Contention 1

The Environmental Report is unacceptably deficient because it omits an adequate analysis of the significance of Fermi 3 environmental impacts and its contribution to cumulative and additive persistent toxic discharges into Lake Erie and the Great Lakes Basin from the nuclear industry.

ARGUMENT

The Great Lakes Basin is comprised of Lake Michigan, Lake Superior, Lake Huron, Lake Erie and Lake Ontario. The Great Lakes Basin is bordered by eight states; Michigan, Ohio, Minnesota, Wisconsin, Indiana, Illinois, New York and Pennsylvania and two Canadian Provinces; Quebec and Ontario. The Great Lakes Basin forms the largest fresh water system on the Earth. The restoration, protection and sustainability of the Great Lakes Basis is of utmost importance to the region's residents, officials and resource managers in both the United States and Canada.

The Petitioners contend that Detroit Edison has omitted any analysis in its Environmental Report (ER) that would provide reasonable assurance that there is or is not an anticipated cumulative and additive environmental impact on Lake Erie and the Great Lakes Basin from the proposed construction and operation of Fermi 3.

Petitioners contend Detroit Edison's omission seeks to avoid or limit a determination of the significance of the new reactor's cumulative and additive impact on health, safety and environment by breaking its impact down into an unreasonably narrow and unsupported analysis of a smaller component part of the Great Lake Basin; namely, the area of surface water immediately in the vicinity of the Fermi nuclear power plant site on western Lake Erie.

The National Environmental Policy Act (NEPA) seeks to determine whether the requested licensing of the new nuclear power plant is related to other actions with individually insignificant but cumulatively significant impacts. As such, NEPA is clear that the significance of the proposed action exists if it is reasonable to anticipate a cumulatively significant impact to the environment. The Petitioners contend that a "hard look" under NEPA cannot be avoided by terming an action temporary or by breaking it down into small component parts. [10 C.F.R. 1508.27(b)(7)]

The NEPA review process further regards that the "hard look" at collective and cumulative environmental impacts of the proposed federal action should not be determined as a convenience to the applicant. The "rule of reason" is inherent in NEPA to ensure that federal agencies determine whether and to what extent to prepare an EIS is based on the usefulness of any potential new information.[1] [Marsh v. Ore. Natural Res. Counc., 490 U.S. 360, 373-374 (1989]

The Petitioners contend that Detroit Edison's ER constitutes neither a "hard look" nor complies with the "rule of reason" intended in a NEPA review. The Petitioners further contend that limiting by omission the scope of the environment impact analysis to the immediate vicinity of the proposed site on the western basin of Lake Erie is a scientifically unsupported convenience to the applicant.

Detroit Edison identifies at ER Part 3 Subsection 2.3.3.1 Surface-Water Quality **"**Lake Erie is the smallest of the Great Lakes in volume and is the shallowest of the five lakes." The Applicant identifies that the waters of the five lakes are in communication with Lake Erie having the shortest retention time of the Great Lakes, calculated at 2.6 years. The Applicant identifies that "***The Fermi site is located on the shores of Lake Erie's western basin, which comprises about one-***

[1] http://supreme.justia.com/us/490/360/case.html

fifth of the lake area. The western basin is very shallow with an average depth of 24 feet and a maximum depth of 62 feet. (Reference 2.3-50)" [Applicant, ER Section 3, 2.3.3.1, Page 99-100]

Detroit Edison's ER describes at Part 3 Section 2.3.1 the surface water bodies and the groundwater aquifers that supply the western basin of Lake Erie that is ***"located in the vicinity of the Fermi 3 site."*** [COLA ER Part 3 Section 2.3.1, Page 2-57]

For its quantitative analysis of water impacts, the Applicant provides in the COLA ER Chapter 3 Subsection 2.3.2 a description of the surface-water and groundwater uses that could affect or be affected by the construction or operation of the proposed project. At Table 2.3-28, the Applicant provides "The Nine Sectors of Water Consumption in the Great Lakes Basin" including Self-Supply Thermoelectric Power (nuclear plants). It identifies by State (Michigan, Ohio, Wisconsin, Minnesota, Illinois, Pennsylvania and New York) and Country (including Canada) the reactors that are operating on the Great Lakes and their consumptive water use on the Great Lakes Drainage Basin in reference documents provided by the Great Lakes Commission Annual Report including "Great Lakes Regional Water Use: Database Repository: Representing 2004 Water Use Data in Gallons," http://www.glc.org/wateruse/database/pdf/2004-gallons.pdf, Page 100.

Detroit Edison also describes the proposed reactor's quantitative water impacts at Subsection 5.2.1.4 beginning at Page 5-11 which identifies 9 major sources of water consumption, including Self Supply Thermoelectric (Nuclear) power plants. The consumptive use of water for each sector, including the cumulative impact of reactors operating on all of the Great Lakes both on US and Canadian shores is listed in Table 2.3-29. Flow rates and total water use concerning these sectors is provided in Table 2.3-34. Yearly consumptions and water withdrawals for all of Lake Erie are shown on Table 2.3-30 through Table 2.3-33. Projected water-use is described in Subsection 5.2.2.5. [COLA, ER, Part 3, Subsection 5.2.1.4, page 5-11 to 5-12]

The Applicant's ER provides analytical data on the cumulative and additive quantitative water usage and consumption by the nuclear power plants operating on the Great Lakes Drainage Basin. The operation of each and every nuclear power station on the Great Lakes Drainage Basin contributes to the cumulative and additive quantitative analysis of water use and consumption.

Petitioners point out that there are, in fact, 33 reactors licensed to operate and up to 12 additional newly proposed reactor units, including Fermi 3, on the Great Lakes Basin:

The reactor locations on the Great Lakes are:

Lake Michigan

Point Beach 1 & 2 and Kewanee (3 operational units, Wisconsin), Cook 1 & 2 and Palisades (3 operational units, Michigan)

Lake Huron

Bruce A & B (8 operational units, Ontario, Canada), proposed new Bruce units (up to 4 additional units, Tiverton, Ontario, Canada)[2]

Lake Erie

Fermi 2 (1 operational unit, Michigan), the proposed new Fermi 3 (1 new unit, Michigan), Davis-Besse & Perry (2 operational units, Ohio), proposed new units at Nanticoke (up to 2 new units, Hammond County, Ontario, Canada)[3]

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[2] Status: Bruce Nuclear Power Plant Project, Canadian Nuclear Safety Commission, February 4, 2009, http://www.nuclearsafety.gc.ca/eng/readingroom/newbuilds/brucepower/index.cfm

[3] Fact Sheet, Nanticoke Nuclear Power Station, Bruce Power, November 2008 http://www.brucepower.com/uc/GetDocument.aspx?docid=2747 and Status, Bruce Power Erie/Nanticoke New Nuclear Power Plant Project, Canadian Nuclear Safety Commission, January 15, 2009, http://www.cnsc-ccsn.gc.ca/eng/readingroom/newbuilds/nanticoke/index.cfm

Lake Ontario

Ginna, Nine Mile Point 1 & 2, Fitzpatrick (4 operational units, New York), the newly proposed Nine Mile Point 3 (1 new unit, New York), Pickering (8 operational units, Ontario, Canada), Darlington (4 operational units Ontario, Canada), proposed new units at Darlington (up to 4 new units, Bowman, Ontario, Canada)[4]

Detroit Edison Company describes in part its water impact in the ER: "*The existing and proposed site-specific and regional hydrosphere is summarized to provide a full evaluation of impacts on surface-water bodies and groundwater aquifers within the approximately 299,000 square mile area of the Great Lakes Drainage Basin* (Reference 2.3-1). *Within this basin, the Fermi site is 1260 acres. The site-specific area for the construction and operation of Fermi 3 is approximately 325 acres. Fermi 3 will be located within the same vicinity as Fermi 2, but further inland from the shoreline of Lake Erie. The topography of the site is flat to gently rolling plain and is located in the Swan Creek Watershed, which has an elliptical-shaped basin trending northwest-southeast and contributes a small water flow to the relatively large water capacity of Lake Erie.*" [COLA, ER Section 2.3.1 Page 2-58]

The Applicant acknowledges *"Lake Erie is part of the larger network of the five Great Lakes."* [COLA, ER Section 2.3.1.1, Page 2.59]

Detroit Edison's states at Part 3 Subsection 5.4.1 "*Exposure Pathways-Radioactive gases would be discharged to the environment during normal operation of Fermi 3. Fermi 3 is planned to be operated as a zero liquid effluent discharge plant. However, the analyses discussed herein conservatively assume that liquid effluents are discharged as part of normal operation. The released quantities have been estimated*

[4] Status: Ontario Power Generation Darlington Nuclear Power Plant Project, January 15, 2009, Canadian Nuclear Safety Commission, http://www.nuclearsafety.gc.ca/eng/readingroom/newbuilds/opg_darlington/

in DCD Revision 5 Table 12.2-16 (gases) (Reference 5.4-12) and ESBWR DCD Table 12.2-19b (liquids) (Reference 5.4-10). The impact of these releases and any direct radiation to individuals, population groups, and biota in the vicinity of Fermi 3 was evaluated by considering the most important pathways from the release to the receptors of interest. The major pathways are those that could yield the highest radiological doses for a given receptor. The relative importance of a pathway is based on the type and amount of radioactivity released, the environmental transport mechanism, and the consumption or usage factors of the receptor.

Detroit Edison further states at ER Chapter 3 Subsection 5.4.1.1, "*Liquid Pathways-As noted above, Fermi 3 is designed for zero liquid effluent discharge during normal operation. However, the analyses discussed herein conservatively assume that liquid effluents are discharged as part of normal operation. For this analysis, the liquid effluents would be released through the Circulating Water (CIRC) blowdown line, approximately 1300 feet into Lake Erie. Dilution would occur due to mixing of the liquid effluent with the normal CIRC blowdown. Additional dilution would occur in Lake Erie. The dilution factors in Lake Erie are determined as part of the thermal analysis. The LADTAP II computer program (Reference 5.4-4) was used to calculate these doses with parameters specific to Lake Erie. This program implements the radiological exposure models described in Regulatory Guide 1.109 for radioactivity releases in liquid effluent. The following exposure pathways are considered in LADTAP II:*

- *Ingestion of drinking water from Lake Erie*
- *Ingestion of aquatic organisms as food*
- *External exposure to contaminated sediments deposited along the shoreline (shoreline exposure)*

"Although less important, as determined by LADTAP II calculations, the swimming and boating exposure pathways are also considered in the analysis. The program also considers ingestion of food sources that use the affected water for irrigation. However, as discussed in

Subsection 2.3.2, water from Lake Erie in the vicinity of Fermi 3 is not used for irrigation. The site-specific input parameters for the liquid pathway are presented in Table 5.4-1."

Petitioners first assert that the referenced ESBWR Design Control Document (DCD) Chapter 12 Radiation Protection, Table 12.2-19b "Average Annual Liquid Releases" is part and parcel of a still uncertified design and therefore the expressed values have not been validated and verified by NRC. The referenced Table identifies 46 radionuclides in the Fermi 3 discharge path to Lake Erie including tritium, technetium-99m, phosphorus-32, chromium-51, cesium-134, cesium-137, cerium-141, strontium-89, strontium-90, iodine -131 and cobalt-60.[5]

However, with regard to Detroit Edison Company's ER analysis of cumulative and additive qualitative environmental impacts on surface water the Applicant states at Part 3, Subsection 5.11.3 that ***"This section focuses on water usage from Lake Erie as the primary surface water body supplying and receiving Fermi water, and as the body of water that provides liquid pathways for both radiological and non-radiological effluents. Groundwater impacts also are discussed. The geographical area for surface water in this analysis is the Lake Erie segment immediately adjacent to Fermi."*** [COLA, ER, Part 3, Subsection 5.11.3 Cumulative Impacts Related to Station Operation and Water Use and Quality, Page 5-200]

Petitioners contend that contrary to the example of Applicant's ER quantitative analysis of water usage, Detroit Edison acknowledges that its ER narrowly focuses the cumulative and additive environmental impacts on water quality to the small segment of western Lake Erie "immediately adjacent to Fermi." The Applicant only considers the

[5] GE Hitachi ESBWR, Design Control Document, Rev. 4, Chapter 12 Radiation Protection, Table 12.2-19b, September 2007, pages 12.2-67 to 12.2-68

cumulative and additive chemical and radiological impacts from the single Fermi Unit 2 site immediately adjacent to the proposed Fermi Unit 3.

However, Detroit Edison provides no analysis in the ER as to how persistent toxic chemical and radiological discharges from Fermi Unit 2 and the proposed Unit 3 can or cannot environmentally cycle in the waters of Lake Erie beyond the suggested "immediate" vicinity of the Fermi nuclear power station.

