

## Rulemaking1CEm Resource

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**From:** RulemakingComments Resource  
**Sent:** Thursday, December 26, 2013 10:44 AM  
**To:** Rulemaking1CEm Resource  
**Subject:** FW: Riverkeeper Comments on Docket ID No. NRC-2012-0246 (U.S. NRC Draft Waste Confidence Generic Environmental Impact Statement and Proposed Rule)  
**Attachments:** 2013.12.20.Rvk Comments on NRC Waste Confidence DGEIS and Proposed Rule.pdf

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**SECY DOCKET DATE:** 12/20/13  
**TITLE:** Waste Confidence—Continued Storage of Spent Nuclear Fuel  
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**From:** Deborah Brancato [<mailto:DBrancato@riverkeeper.org>]  
**Sent:** Friday, December 20, 2013 8:06 PM  
**To:** RulemakingComments Resource  
**Cc:** Phillip Musegaas  
**Subject:** Riverkeeper Comments on Docket ID No. NRC–2012–0246 (U.S. NRC Draft Waste Confidence Generic Environmental Impact Statement and Proposed Rule)

Dear Rulemakings and Adjudications Staff:

Please accept the attached comments of Riverkeeper, Inc. on Docket ID No. NRC–2012–0246, pertaining to the U.S. NRC Draft Waste Confidence Generic Environmental Impact Statement and Proposed Rule.

Riverkeeper has submitted these comments via regulations.gov, but hereby also files them via e-mail in an abundance of caution.

Please do not hesitate to contact me should have any questions regarding this transmittal.

Sincerely,

Deborah Brancato, Esq.  
Staff Attorney

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December 20, 2013

**VIA REGULATIONS.GOV AND E-MAIL**

Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
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**Re: Comments of Riverkeeper, Inc. on Docket ID No. NRC-2012-0246 – U.S. NRC Draft Waste Confidence Generic Environmental Impact Statement and Proposed Rule Revising Generic Determination on the Environmental Impacts of the Continued Storage of Spent Nuclear Fuel Beyond Reactor License Life for Operation**

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Dear Rulemakings and Adjudications Staff:

Please accept the following comments on behalf of Riverkeeper, Inc. (“Riverkeeper”) on the above-referenced NRC Draft Waste Confidence Generic Environmental Impact Statement (“DGEIS”) and proposed revisions to NRC’s regulations for implementing the National Environmental Policy Act (“NEPA”) regarding environmental impacts of spent fuel storage (“proposed rule”).<sup>1</sup> Riverkeeper has submitted comments on NRC’s DGEIS and proposed rule in conjunction with numerous other environmental organizations,<sup>2</sup> and submits these additional comments in order to discuss NRC’s failure to address critical site-specific concerns related to the Indian Point nuclear power plant, as well as the overall deficiency of the determination in the DGEIS that a generic assessment of future spent fuel pool leaks and fires complies with NEPA and the ruling of the D.C. Circuit Court of Appeals that led to this rulemaking (herein referred to

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<sup>1</sup> Draft Waste Confidence Generic Environmental Impact Statement, 78 Fed. Reg. 56,621 (Sept. 13, 2013); Waste Confidence—Continued Storage of Spent Nuclear Fuel, Proposed Rule, 78 Fed. Reg. 56,776 (Sept. 13, 2013); Waste Confidence - Continued Storage of Spent Nuclear Fuel; Extension of Comment Period, 78 Fed. Reg. 66,858 (Nov. 7, 2013).

<sup>2</sup> See Comments by Environmental Organizations on Draft Waste Confidence Generic Environmental Impact Statement and Proposed Waste Confidence Rule And Petition to Revise and Integrate All Regulations Related to Back End of the Uranium Fuel Cycle (December 20, 2013). Commenting organizations include Friends of the Earth, Public Citizen, Physicians for Social Responsibility, Hudson River Sloop Clearwater and others.

as “Court Ruling”).<sup>3</sup> Please note that all documents referenced, cited to, linked, or otherwise referred to as support for these comments are hereby incorporated by reference in their entirety into the record of this NEPA review.<sup>4</sup>

## **I. RIVERKEEPER’S INTEREST**

Riverkeeper is a non-profit, membership-supported, environmental advocacy organization dedicated to the protection of the environmental, recreational, and commercial integrity of the Hudson River and its tributaries, as well as the drinking water of nine million New York City and Hudson Valley residents. Since its inception in 1966, Riverkeeper has used litigation, science, advocacy, and public education to raise and address concerns relating to the environmental impacts caused by the operation of the Indian Point nuclear power plant. Riverkeeper is headquartered in Ossining, New York, approximately 10 miles from the Indian Point facility, and has approximately 8,000 members and/or subscribers that reside within at least 50 miles of the plant and who are concerned about the environmental impacts of Indian Point.

Since the terrorist attacks of September 11<sup>th</sup>, as well as the Fukushima Daiichi nuclear disaster, Riverkeeper has become increasingly concerned with, and proactive about, the environmental, safety, and security issues posed by the dangerous volume of ever-accumulating irradiated fuel being stored onsite at Indian Point. Riverkeeper has been actively involved in advocacy and litigation relating to the impacts and risks of long-term or indefinite onsite nuclear waste storage in vulnerable and/or degraded onsite storage structures at Indian Point, including probable radiological leaks and releases to the surrounding environment over time, and spent fuel pool fire and accident risks. As an intervenor in, *inter alia*, the Indian Point license renewal proceeding before the NRC, Riverkeeper has raised and litigated site-specific concerns about the environmental and safety implications of nuclear waste storage and radiological leakage at Indian Point. In addition, Riverkeeper has been recognized as a national stakeholder in Federal government activities related to radiological leakage and environmental contamination issues occurring at nuclear plants across the country.

Riverkeeper is, thus, uniquely situated to provide NRC with the following detailed comments on the long-term nuclear waste storage issues discussed in the DGEIS and implicated by the proposed rule.

## **II. DISCUSSION**

The NRC’s DGEIS contains a deficiently generic analysis of the impacts of long-term and indefinite onsite nuclear waste storage to purportedly support the proposed rule, which, if adopted, would preclude site-specific NEPA analyses for future nuclear power reactor, reactor license renewal, and spent fuel storage facility licensing actions.<sup>5</sup> The DGEIS fails to recognize

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<sup>3</sup> See *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012).

<sup>4</sup> All documents cited herein are in the public domain, and should be easily obtained by NRC Staff reviewing these comments. Riverkeeper will provide any documents cited herein in their entirety at the request of NRC Staff, as needed.

