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December 18, 2013

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications

RE: U.S. NRC NUREG-2157: Draft Waste Confidence Generic Environmental Impact Statement – Draft Report for Comment

Dear Secretary:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed for review and comment the draft Waste Confidence Generic Environmental Impact Statement (DGEIS) prepared by the U.S. Nuclear Regulatory Commission (NRC). This draft report was published in the federal register on September 13, 2013 and examines the potential impacts that could occur as a result of the continued storage of spent nuclear fuel at at-reactor and away-from-reactor sites until a repository is available as well as generic impacts determinations for potential spent fuel storage sites. This DGEIS does not replace the National Environmental Policy Act (NEPA) analysis required for any potential specific site licensing action.

On behalf of the Department, we offer the following comments.

BUREAU OF NUCLEAR ENGINEERING

Following are comments on NRC's Draft NUREG-2157 from staff of the Bureau of Nuclear Engineering's Nuclear Environmental Engineering Section.

General Comment- In some cases, the environmental impacts of continued storage can be addressed through a generic environmental impact statement (EIS). In other cases, there may be site specific environmental issues that are not adequately addressed by the Generic EIS. Therefore, the NRC should require the licensees to verify that the Generic EIS adequately addresses the environmental impacts of continued storage at their facility, and if that is not the

case, require them to provide a supplement to the Generic EIS that addresses the site specific issues.

1. **Appendix E "Analysis of Spent Fuel Pool Leaks, Section E.1.1. "Spent Fuel Pools", Page E-5, Lines 14-24-** The enhancement of existing aging management programs for the spent fuel pool concrete structure and liner plate should not just be done under the license renewal process. This should be an ongoing process that is done prior to license renewal and continues into the short term storage timeframe whereby leaks would be detected early and repaired.
2. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.1.2 "Groundwater Monitoring and Licensee Response to Leaks at Nuclear Power Plants", Page E-6, Lines 1-9-** Licensees should not rely solely on the Groundwater Protection Initiative recommended by the Nuclear Energy Institute for developing monitoring programs to detect leaks. Groundwater protection programs should be supplemented by a more robust spent fuel pool and underground piping inspection and maintenance program to ensure that contaminated water from the spent fuel pool or buried piping does not leak into the environment.
3. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.2.1.2 "Radionuclides in Spent Fuel Pools and Radionuclide Transport", Page E-11, Table E-1** – The source of the initial concentrations of spent fuel pool radionuclides of concern is unclear. NRC (2006b) "Liquid Radioactive Release Lessons Learned Task Force Final Report" is cited as the source of the initial concentrations in this table however no data on the concentrations of radionuclides in spent fuel pools could be found in the cited report.
4. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.2.1.2 "Radionuclides in Spent Fuel Pools and Radionuclide Transport", Page E-11, Table E-1** – The basis for the initial concentrations of spent fuel pool radionuclides of concern is unclear. For example, with regard to tritium, it is not unusual for spent fuel pool concentrations to be an order of magnitude higher than the 2.9×10^{-2} micro curies/ml reported in this table. Is this an average value? Would it be more useful to report a range of concentrations?
5. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.2.1.3 "Influence of Site Hydrological Conditions", Page E-14, Lines 12-24** – The potential for spent fuel pool leaks (and other leaks of radioactive liquids) to impact deeper aquifers, separated from the shallow unconfined aquifers by low-permeability confining layers, is overly minimized here. Recent experience at nuclear power plants in New Jersey has demonstrated that the probability that tritium contaminated water released into shallow unconfined aquifers will ultimately reach deeper confined aquifers is much greater than previously predicted. Construction activities typically associated with nuclear power plants, such as deep excavations for building foundations and other structures, and the installation of cofferdams to support dewatering operations, can significantly alter site hydrological conditions. An unintended consequence of these activities has been the creation of downward pathways through the confining layers into the deeper aquifers. Although these facts do not alter the ultimate conclusions of the GEIS with regard to impact determination, for the sake of completeness and credibility this aspect of site hydrological conditions should be discussed.
6. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.2.2.2 "Surface Water", Page E-17, Table E-2** – Based upon the information provided in the text regarding the methodology for calculating the annual discharge rate associated with spent fuel pool leakage of

100 gallons per day, the estimated spent fuel pool leakage (Ci/yr) should be two orders of magnitude higher than the values reported in this table. Was a dilution factor applied that is not discussed in the GEIS?