In fact, the water of the Great Lakes Basin communicates throughout the lake system as it flows west to east toward the Atlantic Ocean.[6]

The Applicant's ER omits any analysis of the proposed action as its cumulative and additive discharges contribute to those discharges from Davis-Besse nuclear power station in Oak Harbor, Ohio into Lake Erie, approximately 31 miles from the proposed Fermi Unit 3 site. Similarly, the ER omits any analysis of the proposed action contributions to cumulative and additive impacts to Lake Erie in addition to the discharges from the Perry nuclear power station also operating on Lake Erie approximately 117 miles away. Similarly, the ER analysis makes no reference to Fermi 3 cumulative and additive contribution in relation to Bruce Power's two proposed Nanticock reactors on the northern shore of Lake Erie.

Detroit Edison's omission treats these environmental impacts on Lake Erie as if these reactors and other units were non-existent and not part of a cumulative and additive environmental impact. The omitted Davis-Besse nuclear power plant is even within the Fermi nuclear power station 50-mile Emergency Planning Zone (EPZ).

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[6] "Great Lakes Flow, Michigan Tech University, http://techalive.mtu.edu/meec/module08/GreatLakesFlow.htm

However, the Detroit Edison ER goes on to state that the cumulative and additive radiological impact of normal operation "includes the Fermi site during the operational service life of Fermi 2 and 3. The geographical area within 50 miles of the Fermi site was evaluated in accordance with NRC guidelines. The Fermi property is the only noteworthy radioactivity source in the immediate project area to which workers or the public could be potentially exposed." [COLA, ER, Part 3, Subsection 5.11.7, page 5-209] As we point out, the Applicant has omitted the Davis-Besse nuclear power station from its analysis and is inconsistent with the fact that Davis-Besse is within the 50-mile and itself an unanalyzed additional cumulative radiation source routinely discharging into Lake Erie.

Detroit Edison states "The impact of these releases and any direct radiation to individuals, population groups, and biota in the vicinity of Fermi 3 was evaluated by considering the most important pathways from the release to the receptors of interest." [COLA, ER, Part 3, Subsection 5.4 .1 Exposure Pathways, page 5-107]

The Petitioners contend that point source pollution remains a threat to the Great Lakes Basin. The International Joint Commission (IJC) on the Great Lakes has detailed the injury to humans and the environment posed by persistent toxic substances released into the entire Great Lakes community where "The evidence continues to grow."[7] The nuclear industry as a source of persistent toxins into The Great Lakes is addressed by the IJC in an "***Inventory of Radionuclides for the Great***

[7] The International Joint Commission Canada and the United States created the International Joint Commission out of the recognition that each country is affected by the other's action in lake and river systems along the border and the need to protect and manage these waters wisely.
http://www.ijc.org/php/publications/html/invrep/index.html

Lakes" conducted by the Nuclear Task Force of the International Joint Commission (IJC) in December 1997.[8]

The Petitioners note that Detroit Edison ER omits the IJC study in its reference documents.

Among the findings of the IJC Task Force relevant to this application are:

1) *"Monitoring meets the needs of the relevant atomic energy acts in the United States and Canada but is not designed to look at environmental cycling of radionuclides."*[9]

2) *"There is a special issue of reporting nuclear data, which applies specifically to the Great Lakes and has the implication of rendering incorrect some dose-assessment factors used in establishing the transfer of radionuclides from biota to humans in the region of interest. The issue relates to the transfer factors which estimate uptake of radionuclides in biota. These transfer factors traditionally have been derived from work done in rivers and oceans, rather than in freshwater lakes. The Task Force is concerned that the factors derived from riverine and oceanic systems are inappropriate for use in the Great Lakes.*

"In developing the inventory for radionuclides, the Task Force noted that the bioaccumulation, biomagnification, and transfer factors used to describe the cycling of radionuclides and their transfer along exposure pathways to biota, including humans, came from the long history of work done in the marine, estuarine, and river environments. This work stemmed from interests in the deposition of radionuclides in

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[8] *"Inventory of Radionuclides for the Great Lakes,"* Nuclear Task Force, International Joint Commission, December 1997, http://www.ijc.org/php/publications/html/9br/recome.html

[9] *"Inventory of Radionuclides for the Great Lakes,"* IJC, Conclusions, 4.1 Adequacy of Monitoring, (1), http://www.ijc.org/php/publications/html/9br/recome.html

the oceans and the transport of radionuclides down rivers and estuaries from discharges to the oceans. The comparable studies for lakes were virtually non-existent. Yet for the Great Lakes, the need for transfer factors that describe lake environments is critical."[10]

3) The IJC specifically recommended with regard to protecting the public health and Great Lakes water quality from radioactivity that *"There are radionuclides that merit separate studies and further reporting because of the patterns of use and discharge; physical, chemical, and biological properties; and the special monitoring needs of lakes as opposed to estuaries, oceans, and rivers (these include tritium, carbon-14, iodine-129, isotopes of plutonium, and radium-226."*[11] The IJC further recommends that *"There are other radionuclides that could be a potential concern in special situations: technetium 99, -99m; phosphorus-32; chromium-51; cesium-134, -137; cerium-141, -144; strontium-89, -90; iodine-125, -131; and cobalt-60."*[12]

Petitioners submit that many of these IJC identified radionuclides that merit the above cited separated studies, further reporting and potential health and environmental concerns are identified as radionuclides in the liquid effluent release path by the GE Hitachi ESBWR DCD Chapter 12, Radiation Protection. These same radionuclides are discharged a well by the other proposed and operational reactors on the Great Lakes Basin.

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[10] "*Inventory of Radionuclides for the Great Lakes,*" IJC, 4.5 Biological Transfer Factors for Lake Systems, (13), http://www.ijc.org/php/publications/html/9br/recome.html

[11] "*Inventory of Radionuclides for the Great Lakes,*" IJC, 4.6 Radionuclides of Concern, (14), http://www.ijc.org/php/publications/html/9br/recome.html

[12] "*Inventory of Radionuclides for the Great Lakes,*" IJC, 4.6 Radionuclides of Concern , (15), http://www.ijc.org/php/publications/html/9br/recome.html

For example, tritium is one of the identified radionuclides that appear in both the IJC inventory and the ESBWR DCD. Tritium is the radioactive isotopic form of hydrogen. Tritium moves environmentally in the lake system mainly as a tritiated water molecule or HTO. Tritium has a radiological half-life of 12.3 years and decays to the stable isotope helium (3He), emitting a beta particle (and a neutrino). The beta particle has a maximum energy of 18.6 kilo electron volts (keV) (average energy of 5.7 keV) with a short range—a few centimeters in air, 0.9 micrometers (μm) in water, and about 0.6μm in tissue. While tritium is not known to be dangerous externally, it is a known internal radiation hazard when inhaled, or ingested via food or water, or absorbed through the skin. Tritium is the most commonly encountered and important beta-emitting radionuclide. Of concern to the Petitioners, tritium is recognized as a known persistent radioactive toxin that can cause injury to humans and the environment as most clinic studies demonstrate that tritium inhaled, ingested and absorbed in living creatures can produce typical radiogenic induced harmful effects including cancer, genetic effects, developmental abnormalities and reproductive effects. [13]

Because tritium is isotopic hydrogen, it can take the form of tritiated water or radioactive water that is then discharged by Fermi 2 and the proposed Fermi Unit 3 into the water of Lake Erie and is also the case for the additional identified operational and proposed nuclear reactors on the Great Lakes Basin.

The wide range of permissible radiation protection goals and standards for tritium in drinking water from 400 picocuries per liter (State of California)[14] to 20,000 picocuries per liter (US EPA)[15] to the US NRC

[13] 16 scientific abstracts on the known toxicity of tritium http://www.nirs.org/radiation/tritium/all16abstracts.pdf

[14] "Public Health Goals for Chemicals in Drinking Water, Tritium," The State of California, March 2006, http://oehha.ca.gov/water/phg/pdf/phgtritium030306.pdf

effluent concentration limit of 1,000,000 picocuries per liter as provided in 10 CFR Part 20)[16] underscore an equally wide range of uncertainty and lack of scientific and public health confidence in what constitutes the so called "permissible" radiation exposure levels from tritium.

The Petitioners' concerns for their health, safety and environmental quality are further elevated by the fact that many federal radiation protection standards are based on average lifetime exposure or on "Reference Man" as identified by the Institute for Energy and Environmental Research (IEER). This is a hypothetical middle aged adult "Caucasian" male weighing 154 pounds and five feet seven inches tall and is Western European or North American in habitat and custom. Reference man is widely used to set federal rules and regulations on limits on radiation exposure from drinking water or the ingestion exposure pathway. The problem is accentuated by the fact that different groups are affected differently than adult men when exposed to radiation or toxic materials. According to the National Research Council of the National Academies, cancer mortality risks for women are 37.5% higher than for men for the same radiation exposure. Sometimes the most vulnerable period is not in adulthood but rather in infancy, childhood, puberty, or when the ova are developing in a female fetus. Prenatal exposures to certain toxic chemicals and radiation can increase the risk of certain disorders, like breast

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[15] "Radiation Regulations, Standards and Guidance," US EPA, http://www.epa.gov/rpdweb00/docs/402-f-01-025.pdf

[16] Letter from NRC Chairman Dale Klein to Senator Diane Feinstein, October 30, 2006, http://www.nrc.gov/reading-rm/doc-collections/congress-docs/correspondence/2006/feinstein-10-30-2006.pdf

cancer, later in life. The combined effects of chemicals and radiation are little understood.[17]

The Petitioners submit that these findings and recommendations support their contention that Detroit Edison's omissions in its ER fails to address NEPA requirements for a "hard look" at the cumulative and additive environmental impacts by the proposed action on a regional scope from its contribution to the addition of numerous operational and proposed new individual reactor sites on Lake Erie and the Great Lakes Basin.

The Petitioners additionally cite from "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis" prepared by the President's Council on Environmental Quality (CEQ).[18] The CEQ memorandum provides guidance to the heads of federal agencies on the extent to which agencies of the Federal government are required to analyze the environmental impacts from past actions when they describe the cumulative environmental impact of a proposed action in accordance with Section 102 of NEPA. While the environmental analysis is forward looking with a focus on the proposed action, the review of past actions is required to the extent that these actions can inform the agency on the proposed action.

The Council on Environmental Quality cites that its regulations are consistent with the Supreme Court decision in Kleppe v. Sierra Club, 427 U.S. 390 (1976). In that decision, the Supreme Court held that "unless there is a plan for a regional plan of action, it is not practical to prepare a regional EIS." However, on the subject of the

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[17] "Open Letter to President George Bush on Protecting the Most Vulnerable," Dr. Arjun Makhijani, Institute for Energy and Environmental Research, October 18, 2006, http://www.ieer.org/campaign/letter.php

[18] "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis," James Connaughton, Executive Office of the President, Council on Environmental Quality, June 24, 2005, http://ceq.hss.doe.gov/nepa/regs/Guidance_on_CE.pdf

cumulative impact of proposed new projects, the Supreme Court stated in Kleppe (at 410) that "when several proposals for . . . actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together."[19]

The Petitioners point out in this case that more than several applications for new nuclear power plants on the Great Lakes Basin are currently being pursued. The Petitioners have identified that together there are the two COLA applications for Fermi 3 and Nine Mile Point 3 submitted to the US Nuclear Regulatory Commission and up to 10 reactor units Canadian reactor units being considered by the Canadian Nuclear Safety Commission, along with the combined 33 US and Canadian operating reactors, all of which constitute more than the mere "contemplation" of major federal actions in the Great Lakes Basin.

The Petitioners contend that these past, present and reasonably foreseeable future actions prompt the need for the Atomic Safety Licensing Board to use its discretion to require a regional environmental impact statement of a larger and broader scope than the "immediate vicinity" of the Fermi nuclear power station on the western basin of Lake Erie as submitted by Detroit Edison.

The Petitioners contend that the Applicant's ER has therefore failed to provide an adequate analysis of the Fermi Unit 3 cumulative and additive environmental impacts on Lake Erie and the Great Lakes in context of the 33 reactors that are currently operational and up to 12 new proposed reactors on the Great Lakes Drainage Basin.

At this point, the Petitioners submit that should Detroit Edison Company submit an amended application at a future date that includes the omitted cumulative and additive environmental analysis the

[19] Kleppe v. Sierra Club, http://supreme.justia.com/us/427/390/case.html

Petitioners reserve the opportunity to review the new analysis by expert opinion.

The Petitioners' contention on cumulative and additive environmental impacts should therefore be admitted.

CONTENTION NO. 2: There is no technical basis for a finding of 'reasonable confidence' that spent fuel can and will be safely disposed of at some time in the future

Background

In recent days, NRC's "Nuclear Waste Confidence Decision" has been clearly shown to be completely false. In 1984, 25 years ago, NRC expressed "confidence" that one or more repositories for irradiated nuclear fuel and high-level radioactive waste would be opened somewhere in the United States by 2007 to 2009. But in 1990, NRC revised its "confidence," stating that at least one such repository would open by 2025. Since even that deadline, to open a single repository, appears unattainable now, NRC is currently re-evaluating its "Nuclear Waste Confidence Decision" yet again.