<sup>5</sup> See, e.g., DGEIS at xxiv (“The proposed action is to issue a rule, 10 CFR 51.23, that generically addresses the environmental impacts of continued spent fuel storage by incorporating into rule the conclusions of the final version

and assess critical site-specific concerns related to the impacts of onsite nuclear waste storage, and as a result does not take the “hard look” required by NEPA. That is, NRC has presented an allegedly conservative bounding assessment, however the bounding parameters used were not broad enough to cover various site-specific concerns. As a result, the DGEIS is fundamentally flawed, and NRC has demonstrably failed to justify the generic proposed rule and future preclusion of the consideration of site-specific issues relating to nuclear waste storage.<sup>6</sup> In order to comply with NEPA, the NRC should specifically require site specific review of the impacts of future spent fuel pool leaks, and the risk and consequences of pool fires in all licensing proceedings.<sup>7</sup>

In particular, the operation of the Indian Point nuclear power plant implicates a variety of site-specific concerns that have not been adequately accounted for or analyzed in the DGEIS. The Indian Point facility faces a unique set of circumstances and challenges which exacerbate concerns related to nuclear waste storage at the site. Yet, such issues have not been adequately “bounded” or otherwise accounted for by the discussion in the DGEIS.

## **A. Site-Specific Considerations at Indian Point**

### *1. Plant Location*

Indian Point is located in Buchanan, Westchester County, NY just 24 miles north of New York City proper and 35 miles north of midtown Manhattan. The 50-mile radius around the plant encompasses NYC, which has a population of over 8 million people.<sup>8</sup> With over 17 million

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of this draft GEIS. If the proposed Rule is adopted, the site-specific NEPA analyses for future commercial power reactor and spent fuel storage facility licensing actions would not need to consider the environmental impacts of continued storage.”).

<sup>6</sup> See *New York v. NRC*, 681 F.3d at 480-81 (explaining that a generic analysis must be “thorough and comprehensive” and that a generic rulemaking is considered appropriate where “conservative bounding assumptions” are used *and* there is “the opportunity for concerned parties to raise site-specific differences at the time of a specific site’s licensing).

<sup>7</sup> It is critical to note that in the Court Ruling, while not agreeing with Petitioners that site specific review was required, the Court did not specifically prohibit the NRC from conducting site specific analyses in the DGEIS. *Id.* at 480-81. On the contrary, while the Court Ruling states that “a comprehensive general analysis” might be sufficient to “examine onsite risks that are essentially common to all plants,” it also states the following; “Nonetheless, whether the analysis is generic or site by site, it must be thorough and comprehensive.” *Id.* at 481-82. Moreover, the justification for the Court permitting a generic analysis included the notion that that site specific issues could be raised by intervenors at the time of a specific site’s licensing action. *Id.* at 480-81. However, the proposed rule at issue here, supported by the facially deficient DGEIS, would expressly *prohibit* such site specific analysis of the environmental impacts of spent fuel storage in all future licensing proceedings, which clearly undermines the basis for a generic analysis.

<sup>8</sup> See Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (NUREG-1437, Supplement 38), *available at*, <http://pbadupws.nrc.gov/docs/ML1033/ML103350405.pdf>, at p.2-1 (“The area within a 50-mi (80-km) radius of the site includes parts of New York, New Jersey, and Connecticut. New York City, located approximately 24 mi (39 km) south of the plant, is the largest city within 50 mi (80 km) with a 2006 population of approximately 8,214,426 (USCB 2006).”).

people living within the 50-mile radius of Indian Point, the plant has, by far, the highest surrounding population density of all the nuclear power reactors in the United States.<sup>9</sup>

Thus, Indian Point is situated just minutes from one of, if not, the world's leading financial, cultural, and socio-economic centers. Various affluent areas surround or are in the vicinity of the plant, which command high property values.

In addition, two of New York City's most important drinking water reservoirs are located less than ten miles and approximately twenty one miles from Indian Point.<sup>10</sup> Nine million people depend on the safety of that water supply every day.

## 2. *Emergency Preparedness Concerns*

The incredibly ill-suited location of Indian Point makes emergency evacuation all but impossible. As stated by a director of the NRC over 30 years ago: "it is insane to have a three-unit reactor on the Hudson River in Westchester County, 40 miles from Times Square, 20 miles from the Bronx... [Indian Point is] one of the most inappropriate sites in existence."<sup>11</sup>

The high surrounding population around the facility results in significant traffic congestion that would prevent authorities from evacuating the residents living within the artificially small ten-mile Emergency Planning Zone ("EPZ") (let alone the residents beyond that zone) in the event of an emergency. Roads and bridges would not be able to handle the amount of traffic leaving the 10-mile radius and beyond in an emergency situation.<sup>12</sup> According to an independent analysis of Indian Point's emergency plans commissioned by former New York Governor George Pataki in 2003 and authored by former FEMA director James Lee Witt, the radiological emergency plan for Indian Point is badly flawed, unworkable and key components are unfixable. Witt found that "the current radiological response system and capabilities are not adequate to . . . protect the people from an unacceptable dose of radiation in the event of a release from Indian Point."<sup>13</sup> On

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<sup>9</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (NUREG-1437, Supplement 38), *available at*, <http://pbadupws.nrc.gov/docs/ML1033/ML103350405.pdf>, at p.2-124 ("Approximately 16,791,654 people live within 50 mi (80 km) of IP2 and IP3"); *See also* Bill Dedman, *Nuclear Neighbors: Population Rises Near US Reactors*, NBC New.com, [http://www.nbcnews.com/id/42555888/ns/us\\_news-life/t/nuclear-neighbors-population-rises-near-us-reactors/#.UrNSx8Kx7IU](http://www.nbcnews.com/id/42555888/ns/us_news-life/t/nuclear-neighbors-population-rises-near-us-reactors/#.UrNSx8Kx7IU) (last accessed Dec. 19, 2013).

<sup>10</sup> The New Croton Reservoir is approximately 9.4 miles from Indian Point, and is the primary reservoir for the "East of Hudson" water supply for New York City. The Kensico Reservoir, which serves as the terminus surface water storage reservoir for the entire East and West of Hudson water systems for New York City, is approximately 21 miles from Indian Point. *See* NYC DEP, Kensico, [http://www.nyc.gov/html/dep/html/watershed\\_protection/kensico.shtml](http://www.nyc.gov/html/dep/html/watershed_protection/kensico.shtml) (last accessed Dec. 20, 2013).

<sup>11</sup> *Report of the Office of the Chief Counsel on Emergency Preparedness to the President's Commission on the Accident at Three Mile Island*, October 31, 1979, p. 5.

<sup>12</sup> *See, e.g.*, Randi Weiner & Steve Lieberman, *Multiple Accidents Close Tappan Zee, Snarl Traffic for Hours*, The Journal News, July 28, 2007 (reporting two accidents—one on each side of the Tappan Zee Bridge, and a raft of fender-benders that blocked breakdown lanes and hindered commuters for hours).

<sup>13</sup> Review of Emergency Preparedness of Areas Adjacent to Indian Point and Millstone, p. viii, James Lee Witt Associates, 2003, *accessible at*, <http://www.riverkeeper.org/about-us/publications/reports/>, under the "Indian Point Reports" toggle (last accessed Dec. 20, 2013).



October 8, 2013 a panel of nuclear experts, including the former chairman of the NRC, Gregory Jaczko, confirmed that alleged emergency plans at Indian Point are not designed to protect the public from unhealthy doses of radiation and that it would be best if the plant closes down.<sup>14</sup> Thus, the absence of a workable emergency evacuation plan puts the public around the plant at immense risk in the event of an emergency.

