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Environmental Analysis and Decision Making:

The National Environmental Policy Act (NEPA) at the NRC

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Introductory Remarks from NEPA Acting Director

Office of Nuclear Material and Safety Safeguards

The U.S. Nuclear Regulatory Commission (NRC) performs environmental reviews to satisfy the National Environmental Policy Act (NEPA) across a spectrum of regulatory activities to accomplish our mission. NEPA stands at the center of environmental law, and NRC implements NEPA and other environmental laws to protect the environment. To apply the regulations most effectively, technical staff, first-line supervisors, and executives at NRC are aware of NEPA requirements and strive for regulatory compliance in our agency's environmental reviews. That requires an understanding of the breadth of laws, regulations, and requirements across the Agency.

To foster such an understanding, in 2008 the NRC partnered with one of the Nation's top schools that offered a range of courses providing high quality NEPA training. Cosponsored by the Council on Environmental Quality, the environmental leadership program at Duke University offered the NRC an opportunity that coupled first-rate training with access to outstanding talent in the environmental field. Through the Duke Environmental Leadership Program, NRC staff across the Agency (not just those in environmental positions) took part in graduate-level courses and were provided the opportunity to pursue graduate-level professional certification in the implementation of NEPA.

This program was successful in providing NRC staff with the essential skills in understanding and implementing NEPA. I am proud of all of the Agency's staff who took the time to attend classes over a period of 5 years, and I am particularly impressed by those who received the program's certificate. I commend Larry Camper, former NRC Division Director, for his personal efforts initiating and sustaining this partnership between NRC and Duke, which has been most effective and saved training funds.

The enclosed compendium contains the capstone papers written by those NRC staff members who succeeded in completing the entire program and obtaining a professional certificate in the implementation of NEPA. The papers provide a lasting transfer of knowledge that will help the generations of staff who follow.

Scott W. More, Acting Director
Office of Nuclear Material Safety and Safeguards

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EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20503

September 25, 2015

Mr. Larry Camper Director
Decommissioning
Uranium Recovery and Waste Program
US Nuclear Regulatory Agency
Mail Stop T-8F5 Washington, DC 20555-0001

Dear Mr. Camper,

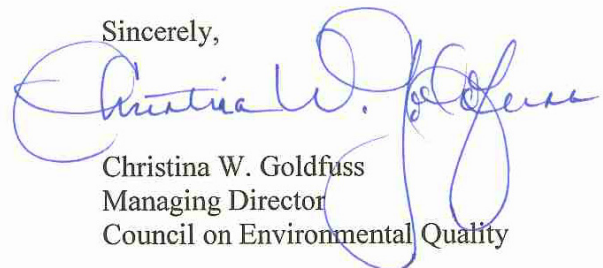
As you retire from more than 30 years of public service, I wanted to take this opportunity to express my appreciation for your support of the National Environmental Policy Act (NEPA) at the Nuclear Regulatory Commission. Your work has furthered the mission of not only the NRC, but that of the White House Council on Environmental Quality (CEQ).

You advanced NEPA practice at the NRC with your initiative to train not only NRC NEPA practitioners but the entire staff, from senior executives to newly hired scientists, on the requirements and the opportunities that a robust implementation of NEPA provides. That initiative stands out as a shining example of good environmental governance. Your insightful and bold move to engage Duke University to provide the NRC training was an effective way to have an impact across the breadth of the agency and an efficient way to use Federal resources.

During your career you also advanced the spirit and practice of NEPA by providing your advice and wise counsel at inter-agency NEPA meetings and directly to CEQ as we developed NEPA guidance for agency implementation. In that respect you have had an influence not only at NRC, but on NEPA implementation across the Federal government.

I trust that the knowledge you leave behind will be useful for many years to come, you indeed leave a legacy of leadership in the Federal NEPA community.

Sincerely,



Christina W. Goldfuss
Managing Director
Council on Environmental Quality

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Foreword

Ray Clark

Chair, NEPA Certificate Program

Duke University Environmental Leadership Program

Background

The National Environmental Policy Act (NEPA) is the culmination of over 100 years of science, research and advocacy. Passed by the U.S. Congress in 1969 and signed into law in January 1970 by President Nixon, it established (1) a national environmental policy and a requirement to “include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement.” Further, it created the Council on Environmental Quality (CEQ) in the Executive Office of the President.

Shortly after the passage of NEPA, there was confusion and uncertainty about the extent of the law and one of the first lawsuits brought was *Calvert Cliffs’ Coordinating Committee v. Atomic Energy Commission*, (449 F.2d 1109 (D.C. Cir. 1971), *cert. denied*, 404 U.S. 942 (1972)) where the court reviewed rules promulgated by the Atomic Energy Act on NEPA implementation. This case against the Atomic Energy Commission (later reorganized largely into the Nuclear Regulatory Commission) was one of the first cases interpreting NEPA, and set the tone for all subsequent NEPA cases.

Since 1970, there have been thousands of environmental impact analyses drafted on the management of national forests, the construction of interstate highways, the permitting of nuclear power plants and waste management facilities, the destruction of military weapon systems, the setting of fuel efficiency standards and many other plans, programs and policies. In 1978, President Carter directed the Council on Environmental Quality to issue regulations implementing NEPA. Every Federal agency has built a program to comply with NEPA and virtually every aspect of the law and the CEQ Regulations have been litigated. For more than 30 years, training programs have been developed by the agencies or private firms to train employees of Federal agencies and their consultants regarding the requirements of NEPA and the CEQ regulations.