Since 1987, the nuclear power establishment in industry and government, including NRC itself, has put faith and confidence in the proposed national repository at Yucca Mountain, Nevada. But Yucca has been dogged from the very beginning by unforeseen technical failures, amounting to outright geologic and hydrologic unsuitability of the site. There has been determined resistance against the proposal, from the State of Nevada and its elected officials, to over a thousand environmental organizations across the country. This resistance has not only persisted, but has grown stronger over the course of the past two decades, as evidence of Yucca's scientific unsuitability has mounted.

Now, significant new information has developed that casts deeply in doubt DTE's ability to dispose of high-level radioactive waste that would be generated by the proposed Fermi 3. Yucca Mountain now appears doomed to be canceled by the Obama administration.

The Obama administration's Fiscal Year 2010 federal budget

outline, released on February 26, 2009, stated: "[The] Yucca Mountain program will be scaled back to those costs necessary to answer inquiries from the Nuclear Regulatory Commission, while the Administration devises a new strategy toward nuclear waste disposal."

As reported by the Las Vegas Review-Journal:

> Asked if that means the Department of Energy will pull the license application it submitted for the commission to review, Energy Secretary Steven Chu's press secretary, Stephanie Mueller, wrote in an e-mail that the fate of the license application 'is just one of a set of important issues that need to be resolved thoughtfully, carefully and comprehensively as we develop a responsible long-term approach to nuclear waste management.'
>
> But the bottom line is clear: Yucca Mountain is not an option, and the new administration is starting the process of finding a better solution for management of our nuclear waste.[1]

President Obama's Energy Secretary, Steven Chu, drove the point home during his testimony before the U.S. Senate Energy and Natural Resources Committee on March 5, 2009. Chu affirmed that President Barack Obama's administration does not regard Yucca Mountain as an option for radioactive waste disposal, thus fulfilling a clear and oft-repeated campaign pledge Obama made during the presidential race.[2]

The impending end of the Yucca Mountain dumpsite proposal further calls into question the safety of generating, storing, and ultimately permanently disposing of Fermi 3's irradiated nuclear fuel. After all, the inventory of irradiated nuclear fuel and other high-level radioactive wastes already generated by the current generation of atomic reactors is far greater than what could have ever been accommodated by

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[1] "PRESIDENT'S BUDGET OUTLINE: Plan sounds death knell for Yucca Mountain project; Minimal funding recommended; New options advised," Keith Rogers, Las Vegas Review-Jo0urnal, 2/27/09 at http://www.lvrj.com/news/40412057.html

[2] "Chu: Yucca no longer option for nuclear waste," H. Josef Hebert, Associated Press, March 5, 2009, http://www.boston.com/news/nation/washington/articles/2009/03/05/gop_assails_administration_over_nuclear_waste_site/

the planned space at Yucca Mountain, which could have accepted only 63,000 metric tons of commercial high-level radioactive waste and irradiated nuclear fuel. This limit was imposed by the Nuclear Waste Policy Act[3] (NWPA) of 1983, as amended, pending construction of a second national repository became operational elsewhere in the United States, specifically, in the eastern part of the country.

U.S. Department of Energy (DOE) policy first established during the Reagan administration that the first 70,000 metric tons of irradiated nuclear fuel and solidified high-level radioactive waste "disposed of" at Yucca Mountain, Nevada would have included 90% commercial nuclear reactor waste, and 10% DOE waste from the nuclear weapons production complex, nuclear energy research activities, and Department of Defense Nuclear Navy propulsion-related wastes. That 90% share of 70,000 metric tons means that only 63,000 metric tons of commercial irradiated nuclear fuel could have been "disposed of" at Yucca Mountain, Nevada pending a second national repository. See DOE's Yucca Mountain Final EIS at A-1, Feb. 2002.

The U.S. Department of Energy has known since at least the mid-1990s that, by the year 2030 or so, well over 80,000 metric tons of irradiated nuclear fuel generated at commercial nuclear reactors will exist in the U.S. See, for example, U.S. Nuclear Waste Technical Review Board (NWTRB), "Disposal and Storage of Spent Nuclear Fuel: Finding the Right Balance," Figure 2 at page 11 (March 1996). This

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[3]As the NWPA states at Section 114(d):
"The [NRC] decision approving the first such application [for a license to open and operate a repository] shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation…" 42 U.S.C. § 10134(d).

was, of course, significantly in excess of the “disposal” capacity at Yucca Mountain of 63,000 metric tons of commercial irradiated nuclear fuel, absent a second operational repository in the East. Notably, this figure largely excludes the waste anticipated from the next-generation plants such as Fermi 3, which presumably would be holding spent fuel from several refueling cycles onsite in cooling tanks.

By February of 2002, as indicated in its Final Environmental Impact Statement for Yucca Mountain, DOE was already clearly predicting that by 2011 at the latest, 63,000 metric tons of commercial irradiated nuclear fuel would exist in the United States (Tables A-7 and A-8). Clearly, the capacity at Yucca was wholly taken long before it even opened.

In March, 2008, at the U.S. Nuclear Regulatory Commission’s Regulatory Information Conference, the director of the DOE’s Office of Civilian Radioactive Waste Management, Ward Sproat III, announced that 63,000 metric tons of commercial irradiated nuclear fuel — enough to fill Yucca to its legal limit — would in fact exist in the U.S. by as early as the spring of 2010. Irrefutably, the irradiated nuclear fuel and other high-level radioactive wastes generated at proposed new reactors such as Fermi 3, could not have been “disposed of” at Yucca Mountain, unless and until a second national repository was operational in the eastern U.S.

As noted above, the Commission has backpedaled on its “confidence” that a second repository will open in the foreseeable future (NRC’s 1984 “confidence” spoke of one or more repositories by 2009, but in 1990 was revised to at least one repository by 2025). Any irradiated nuclear fuel or other high-level radioactive waste generated after the spring of 2010 (after 63,000 metric tons of

commercial irradiated nuclear fuel has been generated) will have nowhere to go, would lack “disposal” space at even the first repository (which is no longer Yucca), unless and until a second repository is opened and operating in the U.S. elsewhere. Such a process of opening not one, but two repositories could very well take many decades, based on the experience of unsuccessfully trying to open the first repository at Yucca Mountain.

NRC’s often routine approval of 20-year license extensions[4] for old commercial atomic reactors has served merely to exacerbate the quantity of high-level radioactive waste in excess of the capacity limits at the now doomed Yucca Mountain, Nevada repository. In its “Final Environmental Impact Statement for a Repository for Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,” (Feb. 2002) (hereinafter “Yucca Mountain EIS”), DOE predicted the generation of over 105,000 metric tons of commercial irradiated nuclear fuel by the year 2046. DOE FEIS, Table A-8, page A-16. While NRC’s standard license extension term is 20 years, the DOE had assumed that the term of license extensions would be only 10 years. DOE also assumed no new commercial nuclear reactors in the U.S. Thus, the high-level waste and irradiated fuel generated by the current generation of reactors will far exceed the capacity of the first, single repository that the NRC has identified as feasible and likely in the next several decades in its “Nuclear Waste Confidence Decision,” a repository that is now to be cancelled by the Obama administration.

[4]The first 47 reactor applicants all easily received re-licensing from NRC, despite serious safety concerns raised by environmental groups and concerned citizens.

Likely because of the mounting uncertainties over the years regarding the suitability of the Yucca Mountain repository proposal, the NRC Commissioners in October, 2008 ordered a re-evaluation of the “Nuclear Waste Confidence Decision,” after previously rejecting calls for just such a re-evaluation. For instance, on March 1, 2005, attorneys representing the State of Nevada filed a petition for rulemaking to NRC calling on the Commission to amend its Waste Confidence Decision and Rule to avoid prejudging the Yucca Mountain license application (PRM-51-8). But on August 17, 2005 the NRC denied Nevada's petition for rulemaking (70 Federal Register 48329, and NRC Office of Administration "Items of Interest," Week Ending August 19, 2005). And even as recently as early 2008, NRC Chairman Dale Klein was saying that NRC would not be re-evaluating its Nuclear Waste Confidence Decision. In his speech entitled "Waste Confidence and Waste Challenges: Managing Radioactive Materials" at the Waste Management Symposium in Phoenix, Arizona on February 25, 2008, NRC Chairman Dale E. Klein said "I personally do not feel that a new [Waste Confidence] rulemaking is necessary at this time..."

However, Chairman Klein's May 16, 2008 letter to U.S. Senator George Voinovich – Ranking Member of the Subcommittee on Clean Air and Nuclear Safety of the Senate Environment and Public Works Committee – confessed that the NRC had changed course. Klein wrote:

> On September 7, 2007, following a public meeting where the Commission was briefed by the Nuclear Energy Institute and other industry representatives, the Commission "agreed with the nuclear industry view that it was appropriate to update the NRC's waste confidence findings in the near term."

Thus, the NRC Commission rejected Nevada's petition for rulemaking to update the NRC Nuclear Waste Confidence Decision, but embraced the

nuclear power industry's call for just such a re-evaluation. In fact, that re-evaluation is currently underway.

Obviously, as worded in the 1999 review of the NRC Nuclear Waste Confidence Decision, "significant and pertinent unexpected events" must have occurred, "raising substantial doubts about the continuing validity of the Waste Confidence finding" (64 Federal Register 68005), for NRC is in fact currently re-evaluating its Waste Confidence finding. Given that the NRC Nuclear Waste Confidence Decision is under re-evaluation, it is inappropriate for NRC staff and Detroit Edison to take credit for a renewed expression of "Confidence" that the waste problem is completely under control, and will remain so for many decades to come. This presumptuous gesture, to take credit for a "Confidence Decision" not yet made, would turn the "Confidence Rule" into a confidence trick or confidence game, also known as a scam, an attempt to defraud a person or group by gaining their confidence.

In December, 2008, DOE published its “Report to the President and the Congress by the Secretary of Energy on the Need for a Second Repository.” In it, DOE indicated that –- unless the Yucca dumpsite is opened, and its capacity limits removed -- the State of Michigan itself could serve as the location for a high-level radioactive waste repository, as could the State of Ohio. On page 11 of this report[5], DOE states that "DOE reference documents ... identify 17 states within which there were granitic bodies believed to be adequate for investigation for siting a repository for the second repository program." This list of 17 states includes Michigan. Figure 3 on page 12 of the same report, entitled "Map of the United States Illustrating

[5]http://www.ymp.gov/info_library/program_docs/Second_Repository_Rpt_120908.pdf

First Repository Program Sites, Second Repository Program Areas Under Consideration, and Shale Deposits Potentially Suitable for a Repository," shows shale deposits across Michigan and Ohio that DOE is considering as potentially suitable repository locations.

If eventually opened, such granitic or shale repositories in Michigan and/or Ohio could leak over time, risking environmental and public health damage to residents and the Great Lakes ecosystem. Constructing and operating Fermi 3, and thus generating yet more irradiated nuclear fuel at the Fermi nuclear power plant, would increase the risk that Michigan and/or Ohio could be targeted for a national high-level radioactive waste dump.

Regarding DOE’s proposal to have removed Yucca’s capacity limits, changing the amount of high-level radioactive waste and irradiated nuclear fuel to have been buried at Yucca would have increased the environmental and public health risks and impacts downstream and downwind. Not only would a change in federal law have been required, but new analyses to determine the extent of these increased impacts would have been necessary. Although initial studies by the nuclear industry-funded Electric Power Research Institute (EPRI) and DOE on Yucca’s technical ability to contain more than 70,000 metric tons of highly radioactive wastes were published, no objective, independent, unbiased, and rigorous analyses have ever even been begun, much less completed. The Obama administration’s clear indication that Yucca is unsuitable for repository development dramatically undermines DOE and EPRI claims that Yucca would have been able to accommodate drastically more than 70,000 metric tons of highly radioactive wastes. Given such unknowns associated with requirements for changes in the law, new technical analyses, and additional regulatory proceedings associated

with the proposal to expand Yucca's waste disposal capacity, NRC's "confidence" in a waste solution for a new generation of reactors has been, and is still, entirely misplaced. The Obama administration's very recent defunding of, and clearly stated opposition against, the Yucca Mountain dumpsite proposal makes any claims of "Nuclear Waste Confidence" by NRC ring all the more hollow.

Moreover, Congress has not given the NRC any basis for assuming that a second repository will be opened. Section 161(a) of the NWPA,[6] as amended, states that: "The Secretary [of Energy] may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities." Although the Department of Energy did report in December 2008 that a second repository will needed if Yucca is not opened and its capacity limit removed, Congress has not authorized nor appropriated funds, for second repository activities, such as site-specific searches for suitable geological locations.

The Nuclear Regulatory Commission's failure to express confidence that a second repository will be opened any time soon also implicates the proposed new findings of the current Waste Confidence Decision re-evaluation, *i.e.*, that irradiated fuel and other high-level radioactive waste can be safely stored at reactor sites for up to many decades years post permanent shutdown and operating license termination. The risks associated with such *de facto* permanent on-site storage include not only accidents and eventual leakage as waste containers deteriorate and degrade with age and exposure to the elements, but also the specter of terrorist attacks.