### 3. Significance of the Surrounding Ecology

Indian Point is located in an area of high ecological significance. The plant is situated on the eastern banks of the Hudson River estuary, which is home to “an extraordinarily rich variety of fish species,” “one of the major spawning grounds for several commercially significant Atlantic species,” and “many important wildlife habitats.”<sup>15</sup> Indian Point sits directly in front of and adjacent to designated Significant Coastal Fish and Wildlife Habitat (i.e., the “Hudson Highlands” habitat), as well as slightly upstream of Haverstraw Bay, which is also a designated Significant Coastal Fish and Wildlife Habitat (“SCFWH”).<sup>16</sup> The Hudson Highlands SCFWH, *inter alia*, “provides highly favorable conditions for reproduction by coastal migratory fishes, especially striped bass,” is used as a migrational route for endangered shortnose and Atlantic sturgeon species, and provides an important nursery and summering area for endangered Atlantic sturgeon.<sup>17</sup> The Haverstraw Bay SCFWH, *inter alia*, “regularly comprises a substantial part of the nursery area for striped bass . . . American shad . . . white perch . . . Atlantic tomcod . . . and Atlantic sturgeon,” provides habitat for numerous fish species, is a major nursery and feeding area for bay anchovy, Atlantic menhaden, and Atlantic blue crab, and provides spawning and wintering grounds for endangered shortnose and Atlantic sturgeon.<sup>18</sup>

Importantly, the State of New York Department of Environmental Conservation (“NYSDEC”) has a number of regulations and standards which provide for the protection of surface waters as well as groundwaters in the State, including the Hudson River and groundwater beneath Indian Point. In particular, NYSDEC has designated the waters of the Hudson River in the vicinity of Indian Point to be suitable as aquatic habitat as well as for primary and secondary contact recreational activities, i.e., swimming, fishing, boating, etc.<sup>19</sup> Further, even though the

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<sup>14</sup> See Jim Polson & Peter Ward, *Indian Point Nuclear Plant Should be Shut, Jaczko Says*, Bloomberg News (Oct. 8, 2013), available at, <http://www.bloomberg.com/news/2013-10-08/indian-point-nuclear-plant-should-be-shut-jaczko-says.html> (last visited Oct. 28, 2013).

<sup>15</sup> NOAA, Office of Coastal Zone Management, *New York State Coastal Management Program and Final Environmental Impact Statement*, available at, <http://www.dos.ny.gov/communitieswaterfronts/pdfs/NY%20CMP%20.pdf> at § II-2, 6-7.

<sup>16</sup> See Coastal Fish and Wildlife Rating Form, Hudson Highlands (Revised Aug. 15, 2012), available at, [http://www.dos.ny.gov/communitieswaterfronts/consistency/Habitats/HudsonRiver/Hudson\\_Highlands\\_FINAL.pdf](http://www.dos.ny.gov/communitieswaterfronts/consistency/Habitats/HudsonRiver/Hudson_Highlands_FINAL.pdf) (last visited Oct. 27, 2013) (hereinafter “Hudson Highlands SCFWH Rating Form”); Coastal Fish and Wildlife Rating Form, Haverstraw Bay (Revised Aug. 15, 2012), available at, [http://www.dos.ny.gov/communitieswaterfronts/consistency/Habitats/HudsonRiver/Haverstraw\\_Bay\\_FINAL.pdf](http://www.dos.ny.gov/communitieswaterfronts/consistency/Habitats/HudsonRiver/Haverstraw_Bay_FINAL.pdf) (last visited Oct. 27, 2013) (hereinafter “Haverstraw Bay SCFWH Rating Form”).

<sup>17</sup> See generally Hudson Highlands SCFWH Rating Form.

<sup>18</sup> See generally Haverstraw Bay SCFWH Rating Form.

<sup>19</sup> The varying classifications of the Hudson River, all designate fishing as a “best usage.” See 6 N.Y.C.R.R. §§ 701.5, 701.6, 701.7, 701.8, 701.11, 701.13; See 6 N.Y.C.R.R. § 864.6 (classifying the portion of the Hudson River

groundwater at Indian Point is not used for drinking water purposes, it is designated under state law as “GA fresh groundwaters”<sup>20</sup> which NYSDEC requires to be suitable “as a source of potable water supply.”<sup>21</sup> Moreover, a NYSDEC narrative standard applicable to groundwater dictates that deleterious substances not “impair the waters for their best usages.”<sup>22</sup> So, the groundwater beneath Indian Point must not be impaired for use as drinking, culinary, or food processing water, notwithstanding whether the groundwater is *actually* used for such purposes.

#### 4. Seismic Conditions at Indian Point

A 2008 study by seismologists at Columbia University’s Lamont Doherty Earth Institute revealed that the area around Indian Point is not an inactive seismic area, as previously thought. Instead, the study found that, in addition to the Ramapo earthquake fault that Indian Point sits directly on top of, there is another, previously unknown earthquake fault, labeled the Stamford-Peekskill seismic line, that runs just slightly north of Indian Point. The study concluded that the area where Indian Point is located is susceptible to an earthquake of up to 7.0 in magnitude,<sup>23</sup> even though the plant was not built to withstand an earthquake of this magnitude.<sup>24</sup>

Furthermore, an NRC report from August 2010 (in conjunction with supplemental data regarding power plants not reviewed in the report) indicated that Indian Point Unit 3 has the *highest* risk of seismic related core damage than any other nuclear power plant in the country.<sup>25</sup>

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from the New York State Bronx County line to Bear Mountain Bridge as “Class SB saline surface waters”); 6 N.Y.C.R.R. § 701.11 (“The best usages of Class SB waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival.”).

<sup>20</sup> 6 N.Y.C.R.R. §§ 701.18, 701.15; *See* Entergy’s Detailed Responses to the New York State Department of Environmental Conservation’s Request for Information, dated May 13, 2009) at 8, *available at*, [http://www.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/elecbrdrdetresp.pdf](http://www.dec.ny.gov/docs/permits_ej_operations_pdf/elecbrdrdetresp.pdf).

<sup>21</sup> 6 N.Y.C.R.R. § 701.15; Potable water” is defined as “those fresh waters usable for drinking, culinary or food processing purposes.” 6 N.Y.C.R.R. § 700.1(a)(48).

<sup>22</sup> 6 N.Y.C.R.R. § 703.2.

<sup>23</sup> Lynn R. Sykes, John G. Armbruster, Won-Young Kim, & Leonardo Seeber, Observations and Tectonic Setting of Historic and Instrumentally Located Earthquakes in the Greater New York City–Philadelphia Area, *Bulletin of the Seismological Society of America*, Vol. 98, No. 4, pp. 1696–1719, August 2008; *see also* The Earth Institute, Columbia University, “Earthquakes May Endanger New York More than Thought, Says Study: Indian Point Nuclear Power Plant Seen as Particular Risk,” Press Release Posted on The Earth Institute website, August 21, 2008, *available at*, <http://www.earth.columbia.edu/articles/view/2235> (last visited December 19, 2013).

<sup>24</sup> The Environmental Impact Study conducted for Indian Point’s original construction and operation presumed that the site was located in an inactive seismic zone, and thus was built to withstand an earthquake from 3.0 to 5.0 on the Richter scale.