7. **Appendix E "Analysis of Spent Fuel Pool Leaks", Section E.3 " Historical Data on Spent Fuel Pool Leakage", Page E-20, Table E-4-** Please provide the historical data for Salem Unit 2 that characterized this event as an inadvertent liquid radioactive release to the environment resulting from the occurrence of spent fuel pool leakage, as indicated in Table E-4.

NJ GEOLOGICAL AND WATER SURVEY

The above cited draft document has been reviewed and the comments on the document given below are broken into two categories, first, general comments and second, section specific comments.

General Comment:

According to the NRC, in this document the impact from the continued storage of the spent fuel at the plant sites will have only a small impact on the local environment. The major problem is that NRC makes many statements and assumptions but presents no data, studies or reviews from outside unbiased scientific groups or agencies. Specific comments listed below illustrate some of the areas where NRC is over simplifying the issues and problems or which contradict some of NRC's assumptions. For example, NRC's answer to any ground water contamination at a nuclear power plant site is that the contaminated ground water will be detected by the monitoring wells, the contamination will only be in the water table aquifer and it will only flow to the surface water body at the plant. In New Jersey and many other areas the gradients and flow directions of ground water flow can be changed by pumping centers miles away from the rivers.

Section Specific Comments:

1. Section ES.3, p. xxiv-- It is indicated that "If the proposed Rule is adopted, the site-specific NEPA analyses for future commercial power reactor and spent fuel storage facility actions would not need to consider the environmental impacts of continued storage." The problem with this statement is that environmental impacts are extremely site and even time specific. Also, demographics around a facility can change significantly from the time the plant was originally being licensed until even the first license renewal.

2. Section ES.7, p. xxvi-- Lines 9 to 11 indicate that revising the Waste Confidence rule would provide the same level of protecting the environment as a site specific EIS would. This is difficult to accept since each facility's impact on the environment would be different depending on the local geology, physiography, ecology and area water use. Also over time climate change due to global warming can alter a regions' water use, storm frequency and, as sea level rises, there will be impacts on coastal and estuarine facilities.

3. Section ES.13.15, p. xxxvi-- The impact from the spent fuel storage on climate change is indicated as small. The impact from climate change on the storage facilities should be evaluated instead. For instance, for facilities located in coastal and estuarine areas the increased rate of sea

level rise coupled with the potential increase in storm frequency due to climate change will make these facilities more prone to flooding and loss of power, such as occurred from Sandy. Facilities in the inner parts of the country may experience more severe droughts which would put greater strain on local aquifers and change the ground water flow in and around these facilities. It is likely that when most or all of the current power plants and storage facilities, including those in the coastal or estuarine areas, were designed, there was never any concern for sea level rise or climate change over the life of the plant, even though it was known that both were occurring.

4. Section ES.13.1.6, p. xxxvi– This section evaluates the storage impact on geology. They are not evaluating the impact of the geology on the continued storage. They are not considering any new theories, data collection, mapping of the local and regional geology around a facility and how that would impact the original estimations of the potential severity of such natural disasters such as landslides, earthquakes or sinkholes at a facility.

The theory of continental drift was proposed in 1912, but did not gain actual acceptance until the mid 1970's. Once the theory of continental drift and plate tectonics was accepted, it helped geologists to better understand faults and fault propagation. The geologists are continuing to advance an understanding of the geology of the country with such projects such as Earth Scope, an ongoing National Science Foundation program that consists of thousands of seismic and other geophysical instruments moving across the country. A major objective of the project is to develop a better understanding of earthquake propagation, strength of faults, regional strain patterns and earthquake prediction.