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[6] 42 U.S.C. §10172a(a).

As a previous Atomic Safety and Licensing Board so eloquently stated in a previous proceeding:

> GANE's [Georgians Against Nuclear Energy] contention was filed on August 13, 2001. Regardless of how foreseeable terrorist acts that could cause a beyond basis accident were prior to the terrorist attacks of September 11, 2001, involving the deliberate crash of hijacked jumbo jets into the twin towers of the World Trade Center in New York City and the Pentagon in the Nation's Capitol killing thousands of people, it can no longer be argued that terrorist attacks of heretofore unimagined scope and sophistication against previously unimaginable targets are not reasonably foreseeable. Indeed, the very fact these terrorist attacks occurred demonstrates that massive and destructive terrorist acts can and do occur and closes the door, at least for the immediate future, on qualitative arguments that such terrorist attacks are always remote and speculative and not reasonably foreseeable.

Duke Cogema Stone and Webster (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-01-35, ASLBP No. 01-790-01-ML, 54 NRC 403, 446 (2001).

The 1998 Aberdeen Proving Ground anti-tank missile test against an irradiated nuclear fuel storage cask, NRC's own February 2001 report on irradiated nuclear fuel storage pool fire risks, Alvarez *et al.'s* 2003 report on the risks of attacks on waste pools, and the National Academy of Sciences 2005-6 study on densely-packed irradiated nuclear fuel storage pool security vulnerabilities, all confirm that NRC's "confidence" that irradiated nuclear fuel can be stored safely at reactor sites for many decades into the future is without technical merit. The terrorist threat to irradiated nuclear fuel and high-level radioactive waste – whether it is being stored onsite at commercial reactors in storage pools or dry casks; stored in away-from-reactor Independent Spent Fuel Storage Installations; or transported by truck, train, or barge between nuclear plants and off-site interim storage facilities – demands an evaluation of whether (a) it is appropriate to store irradiated nuclear fuel and other highly radioactive waste for

many decades or over a century pending availability of a permanent repository, and (b) whether nuclear power should be phased out as quickly as possible as a matter of environmental protection, national security, public safety, and common defense.

The homeland security risks posed by indefinite temporary storage of irradiated nuclear fuel have been recognized by former Energy Secretary Spencer Abraham:[7]

> Yucca Mountain is an important component of homeland security. More than 161 million people live within 75 miles of one or more nuclear waste sites, all of which were intended to be temporary. We believe that today these sites are safe, but prudence demands we consolidate this waste from widely dispersed, aboveground sites into a deep underground location that can be better protected.

It is undisputed that neither fuel storage pools nor dry storage facilities are designed to withstand the type of determined and sophisticated attack that was carried out on September 11, 2001. In fact, the U.S. National Academy of Sciences documented such security vulnerabilities in its report entitled “Safety and Security of Commercial Spent Nuclear Fuel,” released on April 6, 2005. Clearly, under NEPA it is appropriate to consider whether the Commission continues to have a basis for expressing confidence that stored irradiated nuclear fuel and other high-level radioactive waste is safe from terrorist attacks.

Petitioners are aware that the Commission has ruled that environmental impacts of terrorist attacks are not cognizable under NEPA.[8]

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[7]Statement of Spencer Abraham, Secretary of Energy, Before the Energy and Natural Resources Committee, U.S. Senate (May 16, 2002) http://yuccamountain.org/abraham051602.htm

[8]See, *e.g.*, *Pacific Gas & Electric Co. (Diablo Canyon Independent Spent Fuel Storage Installation)*, CLI-03-01, 57 NRC 1 (2003); *Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation)*, CLI-02-25, 56 NRC 340 (2002).

Petitioners request that the Commission reconsider this policy, in light of (a) the obvious attractiveness and vulnerability of irradiated nuclear fuel to terrorist attack; (b) the Secretary of Energy's recognition of the relationship between homeland security and assured capacity for timely irradiated nuclear fuel disposal; (c) the Commission's explicit statement in the Waste Confidence status review that it would undertake a comprehensive re-evaluation of the Waste Confidence findings if "significant and pertinent unexpected events" occur raising substantial doubt about the continuing validity of the Waste Confidence findings, which appears to be the case since NRC is currently re-evaluating its "Waste Confidence Decision"; and (d) the June 2, 2006 ruling by the U.S. Court of Appeals for the Ninth Circuit in *San Luis Obispo Mothers for Peace (SLOMFP) v. NRC*, 449 F.3d 1016.

The uncertainties concerning irradiated nuclear fuel and high-level radioactive waste management in the U.S., clearly evidenced by the Obama administration's opposition to the Yucca Mountain dumpsite proposal, NRC's current revision of its "Nuclear Waste Confidence Decision," and DOE's December 2008 report on the potential of states such as Michigan and/or Ohio to be targeted for national radioactive waste dumpsites in lieu of Yucca Mountain, all reinforce the rationale for admitting this contention for hearing. If the Commission has no legitimate confidence that a repository will open at some reasonable time in the future, it must be assumed that irradiated fuel may continued to be "temporarily" stored at the proposed new Fermi 3 reactor site for an indefinite period of time. The environmental impacts of such indefinite – de facto permanent -- surface storage at the Fermi 3 reactor site must be evaluated before a Combined Operating License can be granted. Clearly, an ASLB hearing on high-level

radioactive waste management contentions is warranted.

A. Purpose of Contention

This contention is based on comments that Beyond Nuclear, Don't Waste Michigan, and Sierra Club submitted on February 6, 2009, regarding the U.S. Nuclear Regulatory Commission's ("NRC's" or "Commission's") proposed Waste Confidence Decision Update, 73 Fed. Reg. 59,551 (October 9, 2008) ("Proposed Waste Confidence Decision"); and its proposed rule entitled: Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 73 Fed. Reg. 59,547 (October 9, 2008) ("Proposed Temporary Storage Rule"). *See* the attached Comments by Texans for a Sound Energy Policy *et al.* regarding NRC's Proposed Waste Confidence Decision Update and Proposed Rule Regarding Consideration of Environmental Impacts Of Temporary Storage Of Spent Fuel After Cessation Of Reactor Operations (February 6, 2009) ("Comments").

This contention seeks to enforce, in this specific proceeding, the NRC's commitment that "it would not continue to license reactors if it did not have reasonable confidence that the wastes can and will in due course be disposed of safely." Proposed Waste Confidence Decision, 73 Fed. Reg. at 59,552 (citing 42 Fed. Reg. 34,391, 34,393 (July 5, 1977); *Natural Resources Defense Council v. NRC,* 582 F.2d 166 (2d Cir. 1978)). The contention also seeks to enforce the requirement of the National Environmental Policy Act ("NEPA") that generic determinations under NEPA must be applied to individual licensing decisions and must be adequate to justify those individual decisions. As the Supreme Court held in *Baltimore Gas and Electric Co. v. Natural Resources Defense Council,* 462 U.S. 87 (1983):

> The key requirement of NEPA . . . is that the agency

> consider and disclose the actual environmental effects in a manner that will ensure that the overall process, including both the generic rulemaking *and the individual proceedings,* brings those effects to bear on the decisions to take *particular actions that significantly affect the environment.*

462 U.S. at 96 (emphasis added). *See also State of Minnesota v. U.S. Nuclear Regulatory Commission,* 602 F.2d 412, 416 (D.C. Cir. 1979) (agreeing with the Commission that "it could properly consider the complex issue of nuclear waste disposal in a "generic" proceeding such as rulemaking, *and then apply its determinations in subsequent adjudicatory proceedings*") (emphasis added). Indeed, the Commission itself has stated that it intends to use the Proposed Waste Confidence Decision to "enhance the efficiency of combined license proceedings for applications for nuclear power plants anticipated in the near future" and "assure that [the NRC's] Waste Confidence findings are up to date." 73 Fed. Reg. at 59,551. *See also* Proposed Temporary Storage Rule, 73 Fed. Reg. at 59,547 ("The proposed revision reflects findings that the Commission has reached in the 'Waste Confidence' decision update . . .") By placing the exact same concerns raised in the aforesaid Comments before the ASLB in this contention, Petitioners therefore seek to ensure, as required by NEPA and *Baltimore Gas and Electric Co.,* that whatever decisions the NRC reaches in response to the aforesaid Comments on the Proposed Waste Confidence Decision and Proposed Temporary Storage Rule will be applied in a timely way to the licensing decision for the proposed Fermi 3 nuclear power plant, *i.e.,* before that plant is licensed. *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 349 (1989) (holding that environmental concerns must be considered *before* an action is taken).

Beyond Nuclear, Don't Waste Michigan, and Sierra Club recognize that the issues raised by their Comments – and therefore by this

contention -- are generic in nature. Therefore Petitioners do not seek to litigate them in this individual proceeding. Instead, the contention should be admitted and held in abeyance in order to avoid the necessity of a premature judicial appeal if this case should conclude before the NRC has completed the rulemaking proceeding. If the ASLB does not consider that it has the authority to admit the contention because it presents a challenge to a generic rule, we request the ASLB to refer the contention to the Commission.

B. Statement of the Issue

Neither the Proposed Waste Confidence Decision nor the Proposed Spent Fuel Storage Rule satisfy the requirements of NEPA or the Atomic Energy Act. Therefore they fail to provide adequate support for the Applicant's Environmental Report or for an Environmental Impact Statement in this particular licensing case. The deficiencies in the Waste Confidence Rule also fatally undermine the adequacy of the NRC's findings in Table S-3 of 10 C.F.R. § 51.51 to satisfy NEPA. Unless and until the NRC remedies the deficiencies in the Waste Confidence Rule, Table S-3, and the Proposed Spent Fuel Storage Rule, the NRC has no lawful basis to issue a license for the proposed Fermi 3 nuclear power plant.

C. Statement of Issues of Law and Fact to Be Raised

This contention is intended to be identical to the Comments that Beyond Nuclear, Don't Waste Michigan, Sierra Club, and other groups filed with the NRC on February 6, 2009. The legal and factual issues raised in this contention can be summarized as follows:

The NRC has no technical basis for a finding of reasonable confidence that spent fuel can and will be safely disposed of at some

time in the future. Therefore, under the Commission's own standard that "it would not continue to license reactors if it did not have reasonable confidence that the wastes can and will in due course be disposed of safely," the Commission must refuse to issue new licenses or renew existing licenses for nuclear power plants. 73 Fed. Reg. at 59,552 (citing 42 Fed. Reg. 34,391, 34,393 (July 5, 1977); *Natural Resources Defense Council v. NRC,* 582 F.2d 166 (2d Cir. 1978)).

The NRC's lack of a basis for any finding of confidence in the technical feasibility of a repository also fatally undermines Table S-3 of the NRC's Uranium Fuel Cycle Rule, which depends on the assumption that radioactive releases from a repository will be zero. Final Rule, Licensing and Regulatory Policy and Procedures for Environmental Protection; Uranium Fuel Cycle Impacts From Spent Fuel Reprocessing and Radioactive Waste Management, 44 Fed. Reg. 45,362 (August 12, 1979). Based on its own statement in the 1990 Waste Confidence rulemaking proceeding, the NRC, having arrived at a stage where any basis that it may have had for confidence in the safe disposal of spent fuel has clearly evaporated, must revisit the basis for Table S-3. *See* Review and Final Revision of Waste Confidence Decision, 55 Fed. Reg. 38,474, 38,491 (September 18, 1990) ("Unless the Commission, in a future review of the Waste Confidence decision, finds that it no longer has confidence in the technical feasibility of disposal in a mined geologic repository, the Commission will not consider it necessary to review the S-3 rule when it reexamines its Waste Confidence findings in the future.") Certainly, the Commission no longer has any basis whatsoever for the principal assumption underlying Table S-3, which is that spent fuel can be safely disposed of in a repository, having repudiated that assumption in the proposed Waste Confidence

Decision. 73 Fed. Reg. at 59,555. *See also* IEER Comments.

In both the proposed Waste Confidence Decision and the Proposed Temporary Storage Rule, the NRC continues to deny that temporary spent fuel storage poses significant environmental risks, ignoring a wealth of government reports showing that high-density fuel storage pools are vulnerable to catastrophic fires that may be caused by accidents or intentional attacks. Instead of confronting this information in a detailed EIS, the NRC calls it a security matter and shrouds it in an unjustifiably broad mantle of security-related secrecy. But the NRC is not entitled to use security concerns as an excuse for failing to comply with NEPA. *San Luis Obispo Mothers for Peace v. NRC,* 449 F.3d 1016, 1034-35 (9th Cir. 2006).

In making a finding of no significant impact ("FONSI") with respect to spent fuel storage, the NRC has not even attempted to comply with the NRC's procedural requirements for a FONSI, such as preparing an environmental assessment ("EA") that addresses the purpose of and need for the proposed action and evaluates alternatives to the proposed action. The NRC also violates NEPA by failing to identify the documents on which it relies for its decision, and by failing to disclose all portions of its decision-making documents that are non-exempt under the Freedom of Information Act ("FOIA"). *San Luis Obispo Mothers for Peace* (Diablo Canyon Independent Spent Fuel Storage Installation), CLI-08-01, 67 NRC 1, 15-17 (2008) (citing *Weinberger v. Catholic Action of Hawaii,* 454 U.S. 139, 143 (1981)).