<sup>25</sup> *See* Generic Issue 199 (GI-199), Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants Safety/Risk Assessment, August 2010, at Appendix D (Seismic Sore-Damage Frequencies), *available at*, ADAMS Accession Nos. ML100270639, ML100270756; Bill Dedman, *What are the odds? US nuke plants ranked by quake risk*, March 17, 2011, *available at*, [http://www.msnbc.msn.com/id/42103936/ns/world\\_news-asia-pacific/](http://www.msnbc.msn.com/id/42103936/ns/world_news-asia-pacific/) (last visited Dec. 19, 2013).

## 5. *Safety and Security Risks*

From a safety and security perspective, Indian Point is a highly mismanaged plant that poses an incredible risk to the region. Indian Point consistently operates in an unsafe manner, including pursuant to many regulatory exemptions, such as fire safety exemptions, which reduce critical safety margins at the plant. Notably, Indian Point was recently determined to be the plant with the highest number of violations of any operating reactor in the country.<sup>26</sup> The plant is highly degraded, with components consistently succumbing to breakdown and malfunction: in 2001 a steam generator tube ruptured causing Indian Point Unit 2 to remain shut down for almost a year; in 2007 a degraded transformer of Unit 3 exploded and just two years later in 2010, a Unit 2 transformer exploded;<sup>27</sup> and over the past twelve years both reactors have suffered numerous unplanned shutdowns. As the plant continues to operate, aging related degradation will continue to occur and, in accordance with the bathtub curve principle, actually accelerate.

Security at the plant is, likewise, abysmal. Recent analyses have adjudged Indian Point to be vulnerable to and inadequately protected against intentional terrorist attacks.<sup>28</sup> A 2007 Report by Gordon Thompson, Ph.D. related to the risks of continuing to operate Indian Point explains the vulnerability of the spent fuel pools at Indian Point to intentional attacks, the credible threat environment, and the likelihood of acts of malice occurring at Indian Point.<sup>29</sup> Likewise a 2004 report by Edwin Lyman, *Chernobyl on the Hudson: the Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Plant*,<sup>30</sup> explains the justified concerns about a potential terrorist attack at Indian Point.<sup>30</sup> Importantly, Indian Point faces a uniquely high probability of attack due to the location of the plant.<sup>31</sup>

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<sup>26</sup> Associated Press, *Report: NY Plant Had Most Nuclear Violations in US* (Oct. 15, 2013), <http://online.wsj.com/article/AP5fc1534dab524315b3ccdf1ec8ec79cc.html> (last visited Dec. 19, 2013).

<sup>27</sup> See NRC Information Notice 2009-10: Transformer Failures-Recent Operating Experience, available at, <http://pbadupws.nrc.gov/docs/ML0905/ML090540218.pdf> (“Indian Point, Unit 3—On April 6, 2007, while operating at 92-percent power, a fault occurred on the No. 31 main transformer resulting in an automatic reactor trip and transformer fire.”); NRC Event Notification Report 46400 (November 7, 2010), available at, <http://pbadupws.nrc.gov/docs/ML1101/ML110190640.pdf> (“At 1849 EST, the licensee declared an Alert due to an explosion in the 21 Main Transformer. As a result of the loss of the transformer, Unit 2 experienced a reactor trip.”).

<sup>28</sup> See, e.g., Lara Kirkham & Alan Kuperman, Protecting U.S. Nuclear Facilities from Terrorist Attack: Re-assessing the Current “Design Basis Threat” Approach, Nuclear Proliferation Prevention Project (Working Paper #1 August 15, 2013), available at, <http://blogs.utexas.edu/nppp/files/2013/08/NPPP-working-paper-1-2013-Aug-15.pdf>; (acknowledging “that NRC licensees might be unable to provide adequate security measures to satisfy” design basis threats “due to economic or statutory constraints” and arguing that the government needs to “provide the necessary supplementary security, which currently does not occur in many cases, rather than to reduce artificially the posited threat as now is done.”).

<sup>29</sup> Gordon Thompson, Risk-Related Impacts from Continued Operation of the Indian Point Nuclear Power Plants (Institute for Resource and Security Studies, 2007), available at, <http://pbadupws.nrc.gov/docs/ML1209/ML120970089.pdf> (hereinafter “Thompson, Risk-Related Impacts”).

<sup>30</sup> Edwin S. Lyman, *Chernobyl on the Hudson? The Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Plant* (September 2004), available at, [http://www.ucsusa.org/assets/documents/nuclear\\_power/indianpointthealthstudy.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/indianpointthealthstudy.pdf) (hereinafter “Lyman, Chernobyl on the Hudson”).

<sup>31</sup> For example, the 9/11 Commission Report revealed that the mastermind of the 9/11 attacks had originally planned to hijack additional aircrafts to crash into targets, including nuclear power plants, but wrongly believed the plants

In addition, numerous current and former Indian Point employees, including security staff, have come forward as whistleblowers recently, highlighting inadequate training and deficient security systems and procedures that clearly leave the plant susceptible to human error as well as malicious acts. Repeated reports of faulty security systems, failed security exercises, and overworked guards found asleep at their posts raise grave concerns about the susceptibility of the facility, particularly the unhardened spent fuel pools, to terrorist attack.<sup>32</sup> In addition, there have been several instances of Entergy employees being prosecuted for theft and falsification of records related to the safe operation of the plant.<sup>33</sup>

#### 6. A History of Spent Fuel Pool and Other Radiological Leaks

Accidental radiological leaks and spills have been a rampant and pervasive problem at Indian Point for decades, and will likely continue as long as the reactors operate and spent fuel is stored in the facility's aging pools.<sup>34</sup> Leaks from Indian Point's Unit 2 spent fuel pool started occurring

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were heavily defended. See Nat'l Comm'n on Terrorist Attacks Upon the U.S., *The 9/11 Commission Report* (2004), available at, <http://www.9-11commission.gov/report/911Report.pdf>, at 154. This report indicates that the terrorists were considering attacking a specific nuclear facility in New York, most likely Indian Point, which one of the pilots had seen during a familiarization flight near New York. *Id.* at 245.

<sup>32</sup> See My Fox New York Staff, *Guards raise concerns about security at Indian Point* (Nov. 14, 2013), <http://www.myfoxny.com/story/23975312/guards-raise-concerns-about-security-at-indian-point> (last visited Dec. 19, 2013); Roger Witherspoon, *NRC Probes Security Failings at Indian Point* (Nov. 22, 2013), <http://www.newjerseynewsroom.com/science-updates/nrc-probes-security-failings-at-indian-point-power-plant> (last visited Dec. 19, 2013); Shawn Cohen, *Second Indian Point worker charged in copper wire theft* (Jan. 26, 2013), <http://www.lohud.com/article/20130127/NEWS02/301250115/Second-Indian-Point-worker-charged-copper-wire-theft> (last visited Dec. 19, 2013).