According to NRC's proposed Waste Confidence rule as indicated on p. xxiv of Section ES.3, a "… site-specific NEPA analyses for future commercial power reactor and spent fuel storage facility actions would not need to consider the environmental impacts of continued storage." This storage could be anywhere from 60 years after the end of the license and two license extensions (short term), to 160 years after the license extensions (long term) or possibly forever (indefinite). If the facilities are not required to consider any future impacts of continued storage on the environment then any new or better understanding of geology, aquifers or ground water resources near and under the facility does not have to be considered.

5. Section ES.13.1.8, p. xxxvii– The report indicates for ground water quality and use the impacts would be SMALL since there is "… a low probability of a leak of sufficient quantity and duration to affect offsite locations and (2) site hydrologic characteristics and monitoring programs ensure that impacts from spent pool leaks would be unlikely." When Table E-4, **Occurrence of Spent Fuel Pool Leakage at U.S. Nuclear Power Plants,** is compared to Table G-1, **Capacity of Spent Fuel Pools for Operating Nuclear Power Reactors,** it is clear that there is <u>not a low probability</u> of a spent pool leak since about 17% of the spent fuel pool has already had leaks, or 15 or 16 spent fuel pools (Table E-4) out of 104 reactors (Table G-1) with spent fuel pools. As indicated on Table E-4, eight of the leaks reached the environment (migrated out of the containment building). According to Table G-1 there are 94 spent fuel pools since some reactors share a spent fuel pool.

At one New Jersey facility two of the three nuclear power plants which had spent fuel pool leaks that reached the environment. It should be noted that none of the REMP ground water monitoring systems detected the tritium contamination in the ground water. The plumes of the tritium that contaminated ground water were initially delineated only after an extensive drilling

program with monitoring wells placed at both plants. Only after extensive negotiations with the plant operator to drill deeper monitoring wells into the first confined aquifer below the plant, it has been confirmed that tritium contamination has migrated downward into the deeper aquifer. Since this deeper aquifer is confined the flow direction may not be in the same direction as the water table aquifer. Studies are currently underway to determine the actual flow direction.

At another New Jersey plant, a leak in a condenser pipe caused significant ground water contamination by tritium. In this case also, the REMP ground water monitoring wells never detected the tritium from the leak. After several years of negotiations, the company installed deeper monitor wells that indicated the tritium was moving downward into a deeper aquifer below a clay layer which the company's consultants indicated would protect the deeper aquifer. The part of the plume in the deeper aquifer has the potential to flow in the opposite direction as the water table aquifer. Without having additional wells drilled into the deeper zone, the true flow direction cannot be determined from the existing deep monitoring wells.
At both Salem-Hope Creek and the Oyster Creek facilities, tritium contamination has migrated into aquifers below clay layers which both facilities indicated in their various reports would prevent any contamination from reaching the deeper aquifers at the plant sites. When they finally installed the deeper monitor wells the State requested, tritium was found in the deeper aquifer at both sites. Also at both of these sites there is a strong possibility that the flow will not be to the surface water body as NRC indicates always is the case.

In addition the NRC assumes the ground water system remains constant since the reactor was first designed. In New Jersey the ground water usage near the plants has increased by as much as a factor of ten. Modern regional ground water flow maps for many areas show that some rivers are now recharging the aquifers and not that the aquifers are always recharging the rivers as the NRC model indicates.

6. Sections ES.13.2.5, ES.13.2.6 and ES.13.2.8—These sections are the climate, geology and ground water analyses for the off-site (away from reactor site) storage of spent fuel. Comments 3,4 and 5 above also apply to these sections.

7. Section ES.14, p. lvi-- Table ES-5 indicates the cumulative effects range from small to moderate or to large in every category but three (public and occupational health and accidents both being small and climate change being moderate) with the impacts on socioeconomics, surface water, ground water, aquatic ecology, historical and cultural resources and waste management ranging up to large. This would imply that the environmental impact of each facility should be evaluated on its own, not lumped in a generic GEIS evaluation.