Perhaps most importantly, the NRC fails to explain why it is justified in continuing to allow licensees to use dangerous high-density fuel storage pools to store spent fuel under protective measures whose adequacy is suspect but cannot be publicly verified,

when it would be possible to virtually eliminate the danger by using low-density pool storage and hardened dry storage of spent fuel. The NRC's secrecy is unnecessary, corrosive to the NRC's system of accountability through open decision-making, and potentially dangerous because the decision-making process was not only secret but was restricted to the NRC and a limited group of individuals with a vested interest in minimizing the cost of mitigative measures, *i.e.,* reactor licensees.

The Proposed Waste Confidence Rule and the Proposed Temporary Storage Rule are utterly inadequate to satisfy the requirements of the AEA and NEPA for a generic licensing decision for new nuclear power plants. Any generic decision to allow the creation of additional spent reactor fuel and other radioactive waste associated with the uranium fuel cycle must be accompanied by thorough, supported, and well-documented safety findings; and it must also be accompanied by an environmental impact statement ("EIS") that fully assesses the environmental impacts of the uranium cycle, including health and environmental impacts and costs, and that examines a reasonable array of alternatives, including the alternative of not producing any additional radioactive waste.

D. Brief Explanation of the Basis for the Contention

This contention is based on the legal and technical criticisms of the Proposed Waste Confidence Decision and the Proposed Temporary Storage Rule that are contained in the following documents which are attached to the contention:

> the Comments submitted by Beyond Nuclear, Don't Waste Michigan, Sierra Club, and other organizations on February 6, 2009;

> attached to the Comments, the expert declaration of Dr. Arjun Makhijani, President of the Institute for Energy and Environmental Research ("IEER"), to which in turn is attached his *curriculum vitae* and expert report entitled "Comments of the Institute for Energy and Environmental Research on the U.S. Nuclear Regulatory Commission's Proposed Waste Confidence Rule Update and Proposed Rule Regarding Environmental Impacts of Temporary Spent Fuel Storage" (February 6, 2009) ("IEER Comments");

> also attached to the Comments, the expert declaration of Dr. Gordon R. Thompson, Executive Director of the Institute for Resource and Security Studies ("IRSS"), to which in turn is attached his *curriculum vitae* and expert report entitled "Environmental Impacts of Storing Spent Fuel and High-Level Waste from Commercial Nuclear Reactors: A Critique of NRC's Waste Confidence Decision and Environmental Impact Determination" (February 6, 2009) ("Thompson Report").

E. Demonstration That the Issue Raised by the Contention is Within the Scope of the Proceeding and Material to the Findings the NRC Must Make to Support its Licensing Decision.

Before licensing the proposed Fermi 3 nuclear power plant, the NRC must make a determination under the Atomic Energy Act that it has a reasonable assurance that spent fuel can be safely stored and disposed of. *See* Comments at pages 7-8. Under NEPA, the NRC must also evaluate the environmental impacts of spent fuel storage and disposal. *Id.* While the NRC has chosen to make these determinations generically, in the Proposed Waste Confidence Decision and the Proposed Temporary Storage Rule, those generic determinations must be

adequate to support any individual licensing decision. *Id.* Therefore the contention is within the scope of this proceeding and material to the findings the NRC must make to support the requested issuance of a license.

F. Concise Statement of Facts or Expert Opinion Relied on to Show the Existence of a Genuine Dispute with the Applicant and the NRC Regarding the Adequacy of the License Application

In support of this contention, Beyond Nuclear, Don't Waste Michigan, and Sierra Club rely on the facts, expert opinion, and documentary resources set forth in the attached IEER Comments and Thompson Report. The IEER Comments and Thompson Report contain sufficient information to show that Beyond Nuclear, Don't Waste Michigan, and Sierra Club have a genuine dispute with the Applicant and with the NRC regarding the safety and environmental impacts of spent fuel storage and disposal, and whether the NRC has complied with the requirements of the Atomic Energy Act and NEPA in the Proposed Waste Confidence Decision and the Proposed Spent Fuel Storage Rule.

CONTENTION NO. 3: The COLA violates NEPA by failing to address the environmental impacts of the 'low-level' radioactive waste that it will generate in the absence of licensed disposal facilities or capability to isolate the radioactive waste from the environment

The issue of long-term radioactive waste management and disposal of Class B, C and greater-than-C (">C"), so-called "low-level" radioactive waste generated at Fermi 3, is not adequately addressed in the COLA.[1] Some of the waste in these classes remains radiologically hazardous for literally millions of years.

According to the FSAR, Fermi will not "utilize any temporary storage facilities to support plant operation."[2] DTE presumes offsite land disposal of low-level radioactive waste in calculating radiation effects its Environmental Report.[3] The applicant assumes a routine 60-year operating life.[4] DTE describes its radioactive waste handling at the Fermi plant this way:

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[1]A U.S. Government Accountability Office Report provides some background concerning the present situation, about which there is no dispute. U.S. Government Accountability Office, "Low-Level Radioactive Waste: Status of Disposal Availability in the United States and Other Countries," GAO 08-813T (May 20, 2008). The GAO Report explains that a LLRW disposal facility located in Barnwell, South Carolina, formerly received about 99% of the nation's Class B and C waste, but that after June 30, 2008, the Barnwell facility was closed to generators of LLRW except those located in States that are part of the Atlantic Compact (South Carolina, Connecticut, and New Jersey). LLRW generators in Michigan thus cannot send their Class B and C waste to the Barnwell facility. The GAO Report also explains that unless an off-site disposal facility becomes available, Greater-than-Class-C waste, if any, will also have to be managed onsite since DOE has not yet developed a disposal facility for that type of waste.

[2]FSAR, STD COL Subsect. 11.4-4-A, p. 11-10

[3]ER, Rev. 0, p. 5-146, Subsect. 5.7.1.6 ("The quantities of buried radioactive waste material (low-level, high-level, and transuranic wastes) are specified in NRC Table S–3. For low-level waste disposal at land burial facilities, the NRC notes in Table S–3 that there will be no significant radioactive releases to the environment").

[4]ER, Rev. 0, p. 5-142, Subsect. 5.7.1 ("Changes in the UFC and reactor operations have occurred since NRC Table S-3 was promulgated. For example, the estimated quantity of fuel required for a year's operation of a nuclear power plant can now reasonably be calculated assuming a 60 year lifetime (40 years of initial operation plus a 20 year license renewal term)).")

> Certain amounts of radioactive materials are generated in solid form. The Solid Waste Management System (SWMS) collects, processes, packages, and temporarily stores these solid radioactive wastes for offsite shipment and permanent disposal. The SWMS controls, collects, handles, processes, packages, and temporarily stores solid waste generated by the plant prior to shipping the waste offsite. These wastes include filter backwash sludge, reverse-osmosis concentrates, and bead resins generated by the LWMS, reactor water cleanup/shutdown cooling system, fuel and auxiliary pools cooling system and the condensate purification system. Contaminated solids such as HEPA and cartridge filters, rags, plastic, paper, clothing, tools, and equipment are also disposed of in the SWMS. Liquids generated by the SWMS are processed through the LWMS described in Subsection 3.5.2.1.[5]

Clearly, off-site disposal of waste is part of the plan; but presently, such off-site disposal is not available to waste generators in Michigan. The COLA does not contemplate any but "temporary" onsite storage of Class B, C and greater-than-C wastes, nor is there any indication that the facilities could accommodate such an accumulation. The intent is that the facility will prepare waste for routine shipment to a disposal site throughout Fermi's entire operating life, despite the fact that no such disposal site is currently available, let alone guaranteed available in future decades. The plan for Fermi omits this essential information, despite the reality that the waste involved is potentially hazardous for far more than 60 years. There are no regulations that specifically guide this situation. Reference is made elsewhere to NRC guidance for extended storage but not potentially permanent or very long-term storage.

DTE states that "[t]he radioactive waste management systems are designed to maintain releases of radioactive materials in effluents to 'as low as reasonably achievable' levels in conformance with 10 CFR Parts 20 and 50, including the design objectives of 10 CFR 50 Appendix

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[5]ER, Rev. 0, pp. 3-39/3-40, 3.5.2.3

I."[6] These are the routine release levels and the applicant provides no detail regarding the ongoing onsite management and potential impact from permanent or very long-term storage of all the B, C and >C radioactive waste from operations on the site of generation. No explanation is offered for how the applicant will meet this plan in the absence of a licensed disposal site.

DTE apparently assumes that it will be able to send its Class B, C, and >C radioactive waste offsite. However, no facility in the United States is licensed and able to accept for disposal such radioactive waste from the Fermi 3 nuclear power reactor. And DTE fails to offer a viable plan for disposal of Class B, C and >C - so-called "low-level" radioactive waste - generated in the course of operations, closure and post-closure of Fermi 3. DTE fails to address how so-called "low-level" radioactive waste from the operation, closure/ dismantlement and decommissioning of Fermi 3 will be isolated from the environment and permanently disposed of.

The only operating disposal sites that presently accept Classes B and C waste (and possibly >C on a case-by-case basis) are in Richland, Washington and Barnwell, SC. Neither accepts radioactive waste from outside the North-west, Rocky Mountain and Atlantic low-level radioactive waste compacts. The recently-licensed Waste Control Specialists site in Andrews County, Texas, on the New Mexico border, is being challenged in the state regulatory system by the Sierra Club.[7] Even if that site is allowed to open, it can only accept waste from Texas and Vermont, which are members of a compact.

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[6]ER, Rev. 0, pp. 3-37, Sect. 3.5

[7]http://texasvox.org/2009/03/06/andrews-county-a-radioactive-risk-for-west-texas/

Processors could change the form of the waste, but the radioactivity will remain, requiring isolation and disposal. Although there are experiments at diluting or down-blending higher concentration wastes to lower concentrations, this is not an accepted routine and has not been analyzed nationally to consider the environmental, health and economic effects of making such a practice routine. Given the lack of an offsite repository, once Fermi is operating, it is reasonable to expect that all Class B, C and >C radioactive waste from the proposed Fermi 3 reactor will remain onsite indefinitely.

The environmental impacts of leaving these wastes onsite must be addressed in order for the Nuclear Regulatory Commission to comply with NEPA. It is imperative that the safety and security issues of extended onsite storage, which comprises *de facto* disposal, be addressed prior to generation of the waste. The so-called "low-level" radioactive waste for which there is no disposal available is the hottest, most concentrated[8] waste in the category. The Environmental Report should also address the fact that >C wastes require disposal in an even more protective manner than imposed for Classes B and C, and must be disposed of in a deep geologic repository unless a specific exemption is granted.

The decommissioning planning assumes that the process-generated "low-level" radioactive will not be present onsite at time of closure.[9] And DTE's assumption is that "waste vendors", which Petitioners take

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[8] A GAO report indicates some of this waste can give a lethal dose in 20 minutes if exposed unshielded. GAO-RCED-98-40R Questions on Ward Valley pages 49-52, 1998.

[9]COLA Part 1, Attachment C, "Decommissioning Funding Assurance Report," Appendix A, shows an "LLW Disposal Preference" of "contract with waste vendors" and an "LLW Burial Location" of "South Carolina."

to mean private firms that process and concentrate waste, will somehow render all waste disposable then dispose of it at a licensed facility, will make the low-level waste disappear. This is not accurate. Vendors will almost undoubtedly have no greater access to disposal facilities than DTE, which means that there is a substantial likelihood that DTE will end up having the waste returned to Fermi. In sum, the applicant's Process Control Program, while explaining the methods of temporary storage, does not explain how DTE will comply with the need for permanent disposal of long-lasting radioactive in the absence of licensed disposal facilities for Classes B, C and >C waste. Even waste sent offsite to vendors could be returned for storage in the absence of permanent disposal. And DTE does not address in its NEPA documents any detail regarding the ongoing onsite management and potential impact from storage of all the B, C and >C radioactive waste from operations at the site of generation. This discussion must appear in the COLA.

The decommissioning cost estimate in Part 1 contains no factoring of the cost of Class B, C and >C radioactive waste that may be stored onsite at that point. There is no accounting, either, for the increased costs that may be associated with disposal of a cumulative total of LLRW from operations in addition to the LLRW generated by dismantling the facility. There is no mention in the decommissioning funding section of any plan to maintain records for LLRW in the event that it is retained on-site at Fermi 3 up to the time of decommissioning.