<sup>33</sup> For example, see the following: Shawn Cohen, *Second Indian Point worker charged in copper wire theft* (Jan. 26, 2013), <http://www.lohud.com/article/20130127/NEWS02/301250115/Second-Indian-Point-worker-charged-copper-wire-theft> (last visited Dec. 19, 2013); *Ex-supervisor at Indian Point nuclear plant charged with fabricating fuel tests*, NY Daily News, July 23, 2013, <http://www.nydailynews.com/new-york/ex-supervisor-indian-point-nuclear-plant-charged-fabricating-fuel-tests-article-1.1406963>; *Indian Point Nuclear Plant Worker Pleads Guilty After Attempt To Cover Up Diesel Fuel Contamination*, AP, Oct. 17, 2013, [http://www.huffingtonpost.com/2013/10/17/indian-point-nuclear-diesel-cover-up\\_n\\_4115227.html](http://www.huffingtonpost.com/2013/10/17/indian-point-nuclear-diesel-cover-up_n_4115227.html), also <http://www.justice.gov/usao/nys/pressreleases/July13/WilsonDanielComplaint.php>; *NRC: Indian Point Worker Falsified Background Check Letter*, Hudson Valley Reporter, Nov. 21, 2013, <http://hudsonvalleyreporter.com/westchester/buchanan/2013/11/nrc-indian-point-worker-falsified-background-check-records/>.

<sup>34</sup> A thorough factual record relating to the long and persistent history of inadvertent radiological releases at Indian Point is discussed in a post-hearing brief submitted by Riverkeeper in a proceeding pending before the New York State Department of Environmental Conservation concerning the request by the owner of Indian Point, Entergy, for a Water Quality Certification pursuant to Section 401 of the Federal Clean Water Act; in that proceeding, an issue related to whether radiological releases from Indian Point are consistent with State water quality standards was raised. See Post-Hearing Closing Brief of Intervenors Riverkeeper, Natural Resources Defense Council, and Scenic Hudson Regarding Issue for Adjudication No. 3 – Radiological Materials (April 27, 2012), available at, <http://www.riverkeeper.org/wp-content/uploads/2012/12/2012.04.27.Indian-Point-401-SPDES-Proceedings-Riverkeeper-Closing-Brief-Radiological.pdf> (hereinafter cited as “Riverkeeper Post-Hearing Brief on Radiological Materials”). This brief supports the factual statements herein related to radiological leakage issues at Indian Point, and is hereby incorporated by reference in its entirety into the record of this NEPA review.

in the 1990s.<sup>35</sup> In 2005, Entergy “discovered” that the Unit 2 pool was cracked and actively leaking. A follow-up hydrogeologic investigation, during which additional leakage sources from the Unit 2 pool were found, uncovered an extensive groundwater plume of tritium, from which it could be gleaned that the Unit 2 pool had been leaking radioactivity to the groundwater for years. Despite Entergy’s representations that it “fixed” the Unit 2 spent fuel pool leaks, in 2010 yet another, *new*, active leak source from the pool was discovered. Moreover, Entergy has never been able to inspect about 40% of the liner of the Unit 2 pool due to the density of the fuel, and Entergy concedes that other active leaks are likely ongoing. It is highly likely that the Unit 2 spent fuel pool will continue to leak radioactivity into the environment as Indian Point continues to operate: Entergy has no intention of ever conducting any full inspections of the Unit 2 spent fuel pool liner, or even any additional partial inspections that could detect potential leak sources; the pool has no “tell-tale” drain collection system which allows any leaks to be collected and monitored; the Unit 2 pool will continue to age and degrade since it is subject to the bathtub curve effect; and the owner of Indian Point, Entergy, employs a purely reactive approach that will discover leaks from the pool only *after* they occur.

Leaks from the Unit 1 spent fuel pools were also first discovered in the 1990s.<sup>36</sup> The previous owner of Unit 1 attempted to manage the leakage with a collection system. However, in 2006, Entergy discovered that this system had been failing and allowing highly toxic radioactive contaminants, including Strontium-90, Cesium-137, Nickel-63, and Cobalt-60, to be released to the environment at a rate of about 70 gallons/day. This rampant leakage only ceased at the end of 2008 when Entergy completed moving the fuel out of, and draining, the leaking Unit 1 pool. Entergy’s hydrogeologic investigation, spurred by the discovery of Unit 2 spent fuel pool leakage, uncovered that the leaks from the Unit 1 pools that began in the 1990s and continued until the end of 2008 had resulted in an extensive additional plume of contamination in the groundwater at Indian Point containing the aforementioned radionuclides. This plume commingles with the tritium plume generated by the Unit 2 spent fuel pool leaks. Moreover, despite the fact that no *new* radionuclides are being introduced from the Unit 1 pool, the previous contamination is retained in the subsurface, and will continue to be released into the groundwater, and subsequently into the Hudson River, indefinitely.

In addition, over the course of Indian Point’s over 40 years of operation, numerous radiological leaks and spills have occurred and resulted in releases of radioactivity. This includes, but is not limited to the following:<sup>37</sup>

- In 1988, 8,400 gallons of radioactively contaminated water was released to the Hudson River as the result of a crack in the condenser blowdown line Unit 2;
- In 2009, a Unit 1 distillation tank valve leaked enough radioactivity to cause noticeable increases in a groundwater monitoring well;
- In 2009, a refueling water storage tank spilled radioactive water, causing greatly elevated levels of radioactivity in the groundwater wells for several months;

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<sup>35</sup> For a discussion of Indian Point Unit 2 spent fuel pool leaks, see generally Riverkeeper Post-Hearing Brief on Radiological Materials at 24-29.

<sup>36</sup> For a discussion of Indian Point Unit 1 spent fuel pool leaks, see generally Riverkeeper Post-Hearing Brief on Radiological Materials at 30-33.

<sup>37</sup> See Riverkeeper Post-Hearing Brief on Radiological Materials at 33-38.

- In 2009, a plant worker “discovered” that a pipe buried eight feet underground had sprung a leak when he found himself standing in a puddle of water; the leak resulted in an estimated 100,000 gallons of radioactive water to be released to the environment;
- In 2009, Entergy discovered radioactive “washout” occurring at Indian Point, i.e., airborne tritium releases caused by radioactive leaks that evaporate, release via vents, and then condense and deposit in the environment; and
- In 2011, Entergy identified elevated levels of radioactivity in the groundwater; it took Entergy months to discern that the cause was a leak in a recirculation pump.

Inadvertent radiological leaks at Indian Point have resulted in two large commingled groundwater contamination plumes containing a number of different dangerously toxic radionuclides. Notably, Strontium-90 is a radionuclide that is absorbed by and concentrates in bone, while Cesium-137 is absorbed by muscle; tritium behaves like, and cannot be filtered out of, water, and can be ingested, inhaled, or absorbed through skin.

