapping land cover and land uses throughout more than 7,000 square miles in northern Florida. The project involved delineating and classifying residential, commercial, industrial, agricultural, and natural vegetation land uses and land cover using 1:40,000-scale color infrared aerial photography. Led the completion of a pilot area to identify usable photosignatures and refine project procedures. Assisted in administering a training program for a team of 8

photointerpreters tasked with completing the project. Served as one of two senior technical reviewers for the project.

Ecologist; Ecological Risk Assessment (ERA) for Charleston Air Force Base; Air Force Center for Environmental Excellence; Charleston, South Carolina; February 1995 to January 1997. Characterized ecological resources at two dumping sites near the base's airfield designated as Solid Waste Management Units (SWMUs) 74 and 144. Visited both sites to inspect for threatened and endangered species, develop a list of ecological receptors, and identify wetland boundaries. Wrote screening-level ERA. Submitted consultation letters to natural resource trustees and designed a mitigation plan for restoring wetland soils and vegetation after excavation of partially buried drums and other debris.

Wetlands Scientist and Ecologist; Remedial Design for Dump Site, Marine Corps Air Station Cherry Point; Northern Division, Naval Facilities Engineering Command; Cherry Point, North Carolina; February 1995 to June 1995. Delineated existing wetlands and designed a wetland mitigation plan for restoring a roughly 10-acre dump site following cleanup. The site bordered a tidal tributary to the Neuse River. The mitigation design emphasized restoration of zoned natural vegetation including bald cypress swamp, mixed wetland hardwood swamp, Atlantic white cedar swamp, and a pine flatwood buffer. Prepared plans and specifications for the wetland restoration.

Wetlands Scientist and Ecologist; Remedial Design for Site 4 Landfill, Marine Corps Combat Development Command at Quantico; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; Quantico, Virginia; November 1994 to August 1995. Mr. Doub delineated existing wetlands and designed a wetland mitigation plan for remediation of an abandoned landfill bordering a tidal reach of the Potomac River. Wrote wetland delineation report and prepared a Joint Permit Application to the U.S. Army Corps of Engineers. Prepared plans and specifications for restoring over an acre of tidal wetlands as part of the remedy. Inspected the completed wetland in September of 2002 as part of Tetra Tech's 5-year review of the remedy and noted that the wetlands had developed in general accordance with the design. Inspected the wetlands again in November of 2003 to inspect for possible damage from a hurricane and noted that the wetlands had successfully weathered several feet of temporary inundation from a tidal storm surge.

Ecologist and Wetland Scientist; EAs for Military Construction Projects on Vandenberg AFB; Air Force Center for Environmental Excellence; Lompoc, California; September 1994 to January 1996. Prepared sections addressing wetlands and vegetation for eight EAs for minor construction projects. The projects included several road upgrades, pipeline replacements, a combat training facility, a consolidated firehouse, and reconstruction of military family housing. Inspected and characterized vegetation on each project site, mapped the locations of rare or endangered plants, and delineated wetlands and other waters of the United States.

Ecologist and Wetlands Scientist; Remedial Investigation and Feasibility Study (RI/FS) for Melville North Landfill; Northern Division, Naval Facilities Engineering Command; Newport, Rhode Island; September 1994 to January 1995. Delineated tidal and nontidal wetlands at abandoned landfill on Narragansett Bay. Mapped and characterized wetland and upland vegetation and completed functional assessment of wetlands using the WET 2.0 computer model.

Environmental Scientist; Environmental Assessment (EA); Riverbank Stabilization at Landfill, Philadelphia Naval Shipyard; Northern Division, Naval Facilities Engineering Command; Philadelphia, Pennsylvania; April 1994 to September 1994. Served as project ecologist for an EA outlining potential environmental impacts from alternative practices for stabilizing an eroding riverbank at a landfill site on a tidal reach of the Schuylkill River. Practices considered included use of rock armor, gabions, a concrete retaining wall, metal sheet piles, and vegetative stabilization. Key issues were protection of tidal mudflats and nearby habitat used by the (then) Federally-listed peregrine falcon (*Falco peregrinus*). Visited the site, characterized habitats and species present, reviewed key records, and contributed related sections to the EA. The Navy ultimately issued the EA as an "Environmental Permits Report".