8. Section ES.16.1, p. lviii— The first paragraph indicates that offsite impacts from a leak would be very low due leak monitoring, NRC oversight and ground water monitoring. At the plants in New Jersey, for all of the known leaks (spent fuel pool and piping leaks) where the ground water was contaminated, none of the required routine monitoring (REMP) ground water monitoring wells at the facilities detected any of the the leaks or the contamination of the ground water even though in the several of the plumes the tritium concentrations were <1,000,000 pCi/liter. With routine ground water samples being taken yearly a leak or spill can be migrating in the subsurface for up to a year before sample was taken, and the sample would only show something

if it was directly down gradient of the leak. A spent fuel leak detection system (under drain) showed up leakage at one plant, but that leak was likely undetected for several years before it was noticed since the tritium had migrated a significant distance from the believed site of the leak. Also at one New Jersey plant, a ground water cleanup of a diesel fuel leak was never required to monitor for radionuclides even though the cone of drawdown from the fuel cleanup was down gradient of a major plume of tritium contamination. The ground water pumped from the cleanup was discharged to the local sanitary sewer without any analysis.

9. Section ES.17, p. lxi— The conclusion box indicates that NRC did independent impact assessments of continued storage, considered public scoping comments and did a cost-benefit balance. How does an agency do an independent assessment of those they regulate? The NRC has a conflict of interest in this case. If the assessment was done by an outside agency such as GEO, or outside institute such as NSF, it would be an independent impact assessment.

10. Section 1.3, p. 1-5— This section implies that by use of this GEIS site specific consideration of continued storage of spent fuel, the environmental impacts will not have to be considered for any continued operation of the facility. They justify this by 40 years of generic considerations of continued storage in proceedings and by the operating experience of spent fuel storage and licensing dating back to the 1950's, which they say supports the assessment. According to TableG-1, the first two reactors went on line December 1, 1969, so essentially the operating experience of spent fuel storage did not start until 1970, not the 1950's. Also, due to the fact that 17% of the spent fuel pools already have developed leaks, continued storage is not just a simple issue that can be decided by a generic GEIS, especially since one of their main premises is that spent fuel pools do not leak. The impacts of leaks at an individual site depend on the local climate conditions, demographics, water use (both ground and surface) and the geologic interpretations for the facility and area. All these can and will change over the life of the facility.

11. Section 1.8.3, p. 1-14-- Lines 13 to 16 indicate "...NRC believes that spent fuel pool storage could last for 60 years beyond the licensed life of the operation of the reactor..." With about 12.5% of the plants already having spent fuel pool leaks, and the fact that they were still within their original license time frame when the leak occurred, it is not unreasonable to believe that most of the spent fuel pools will have developed leaks before end of the 60 year beyond the end of the licensed life of the reactor. Three of those leaks are at one facility here in New Jersey and two of them reached the environment. The first leak in New Jersey occurred 25 years or less after startup. With 17% of reactors that have spent fuel pools already leaking, it is not a valid assumption to say the life expectancy of a spent fuel pool would be as long as 140 years after the plant went online.

12. Same section, p. 1-17-- line 21—It is stated that the analyses in this draft GEIS are based on current technology and regulations. That may be true, but facility designs were based on the technology and science of 50 or more years ago. For example, as stated earlier, when the geology of many of these sites was assessed the theory of continental drift and plate tectonics was not an accepted by the geologic community. The acceptance of this theory has allowed geologist to better understand fault origins, movements and even orientation. Current studies on faults and earthquakes such as Earth Scope are changing the earthquake hazard evaluation of many parts of the country. Studies into ground water movement and ground water contamination over the last

30 years have changed the way the resource is viewed and cleanups are conducted. For example, at both Oyster Creek and the Salem plants, underlying shallow clay units were identified in the original plant reports and it was indicated that these clays would prevent any contamination for moving below the water table aquifer into deeper aquifers at the sites. Tritium contamination at both of the plants has migrated down from the water table aquifer into deeper water bearing zones below the clay layers. At both sites, the deeper tritium contaminated aquifer has flow directions that are different than the water table aquifers.