The levels of contamination in the groundwater at Indian Point persist at high levels.<sup>38</sup> For example, since groundwater monitoring started at Indian Point, Entergy has regularly detected levels of radionuclides in the groundwater beneath Indian Point in excess of maximum contaminant levels (“MCLs”) established by the U.S. Environmental Protection Agency (“EPA”) for radionuclides in drinking water. This is a trend that is likely to continue. Indeed, the levels of contamination in the groundwater will periodically increase even in the absence of new radioactive leakage due to episodic releases of radionuclides that are stored in the subsurface. Moreover, any new radioactive leaks that may occur in the future will indisputably add to the existing groundwater contamination, prevent the groundwater plumes from decreasing over time, and/or increase the overall levels of the plumes. To be sure, future radiological leaks from varying plant components are highly likely at Indian Point due to combination of factors, including the following: (1) Entergy has a completely inadequate program for managing and preventing leaks from buried components, which the U.S. government has explained are increasingly aging and likely to corrode and leak in the future; (2) Entergy employs a completely reactive approach to the management of radiological leaks at Indian Point, relying on groundwater monitoring to detect leaks *well after* they occur, which essentially ensure that leaks enter the environment, and/or waiting until critical circumstances arise to address operational leakage related events; and (3) Entergy has deficient, inadequately funded maintenance programs which result in insufficient leak management. Thus, the continued operation of Indian Point will foreseeably lead to additional radioactive leaks from plant systems, structures and components, and, as a result thereof, persistent and ever-accumulating contamination in the groundwater beneath the site.

Notably, it is undisputed that the groundwater contamination at Indian Point already migrates and releases to the Hudson River, regularly contributing to the levels of radioactivity present in the river.<sup>39</sup> In fact, Entergy relies on monitored natural attenuation (“MNA”) to “manage” the

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<sup>38</sup> For a general discussion of the persistent nature of contamination plumes at Indian Point, see Riverkeeper Post-Hearing Brief on Radiological Materials at 38-56.

<sup>39</sup> For a general discussion of the movement of the radiological contamination at Indian Point, see Riverkeeper Post-Hearing Brief on Radiological Materials at 56-60.

radiological contamination at Indian Point, and will continue to do so *at least* throughout Entergy's proposed license renewal periods for Indian Point. This means that the existing, as well as any future, new groundwater contamination will remain in the groundwater until it flushes out into to the Hudson River or decays. Entergy's approach ensures that radioactive groundwater contamination will release to the Hudson River for upwards of centuries. Notably, Entergy has refused to extract the contamination so as to better minimize the impact of the groundwater contamination on the environment, despite the fact that such a remediation approach is technically feasible and advisable.

## **B. NRC's Assessment of the Impacts of Nuclear Waste Storage in the DGEIS Fails to Account for These Critical Site-Specific Concerns**

### *1. Indian Point Site-Specific Factors are Highly Relevant to Assessing Spent Fuel Pool Accident and Fire Risks and Consequences*

The NRC's analysis of spent fuel pool fires in Appendix F of the DGEIS employs a generic approach that improperly fails to consider or "bound" the impacts that could occur in light of the site-specific factors discussed above. In particular, in light of the site-specific factors explained above, a spent fuel pool-related accident and/or fire at Indian Point may result in more broad-ranging, intense, and severe impacts than have been "studied" or accounted for in the DGEIS. It is well-established that the environmental impacts of catastrophic spent fuel pool fires, resulting from any of a variety of unforeseen circumstances, can be quite severe and encompass enormous geographic areas, and last for decades.<sup>40</sup> Thus, if a spent fuel pool accident and/or fire occurred at Indian Point, given the unique circumstances surrounding the plant, the impacts would be considerable.

For example: the high population density surrounding Indian Point, coupled with the complete inadequacy of emergency evacuation procedures, means that the public health impacts of a severe, beyond design basis radiological release would be severe and potentially catastrophic. Moreover, because Indian Point is located near NYC, i.e., an area encompassing high value real estate, a spent fuel pool-related accident would result in severe economic impacts to the New York City metropolitan area and quite possibly the nation as a whole. Dr. Edwin Lyman has explained that the "radiological exposure of the population and corresponding long-term health consequences" from a catastrophic release of radioactive material "could be extremely severe, even for individuals well outside of the 10-mile emergency planning zone"; Dr. Lyman calculated "that over 500,000 latent cancer fatalities could occur under certain meteorological conditions" and that "even in the case of 100% evacuation within the 10-mile EPZ and 100% sheltering between 10 and 25 miles, the consequences could be catastrophic for residents of New

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<sup>40</sup>See Dr. Jan Beyea, *Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-Fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant* (May 25, 2006), available at, <http://pbadupws.nrc.gov/docs/ML1209/ML1209A181.pdf>; NRDC, *Nuclear Accident at Indian Point: Consequences and Costs*, available at, [http://www.nrdc.org/nuclear/indianpoint/files/NRDC-1336\\_Indian\\_Point\\_FSR8medium.pdf](http://www.nrdc.org/nuclear/indianpoint/files/NRDC-1336_Indian_Point_FSR8medium.pdf); Thompson, *Risk-Related Impacts*; see also German Reactor Safety Org., *Protection of German Nuclear Power Plants Against the Background of the Terrorist Attacks in the U.S. on Sept. 11, 2001* (Nov. 27, 2002) (finding that large jetliners crashing into nuclear facilities under different scenarios could cause uncontrollable situations and the release of radiation); Lyman, *Chernobyl on the Hudson*, *supra* Note 30.

York City and the entire metropolitan area” and that “[t]he economic impact and disruption for New York City residents . . . could be immense, involving damages from hundreds of billions to *trillions* of dollars, and the *permanent displacement of millions of individuals*.”<sup>41</sup> A 2011 analysis by the Natural Resources Defense Council conducted after the Fukushima Daichi disaster explains that “[a]n accident at one of Indian Point’s reactors on the scale of the recent catastrophe in Japan [which involved spent fuel pool failures] could cause a swath of land down to the George Washington Bridge to be uninhabitable for generations due to radiation contamination.”<sup>42</sup> The economic and social significance of rendering the NYC metro area *uninhabitable*, as well as drinking water supplies unusable, cannot be overstated. Moreover, a SFP accident could also devastate the unique critical and significant surrounding ecosystems of the historic Hudson River.

Despite the inherent uniqueness of the risks at Indian Point, the DGEIS bases its generic spent fuel pool fire analysis on a single pool fire at the Surry Nuclear Plant in Virginia.<sup>43</sup> The differences between the Indian Point and Surry reactor sites could not be more stark. For example, the Environmental Report for Surry’s license renewal review states that less than 400,000 people live within 20 miles of the reactor, equating to 294 persons per square mile.<sup>44</sup> Surry has less than two million people living within a 50 mile radius.<sup>45</sup> In contrast, the EIS for Indian Point’s license renewal states that, over one million people live within 20 miles, and approximately 17 million people live within a fifty mile radius.<sup>46</sup> Within Indian Point’s twenty mile radius, the population density is 886 persons per square mile, nearly three times as many as live near Surry. The NRC ignores this enormous population difference entirely in the DGEIS, and inexplicably relies on the Surry Plant as a generic baseline site for its spent fuel pool fire risk and consequence analysis. Clearly, the consequences of a spent fuel pool fire would be much more severe at Indian Point than they would at Surry, given the potential numbers of people living in proximity to Indian Point. In addition, the Surry base case utilized by NRC assumes a single pool fire, despite the fact that Indian Point and many other reactor sites have multiple reactors operating in close proximity.<sup>47</sup> Yet the NRC utterly fails to provide any rationale for its

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<sup>41</sup> Lyman, Chernobyl on the Hudson, *supra* Note 30, at 23, 54 (emphasis added).