Impetus for the DEL program

Past training programs, whether federal or non-federal, called upon supposed experts to train employees, but often these programs themselves have not fully understood the requirements of



Calvert Cliffs Nuclear Power Plant

Photo courtesy: https://en.wikipedia.org/wiki/Calvert_Cliffs_Nuclear_Power_Plant#/media/File:Calvert_Cliffs_retouched.jpg

NEPA, were not vetted and lacked rigor. Even the most prominent schools in the environment and natural resource management (arguably Duke, Yale and Michigan State) only addressed NEPA perfunctorily in the specializations that addressed environmental policyⁱ. After much discussion among several professionals, the author developed a syllabus and proposal to the Dean of the School of Forestry and Environmental Studies (now the Nicholas School of the Environment) at Duke University.

In 1989, the first week- long NEPA course was taught at Duke in the School of Forestry and Environmental Studies. I was the lead instructor, but called upon nationally recognized experts at CEQ (Dinah Bear), federal agencies (David Ketchum), and the author of the statute Professor Lynton Caldwell). In 2003, the White House Council on Environmental Quality endorsed the program of study and co-sponsored the program, and the NEPA certificate program was launched the next year. The Duke Environmental Leadership Program then asked me to chair the certificate program.

Principles of Instruction

Having often been called upon to teach at commercial NEPA courses, I was generally dissatisfied with the structure, content and tone of these training courses. Courses were often administered by training enterprises which had little or no NEPA experience, used myriad guest instructors, and provided too little time to provide adequate training. In collaboration with CEQ,

ⁱ As late as 2008, students at Duke pooled together their own resources to have a NEPA course taught because no such course was available in their graduate program.

and other nationally recognized professionals, I developed a set of principles that would guide the development of a nationally recognized NEPA training program. At its core, these principles were aimed at providing education and understanding of NEPA, its goals, and its real world use, rather than simple training about creating documents.

These principles (which are further discussed in *NEPA Training is Essential: It Shouldn't Just be For Environmental Staff*, by Larry Camper and Zahira Cruz, found later in this Compendium) included that the program be:

- **University-based.** The Duke courses were designed to take place in an academic setting.
- **Structured.** It was important to me to start by providing context, the development of the law, the provisions of the regulations and then work throughout the program to build on knowledge.
- **Rigorous.** The courses required that students understood the material and showed this understanding through class participation.
- **Multi-Disciplined.** Because NEPA is a law unlike any other environmental law, there is no one discipline that can comply with the law.
- **Interactive.** An essential principle was that the program be interactive with both dialogue and questions.
- **Cross-Pollinated.** Students learned from each other, as well as from instructors.



Photograph: Ray Clark teaching at Duke

- **Educating, not just Training.** It is not enough to teach students how to prepare an Environmental Impact Statement or how to read the case law; it is important to

understand the foundation of the statute, its intent and how to use it purposefully.

- ***Revitalizing to the Spirit and the Mind.*** Students leave the Duke course refreshed, reinvigorated and ready to apply the new knowledge.

In addition to these principles underlying the program itself, I also relied upon key tenets when selecting instructors for the course. The instructors had to be:

- ***Multi-disciplined.*** One of the unique features of NEPA is that the law requires a multi-disciplined approach to the analysis. The Duke program internalized that requirement and ensured that the instructors had diverse backgrounds. Each course had engineers, environmental policy experts, environmental attorneys, cultural and social scientists, physical and biological scientists and many others.
- ***Experienced at senior level decision making.*** One of the important tenets of the Duke NEPA course was to ensure that the theory and practice were connected. Many of the instructors had daily experience with top-level decision makers and in some instances, they were the decision makers. Senior NRC lecturers were integrated into the course to specifically address complex issues facing the agency. It was one of the practices that attracted senior level attendees to the NRC classes.

Certificate Program and Capstone Paper

The NEPA certificate program was designed to demonstrate a mastery of the subject by taking a series of courses and then preparing a Capstone Paper that was reviewed and approved by instructors in the Duke NEPA program. Twenty-five NRC employees, including senior executives, completed the certificate program and their Capstone Paper are included in this compendium and indeed is the very reason for this compendium.

The certificate program required a minimum of 100 hours of NEPA instruction taught by the DEL instructors including “Implementation of the National Environmental Policy Act” course, three elective courses, and a capstone paper.

The certificate program required completion of a capstone paper, which was an original, research-based culminating exercise related to NEPA theory or practice. The papers were based on what was learned in the courses and students’ current or future work in the field; case study examples were encouraged. The rationale of the capstone paper was two-fold: to demonstrate knowledge of the subject, and to make a contribution to the field. Exemplary papers were incorporated into future course offerings. The papers were reviewed by a panel of experts in NEPA.

This compendium is dedicated to all those NRC professionals who cared enough to pursue not only a basic NEPA course, but chose to dive deeper into the subject and to develop observations and conclusions about their own work and pass that on to future NRC professionals. This took

some dedication to complete the effort and thus, the compendium is dedicated to them and their understanding and application of the ideals of NEPA.