Project Manager; Wetland Delineation and Forest Inventory of National Security Agency Campus; National Security Agency; Fort George G. Meade, Maryland; March 1994 to December 1995. Flagged the boundaries of 37 wetland occurrences on the 660-acre campus; coordinated a land survey of the wetland boundaries; and coordinated the establishment of an electronic database depicting regulated wetlands on the campus. The wetlands included several forested wetlands bordering streams and a series of forested hillside seeps. For the forest inventory, collected data from over 200 representative tenth-acre quadrats, one per acre of forest cover on the site. Wrote the forest inventory report in the form of a comprehensive baseline inventory of flora and fauna on the site. Developed vegetation management recommendations for the campus.

Environmental Scientist; Environmental Assessment (EA) for Ship Scrapping Operations; U.S. Department of Transportation, Maritime Administration; Various International Locations; January 1994 to September 1994. The EA addressed potential environmental impacts from moving mothballed ships in Fort Eustis, Virginia; Port Aurthur, Texas; and Suisan Bay, California to scrapping operations in Mexico, India, and China. Wrote sections assessing potential impacts to biological and water resources. The EA was written on the basis of literature research and interviews only; the scope of work did not involve visiting the affected sites.

Environmental Scientist; Basewide Environmental Baseline Survey (EBS) of Williams Air Force Base; Air Force Center for Environmental Excellence; Mesa, Arizona; July 1993 to November 1993. Served on a team of six environmental professionals preparing a basewide EBS using methodology in ASTM E 1527 (the more directly relevant ASTM D 6008 for EBSs had not yet been published). The EBS addressed over 100 industrial and administrative buildings on the 4042-acre base. Collected and reviewed environmental records, interviewed base employees, and conducted visual site inspections of buildings and land areas on the base. The EBS was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA).

Environmental Scientist; Environmental Impact Statement (EIS) for Waste Management Facilities at Oak Ridge Reservation; U.S. Department of Energy (DOE); Oak Ridge, Tennessee; March 1993 to January 1994. Authored land use sections of EIS addressing alternative practices and locations for the disposal and management of low-level radioactive waste. Reviewed proposed action and alternatives for consistency with land use plans and

policies developed by DOE and the City of Oak Ridge. Inspected visited multiple sites on the reservation to map and characterize wetlands to support biological analyses in the EIS.

Ecologist; Supplemental Environmental Impact Statement (EIS) for Indiana Harbor and Canal Maintenance Dredging and Disposal Activities; U.S. Environmental Protection Agency, Region 5; Chicago, Illinois; January 1993 to May 1993. Authored biological resources sections of a Supplemental EIS addressing maintenance dredging operations in a navigable canal near Lake Michigan. The key potential for biological impacts involved resuspension of contaminated sediments in aquatic habitats.

Deputy Project Manager; Sitewide Environmental Assessment (EA) for Continued Development of Naval Petroleum Reserve No. 3; Fluor-Daniel, Inc.; Casper, Wyoming; December 1992 to March 1993. Led preparation of an EA addressing alternatives for continued oil extraction activities on a 9,000-acre site jointly administered by the U.S. Navy and U.S. Department of Energy. Authored sections dealing with wetlands and floodplains, vegetation, soils, and water resources. Directed authors of other sections. The EA was included as one of three sample EA reports presented as appendices in the textbook *Effective Environmental Assessments: How to Manage and Prepare NEPA EAs* by Charles H. Eccleston.

Environmental Scientist; Programmatic Environmental Impact Statement (EIS) for Ballistic Missile Defense Program; Ballistic Missile Defense Organization (BMDO); November 1992 to June 1994. Authored water resources sections of an EIS addressing alternatives for establishing a national missile defense program. As a programmatic EIS, the EIS focused primarily on general issues and controversies associated with establishment of the program. It was intended to serve as a basis for future tiered NEPA documentation for specific actions under the program. Also served as Environmental Consequences Chapter Lead. Authored an introduction to the chapter and assembled input from team of 14 separate technical authors.

Task Manager; Delineation of Wetlands at Runoff Basin, Palo Verde Nuclear Generating Station; Arizona Public Service Company; May 1992 to August 1992. Delineated and characterized wetlands that had formed in a runoff basin resulting from surface runoff from the power plant. Completed wetland delineation data sheets and wrote wetland delineation report.

Deputy Project Manager; Environmental Assessment (EA) for Hartwell Power Plant Complex; Transco, Inc.; Lake Hartwell, Georgia; May 1992 to October 1992. Managed a team tasked to prepare an EA for a Federal water allocation and land easement for a proposed power plant project on a reservoir on the Savannah River in northern Georgia. The EA was funded by the private developer of the power plant project, but the EA was prepared for publication by the Savannah District of the Corps of Engineers. Served as the wetland specialist and terrestrial ecologist on the team and supervised other team members including a hydrologist, aquatic ecologist, soil scientist, archaeologist, planner, architect, and engineer. Served as the primary author of the EA. Performed a wetland delineation of the 215-acre site and obtained a Section 404 permit for construction impacts to wetlands.