13. Section 3.4.1, p. 3-12— Lines 2 to 4 indicate they are using the License Renewal GEIS (NRC 2012) as the baseline which for the climate. That document used data from 1971 to 2000. The most significant changes in climate have occurred since 2000 and now more scientists realize that climate changes over the next hundred years will be most significant than the changes that were experienced up until 2000. Also the effect of climate on sea level changes will be greater than predictions from before 2000. Change in climate will have significant impacts on surface water and ground water in most areas of the country.

14. Section 3.5, p. 3-15— Lines 26 to 28 indicate that facilities are designed and built on natural or engineered strata to ensure that no safety-related facilities are on unstable material. Lines 12 to 20 indicate that the seismic hazards of the regions form the design basis for the spent fuel pools and dry cask storage systems. Lines 23 to 25 indicate that the general characteristics are discussed in this GEIS, the License Renewal GEIS and the impact statements prepared for the initial construction and operation of the plants. This section indicates no use of more modern interpretations of the local and regional geology or a review of changes in seismic hazard ratings for the area which would be based on data obtained since the earlier plants were built. The reinterpretation of the geology of a region based on modern geologic mapping done since the 1980's to the current time is allowing hydrogeologists to better map and understand the aquifers of the various regions of the country.

15. Section 3.7, p. 3-19— Lines 30 to 33 indicate that current and future facilities are required to perform ground water monitoring to aid in determining the extent of existing and future contamination. In every case of leaks at the New Jersey facilities, the general monitoring well networks did not detect the plumes of tritium contaminated ground water. In lines 37 and 38 on this page and line 1, next page, it is stated that licensees that have ground water monitoring programs "...consistent with Nuclear Energy Institute Groundwater Protection Initiative are considered to have an adequate program for the purposes of the Decommissioning Planning Rule (NRC 2011b)." Again the experience here in New Jersey has been that the facility general ground water monitoring well programs did not indicate any of the significant tritium (hundreds of thousands of pCi/L of tritium) leaks at the facilities. Furthermore, the contamination plumes tend be very narrow. At Oyster Creek and Salem, contamination was found to drop from <100,000pCi/L to less than detection limits in less than 100 feet between the monitoring points both on the sides of the plume and down gradient of the plume.

16. Section 4.5, pgs. 4-18 to 4-20— Here again, the effect of the operation on climate change is examined, but not an impact assessment of climate change on storage facility. For instance, sea level rise will have an impact on facilities near the coast or on estuaries.

17. Section 4.6, p. 4-20— According to Tables E-4 and G-1, about 17% of the spent fuel pools have already leaked. Some leaks were found fairly quickly and others, like Salem 1, were not found until several years after the leak started. The spent fuel leak at Salem 1 migrated down from the water table aquifer into a deeper confined aquifer. A tritium leak from piping at Oyster Creek has also migrated down from the water table aquifer through a local "confining clay" into a deeper aquifer. All the geologic/ground water reports used for the Oyster Creek plant design and operations indicate this clay layer would protect the deeper aquifer at the site, including the ones written after the leak was found. When contamination gets into deeper aquifers below local confining layers, the ground water flow does not have to be in the same direction as it is in the water table aquifer.

18. Section 4.8, pgs. 4-25 to 4-26— Ground water and geology are inseparable since aquifers are geologic materials and should be examined together. Changes in geologic interpretations affect how a ground water flow system may be interpreted. In addition, research into contaminate transport combined with three dimensional computer modeling using modern geologic mapping completed since the 1980's provide a better understanding of the ground water flow at a facility than the geologic and ground water reports completed from before the facility was constructed. Based on information obtained during the ongoing tritium contaminated ground water cleanups at two of the New Jersey plants, the original geology and ground water reports for the plants, as well as early company consultant reports after the leaks were identified did not reflect actual ground water flow systems. In each case, it was stated that the clay layers would prevent the tritium from moving into the deeper aquifer, but in both cases these clays did not prevent the contamination from migrating down into a deeper aquifer.