In Section 5.9 of the Environmental Report, which discusses decommissioning, there is no consideration of the potential for an accumulation of operations waste (so-called "LLRW") being present at

the site at the time that stage commences.[10] In fact, decommissioning is viewed positively as a step toward reuse of the land where the reactor is located:

> Decommissioning of a nuclear facility that has reached the end of its useful life is in essence an environmental remediation and therefore has an overall positive environmental impact. The main adverse environmental impact, regardless of the specific decommissioning option selected, is the commitment of relatively small amounts of land for waste burial in exchange for the potential re-use of the land where the facility is located.[11]

The lack of permanent disposal for so-called “low-level” Class B, C and >C radioactive waste that would be routinely generated from Fermi 3, and the failure of the COLA to fully address potentially permanent on-site storage for those long-lasting wastes, violates environmental and safety and security requirements. There is no justification provided for producing long-lasting, intensely radio-active wastes for which no disposal exists. There is no realistic plan for isolation of the wastes or permanent disposal of the wastes. Considering the long history of failed so-called “low-level” radio-active waste disposal sites in the country, assumptions that new ones will be available are not justified.

The COL, ER and FSAR indicate that thousands of curies in “low-level” radioactive waste will be generated from operation of Fermi 3 but none provide analysis of the safety and security of Class B, C and >C wastes that will accumulate at the site in absence of final disposal. Although there is discussion of the routine treatment and processing that would and could be carried out onsite, there is not an assessment of the very long-term economic, safety, security and

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[10]ER, Rev. 0, Section 5.9, p. 5-174.

[11]ER, Rev. 0, Subsection 5.9.2, pp. 5-174/5-175.

environmental consequences of storing Class B, C and >C radioactive waste (regardless of form) nor of the routine and potential accidental releases over time. For example, “low-level” radioactive wastes are not intended to be stored in the containment building that houses the reactor, thus they will not be as protected as other parts of the site. No estimates are made for additional emissions and doses from processing and storage of these long-lasting concentrated wastes. Some so-called “low-level” radioactive waste can give high doses of radiation if one is exposed unshielded. According to the Government Accounting Office (GAO/RCED-98-40R Questions on Ward Valley, 5-22-98 pp. 49-52) some so-called ‘low-level’ radioactive waste can give a lethal dose at one meter, unshielded, in approximately 20 minutes. In addition, so-called ‘low-level’ radioactive wastes:

> . . . [C]ontain every radionuclide found in ‘high-level’ radioactive waste…low-level radioactive wastes constitute a very broad category containing many different types and concentrations of radionuclides, including the same radionuclides that may be found in high-level radioactive wastes.

These include plutonium-239 (hazardous life 250 to 500 thousand years), iodine-129 (hazardous life 170 to 340 million years), strontium 90 (hazardous life 280-560 years) and cesium-137 (hazardous life 300 to 600 years).

The DTE COL application, FSAR and ER fail to explain or address how safety and security issues of extended on-site storage/*de facto* disposal of radioactive waste will be maintained with increasing amounts of waste without permanent offsite disposal. The Environmental Report simply describes the generation of waste during operations with the expectation of shipment offsite. Reference is made elsewhere to NRC guidance for extended storage, but not potentially permanent or very long-term storage.

Petitioners have here raised a "contention of omission," *i.e.*, a claim, in the words of 10 C.F.R. § 2.309(f)(1)(vi), that "the application fails to contain information on a relevant matter as required by law . . . and the supporting reasons for the petitioner's belief.[12]" In *Pa'ina Hawaii, LLC,* the Board found that a contention satisfied the requirement to provide a specific statement of the legal or factual issue sought to be raised by alleging that the application failed to describe the emergency procedures for a prolonged loss of electricity.[13]

Petitioners urge acceptance of this contention for litigation.

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[12]*Pa'ina Hawaii, LLC (Material License Application)*, LBP 06-12, 63 NRC 403, 413 (2006), pet. for reconsideration denied, CLI-06-25, 64 NRC 128 (2006) (dis-missing applicant's appeal as untimely).

[13]LBP 06-12, 63 NRC at 414.

CONTENTION NO. 4: ***The Commission must suspend the COL adjudication pending completion of the NRC review of the ESBWR reactor design and the obligatory design rulemaking***

There is no complete, accepted and certified design for the Economic Simplified Boiling Water Reactor, the design which DTE has chosen for Fermi 3.[1]

In a letter dated February 18, 2009 from David B. Matthews, NRC Director of the Division of New Reactor Licensing Office of New Reactors, to Mr. Robert E. Brown Senior Vice President, Regulatory Affairs GE Hitachi Nuclear Energy the NRC staff set certain dates in the second half of 2010 by which time the NRC Staff anticipated completion and certification of the ESBWR design.[2]

As a consequence, the pending proceedings to adjudicate a Combined Operating License for Fermi 3 must be suspended until the NRC staff has completed its review of the ESBWR design and the necessary design certification rulemaking proceeding has been concluded by the

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[1]With unwitting irony suggestive of Monty Python, DTE asserts (p. 1 of its "Departures Report") that:

> A Departures Report includes deviations identified in the Fermi 3 FSAR from the information in the applicable NRC approved DCD. At the time of application submittal, *an ESBWR standard design certification and rule has not been issued by the NRC, and therefore departures would not be considered to currently exist.* However, for the purposes of identifying changes to Revision 4 of the ESBWR DCD, three DCD Departures were identified. (Emphasis supplied)

COLA, Departures Report (Part 7), Rev. 0, p. 1.

[2]"NRC issues remaining supplemental RAIs April 30, 2009
GEH respond to all remaining outstanding RAIs July 31, 2009
All open items resolved July 31, 2009
GEH submit DCD Revision 6 incorporating revisions associated with all RAI responses (FSER will be based on this DCD revision) August 31, 2009
FSER complete December 30, 2009
Two (2)-Month Managed Reserve March 8, 2010
NRC forwards advance FSER to ACRS for review March 8, 2010
ACRS Subcommittee/ Full Committee meetings on FSER April 2010.
FSER Issuance August 16, 2010."

From letter, "Economic Simplified Boiling Water Reactor (ESBWR) Design Certification Schedule Update", ML090420291.

NRC.

The manner in which the NRC is poised to conduct the licensing proceeding would deprive Petitioners of a fair and meaningful opportunity for a hearing on the Fermi COLA, in violation of the Atomic Energy Act ("AEA"), the Administrative Procedure Act ("APA"), the National Environmental Policy Act ("NEPA"), and the NRC's own regulations.

The AEA is violated because the determination as to whether an application is sufficiently complete for docketing is for the Staff, rather than an adjudicatory board, to make.[3] DTE effectively, but improperly, urges the ASLB to assume the role of the Staff, in violation of the Atomic Energy Act,[4] to erase this bright-line distinction.

Moreover, the Commission's policy statement that removes the COLA's design-related contents from the scope of issues that may be challenged in the COLA adjudication[5] and refers those issues for resolution in a separate rulemaking proceeding (one which has neither been scheduled nor commenced) is not enforceable law or regulation.[6]

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[3] *New England Power Co.* (NEP, Units 1 & 2), LBP-78-9, 7 NRC 271, 280 (1978).

[4] 42 U.S.C. § 2241 of the Act allows for creation of ASLBs "to conduct such hearings as the Commission may direct and make such intermediate or final decisions as the Commission may authorize with respect to the granting, suspending, revoking or amending of any license or authorization under the provisions of this Act, any other provision of law, or any regulation of the Commission issued thereunder."

[5] Policy Statement on the Conduct of New Reactor Licensing Proceedings, 72 Fed. Reg. 20,963 (April 17, 2008) ("2008 Policy Statement").

[6] Petitioners seek admission of this contention in order to protect their right to ensure that any generic resolution of their concerns is made in a timely way and "plugged in" to the licensing decision in this case. *Baltimore Gas and Electric Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 101 (1983). *See also Commonwealth of Massachusetts v. NRC*, 522 F.3d 115, 127 Cir. 2008) (although the NRC may make generic determinations regarding the

It violates § 189a of the Atomic Energy Act ("AEA"), as well as judicial precedent interpreting the AEA, and the NRC's Part 52 regulations for the conduct of licensing proceedings on COLAs. The fixing of policy around convenience cannot be used to supplant regulatory rigor; when an agency applies a policy in a particular situation, "it must be prepared to support the policy just as if the policy statement had never been issued".[7]

The APA is violated because as a matter of law, the COLA is incapable of meeting the Administrative Procedure Act's requirement for an adequate hearing notice. An adequate notice contains the chief "issues of . . . law" that must be included in the hearing notice. That certainly encompasses the content of the ESBWR standard design certification rule, and that content has yet to be established.

Petitioners' rights to raise challenges under NEPA would be impugned by allowing this COL proceeding to move forward with an uncertified design. The Environmental Impact Statement which the Commission has promised will be compiled must contain a "full and fair discussion" of significant environmental impacts that is "supported by evidence that the agency has made the necessary environmental anal-

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significance of environmental impacts and prohibit challenges to those generic determinations in individual proceedings, it nevertheless must "consider any new and significant information regarding environmental impacts before renewing a nuclear power plant's operating license"). While the NRC may steer a challenging party's concerns about the effects of new and significant information on an individual licensing decision into a generic proceeding, the NRC may not refuse to provide "at least one path by which the [challenging party] may establish a connection" between the rulemaking and the licensing proceeding, thereby ensuring that the result of the rulemaking proceeding will be applied in the individual licensing case. *Id*. at 128. To ensure that a "connection" is maintained between any rulemaking determination on the ESBWR reactor design and the Petitioners' right to seek application of new and significant information to this proceeding, the Petitioners request that this contention be admitted and held in abeyance pending the outcome of the generic proceeding.

[7] *Pacific Gas & Electric Co. v. FPC,* 506 F.2d 33, 38-39 (D.C. Cir. 1974).

yses." 40 C.F.R. § 1502.1. To satisfy NEPA, the NRC must demonstrate it has taken a "hard look" at the environmental consequences of the proposed action. "To comply with NEPA's 'hard look' requirement an agency must adequately identify and evaluate environmental concerns." *Friends of the Bow v. Thompson,* 124 F.3d 1210, 1213 (10th Cir. 1997). "NEPA procedures must insure that environmental information is available to public officials and citizens ***before decisions are made and before actions are taken*** [emphasis supplied]. . . Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." *Earth Island Inst. v. U.S. Forest Serv.*, 442 F.3d 1147, 1153–54 (9th Cir. 2006); 40 C.F.R. § 1500.1(b). These things are impossible unless the COL is complete, including a certified reactor design that may be analyzed in context. Without a fixed, certified ESBWR design, public commenters in the ongoing NEPA proceeding cannot meaningfully comment concerning operational prospects and associated environmental effects; accident scenarios and such effects; nor is it possible for them to gain, in timely fashion, an understanding of the routine radiation emissions likely to come from Fermi 3.

There is uncertainty, not just as to what the final ESBWR design will be, but whether DTE will ultimately continue in its quest to construct an ESBWR, given the protracted continuum for finalizing the design which the NRC staff has identified. This uncertainty comprises a denial of due process to the Petitioners.

The regulatory scheme embodied in 10 CFR Part 52 leaves the Commission only two choices with respect to the conduct of a licensing proceeding for the proposed Fermi 3: either to hold an adjudication on the entire COLA, including the ESBWR design certification application

that is incorporated by reference into the COLA; or to complete the ESBWR design certification rulemaking before holding an adjudicatory hearing on the Fermi 3 COLA. The Part 52 regulations do not give the NRC the option of removing the COLA's design-related contents from the scope of the adjudication on the COLA and referring them to a separate rulemaking for resolution while the COL proceeding cranks along without a fix on the reactor design.

DTE cannot have matters both ways. The COL adjudication must be suspended pending completion of the ESBWR design rulemaking.

CONTENTION NO. 5: The Fermi site may have problematic hydrology likely to allow offsite transport of chemical and radiological contaminants

The relevant part of NRC regulations for this contention is 10 CFR PART 100 REACTOR SITE CRITERIA, Subpart B, Evaluation Factors for Stationary Power Reactor Site Applications on or After January 10, 1997, Sec. 100.20 Factors to be considered when evaluating sites. This regulation states, in relevant part:

> The Commission will take the following factors into consideration in determining the acceptability of a site for a stationary power reactor. . .:
> (c) Physical characteristics of the site, including seismology, meteorology, geology, and hydrology.
> (3) Factors important to hydrological radionuclide transport (such as soil, sediment, and rock characteristics, adsorption and retention coefficients, ground water velocity, and distances to the nearest surface body of water) must be obtained from on-site measurements. The maximum probable flood along with the potential for seismically induced floods discussed in Sec. 100.23 (d)(3) must be estimated using historical data.

Detroit Edison's current hydrological studies are woefully inadequate, currently omitting key data on "Factors important to hydrological radionuclide transport (such as soil, sediment, and rock characteristics, adsorption and retention coefficients, ground water velocity, and distances to the nearest surface body of water)," and lacks key, adequate on-site measurements. This is made abundantly clear by Detroit Edison's own documented admissions, as cited below. In this regard, this contention represents a contention of omission.