This Compendium has been prepared to provide a summary of the Duke DEL program at the NRC. The introductory section discusses the training that was provided to NRC staff from FY2008-FY2014; the implementation plan for NEPA practices and processes that need to be included in day-to-day licensing actions; and the historical perspective as to why and how the training was pursued. The course summary section then provides a brief description of each course offered by the program, including the course objectives and the benefits of the course to the NRC staff. Finally, the compendium section includes all of the capstone papers from 25 NRC staff members who completed the program.

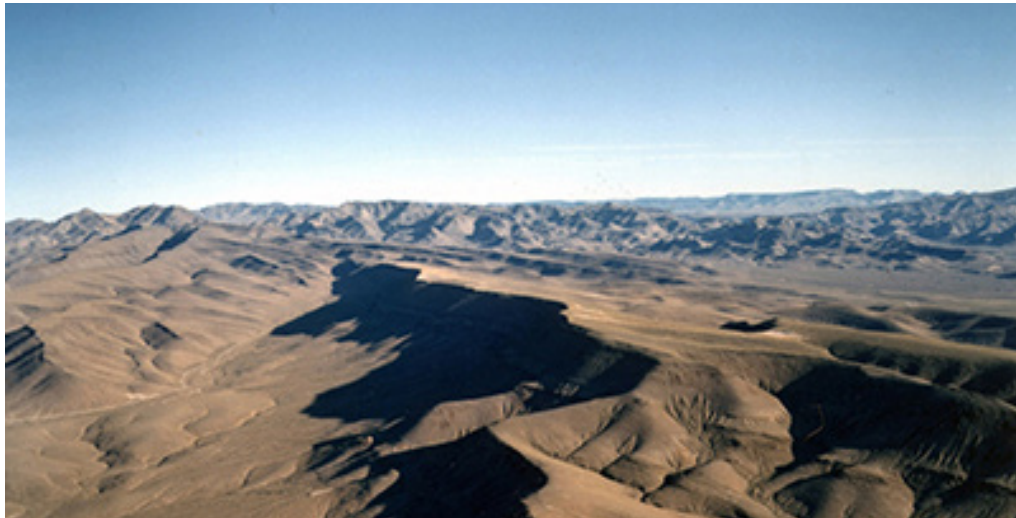
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NEPA Training is Essential: It Shouldn't Just be For Environmental Staff

Larry W. Camper
Zahira Cruz

The U.S. Nuclear Regulatory Commission (NRC) performs environmental reviews under the National Environmental Policy Act (NEPA) for reactors and materials licensees, as well as for sites undergoing decommissioning, including fuel cycle facilities. With the legal assistance of the Office of the General Counsel (OGC), the major NRC offices that conduct NEPA reviews are: Office of New Reactors (NRO), Office of Federal and State Materials Management Programs (FSME), Office of Nuclear Materials Safety and Safeguards (NMSS), and the Office of Nuclear Reactor Regulation (NRR).

In 2007, the FSME and OGC recognized that there was a need for large numbers of the NRC staff to become trained in the requirements of, as well as the opportunities associated with NEPA. NRC staff were open to wide spread training because of the expected increase in the NRC's licensing and associated hearing activities related to the nuclear renaissance throughout the entire nuclear fuel cycle (e.g., uranium milling, enrichment/fuel fabrication facilities,