By use of this GEIS's, the NRC is essentially refusing to allow any modern information on the geology and ground water interpretations at a facility when they evaluate continued storage or license extensions. In this section it is stated when the plant closes there is less impact on the resource since the facility is using less water. This does not account for the fact that when the amount of ground water and surface water pumped at a site is reduced during and after closure of the power plant, the local ground water-surface water flow system at the site will <u>definitely</u> change. Also as people and industry move in to the area near the power plant a greater demand is placed on the local aquifers just off the plant site. In the case of Oyster Creek, the population, within 10 miles, went from 5,000 to 10,000 when construction started to over 150,000 before the first license extension. Now the population is approaching almost 200,000 people. With 100% of the population supplied by ground water, mainly from wells in the water table aquifer and shallow confined aquifers, local ground water flow is toward the pumping centers.

19. Same section, p. 4-26—Lines 10 to 12 of the report indicate that a small number of spent fuel pool leaks have reached the environment and have not affected health of the public. According to Table E-4, 9 of the 16 plants listed had spent fuel pool leaks which reached the environment. This is not a small number. More than 55% of the pools that have leaked have reached the environment.

19. Same section, p. 4-26— Lines 32 to 34 indicate "Except for a few substances (e.g., diesel fuel), these hazardous spills are often localized, quickly detected, and relatively easy to remediate NRC 2002b)." Based on an extensive number of ground water cleanups which have

been done in New Jersey and contrary to what is stated here, the hydrocarbon (diesel and gasoline) cleanups generally are easiest, whereas ground water cleanups of other contaminants have taken tens of years and are not yet complete.

20. Same section, p. 4-28 in part 4.8.1.3— In lines 15 to 19, NRC concludes that the short-term storage of the spent fuel in the spent fuel pools and ISFSI's impact would be SMALL for water use and quality. Without utilizing any up-to-date data along with current geologic interpretations of the local geology and ground water evaluations, not the studies from 40 or more years earlier when the facility was being designed, it is impossible to accurately assess these impacts. For instance, for the Oyster Creek plant, between the time construction started until today the ground water use within the ten mile radius of the plant has increased from about 150,000 gallons per day to over 15 million gallons per day, not including any industrial or agricultural water pumpage. In New Jersey, ground water pumpages has changed the flow from being toward local streams and rivers to the streams and rivers recharging the aquifers and the ground water flow is toward the pumping centers.

21. Section 4.18, pgs. 4-71 to 4-76— This section discusses the impact of earthquakes, floods, high winds from tornadoes and hurricanes, and climate change on the facilities, with the summary on page 4-76. According to the summary the environmental risk from accidents related to these hazards is small since all important safety features and components related to the spent fuel are designed to withstand the "design basis" for each of these accidents. A review of the design basis for tornados indicates a reduction in the design wind speed from the original design basis. For the earthquake hazard, as a result of the March 2011 earthquake and tsunami at the Fukushima Dai-ichi nuclear power plant, NRC requested all US nuclear power plants to (1) conduct walkdowns of the their facilities including spent fuel pools and address plant-specific vulnerabilities and verify the adequacies of monitoring and maintenance procedures and (2) reevaluate the seismic hazards against present day NRC requirements and guidance. Page 4-75 indicates the lowest grade above sea level for an NRC-licensed facility is currently about 14 feet. Hurricane Sandy had storm surges in the area of Oyster Creek up to at least 7 feet above mean seal level with very little rainfall for the storm. If Sandy produced a normal amount of rainfall for a hurricane-tropical storm, the flooding on the bay in and around Oyster Creek would have been substantially greater.

22. Section 6.4.8, p. 6-30— Lines 33-35 indicate that NRC has determined that the incremental impacts, on ground water, from continued storage would be minor compared to trends such as climate change. The problem with these assessments is that they do not take into account the fact that the impact of each plant site on groundwater near the plant is site specific, yet they are generalizing. For plants such as Oyster Creek, the ground water pumpage from the water table to shallow semi-confined aquifer are orders of magnitude greater than at most other US nuclear power plants. When the plant shuts down to be decommissioned, and the large circulation pumps stop pumping, the local ground water to surface water flow system will change. With large pumping centers just outside the plant boundaries of Oyster Creek, the ground water flow can be away from the surface water body toward the pumping centers, not toward the surface water body as the NRC uses in scenarios.