<sup>42</sup> NRDC, Nuclear Accident at Indian Point: Consequences and Costs, *available at*, [http://www.nrdc.org/nuclear/indianpoint/files/NRDC-1336\\_Indian\\_Point\\_FSR8medium.pdf](http://www.nrdc.org/nuclear/indianpoint/files/NRDC-1336_Indian_Point_FSR8medium.pdf).

<sup>43</sup> See DGEIS, Appendix F (citing Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants (NUREG-1738), *available at*, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1738/>).

<sup>44</sup> Applicant’s Environmental Report – Operating License Renewal Stage Surry Power Station Units 1 and 2 Virginia Electric & Power Company License Nos. DPR-32 and DPR-37, *available at*, [http://www.nrc.gov/reactors/operating/licensing/renewal/applications/northanna-surry/surry\\_env.pdf](http://www.nrc.gov/reactors/operating/licensing/renewal/applications/northanna-surry/surry_env.pdf) (last accessed Dec. 19, 2013).

<sup>45</sup> *Id.*

<sup>46</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (NUREG-1437, Supplement 38), *available at*, <http://pbadupws.nrc.gov/docs/ML1033/ML103350405.pdf>, at p.2-124; see also Bill Dedman, *Nuclear Neighbors: Population Rises Near US Reactors*, NBC New.com, [http://www.nbcnews.com/id/42555888/ns/us\\_news-life/t/nuclear-neighbors-population-rises-near-us-reactors/#.UrNSx8Kx7IU](http://www.nbcnews.com/id/42555888/ns/us_news-life/t/nuclear-neighbors-population-rises-near-us-reactors/#.UrNSx8Kx7IU) (last accessed Dec. 19, 2013).

<sup>47</sup> In New York, for example, the Nine Mile Point and Fitzpatrick nuclear power plants are located on adjacent sites.



reliance on a single unit pool fire at a reactor with relatively low population density in surrounding communities.<sup>48</sup>

Thus, NRC's spent fuel pool fire impact analysis is factually and legally deficient for failing to encompass within its analysis, or otherwise consider, the reasonably foreseeable impacts that could occur as a result of a spent fuel pool accident and/or fire at Indian Point. NRC's generic approach to considering the consequences of spent fuel pool accidents is insufficient, and site-specific assessment is necessary and warranted.

In addition, NRC should have also considered the unique, site-specific safety and security issues facing Indian Point, as well as seismic risks, in relation to assessing the *risk* of future spent fuel pool-related fires. That is, the circumstances present at Indian Point increase the risks of such accidents, yet such factors were not "bounded" or considered by NRC. Instead, the NRC continues to rely on a generic probability risk analysis that is largely inapplicable to Indian Point, particularly when it comes to the risk of a pool fire resulting from a terrorist attack. This also renders NRC's assessment in the DGEIS inadequate.

## 2. Indian Point Site-Specific Factors are Highly Relevant to Assessing Spent Fuel Pool Leak Risks and Consequences

As an initial matter, the analysis in Appendix E of the DGEIS is deficient and fails to comply with NEPA or the Court Ruling because it inexplicably limits the analysis to offsite impacts only<sup>49</sup> and relies on "institutional controls" to purportedly ensure the safe management of spent fuel onsite for an indefinite period of time in the future, without conducting an actual assessment of the efficacy of the regulatory controls being relied upon to prevent or mitigate the effects of long term storage. In Appendix E, the NRC assumes that existing decommissioning regulations will ensure that all onsite contamination will be remediated during the sixty year timeframe, thereby obviating the need for any assessment of onsite impacts from future spent fuel pool leaks. This is in direct contravention of the Court Ruling, which explicitly warned the NRC against continuing to rely on existing regulations as a basis for determining future impacts. The Court Ruling states:

With full credit to the Commission's considerable enforcement and inspection efforts, *merely pointing to the compliance program is in no way sufficient to support a scientific finding that spent-fuel pools will not cause a significant environment impact during the extended storage period.* This is particularly true when the period of time covered by the Commission's predictions may extend to nearly a century for some facilities.<sup>50</sup>

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<sup>48</sup> In fact, the NRC appears to be relying on Surry simply because the pool fire consequence analysis in the DGEIS is largely drawn from NUREG-1738, a spent fuel pool severe accident study. However, that study is particularly unhelpful since it was completed prior to the 9/11 attacks, and thus does not consider a scenario in which a spent fuel pool loses cooling water or is otherwise damaged due to terrorist attack.

<sup>49</sup> See DGEIS, Appendix E at pgs. E-1, E-8.

<sup>50</sup> *New York v. NRC*, 681 F.3d at 481 (emphasis added).

In any event, as with spent fuel pool accidents, the NRC's analysis of spent fuel pool leaks in the DGEIS also employs a generic approach that improperly fails to consider or "bound" the impacts that could occur in light of the site-specific factors discussed above. The NRC's generic approach to future pool leaks makes no sense when viewed in light of the completely opposite conclusion regarding the need for site specific impact assessment reached in the NRC Staff's recent revision to the Generic Environmental Impact Statement pertaining to nuclear power plant license renewal ("License Renewal GEIS"). In the License Renewal GEIS, the NRC included a new "Category 2" issue, i.e., an issue for which it is necessary for the agency to conduct a site-specific assessment, related to "radionuclides in groundwater."<sup>51</sup> In this context, NRC explained as follows:

This new Category 2 issue evaluates the potential contamination and degradation of groundwater resources resulting from inadvertent discharges of radionuclides into groundwater from nuclear power plants. Within the past several years, there have been numerous events at power reactor sites which involved unknown, uncontrolled, and unmonitored releases of radionuclides into the groundwater. The number of these events and the high level of public controversy have made this issue one that the NRC believes needs a "hard look" as required by NEPA.

As a voluntary action, NEI 07-07 [*Industry Ground Water Protection Initiative—Final Guidance Document*; NEI 2007] cannot be enforced by the NRC. As such, no violations can be issued against a licensee who fails to comply with the guidance in NEI 07-07. Furthermore, the NRC cannot rely on a voluntary initiative as a basis to ensure that the nuclear power industry will have adequate information available for the NRC to determine whether a documented leak or spill does or does not have an adverse impact on groundwater resources. Regarding the magnitude of impact, the NRC bases its determination of SMALL to MODERATE impact on a review of existing plants have had inadvertent releases of radioactive liquids. Even though the NRC expects impacts for all plants to be within this range, a conclusion of LARGE impact would not be precluded for a future license renewal review based on new and significant information if the data support such a conclusion. As reflected in the final GEIS and rule, "Radionuclides released to groundwater" remains a Category 2 issue.<sup>52</sup>

Further proof of the NRC Staff's arbitrary approach in the DGEIS can be found in testimony that was provided to the NRC Commissioners prior to the finalization of the License Renewal GEIS. In this testimony, a staff member of the NRC, Andy Imboden (who is notably also involved in

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<sup>51</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1436, Volume 1, Revision 1 (May 2013), available at, <http://pbdupws.nrc.gov/docs/ML1310/ML13106A241.pdf>, at pp.S-7, 1-24 ("Category 2 issues are those that do not meet one or more of the criteria of Category 1, and therefore, require additional plant-specific review").