Wetland Scientist; Remedial Investigation/Feasibility Study for Kearsarge Metallurgical Site; U.S. Environmental Protection Agency, Region 1; South Conway, New Hampshire;

May 1992 to October 1992. Delineated wetlands and inventoried vegetation on a 10-acre site in central New Hampshire that had been contaminated by an abandoned metallurgical facility. Modeled wetland values and functions using the Wetland Evaluation Technique (WET 2.0).

Ecologist and Wetland Scientist; Environmental Assessment (EA) for Astrotech Payload Processing Facility on Vandenberg AFB; Astrotech Space Operations Limited Partnership; Lompoc, California; March 1992 to December 1992. Served as the wetlands and vegetation lead on an EA for construction of a privately funded facility on federal property on Vandenberg AFB. Reviewed alternative sites on and off the base to assist in siting facility to avoid or minimize impacts to wetlands, vernal pools, and other sensitive natural resources. Delineated two vernal pools on the selected site and assisted in positioning the footprint of the facility to avoid encroachment and minimize runoff into the vernal pools. Wrote EA sections on wetlands and biological resources.

Project Manager; Wetland Delineation of Transmission Line for Beaver Falls Cogeneneration Plant; Commonwealth Associates, Inc.; March 1992 to January 1993. Under subcontract to Commonwealth Associates, Inc., performed a wetland delineation for a 7.3-mile right-of-way for a 115 kV electric transmission line. Wrote wetland delineation report. Suggested routing adjustments to reduce wetland impacts. The right-of-way was mostly forested.

Ecologist; Ecological Risk Assessment (ERA) for Storage Yard 2, Annapolis Naval Station; Engineering Field Activity Chesapeake, Naval Facilities Engineering Command; Annapolis, Maryland; March 1992 to January 1993. Delineated tidal and nontidal wetlands and mapped forest stands on a roughly 75-acre site on the Severn River. Collected sediment samples to characterize benthic macroinvertebrate populations.

Ecologist; Environmental Assessment (EA) for Consolidation of Nonnuclear Manufacturing Operations; U.S. Department of Energy; January 1992 to April 1993. Wrote sections on biological resources, threatened and endangered species, and wetlands for an EA addressing the proposed consolidation of non-nuclear manufacturing activities within the U.S. nuclear weapons complex. The EA addressed alternatives for consolidating activities at the Kansas City Plant, the Mound Plant in Ohio, the Pinellas Plant in Florida, the Rocky Flats Plant in Colorado, the Savannah River Site in South Carolina, the Oak Ridge Reservation in Tennessee; the Pantex Plant in Texas; and the Los Alamos National Laboratory in New Mexico.

Ecologist and Wetlands Scientist; Environmental Impact Statements (EISs) for Disposal and Reuse of Williams and Lowry Air Force Bases; Air Force Center for Environmental Excellence; Mesa, Arizona and Denver, Colorado; December 1991 to June 1993. Mapped vegetative cover, performed rare plant survey, and completed delineation of wetlands (and other waters of the United States) for each base and wrote EIS sections addressing vegetation and wetlands in the EISs. Obtained wetland Jurisdictional Determinations for each base.

Task Leader; Environmental Permiting for AES Warrior Run Electric Transmission Line; AES Warrior Run, Inc.; Cumberland, Maryland and Carpendale, West Virginia; September 1991 to June 1992 and December 1997 to January 1998. Prepared applications for environmental permits required for 6-mile, 230 kV electric transmission line connecting proposed 180 MW power plant to the Allegheny Power grid. Assisted the client in selecting a route that

would minimize environmental impacts and facilitate permit acquisition. Performed wetland delineation of the selected route. Completed applications and environmental analyses for Public Service Commission approval, a Joint Permit Application for wetlands impacts and a Potomac River crossing, and applications for local approvals (1991-1992). Performed tree inventory of the proposed right-of-way where it traversed Carpendale, West Virginia to comply with municipal ordinance. Designed tree screen for where the transmission line would cross a public road in Carpendale (1997-1998).