On January 14, 2009, NRC's Jerry Hale, Project Manager, ESBWR/ ABWR Projects, Branch 1, Division of New Reactor Licensing, Office of New Reactors wrote to Mr. Jack M. Davis, Senior Vice President and Chief Nuclear Officer, DTE Energy, Fermi 2 - 210 NOC, 6400 North Dixie Highway, Newport, MI 48166 regarding "REQUEST FOR ADDITIONAL INFORM-ATION LETTER NO. 2 RELATED TO THE SRP SECTIONS 02.04.13 FOR THE FERMI 3 COMBINED LICENSE APPLICATION." In this letter, Mr. Hale wrote the

following:

Request for Additional Information No. 1944 Revision 0

Fermi Unit 3
Detroit Edison
Docket No. 52-033

SRP Section: 02.04.13 - Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters

Application Section: FSAR Chapter 2 Section 2.4

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.13-1

Provide site-specific measured hydrologic parameters necessary to perform radionuclide transport analysis under the assumed release scenario as required in 10 CFR 100.20(c). More specifically, provide data and discussions about the hydrologic characteristics of the bedrock aquifer (Bass Islands Group) and the glacial overburden near Fermi Unit 3, including their thickness, depths to water tables, hydraulic conductivities, distribution coefficients, porosities;
bulk mass densities, and retardation factors; the vertical and horizontal groundwater velocities of the overburden; suction heads; and the groundwater velocity of the bedrock aquifer.

02.04.13-2

Provide a description of the screening process used to determine the radioactive constituents in the drain collection tank considered for the failure analysis and how the inventory described in Table 12.2-13a of the ESBWR DCD was used to derive the radionuclide constituents for the subsequent radionuclide transport analysis.

02.04.13-3

Provide a discussion on the presence or absence of chelating agents and other chemical agents that would modify the transport characteristics of radionuclides at the site. The discussion needs to include whether these chemicals are to be used anywhere at the site and not limited to the tanks.

02.04.13-4

Provide a discussion on post-construction groundwater levels and their influence on the radionuclide pathways.

02.04.13-5

Provide an explanation of the “two possible sources” mentioned in the discussion of “Transport Considering Radioactive Decay Only”

portion of the supplemental information.

02.04.13-6

Provide a description of the process followed to determine the conceptual models for surface and subsurface pathways and for site characteristics that affect transport of radioactive liquid effluents in ground and surface waters to ensure that the most conservative of plausible conceptual models has been identified pursuant to the guidance provided in SRP 2.4.13. Also provide analysis based on the most conservative of all the plausible models to demonstrate compliance with 10 CFR part 20 Appendix B Table 2 ECL limits. In the supplemental information that contained the analysis of radionuclide transport for an assumed failure, the results show exceedance of the ECL limits for 12 radionuclide isotopes for both assumed receptors (Lake Erie to the east and a receptor well to the west). The applicant also stated that even if the conservatism assumed in the analysis, more specifically the maximum groundwater velocity, dilution, assumption of continuous ingestion were to be relaxed, the resulting concentrations will still be above the ECL limits. Please include in the analysis the basis for the preceding conclusion of the applicant.

NRC RAIs highlight key missing data and measurements that Petitioners need for preparing contentions against Fermi 3. Therefore, Petitioners request the right to modify this contention, once Detroit Edison provides the missing data and analyses, and that they be given adequate time to do so (at a minimum, sixty additional days to modify their contention).

Detroit Edison responded to NRC RAI 2.4.13-1, sent by Jack M. Davis, Senior Vice President and Chief Nuclear Officer, Detroit Edison Company, to U. S. Nuclear Regulatory Commission, Attention: Document Control Desk, Washington DC 20555-0001, on February 16, 2009, stated (emphases below added by petitioners):

> As described in Detroit Edison Company Submittal of Fermi 3 FSAR Section 2.4.13 Analysis, dated November 11, 2008, ***distribution coefficients and retardation factors were not determined. At the time of the development of FSAR Section 2.4.13, due to fractured nature of the Bass Islands Group, testing methods were considered to be limited in their capability to represent the sub-surface conditions.*** Subsequently, Detroit Edison has identified a laboratory that can employ a testing

> method to determine distribution coefficients and retardation factors for sub-surface conditions representative of the Fermi site. Based on this contact, Detroit Edison is now able to perform this testing. Using the results from the laboratory testing, ***Detroit Edison will update the analysis to credit these factors. The results from the testing and the updated analysis will be provided in a subsequent submittal by September 1, 2009.*** (Emphasis supplied***)***

Such admissions clearly show that Detroit Edison has omitted key data and on-site measurements. Detroit Edison's statement that the Bass Islands Group is "***fractured,"*** and that ***"testing methods were considered to be limited in their capability to represent the sub-surface conditions,"*** raises alarm bells and red flags that not only is the Bass Islands Group sole source aquifer vulnerable to fast moving plumes of radioactive contamination, but that it is also at risk of leaking this contamination into adjacent aquifers which also could flow into Lake Erie or area drinking water supplies.

Petitioners therefore request the right to modify this contention, once Detroit Edison provides the missing data and analyses on September 1, 2009, and that they be given adequate time to do so (at a minimum, sixty additional days to modify their contention).

Later in the same letter, Mr. Davis wrote to NRC:

> ***As described in Section 2.4.12.3.2, no porosity field data was collected. In lieu of using field data, literature values for porosity were used to determine groundwater velocity.*** Velocity calculations were performed using high and low range estimates (10 - 25 percent for glacial till, 25 percent for rock fill, 1 - 20 percent for limestone/dolomite) to bracket the range of possible results. ***Based on these values, calculated groundwater velocities and estimated travel times to the closest postulated receptors are reported in Section 2.4.12.3.2.***

That section reported that radioactively contaminated groundwater could reach Lake Erie, less than 1,500 feet away, in just 2.3 years. This is a clear admission by Detroit Edison that key data, on-site

measurement, and analyses – concerning an issue as vital as drinking water protection in a sole source aquifer and the Great Lakes -- have been omitted from its COLA.

Mr. Davis concluded that Detroit Edison's "Proposed COLA Revision" would entail the following: ***"A revised COLA markup will be included with the results and the updated analysis upon completion of the laboratory testing."*** Presumably, this means by September 1, 2009, as indicated above, but Mr. Davis was not explicit about a date certain in this particular section of his letter.

Detroit Edison's response to NRC RAI 2.4.13-3 stated:

> Detroit Edison Company Submittal of Fermi 3 FSAR Section 2.4.13 Analysis, dated November 11, 2008, provides an analysis of a postulated accidental release of radioactive liquid effluents to
> the groundwater at the Unit 3 site. The analysis is based on the rupture of a liquid radwaste tank outside of containment. ***The ESBWR standard plant design does not envision the use of chelating agents in liquid radwaste processing. In addition, based on current operating experience at Fermi 2, Detroit Edison does not currently use chelating agents in liquid radwaste processing. Therefore, based on the above there are no plans to use chelating agents for Fermi 3.*** (Emphasis supplied)

Detroit Edison concludes that no proposed revision to its COLA is necessary.

But Detroit Edison's reassurance that chelating agents would not be used at Fermi 3's liquid radwaste processing facilities, nor are they used at Fermi 2's liquid radwaste processing facilities, does not answer the concerns raised. In fact, Detroit Edison's own Fermi 3 COLA contradicts its reassurance. At Part 3, Environmental Report, Section 5.5, "Environmental Impacts of Waste," Detroit Edison states **"**At the Fermi site these wastes include such non-radioactive sources as ***laboratory solvent waste***…" Detroit Edison goes on to state that "Mixed waste contains hazardous waste and a low-level radioactive source,

special nuclear material, or byproduct material. This may include such contaminated items as waste oil, chlorinated fluorocarbons, ***organic solvents***, metals and metal-contaminated materials, or ***aqueous corrosives***." We are concerned that such laboratory solvent wastes, organic solvents, and aqueous corrosives, not only at Fermi 1 and Fermi 2, but also at Fermi 3, could serve to accelerate the transport of hazardous radioactive substances leaked or spilled onto the soil into the groundwater, including the Bass Islands Group Aquifer, a sole source of drinking water downstream.

At Section 5.5.2.1, "Plant Systems Producing Mixed Waste," in the Fermi 3 COLA's Part 3/Environmental Report, Detroit Edison goes on to state that:

> A 1990 survey by the NRC identifies the following types of low-level mixed waste at nuclear power plants which are representative of the types of waste expected at Fermi 3 (Reference 5.5-2):
>
> - Waste oil from pumps and other equipment
> - Chlorinated fluorocarbons resulting from cleaning, refrigeration, degreasing, and decontamination activities
> - ***Organic solvents, reagents, compounds,*** and associated materials such as rags and wipes
> - Metals such as lead from shielding applications and chromium from ***solutions and acids***
> - ***Metal-contaminated organic sludge and other chemicals***
> - ***Aqueous corrosives consisting of organic and inorganic acids".***

Petitioners are concerned that such organic solvents, reagents, and compounds, metal dissolving solutions and acids, metal-contaminated organic sludges and other chemicals, and aqueuous corrosives consisting of organic and inorganic acids, not only at Fermi 1 and 2 but also at Fermi 3, could serve to accelerate the transport of hazardous radioactive substances leaked or spilled onto the soil into the groundwater, including the Bass Islands Group Aquifer, a sole source of drinking water downstream.

Similarly, Detroit Edison states in its Fermi 3 ER at Section 5.2.2.2.1, “Chemical Impacts,” that “Cooling tower water chemistry must be maintained with ***anti-scaling compounds*** and ***corrosion inhibitors*** because cooling towers concentrate solids (minerals and salts) and ***organics that enter the system in makeup water***.” (Emphasis supplied)

Thus, makeup water from Lake Erie already contains organics, which Petitioners are concerned could cause a chelating effect at Fermi 3.

Detroit Edison states “Chemicals to be added to the liquid effluent streams are listed in Table 3.6-1. Water-treatment chemicals planned for use at Fermi 3 include the following types:

- Biocide/Algaecide
- ***Corrosion inhibitor***
- ***Scale inhibitor***
- Dehalogenation”

Upon examination of Table 3.6-1, “Chemicals Added to Liquid Effluent Streams,” it is revealed that the corrosion inhibitor currently in use at Fermi 2, and assumed by Detroit Edison to also be used at Fermi 3, is phosphoric acid. Fermi 2’s NPDES permit allows up to 2,500,000 pounds per year of phosphoric acid to be continuously used in the Fermi 2 “CIRC system” to inhibit corrosion. The Table also reveals that up to 83,000 pounds per year of C2H3OH(PO(OH)2)2 is continuously used in Fermi 2’s “CIRC system” to inhibit scale. In addition to our concerns about these chemicals’ harmful impact upon the greater Lake Erie ecosystem’s flora, fauna, and human population, including synergistic effects in combination with radioactivity released by Fermi’s multiple operating and now permanently shut down

reactors, we are also concerned that such large-scale use of such chemicals could have a chelating effect on hazardous radioactive substances leaked or spilled onto the soil by Fermi 3 operations, accelerating their transport into the groundwater, including the Bass Islands Group Aquifer, a sole source of drinking water downstream.

Also, Detroit Edison's Fermi 3 ER Section 5.11.3.2, "Surface Water Quality," states that "The water quality data review (Subsection 2.3.3.1) identified turbidity, nutrients, ***persistent organics***, metals, and oils as challenges to Lake Erie water quality." (Emphasis supplied). Fermi 3 would be located immediately adjacent to Lake Erie. Whether due to groundwater interaction with Lake Erie itself, flooding from Lake Erie upon the Fermi 3 site, or even deposition of water vapor laced with persistent organic pollutants caused by Lake Erie water flowing through Fermi 2's or Fermi 3's cooling towers, we are concerned about the potential for chelating effects.

Besides such citations in Detroit Edison's own Fermi 3 ER, it should be acknowledged that natural chelating agents are also present in the ecosystem surrounding the Fermi nuclear power plant. Virtually all biochemicals exhibit the ability to dissolve certain metal cations. Thus, proteins, polysaccharides, and polynucleic acids are effective polydentate ligands for many metal ions. In addition to these adventitious chelators, several biomolecules are produced that specifically bind certain metals. Histidine, malate and phytochelatin are typical chelators present in plants.

In biochemistry and microbiology, virtually all metalloenzymes feature metals that are chelated, usually to peptides or cofactors and

prosthetic groups. Such chelating agents include the porphyrin rings in hemoglobin and chlorophyll. Many microbial species produce water-soluble pigments that serve as chelating agents, termed siderophores. For example, species of *Pseudomonas* are known to secrete pycocyanin and pyoverdin that bind iron. Enterobactin, produced by E. coli, is the strongest chelating agent known.

Geologically, chemical weathering is attributed to organic chelating agents, *e.g.* peptides and sugars, that extract metal ions from minerals and rocks. Most metal complexes in the environment and in nature are bound in some form of chelate ring, *e.g.* with "humic acid" or a protein. Thus, metal chelates are relevant to the mobilization of metals in the soil, the uptake and the accumulation of metals into plants and micro-organisms. Selective chelation of heavy metals is relevant to bioremediation, *e.g.* removal of Cesium-137 from radioactive waste.