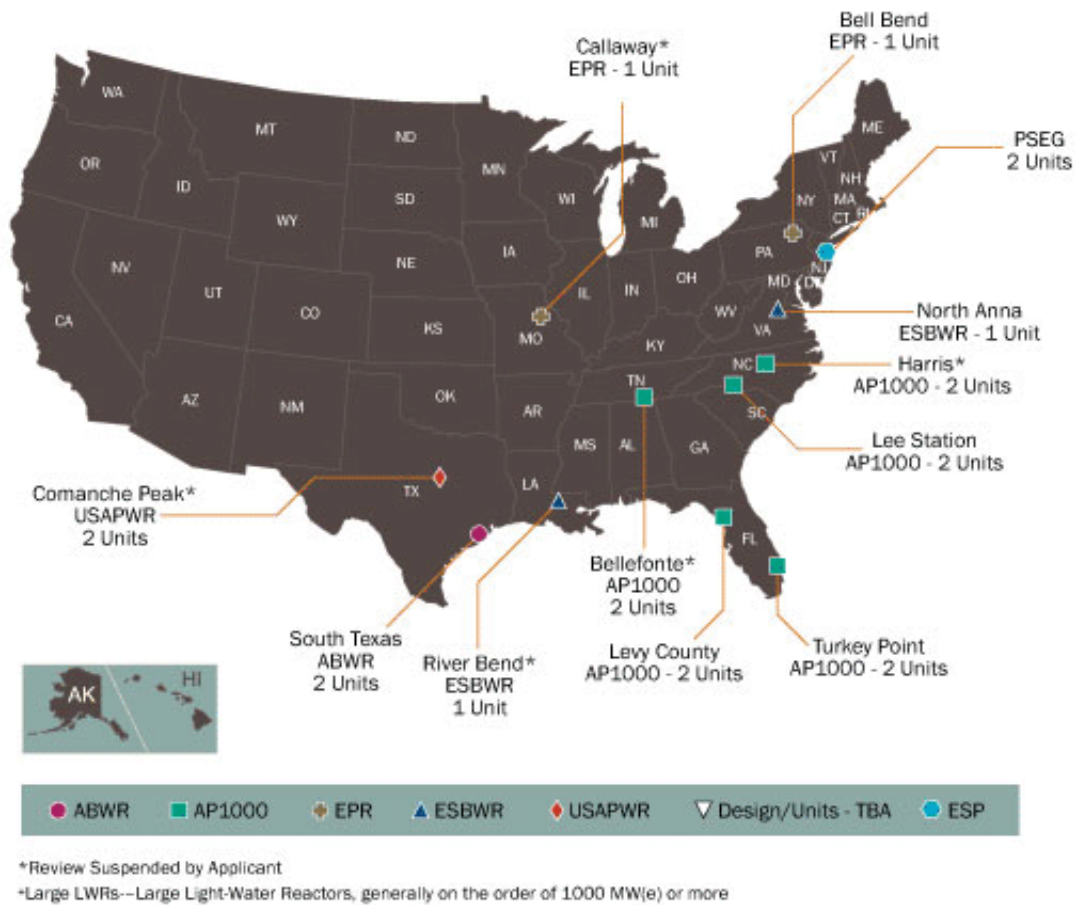


Yucca Mountain, Arizona

Photo courtesy: <http://www.energy.gov/photos/yucca-mountain>

current reactors, new reactors, transportation of spent fuel, Yucca Mountain). All major NRC Program Offices agreed to participate in an expansive program to train a large number of the NRC Project Managers, some of these, with minimal environmental background or NEPA

New Reactor Applications Under Review—Large LWRs⁺



experience. The same managers were expected to be called upon to render either recommendations or decisions that would affect applicants and communities.

In July 2008, the NRC was expecting 20 new and nine restart/expansion uranium recovery applications from FY 2007–FY 2011. At that time FSME had not received the budget to complete all those safety and environmental reviews within the two-year time frame, which was the operational goal. Given the resource constraints and in order to complete the environmental reviews for In Situ Recovery (ISR) uranium recovery applications, FSME decided in FY 2007 to complete an ISR Generic Environmental Impact Statement (GEIS) in FY 2009 and then tier-off the ISR GEIS with either a site-specific environmental assessment or environmental impact statement.

Several NRC scientists and managers took their own initiative to find a proper training course to assist them in their work. They attended several courses at the Duke University Environmental Leadership Program and later recommended the program to others involved in the extensive uranium recovery environmental workload. While there are other entities providing training in NEPA, the Duke program was the only NEPA program co-sponsored by CEQ.

From 2008 through 2014, NRC employees were trained in the basics of Implementation of NEPA. Since some of the NRC employees did not have environmental degrees, the *Implementation of NEPA* course was a good fit for all the managers because it gave a history and context of the development of environmental regulation as well as the fundamental pieces of how the statute integrated into the core mission of NRC. More importantly, the agency wanted to maintain current awareness of NEPA issues.

NRC reviewed the principles of the NEPA program at Duke and they matched the culture and mission of the NRC mission and are applicable to any agency attempting to train staff:

- a. **University-based.** The Duke courses were designed to be in an academic setting where expectations are set that this is a learning environment, rich with other learning opportunities, structured and disciplined instruction, an opportunity to interact with instructors who have written, taught and spoken widely in the field.
- b. **Structured.** The course begins with context; a history of environmental and natural resource conservation and regulations. It is important to start at providing context, the development of the law, the provisions of the regulations and work throughout the week to build on knowledge.
- c. **Rigorous.** The course was designed to be interactive, to expect readings at night, class participation, and feedback to the instructors that they understand the material.
- d. **Multi-disciplined.** NEPA is a law unlike any other environmental law. There is no one discipline that can comply with the law. The law itself requires “and the use of the design arts...” it requires social scientists, engineers, life scientists, lawyers, and the design arts, as well as other disciplines. It makes sense, then, that the instructors be from many disciplines as well.
- e. **Interactive.** An essential principle is that this course be interactive with dialogue and questions. It is challenging to the students and the instructors. There is a much richer learning occurring in such settings.
- f. **Student cross-pollination.** Students learn from each other, as well as from instructors. Through interactive classes, students learn how another student handled similar situations.
- g. **Focus on education, not training.** Every NEPA problem is a new problem with its own unique signature. Many academics have written about this requiring an “ecological rationality”ⁱ or a “Rational Approach to Change”ⁱⁱ and others have written about the limitations of the law and the philosophy of NEPA, strategies to comply,

i Robert Bartlett
ii Ray Clark

and NEPA's relationship to science. It is not enough to teach students how to prepare an Environmental Impact Statement or how to read the case law; it is important to understand the foundation of the statute, its intent and how to use it purposefully.

- h. Revitalization of spirit as well as mind.** Students leave the Duke course refreshed, reinvigorated and ready to apply the new knowledge. This is designed into the course. All of the instructors understand the complexity of the law, the criticisms of the time and money it takes to comply with the law. (40/20 A Review of NEPA Training Courses at Duke University).

Although FSME had the NRC lead to deliver this training, all the major program offices and three of the NRC Regions participated in the NEPA courses taught at NRC Headquarters. All participating program offices achieved success in training a large number of staff in NEPA in a timely and cost-effective manner. In addition, the training positioned many NRC staff to complete the Duke University graduate level professional certificate in Implementation of NEPA. In prior years, NRC staff would attend those courses at Duke University in North Carolina, thus, having the courses taught at NRC Headquarters, the NRC saved approximately \$1.275 million during the five year contract, due to tuition discount and reduced travel costs, including per-diemⁱⁱⁱ. These savings were realized while also maintaining the university-based structure identified earlier.