Wetland Scientist; Appraisal of Wetland Protection on Savannah River Site (SRS); U.S. Department of Energy; Aiken, South Carolina; June 1991 to September 1991. Served on a six-member panel of experts evaluating wetland protection policies and procedures on a nuclear weapons site encompassing over 300 square miles. The panel interviewed selected contractors responsible for construction activities on the SRS. Co-authored report documenting the panel's findings, observations, and recommendations.

Wetland Scientist; Wetland Delineation of Saco Tannery Waste Pit Site; U.S. Environmental Protection Agency, Region 1; Saco, Maine; May 1991 to April 1992. Delineated wetlands and described plant communities on a 200-acre forested site in southeastern Maine containing a series of abandoned waste pits that had been contaminated with chromium and other metals from a past tanning operation. Contributed to planting plan for establishing 2 acres of forested wetlands to offset wetlands unavoidably lost during the remediation of the site.

Environmental and Wetland Scientist; Site Evaluation Study for Proposed Cogeneration Facility; Duke Energy Corporation; Kent County, Delaware; May 1991 to March 1992. Contributed to a site selection study for a proposed power plant in coastal Delaware. Researched permitting requirements. Performed wetland delineation of the selected site and obtained a Jurisdictional Determination from the U.S. Army Corps of Engineers. Assisted in performing a drain field analysis of the selected site.

Task Leader; Wetland Mitigation Plan for AES Warrior Run Cogeneration Plant; AES Warrior Run, Inc.; Cumberland, Maryland; February 1991 to January 1993. Designed wetland mitigation plan for constructing approximately 4.1 acres of palustrine emergent and palustrine forested wetlands on the site of a proposed 180-MW power plant on a floodplain terrace of the North Branch Potomac River. The plan outlined efforts to avoid, minimize, and compensate for wetland impacts. Developed plans and specifications. Assisted the client in obtaining approval of the wetland mitigation plan from the Baltimore District of the Corps of Engineers and Maryland Department of the Environment. Assisted the client in selecting a landscape contractor to construct and plant the wetlands. Inspected the finished wetlands in 1996 and 1997 and determined that they were developing in general accordance with the design.

Wetlands Task Leader; Environmental Permitting for AES Warrior Run Cogeneration Plant; AES Warrior Run, Inc.; Cumberland, Maryland; November 1990 to May 1992. Completed applications for permits related to wetlands, floodplains, and biological resources for proposed 180-MW power plant in western Maryland. Delineated wetlands on proposed 65-acre power plant site and proposed water discharge pipeline right-of-way. Applied for and obtained individual Section 10/404 permit for 1.8 acres of wetland impacts and reconfiguration of a discharge structure in the channel of the North Branch Potomac River. Inspected river

floodplain area for white trout lily (*Erythronium albidum*), a rare plant species in Maryland (to assess potential impacts to rare, threatened, and endangered species).

Deputy Project Manager; Environmental Assessment (EA) for Commonwealth Cogeneration Plant; Commonwealth Cogeneration Limited Partnership; Hurt, Virginia; April 1990 to May 1991. Led the writing of an EA for an EA for construction of a 130-MW power plant on the Roanoke River in southcentral Virginia. Served as the wetland specialist and terrestrial ecologist on the EA team and coordinated work by other team members including a hydrologist, aquatic ecologist, soil scientist, archaeologist, planner, architect, and engineer. Served as the primary author of EA. Performed wetland delineation of the proposed 160-acre power plant site and a proposed 2-mile pipeline right-of-way and obtained Jurisdictional Determination from the U.S. Army Corps of Engineers. Inspected the site for the presence of *Nestronia umbellata*, a rare plant known to occur in close proximity (to assess impacts to rare, threatened, and endangered species). Coordinated a subcontractor performing a Phase I archaeological survey of the power plant site and Phase II deep trenching where pipeline right-of-way crossed the Roanoke River floodplain.

Wetlands Task Leader; Environmental Permitting for AES Cohansey Cogeneration Plant; AES Cohansey, Inc.; Bridgeton, New Jersey; March 1990 to April 1992. Completed applications for permits related to wetlands, floodplains, and biological resources for the proposed site for a 300-MW power plant and an associated 230 kV transmission line. Delineated wetlands on 100-acre power plant site and 10-mile transmission line right-of-way. Applied to the New Jersey Department of Environmental Protection and Energy (NJDEPE) for a Transition Area Waiver and Statewide General Freshwater Wetlands Permit. Inventoried existing trees and standing timber on the site and transmission line right-of-way to assist AES in complying with the City of Bridgeton tree ordinance. Designed a reforestation plan for the site using indigenous tree and shrub species to compensate for tree losses during construction of the power plant. Inspected the site for the presence of the rare plant Swamp Pink (*Helonius bullata*). The project was ultimately tabled by the client for reasons not related to environmental planning.