23. Chapter 8.0, p. 8-1-- Lines 21 through 16 define SMALL, MODERATE and LARGE as related to the environmental effects on the important attributes of the resource. When Table 8-1 is examined, the impact of storage on groundwater quality and use is given as SMALL. Without knowing the demographics and water use around a plant, it is not possible to make a blanket assessment that the impact of a leak to the ground water would be SMALL. The reasoning is that spent fuel pools are designed not to leak, have monitoring systems in place that would detect any leak and there are monitoring wells at the plants to detect any ground water contamination. It is also indicated that any contamination will only affect the water table and migrate to the surface water body.

Currently in New Jersey there are four reactors at two sites, one on a site on an estuary and the other three on at a site on a major river. Both sites are underlain by gently dipping (<65 feet per mile) gravel, sand and clay formations which makeup the confining layers and aquifers of the New Jersey Coastal Plain. Tritium contamination has affected the water table aquifer and deeper confined aquifers at both sites. At Oyster Creek, the water table and locally confined shallow aquifer is the major ground water source and producer for the region with nearly 200,000 people living within the 10 mile radius of the plant.

At Salem, the water table aquifer is an extremely poor water producer, but the confined shallow aquifer is hydraulically and stratigraphically connected to a major aquifer which is heavily pumped across the river in Delaware. A large cone of drawdown has reached under the river into New Jersey and is just to the south of the plant sites. As the drawdown cone expands, it will also migrate up dip toward the shallow confined aquifer at the Salem plant site, which has tritium contamination.

24. Appendix E, p. E-1— According to the information in E.1 there are 94 spent fuel pools at 104 reactors. Based on Table E-4, 17% of the spent fuel pools have already leaked with about 55% of the leaks reaching the environment.

25. Appendix E, p. E-6— Lines 1 to 4 indicate the NRC has found that the ground water monitoring conducted by the facilities is adequate. The is <u>not</u> supported by the data from any of the New Jersey plants since the routine REM monitoring wells did not detect any of the tritium leaks.

26. Appendix E, p. E-7—Lines 5 to 10 and 24 to 27 indicate that the plants are developing ground water monitoring programs and the programs will have conceptual and subsequent numerical models for the basis of estimating the dispersion of radionuclide releases to the ground water. The issue is that the NRC does require the plants use updated geologic and ground water information. With this new GEIS for the spent fuel, no new evaluations of the environmental impacts are being looked at. For example, as indicated earlier, the New Jersey plants continue to use the geologic and ground water information from the original reports from the building of the plants, not any new geologic mapping or interpretations.

27. Appendix E, p. E-9— Lines 11 and 12 indicate that spent fuel pool leaks have been detected at 13 plant sites. It seems like NRC is trying to downplay the number of leaks. Table E-4 lists 13 sites, but at those 13 sites there are 16 spent fuel pools leaking. In lines 16 to 18 it is indicated

that in most cases the liner and leakage monitoring prevent the spent fuel pool water from leaking undetected into the environment. Table E-4 indicates that 9 of the 16 spent fuel pool leaks did reach the environment. It should be noted that at least one of those leaks, Salem 1, must have been leaking for at least two years as evidenced by the distance the plume of contaminated ground water had moved by the time the leak was discovered. None of the routine ground water monitor wells at the have detected the tritium plume.

28. Appendix E, p. E-10— Lines 15 to 22 indicate that the ground water monitoring makes it unlikely that a leak would remain undetected long enough for the contamination to migrate off site. Again, based on experience here in New Jersey, the Salem 1 and Salem 2 spent fuel pool leaks were not detected by any of the routine ground water monitoring wells. Also, the tritium leak at Oyster Creek was not detected in any of the routine ground water monitoring wells. At Oyster Creek there was an ongoing diesel fuel ground water cleanup which was down gradient of the tritium leak. Neither NRC nor the plant sampled the effluent from the diesel fuel cleanup for tritium even though the effluent was being discharge to a sanitary sewer.