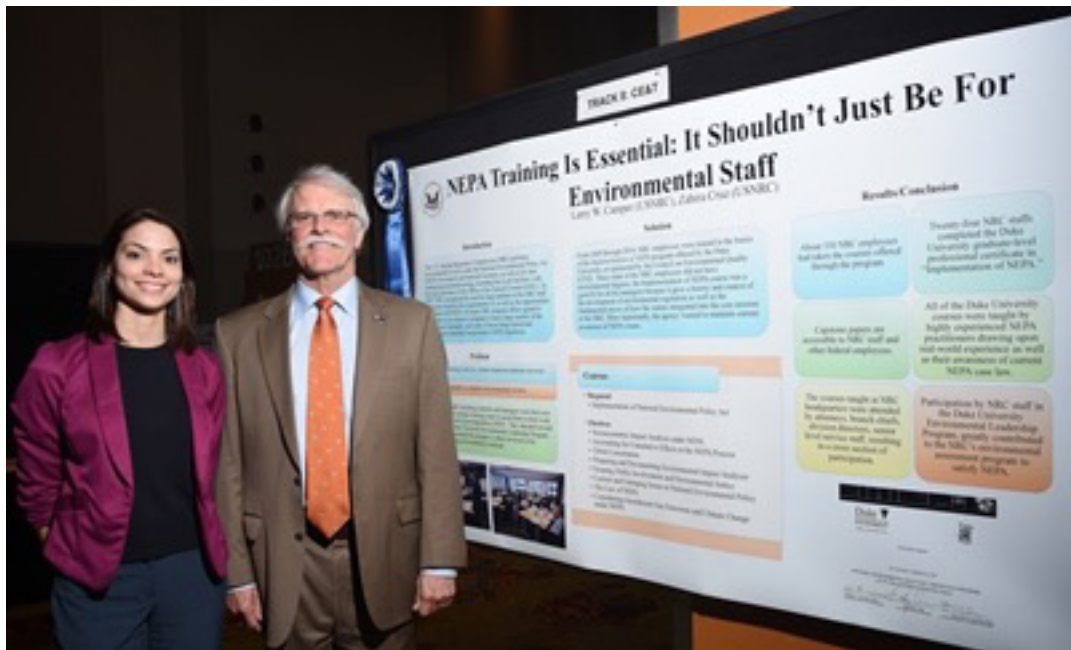
***THE NRC SAVED OVER A MILLION DOLLARS AND
TRAINED OVER 600 STAFF MEMBERS, INCLUDING
SENIOR LEVEL MANAGERS.***

The Duke program was designed for professionals seeking essential skills in the understanding and implementation of NEPA. The training took place over a five year period and included: (1) "Socioeconomic Impact Analysis under NEPA", (2) "Accounting for Cumulative Effects in the NEPA Process," (3) "Tribal Consultation," (4) "Preparing and Documenting Environmental Impact Analyses," (5) "Scoping, Public Involvement and Environmental Justice," (6) "Current and Emerging Issues in National Environmental Policy," (7) "The Law of NEPA," and (8) "Considering Greenhouse Gas Emissions and Climate Change under NEPA." After taking a requisite combination of courses, an NRC employee could choose to prepare the Capstone paper^{iv}. If the

iii NRC, 2008. Memorandum from C. Miller to J. McDermont, et al., Effort to train the U.S. Nuclear Regulatory Commission staff on the National Environmental Policy Act.

iv http://ceq.hss.doe.gov/nepa/training/Duke_EL_courses_2010_NEPA_lists.pdf

employee finished the course work and prepared an acceptable paper, Duke provided a “NEPA Certificate”. The NRC is a science-based agency and the rigor associated with the program was appealing to the NRC leadership.



Those courses were specifically designed for mid-level and senior project managers who work to streamline the environmental permitting process for federal facilities and federal regulatory activities; and to prepare and review environmental assessments, environmental impact statements, and other NEPA analyses.

All of the Duke courses were taught by highly experienced NEPA practitioners drawing upon real world experience, as well as their awareness of current NEPA case law. The courses taught at NRC Headquarters were attended by attorneys, Branch Chiefs, Division Directors, and Senior Level Service staff, resulting in a cross-section of participation. Those courses provided the necessary tools to address the environmental effects of agency actions and to ensure that environmental impact analyses are substantively and procedurally accurate. Instruction aided students in determining the necessary documentation to fully record and disclose to the public the results of environmental analysis.

As of April 2014, over 600 cycled NRC employees have taken courses offered through this program. Twenty-four NEPA certificates have been awarded and one is pending. The Capstone papers developed by the students are preserved in the Duke University Library for future use as reference information and are an integral tool for knowledge management, particularly knowl-

edge transfer among the departments. Those Capstone papers are also accessible to NRC staff and other federal employees^v. Experience has shown that having a broad spectrum of technical staff, managers, executives, and attorneys; enhances the overall learning process and exchange of information. Great value is gained from involving NEPA practitioners along with other operational staff to solicit different perspectives, and thus greatly enhance NEPA functionality. In addition, the benefits of cross-training, mentoring, and knowledge management are well understood and clearly augmented by the NRC/Duke University collaboration.

Those courses provided the necessary tools to address the environmental effects of agency actions and to ensure that environmental impact analyses are substantively and procedurally accurate. Instruction aided students in determining the proper level of documentation to fully record and disclose to the public the results of environmental analysis.