Deputy Project Manager; Environmental Assessment (EA) for Mecklenburg Cogeneration Plant; Mecklenburg Cogeneration Limited Partnership; Clarksville, Virginia; January 1990 to December 1991. Led the writing of an EA for a Federal water allocation and land easement for a proposed power plant project on a reservoir on the Roanoke River in southcentral Virginia. The work was funded by a limited partnership of private developers who were building the project, but the EA was written for publication by the Wilmington District of the Corps of Engineers. Served as the wetland specialist and terrestrial ecologist on the team. Directed a project team comprising a hydrologist, aquatic ecologist, soil scientist, archaeologist, planner, architect, and engineer. Mr. Doub served as the primary author of EA. Completed a wetland delineation of the proposed 65-acre power plant site and 1.5-mile pipeline right-of-way in support of the EA.

Wetlands Task Leader; Wetland Delineation of Proposed Amoco Cogeneration Plant; Amoco, Inc.; Yorktown, Virginia; December 1989 to January 1990. Conducted wetland delineation of a 30-acre forested site in tidewater Virginia proposed for a power plant project. The project was subsequently cancelled due to non-environmental factors.

Wetlands Task Leader; Environmental Permitting for Proposed Meade Paper Cogeneration Plant; O'Brien Energy, Inc.; South Lee, Massachusetts; January 1990 to July 1990. Prepared applications for permits related to wetlands, floodplains, and biological resources for a proposed 60-MW power plant in Berkshire County, Massachusetts. Contributed to selection of routes for a 1-mile steam line and 1.5-mile, 69 kV transmission line that minimized environmental impacts and permitting difficulties. Wrote sections of an Environmental Impact Report (EIR) addressing biological resources and wetlands impacted by the power plant project. Presented wetland impacts to the Town of Lee Conservation Committee.

Wetland Scientist; Wetland Assessment of Nyanza Dye Works Site; U.S. Environmental Protection Agency, Region 1; Framingham, Massachusetts; October 1989 to January 1990. Visited, and described the physical and biological characteristics of, each wetland occurring on a 10-mile reach of the Sudbury River downstream of an abandoned dye works in the western suburbs of Boston. Sediments in the river were suspected of being affected by heavy metals and other contaminants originating at the dye works. Wrote qualitative functional assessment.

Environmental Scientist; Siting/Permitting Assessment for New Jersey Cogeneration Projects; Fluor-Daniel, Inc.; Various Locations in New Jersey; August 1989 to December 1989. Participated in site selection study for proposed power plant projects in New Jersey. The study analyzed permitting problems associated with four sites in various parts of the state. Interacted with regulators from the New Jersey Department of Environmental Protection and Energy (NJDEPE) and U.S. Army Corps of Engineers.

PUBLICATIONS:

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Stribley, T, D. F. Barone, and J. P. Doub. 2003. Case Studies Demonstrating a Systematic Process for Integrating the National Environmental Policy Act with Regulatory Agency Consulation. Environmental Practice 5(4): 371-378.

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Doub, J. P. 1999. A Proposed Method of Professional Practice for Addressing Wetlands in Environmental Impact Statements. Environmental Practice 1(1): 37-47.

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Doub, J. P. and R. K. Hastie. 1997. Wetland Assessment for Hazardous Waste Sites under Superfund. Proceedings of Wetlands 97 Conference of Association of State Wetland Managers: 22-24.

Doub, J. P. and J. Colberg. 1996. Delineation of Playa Features in the Western Great Basin. Wetland Journal 8(2) 8-14.

Doub, J. P. 1995. Nationwide Wetland Delineation: Identifying Wetland Boundaries Anywhere in the United States. Wetland Journal 7(1): 8-9.

Doub, J. P. 1995. The Maryland Forest Conservation Act. Arboricultural Consultant 28(1): 6.

Doub, J. P. and J. A. Sechen. 1994. Wetlands Protection and Permitting for Industrial Development in Virginia. Proceedings of Environment Virginia '94: 69-76.

Doub, J. P. 1992. Wetland Delineations and Mitigation Plans. 1992 Annual Meeting of American Society of Consulting Arborists.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033 COL
	)	
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the NRC STAFF ANSWER TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF CONTENTION 8, with attachments, have been served upon the following persons by Electronic Information Exchange and electronic mail this 2nd day of July, 2012:

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Dated at Rockville, Maryland
this 2nd day of July, 2012