<sup>52</sup> *Id.* at p.1-24.

the waste confidence DGEIS), explained that “[i]n a NEPA context, radionuclides in groundwater as projected over the period of extended operation and their impact to the groundwater resource, makes radionuclides and groundwater an issue that is appropriately discussed in an Environmental Impact Statement,” and that “given the various sources of radionuclides, such as from the spent fuel pool, buried pipe, et cetera, unique hydrological feature for each plant, the staff concluded that a *site-specific review is required*.”<sup>53</sup>

Yet, here in the context of the DGEIS related to “waste confidence,” NRC is content to rely upon the same exact referenced industry guidance and generically dispose of spent fuel pool leakage concerns. There is no basis whatsoever for NRC’s conflicting positions. Notably, the License Renewal GEIS was directly concerned about spent fuel pool leaks, and several of the reactor site leaks discussed in the License Renewal GEIS involved spent fuel pool leaks, such as Indian Point.<sup>54</sup> It is inconsistent, arbitrary, and illogical for the NRC to require site specific assessment of radionuclide releases to groundwater during license renewal timeframes, and conversely find that future spent fuel pool leaks will be insignificant, and not require site specific assessment for spent fuel pool leaks during the 60-year post-operating license timeframe. For the same reasons stated in relation to the License Renewal GEIS, radionuclide leaks from the spent fuel pools and related components should also be examined in a site-specific manner during the post-operating timeframes contemplated in the DGEIS. Not doing so would violate NEPA and the Administrative Procedure Act, and serves to create regulatory confusion regarding the need to assess the impacts of spent fuel storage in the future.

Importantly, site-specific consideration is critical in light of the unique impacts posed by spent fuel pool leaks at Indian Point. That is, NRC limited analysis in the DGEIS did not consider or otherwise somehow bound or encompass the unique and potentially considerable impacts that can occur at Indian Point from spent fuel pool leaks due to site-specific factors discussed above.

For example: given the fact that spent fuel pools have already leaked, and continue to leak at Indian Point, the prospect of decades of additional pool storage during the 60-year post operating license timeframe implicates potential long-term impacts to the surrounding environment. NRC has failed to adequately consider such impacts. Notably, Indian Point is situated adjacent to recognized critical aquatic ecosystems; radionuclides have in the past been detected in fish samples near Indian Point, and spent fuel pool leaks may impact aquatic organisms in the future, especially since the radioactivity from spent fuel pool leaks at Indian Point will be releasing to the Hudson River indefinitely, and certainly throughout the 60-year post operating license timeframe. Yet, NRC has boxed its analysis into narrowly defined impact criteria and, as a result, failed to assess in any meaningful way the impacts to aquatic organisms posed by such cumulative and future spent fuel pool leaks. Notwithstanding what NRC considers its analytical

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<sup>53</sup> Transcript, Briefing on Proposed Rule to Revise the Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, January 11, 2012 (ML120180209) at 63-64 (emphasis added).

<sup>54</sup> See, e.g. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1436, Volume 1, Revision 1 (May 2013), available at, <http://pbadupws.nrc.gov/docs/ML1310/ML13106A241.pdf>, at 4-52 (“The majority of the inadvertent liquid release events involved tritium, which is a radioactive isotope of hydrogen. However, other radioactive isotopes, such as cesium and strontium, have also been inadvertently released into the groundwater. The types of events include leakage from *spent fuel pools*, buried piping, and failed pressure relief valves on an effluent discharge line.” (emphasis added)).

framework, under NEPA, a complete analysis is required since impacts to aquatic ecosystems are reasonably foreseeable.

In addition, the cumulative impact assessment in the DGEIS is also legally and factually deficient because it does not include an assessment of the combined impacts of future spent fuel pool leaks and leaks of radioactive water from other plant systems that are likely to increase the levels of groundwater contamination at Indian Point, and potentially at other reactor sites around the country. In its description of Groundwater Quality and Use, the DGEIS references the numerous instances of groundwater contamination from operating reactors, stating as follows:

There are 65 locations in the United States where commercial nuclear power plants are operating. Records indicate that, at some time during their operating history, 42 of these sites have had leaks or spills involving tritium concentrations in excess of the 20,000 pCi/L drinking water standard established in the Safe Drinking Water Act. Nineteen sites are currently reporting tritium concentrations, from a leak or spill, in excess of 20,000 pCi/L onsite.<sup>55</sup>

Remarkably, Section 6.4.8 of the DGEIS, which addresses Cumulative Impacts to Groundwater Quality and Use, fails to mention or integrate this information into its assessment, completely ignoring the obvious significance of such information to this part of the required NEPA analysis.<sup>56</sup> The failure to assess the cumulative impacts of spent fuel pool leaks and other facility leaks to groundwater renders the DGEIS legally and factually flawed.

Moreover, NRC should have also considered the unique, site-specific issues facing Indian Point, in relation to assessing the *risk* of ongoing and/or additional spent fuel pool leaks occurring in the future during the post-operating license timeframe. For example: newly assessed and heretofore unaccounted for increased risks of earthquakes in the area may affect the structural integrity of the Indian Point spent fuel pools, which could exacerbate existing, or cause new leaks. Likewise, ongoing and future inadequate plant maintenance and management, especially in relation to spent fuel pool leaks and leakage detection (as is already highly evident at Indian Point as discussed above), may result in inadvertent, undetected ongoing or new leakage and unacceptable releases to the environment. Notably, NRC's dependence on purported institutional controls, voluntary programs, and current alleged regulatory "requirements," is completely misguided in light of the fact that the plant operators at Indian Point do not even detect and/or manage spent fuel pool leaks properly now, while the plant operates.<sup>57</sup>

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<sup>55</sup> DGEIS, Section 3.7 at 3-19.

<sup>56</sup> *Id.* at 6-28, 6-29.

<sup>57</sup> See generally Comments by Environmental Organizations on Draft Waste Confidence Generic Environmental Impact Statement and Proposed Waste Confidence Rule And Petition to Revise and Integrate All Regulations Related to Back End of the Uranium Fuel Cycle (December 20, 2013) and Declaration of David Lochbaum, Critique of the Analysis of Safety and Environmental Risks Posed by Spent Fuel Pool Leaks in the NRC's Draft Waste Confidence Generic Environmental Impact Statement, attached thereto.

In sum, the site-specific circumstances facing Indian Point increases the risks of such spent fuel pool leaks and consequences thereof, yet such factors were not “bounded” or considered by NRC. This renders NRC’s assessment in the DGEIS inadequate.

### **III. CONCLUSION**

Based on the foregoing, NRC’s DGEIS is inadequate for failing to consider or account for numerous site-specific concerns implicated by the prospect of storing thousands of tons of nuclear waste at reactor sites for long-periods of time. As a result, the DGEIS does not justify or support the proposed rule, which would effectively preclude the consideration of the environmental impacts of waste storage in future reactor and waste storage licensing proceedings.

Thank you for your consideration.

Sincerely,



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