Federal agencies are often called up to complete complex tasks that require specific skills and current awareness. NRC has a culture that requires rigorous analysis, professional discipline, and efficiency. NRC also requires that the proper focus to address particular complex problems affecting the nuclear industry. While the agency relies on contractors to complete some environmental assessment tasks, there is the expectation that personnel who are NRC employees understand the subject matter and requirements they have asked contractors to perform. The agency does not expect the NEPA analyses to be a “check the box” exercise because the analysis is valued and the critical thinking that NEPA requires is paramount. Participation by NRC staff in the Duke University Environmental Leadership Program, greatly contributed to the Agency’s environmental assessment program to satisfy NEPA. Based upon numerous surveys questioners produced during the five years of the training program, as well as interviews with staff and participating managers, the program was deemed to be a resounding success.

^v <http://dukespace.lib.duke.edu/dspace/handle/10161/3188>

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Excerpts from White Paper on Effort to Train the U.S. Nuclear Regulatory Commission Staff on The National Environmental Policy Act

SUMMARY

The FY 2007 – FY 2008 contract with Duke University was successful in training the ~120 NRC staff from FSME, NMSS, NRO, NRR, and OGC on the “NRC Customized Implementation of NEPA,” which saved the NRC ~\$198,000 by having the four sessions of the class near the NRC Headquarters. The new umbrella contract with Duke University is expected to be used to train ~600 cycled NRC students in multiple NRC Customized DEL Program NEPA classes over the next five years, which is expected to save the NRC ~\$1,275,000 over those five years. Optimally, the original ~120 students will cycle through the Program followed by training opportunities for additional students in the later classes. The classes will be used to train staff responsible for environmental reviews in FSME, NMSS, NRO, NRR, and OGC for new and current NRC licensed facilities throughout the entire nuclear fuel cycle.

WHAT WOULD HAPPEN WITHOUT THE NRC/DUKE ARRANGEMENT?

Without the DEL Program NEPA classes being taught near the NRC Headquarters, the total cost to the NRC would increase each year, starting from a baseline and increasing by 4% each year. The total cost includes the courses cost, travel cost, and per-diem cost. Assuming one single week-long course and three week-long combination courses per year (each course with 30 students), the total cost for those courses in each year would be approximately the following:

	Year 1	Year 2	Year 3	Year 4	Year 5
Courses	\$180,000	\$187,200	\$194,688	\$202,476	\$210,575
Travel	\$ 74,880	\$ 77,875	\$ 80,990	\$ 84,230	\$ 87,599
Per-Diem	\$112,320	\$116,813	\$121,486	\$126,345	\$131,399
TOTAL	\$367,200	\$381,888	\$397,164	\$413,051	\$429,573
Per Student Cost (Single Course)	\$2,760	\$2,870	\$2,985	\$3,104	\$3,228
Per Student Cost (Combination Course)	\$3,160	\$3,286	\$3,417	\$3,554	\$3,696

For five years, the total cost, including courses cost, travel cost, and per-diem cost to the NRC

would be \$1,988,876. In addition, this would also take more time away from the NRC staff being able to perform their duties at the NRC Headquarters. For FSME, it would make it much more difficult to cross-train Decommissioning Project Managers to perform environmental reviews under the mentoring of FSME Environmental Review staff, which would severely impact the schedule for completing the licensing actions for the ~30 new or restart/expansion uranium recovery applications.

Given the increased environmental workload in the future for the entire nuclear fuel cycle, such as, uranium recovery, fuel cycle facilities, life extension of current nuclear power plants (NPPs), new applications for NPPs, and Yucca Mountain, it is imperative that the NRC arrange to have staff trained in NEPA in the most efficient and effective manner possible. Absent such training, the NRC may not be able to complete the environmental reviews necessary in a timely manner.

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Post-Program Assessment

The DEL Program NEPA classes were extremely important and beneficial to the NRC. The classes provided these staff members a state of the art awareness of NEPA analysis and application and real world examples of proper utilization of the NEPA process. The NRC needed the classes because a large number of NRC staff were new or were scheduled to work on environmental reviews that had not worked on environmental reviews in the past.

As evidenced by the benefits to many offices within the NRC, it is likely that such a NEPA training program would benefit most Federal agencies.

For example, the classes helped the former Federal and State Materials and Environmental Management Programs (FSME) by providing cross-training, mentoring, and knowledge management despite FSME substantive resource shortfalls.

The DEL Program NEPA classes were important to the Office of Nuclear Material Safety and Safeguards (NMSS) because the U.S. Department of Energy submitted a license application for the Yucca Mountain High-Level Waste Repository in FY 2008 and that required an environmental review to meet NEPA. The Office of New Reactors (NRO) benefitted because all the new reactors require environmental reviews to meet NEPA. The classes were important to Nuclear Reactor Regulation (NRR) because of the license extensions of current reactors require environmental reviews to meet NEPA. The classes were also important to the Office of the General Counsel (OGC) because OGC is involved in any hearings that arise that are associated with any of the licensing actions taken by FSME, NMSS, NRO, and NRR.

The following white paper details the management approach and decision-making that led to the DEL Program NEPA classes at NRC.