29. Appendix E, pgs. E-13 to E-14— This section stresses that for any leaks at a plant, the contaminated ground water will flow to the nearby body of surface water and any will not contaminate any off site public wells. Without looking at the modern demographics around a plant and current ground water use, this mere conjecture, not science. Again, in New Jersey, Oyster Creek had a small population and little ground water use when the plant was built. Now the population and ground water use within 10 miles is significantly greater. At Oyster Creek and Salem, the tritium has migrated downward into deeper aquifers, a scenario not taken into account in any of the discussions found in the document.

AIR QUALITY PLANNING

The Bureau of Air Quality Planning has reviewed the Waste Confidence DGEIS and our comments are below.

General Comments

1) The Waste Confidence Generic Environmental Impact Statement indicates that, "For the resource areas considered, this draft GEIS attempts to establish generic impact determinations that would be applicable to a wide range of existing and potential future spent fuel storage sites." The General Conformity regulation requires a Federal Agency to assess individual Federal actions (projects) through an Applicability Analysis to determine if a Conformity Determination is required. However, the General Conformity regulation provides a process, Presumed to Conform (40 CFR 93.153 Applicability), which allows a Federal Agency to address General Conformity by specific project type instead of on an individual basis. In order to make a generic determination for General Conformity and waste confidence, the presumed to conform process as described in 40 CFR 93.153 is the appropriate mechanism for making this determination. Therefore, in order to make any generic applicability statement regarding General Conformity, the "presumed to conform" process must be followed.

2) Diesel exhaust contributes the highest cancer risk of all air toxics in New Jersey. State and Federal regulations require that the project complies with #1 and #2 listed below. In addition, the Department recommends that construction projects involving nonroad diesel construction equipment operating in a small geographic area over an extended period of time should implement the remaining measures to minimize the health impacts of diesel exhaust.

a. All on-road vehicles and non-road construction equipment operating at, or visiting, the construction site shall comply with the three minute idling limit, pursuant to N.J.A.C. 7:27-14 and N.J.A.C. 7:27-15.

b. All diesel non-road construction equipment operating at the construction site shall use ultra-low sulfur diesel fuel (<15 ppm sulfur) in accordance with the federal Nonroad Diesel Rule, 40 CFR Parts 9, 69, 80, 86, 89, 94, 1039, 1051, 1065, 1068.

3. It is recommended that all non-road diesel construction equipment greater than 100 horsepower used on the project for more than ten days shall have engines that meet the USEPA Tier 4 non-road emission standards, or the best available emission control technology that is technologically feasible for that application and is verified by the USEPA or the CARB as a diesel emission control strategy for reducing particulate matter emissions, except that:

a. If there is no technologically feasible emission control technology verified by USEPA or CARB for specific diesel non-road construction equipment, the contractor may use the best available emission control technology verified by the Mine Safety and Health Administration or the Switzerland BUWAL program (VERT Filter List) to reduce particulate matter emissions.

b. If there is no technologically feasible and appropriate emission control technology,or installation of a control technology would create a safety hazard, such as impaired visibility for the operator.

4. It is recommended that all on-road diesel vehicles used to haul materials or traveling to and from the construction site shall use designated truck routes that are designed to minimize impacts on residential areas and sensitive receptors such as hospitals, schools, daycare facilities, senior citizen housing, and convalescent facilities.

CULTURAL AND HISTORIC RESOURCES

The State Historic Preservation Office (HPO) offers the following comments:

Upon review of the NRC's Draft GEIS, the HPO broadly concurs with the report's findings regarding at-reactor and away-from-reactor ISFSIs at it relates to impacts on historic and cultural resources (historic properties) subject to Section 106 of the Natural Historic Preservation Act. However, the HPO does not agree that an entire power block is "extremely disturbed" with no possibility for any surviving pockets of archeological sensitivity unless there is supporting documentation from the original station construction to support such an assumption within any particular area of potential effects (APE).

LAND USE REGULATION

The Department's Division of Land Use Regulation (DLUR) does not have any comments at this time regarding the Waste Confidence Rule.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to provide comments.

Sincerely,

Ruth Foster, PhD., Section Chief
Office of Permit Coordination
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Attachment

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