Also, chelates are used in many human applications, from chemical analysis, water softening, ingredients in soaps, shampoos, food preservatives, laundry detergents, and even water treatment and boiler water treatment systems. Chelation is also used in medical and dental treatments. The following chelants are used in various technological applications: Acetic acid, Acrylic polymers, Ascorbic acid, BayPure CX 100 (tetrasodium iminodisuccinate), Citric acid, Dicarboxymethyl-glutamic acid, Ethylenediaminedisuccinic acid (EDDS), Ethylenedi-aminetetraacetic acid (EDTA), Hepta sodium salt of diethylene triamine penta (methylene phosphonic acid)(DTPMP●Na_7), Hydrolysed wool, Malic acid, Nitrilotriacetic acid (NTA), Nonpolar amino acids, such as methionine, Oxalic acid, Phosphoric acid, Polar amino acids,

including: arginine, asparagine, aspartic acid, glutamic acid, glutamine, lysine, and ornithine, Siderophores such as Desferrioxamine B, and Succinic acid. Such chelates could find their way into the waters of Lake Erie via water pollution, and thus could interact with radionuclides at the Fermi nuclear power plant site.

Petitioners are concerned that such naturally and artificially occurring chelates as listed above, present in the flora, fauna, and Lake Erie waters surrounding Fermi nuclear power plant, could accelerate the release of hazardous radioactive substances leaked or spilled onto the soil by Fermi 3 operations, worsening their transport into the groundwater, including the Bass Islands Group Aquifer, a sole source of drinking water downstream, as well as into Lake Erie.

Petitioners' concerns are not limited to the 40, 60, or 80 years that Fermi 3 would operate by NRC permit. We are also concerned about persistent radioactive contamination that would linger at the Fermi 3 site, even long after decommissioning activities that failed to clean it up. Of the dozen radionuclide isotopes that would exceed ECL limits for "both assumed receptors (Lake Erie to the east and a receptor well to the west)," we are not only concerned about relatively short-term hazards (measured in the decades), but also about the long-term hazards (measured in the centuries, millennia, and beyond) for radionuclides with correspondingly long half-lives, and thus hazardous persistence.

Petitioners are also concerned that Fermi 3's decommissioning activities could involve chelating agents now currently being acknowledged by Detroit Edison. For example, during the precedent-setting decommissioning of Consumers Power's Big Rock Point General

Electric boiling water reactor nuclear power plant in northern Michigan between 1997 and 2006, chelating agents were used to dissolve radioactive metallic crusts from within pipes. Use of such chelating agents on former nuclear power plant sites such as Fermi raises grave concerns about accelerated releases of radioactive contamination into adjacent surface and ground waters.

Petitioners' concern stems from the fact that Lake Erie is a vital source of drinking water for millions of people downstream, including in Canada, and to whom the U.S. federal government has century-old Boundary Water Treaty legal obligations. Lake Erie is also a biologically rich fishery, providing food to countless numbers of persons, including First Nations who subsist on fish and retain fishing rights to Lake Erie, as recognized by treaties signed by the U.S. government. Chelates accelerating radioactive contamination of Lake Erie risk bio-accumulation in such species as fish, which are then consumed by humans, worsening the health risks from the radioactive contamination by delivering a more concentrated radiation dose.

Also, long-standing U.S. Environmental Protection Agency policy and practice, as embodied in the Safe Drinking Water Act and Clean Water Act, holds that drinking water supplies, most especially sole source aquifers such as the Bass Islands Group, should be protected against toxicological and radiological contamination, especially contamination that exceeds ECL limits.

Detroit Edison's Environmental Report, at Table 2.3-19, lists EPA Region 5 Sole Source Aquifers, and reports that the Bass Islands Aquifer at Catawba Island is just 34 Miles away from the proposed

location of Fermi 3. We are concerned that Fermi 3's radiological, and even toxicological, releases could endanger this precious sole source aquifer.

At Section 2.3.1.2.1.2, "Site Aquifers, Formations, Sources, and Sinks," Detroit Edison's ER states:

> The zone of shallow overburden characterized by unconsolidated deposits at Fermi 3 average 28 ft in thickness (FSAR Subsection 2.5.1.2.3), which is consistent with conditions in much of Monroe
> County (Reference 2.3-79). The local bedrock formation subcropping beneath the overburden is the Bass Islands Group. As previously stated this unit is part of the bedrock aquifer that exists throughout Monroe County.

Thus Petitioners are concerned about radiological and toxicological risks not only regarding the Bass Islands Aquifer at Catawba Island, but also by hydrological interactions between the Bass Islands Aquifer and other aquifers throughout the area, which supply drinking water via wells or even municipal systems to area residents.

In its response to NRC RAI 2.4.13-4, Detroit Edison stated:

> FSAR, Section 2.4.12, discusses groundwater conditions at the Fermi 3 site. Section 2.4.12.2.5 describes that ***current groundwater flow conditions are influenced by the quarry operations in the vicinity.*** As described, due to the quarry operations, the present flow pattern is reversed from the pre-quarry development flow pattern. If the quarries were to stop operating, water levels in the county could potentially recover to the point that the flow direction beneath the site might revert to the natural pre-development patterns.
>
> ***As further discussed in Section 2.4.12.2.5, construction of Fermi 3 includes excavation into the Bass Islands Group to build foundations. This activity will require temporary dewatering of the excavation site to levels approximately 45 to 50 feet below the present groundwater elevation. This will alter groundwater flow locally near the site.*** As described in Section 2.4.12.2.5.1, this temporary condition was evaluated, including construction techniques to minimize the impacts.
>
> ***There will be localized altered groundwater flows, around newly constructed buildings, postconstruction,*** however these altered groundwater flows are not expected to have an effect on the overall groundwater flow for the area. (Emphasis supplied)

Fermi 3 operations do not rely on groundwater. Thus, groundwater conditions would be expected to return to the present day conditions following construction and there would be no influence to radionuclide pathways other than those evaluated in the Detroit Edison Company Submittal of Fermi 3 FSAR Section 2.4.13 Analysis, dated November 11, 2008.

Subsection 2.4.12.4 discusses post-construction groundwater monitoring. One of the purposes of the post-construction groundwater monitoring is to ensure that any construction impacts are identified and evaluated. If necessary, the analysis would be updated to reflect any postconstruction changes to the local groundwater flow."
Detroit Edison then proposed no COLA revision.

Petitioners are concerned that Detroit Edison lacks an adequate understanding of hydrology in the surrounding area, and that various quarries in Monroe County will serve to draw radioactively and toxicologically contaminated groundwater in various aquifers under the Fermi nuclear power plant site outwards into surrounding areas, where individual families and even entire communities will then draw upon that contaminated groundwater for drinking water supply.

In its response to NRC RAI 2.4.13-5, Detroit Edison clarifies that:

> The referenced discussion in the section titled "Transport Considering Radioactive Decay Only" should have read "two possible receptors" in lieu of "two possible sources" and will be corrected in Revision 1 of the Fermi 3 FSAR. As described in this section ***the two possible receptors are the shoreline of Lake Erie (to the East) and a groundwater well (to the West). There is only one source of radioactive water that is postulated to be released and that is the Equipment Drain Collection Tank*** as stated in Section 2.4.13. (Emphasis supplied)

It should be noted that Detroit Edison's Design Control Document for the ESBWR lists the following radionuclides in Table 12.2-13a, "Liquid Waste Management System Equipment Drain Collection Tank Activity," as having various levels of radioactivity: I-131,-132,-133,-134,-135; Rb-189; Cs-134,-136,-137,-138; Ba-137m; H-3 (tritium); Na-24; P-32; Cr-51; Mn-54,-56; Fe-55,-59; Co-58,-60; Ni-63; Cu-64; Zn-65; Sr-89,-90; Y-90; Sr-91,-92; Y-91,-92-93; Zr-95; Nb-95; Mo-99; Tc-99m; Ru-103; Rh-103m; Ru-106; Rh-106; Ag-110m; Te-129m,-131m,132; Ba-140; La-140; Ce-141,-144; Pr-144; W-187; Np-239. Of these, NRC identifies a dozen that exceed Effluent Concentration Limits (ECLs).

Given Detroit Edison's lack of data, and admitted limitations in understanding of local hydrology, including regarding the Bass Islands Aquifer, we challenge Detroit Edison's assumption that contaminated groundwater is limited to only two possible receptors, the shoreline of Lake Erie to the east, and a groundwater well to the west. Catawba Island's draw on the Bass Islands Aquifer, Catawba Island's sole source aquifer, is just 34 miles to the east, and must be considered as well, given the risk of radioactive contaminant concentration in that sole source aquifer.

NRC RAI 2.4.13-6 states that ***"…the results show exceedance of the ECL limits for 12 radionuclide isotopes for both assumed receptors' (Lake Erie to the east and a receptor well to the west). The applicant also stated that even if the conservatism assumed in the analysis, more specifically the maximum groundwater velocity, dilution, assumption of continuous ingestion were to be relaxed, the resulting concentrations will still be above the ECL limits."***

In its response, Detroit Edison admits that "As described in Section 2.4.12.3.2, ***no porosity field data was collected. In lieu of using field data, literature values for porosity were used to determine groundwater velocity."*** (Emphasis supplied)

Disconcertingly, at Section 2.4.12.3.2 of Detroit Edison's FSAR, it admits that contaminated groundwater could travel from the Fermi 3 site to Lake Erie, just 1,476 feet to the east, in as little as 2.3 years, during which time many of the radionuclides listed above in Table 12.2-13a are still hazardous. Even if the contaminated plume takes as long as 368 years to travel to Lake Erie, many of the radionuclides would likewise still be hazardous, given their long half-lives.

Detroit Edison responds:

> The analysis concluded that ***even with relaxation of conservatisms the results would be expected to exceed the Effluent Concentration Limits (ECL)***. The basis for this conclusion is that ***the concentration of several of the radionuclides were well above the ECL; and one of the radionuclides exceeds the ECL by a factor of more than 5E+03 [that is, 5,000 times]***. As noted in the responses above, Detroit Edison is now able to perform laboratory testing to determine site specific values for ***distribution coefficients and retardation factors. Using these factors, coupled with relaxation of other conservatisms (for example, crediting dilution in the Radwaste Building prior to release),*** Detroit Edison expects the subsequent results to be less than the ECL. Using the results from the laboratory testing, Detroit Edison will update the analysis to credit these factors. The results from the testing and ***the updated analysis will be provided in a subsequent submittal to the NRC by September 1, 2009.*** (Emphasis supplied)

Petitioners emphasize that their deadline for filing intervention contentions is March 9, 2009. Detroit Edison is indicating that its field testing data results and updated analysis will not be available until September 1, 2009 – nearly six months after the present deadline for intervening. Petitioners therefore request that the ASLB allow

them to revisit these issues when Detroit Edison finally publishes its data and revised analysis, so that they may timely modify their contention. Petitioners request that they be given adequate time to analyze Detroit Edison's findings, at a minimum, sixty days.

Detroit Edison, finally, lists the following "Commitments" to NRC:

> "**1.** The following ***commitment*** was made in this letter. Detroit Edison will perform laboratory testing to determine site specific values for distribution coefficients and retardation factors. Using these factors, coupled with ***relaxation of other conservatisms (for example, crediting dilution in the Radwaste Building prior to release), Detroit Edison expects the results to be less than the ECL.*** Using the results from the laboratory testing, Detroit Edison will update the analysis to credit these factors. The results from the testing and the updated analysis will be provided in a subsequent submittal to the NRC by September 1."

Petitioners are very troubled by Detroit Edison's "commitment" to relax conservatisms when it comes to radiological contamination of the Great Lakes and surrounding groundwater, including the Sole Source Aquifer known as the Bass Islands Group. Lake Erie is a precious, irreplaceable resource – drinking water supply to millions downstream, and its shallow western basin the most biologically productive fishery in the entire Great Lakes basin. The Bass Islands Group Aquifer is a the sole source aquifer for Catawba Island, Ohio, and thus also precious and irreplaceable. It is entirely inappropriate and outrageous for Detroit Edison to propose "pencil-whipping" its radiological contamination analyses into compliance with NRC environmental protection regulations. "Crediting dilution in the Radwaste Building prior to release" does not seem to us to be an acceptable method of protecting the Great Lakes and a sole source aquifer from hazardous radiological contamination. We are also concerned that Detroit Edison

seeks to manipulate its “distribution coefficients and retardation factors” in order to achieve a pre-determined outcome: compliance with NRC regulations, at least on pencil-whipped paper.

Such a commitment to relax conservatisms by Detroit Edison is all the more troubling given its report that the Bass Islands Group Sole Source Aquifer is “***fractured,”*** and that ***“testing methods were considered to be limited in their capability to represent the sub-surface conditions…”*** Detroit Edison is thus admitting that it doesn’t understand the hydrology beneath Fermi nuclear power plant, which means that Lake Erie and area drinking water supplies immediately downstream are at significant risk.

Petitioners therefore reserve the right to renew and reactivate this contention at such time as DTE finally publishes its currently omitted data and analyses, so that they may modify their contention. Petitioners further request that they be given adequate time to do so, at a minimum sixty days.