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Summary of Duke Environmental Leadership Courses at NRC



The NRC performs environmental reviews under NEPA for reactors and materials licensees, applicants, and facilities and sites undergoing decommissioning. These facilities and sites include fuel cycle facilities, spent fuel transportation casks, and waste sites, such as Yucca Mountain. The recent nuclear renaissance along with many new NRC employees involved in environmental assessment dramatically increased the need for training in NEPA reviews.

Nine courses were offered during the span of the five years of the NRC/Duke University relationship. These courses were specifically designed for mid-level and senior project managers in order to streamline the environmental permitting process for federal facilities and federal regulatory activities; and to prepare and review environmental assessments, environmental impact statements, and other NEPA analyses. These courses provided the necessary tools to address the environmental effects of agency actions and to ensure that environmental impact analyses were substantively and procedurally accurate. Instruction aided the students in determining the proper level of documentation to fully record and disclose to the public the results of environmental analysis.

Implementation of NEPA. The flagship course was a 5-day NEPA Implementation course that would be considered a survey of the NEPA practice. It began with the development of environmental policy from the colonial days and traced the intellectual and scientific development of American environmental and conservation thought, the federal conservation infrastructure, and the legislation leading up to the passage of NEPA. The flagship course outlined the elements of the law, the CEQ regulations, the requirements of analyses, and a review of the court cases. It was necessary to take this course before taking more intense and focused courses on each element of the NEPA practice.

The Law of NEPA. Although lawyers were welcome, and many attended, this course was specifically designed for non-lawyers who wanted to develop a deeper understanding of the law of NEPA and the workings of our courts. In large part NEPA has become the strong and important law that it is (1) because of judicial review and how the courts have resolved NEPA matters, and (2) the role that CEQ has taken as overseer of the NEPA process, including the promulgation of NEPA regulations for all

federal agencies. This course examined the statute, the CEQ regulations and its guidance memoranda, agency regulations, and the case law. The topics included whether an EIS needs to be prepared, the standards for judicial review of an EA and EIS, judicial review of categorical exclusions, alternatives, cumulative effects, the “purpose and need” for the project or program, and supplementation of the EA or EIS. The class also considered the nature and significance of the administrative record.

Preparing and Documenting Environmental Impact Analyses. This course, designed for professionals with experience in NEPA work, taught participants how to prepare, coordinate, and review high quality documents for decision makers and the public. The course spanned NEPA’s fundamental precepts and regulations and the nuts and bolts of creating high quality documents in the real world. Extensive practical exercises, in individual and work group format, were included and were designed to give the students hands-on experience. An optional half-day writing module session was also offered.

Considering Greenhouse Gas Emissions and Climate Change under NEPA. This course detailed the science of global warming; the expected environmental, social, and economic effects of climate change and examined how the NEPA process can be used to assess the impact of a project and its contribution to climate change and how climate change affected projects and facilities. It reviewed the case law and detailed the requirements of current and emerging legislation and how agencies can integrate the new expectations of the courts, the Congress and the public into their analyses.

Tribal Consultation. This course was designed for Federal and Tribal agency officials who want to develop a greater understanding and awareness of the unique legal relationship the U.S. government has with federally recognized Indian tribes. This course examined the historical and legal underpinnings of the government-to-government relationship between the U.S. government and Indian tribes. The course also clarified the consultation responsibilities that are imposed on federal agencies when they undertake activities that may affect Indian rights or interests, or trust resources. When this course was inaugurated, there was no other course in the nation teaching tribal consultation.

Accounting for Cumulative Effects in the NEPA Process. This intensive course reviewed cumulative effects concepts and principles, scoping techniques, baseline conditions and information sources and methods for effects identification and prediction. Examples of cumulative effects analysis with possible appropriate responses were presented.

Current and Emerging Issues in National Environmental Policy. This course allowed participants to discuss issues currently facing environmental professionals in NEPA and environmental policy and management in general. Instructors include experts currently engaged in the debate over the reach of NEPA, legislative proposals that affect NEPA, White House efforts to modernize the

NEPA process, and the activities of environmental NGO's. In this seminar, NEPA was discussed in its broadcast sense, rather than the technical preparation of documents.

Socioeconomic Impact Analysis under NEPA. This course addressed the need and legal mandate for socioeconomic impact assessment, which includes the National Environmental Policy Act, the Executive Order on Environmental Justice, and case law. It also addressed the role that human communities play in responding to, adapting to, and resisting change brought on by major federal actions.

Scoping, Public Involvement and Environmental Justice. This course introduced scoping as an analytical exercise that targets key issues. Scoping is the first step in the NEPA process where a manager can be successful at making the process cost less, count more in decision-making and ensure that the public participates in the process. Through a combination of presentation, case studies, role-plays and activities, participants learned the skills necessary to develop a scoping effort that produces meaningful analyses, saves their agency/client money and ensures full public participation in decision-making. This course further covered the importance of environmental justice under NEPA.

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Duke Environmental Leadership Program
Nicholas School of the Environment at
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Disclaimer

These papers were prepared by employees of the U.S. Nuclear Regulatory Commission (NRC) on their own time apart from regular duties. The NRC has neither approved nor disapproved of this content. The views expressed in these papers are those of the authors and not necessarily those of the U.S. Nuclear Regulatory Commission.

These papers were created over several years and prepared in different formats. As result, the layout and format of some of these papers may differ from the others.

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Discussion of “Major Federal Actions” Under NEPA

By Russell E. Chazell
US Nuclear Regulatory Commission
Rockville, MD
April 2014

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Introduction

The National Environmental Policy Act of 1969 (NEPA)¹ was enacted by Congress in an attempt to stop and reverse, where possible, the worsening damage to America's air, water, and biota from decades of industrial pollution beginning at the start of the industrial revolution in the 19th century. NEPA was intended to force Federal government decision makers to stop and think about how proposed actions bear on the sustainability of the environment. The courts call it taking a "hard look" at the proposed action to inform agency decision making.² Regardless of what one calls the process, it is intended to drive governmental behavior to reasonable and responsible environmental stewardship.

NEPA is not a directive piece of legislation; rather, it is a procedural statute. NEPA cannot force a Federal agency to abandon a proposed project; it can only force the agency to consider the impacts of the proposal on the environment. Of course, if an agency finds itself in Federal court defending its process, it would be prudent for that agency to be able to substantively demonstrate that it carried out the "hard look"³ required by NEPA and that the agency had considered the information derived from the process before making the final decision to proceed with the proposal or not. That substantive demonstration takes the form of a "detailed statement," now known as an environmental impact statement (EIS), an environmental assessment (EA) or a categorical exclusion (CatX).⁴ Without such a substantive demonstration, the agency is likely to be

enjoined from pursuing the project, or required to readdress the aspects of the agency's NEPA process the court found lacking.⁵

Additionally, NEPA served as the gateway to a plethora of other environmental laws (or amendments to existing laws) such as CERCLA, RCRA, TSCA, CAA, and CWA.⁶ These statutes have the legal "teeth" necessary to force individual, corporate, and governmental compliance with their provisions as well as hold actors accountable, civilly and criminally, for their actions.⁷

The question of whether NEPA—and its follow-on statutory daughters—has worked to improve America's environment is debatable and outside the scope of this paper. Suffice it to say that there are those that believe, at a minimum, the environment is cleaner and healthier than it was in 1969. Others might even say that today's American environment is cleaner and healthier than it has been since the beginning of the industrial revolution.⁸ NEPA has played a part in this success and therefore, viewed in that light, NEPA is an unqualified success.

This paper will focus on how an agency decision maker determines which proposals require the "hard look" necessary under NEPA. On its face, the test is simple—"major Federal actions significantly affecting the quality of the human environment...."⁹ In practicality, defining what constitutes a "major Federal action" is far from simple or straightforward.

Context of a Major Federal Action under NEPA

The primary driver for triggering a

NEPA analysis is the undertaking, by the Federal government, of a major Federal action. As stated in the introduction, determining what constitutes a major Federal action was somewhat unclear in the beginning days of NEPA practice. There has been litigation on the issue with the primary question coming down to—as it often does in legal interpretation—defining the concept of “major Federal action” by looking at the different aspects of the definition. This is sort of like “integration by parts” in mathematics. One takes a complex expression, breaks it down into smaller parts, applies a resolution method to each of the parts individually, and then adds those individual resolutions together to arrive at a comprehensive result. In the case of a major Federal action, the NEPA practitioner—usually some Federal agency or its contractor—will determine whether or not the contemplated action constitutes a major Federal action for NEPA purposes. Then, if that action is deemed to be a major Federal action, determining what level of scrutiny—categorical exclusion, environmental analysis, or environmental impact statement—is required.

Title II of NEPA establishes the Council of Environmental Quality (CEQ) in the Executive Office of the President.¹⁰ CEQ is charged with a number of statutory responsibilities related to the effective implementation and compliance with NEPA by executive branch Federal agencies. CEQ rules are set out in Title 40 of the U.S. Code of Federal Regulations (40 CFR) Parts 1500 to 1508.¹¹ The U.S. Nuclear Regulatory Commission (NRC) is an independent agency established by the Energy Reor-

ganization Act of 1974, as amended.¹² The NRC has promulgated administrative rules to implement Section 102(2) of NEPA in Title 10 of the U.S. Code of Federal Regulations (10 CFR) Part 51.¹³ As an independent agency, the NRC is not bound, per se, by CEQ regulations. However, the Commission has committed to “[e]xamine any future interpretation or change to the Council’s [CEQ] NEPA regulations[.]”¹⁴ Further, in some instances, the Commission has adopted CEQ regulations, including the CEQ definition of a major Federal action.¹⁵

Definition of a Major Federal Action

A “major Federal action” is defined in NEPA as an agency action that “significantly affect[s] the quality of the human environment.”¹⁶

Interpretation of the Definition

The term “major Federal action”, in its simplest structure, is comprised of three subordinate terms—“major,” “Federal,” and “action” – all of which require independent definitions thereby adding multiplicative complexity to what might seemingly be a straightforward concept. However, to get to the kernel of the concept, one must “integrate by parts” these varied underlying concepts to attempt to derive a working framework for identifying what agency actions are truly major Federal actions and then to interpret the NEPA requirement of preparing “a detailed statement” to that particular action. As one might imagine, this definitional complexity makes for disparate conclusions between

agencies on what, in any given circumstance, qualifies as a major Federal action under NEPA.

a. CEQ

CEQ has interpreted the NEPA definition of “major Federal action” to “include actions with effects that may be major and which are potentially subject to Federal control and responsibility.”¹⁷ CEQ appears to be defining a word—major—by using the same the word in the definition. Such a practice tends to be problematic as it does not really define the term at hand. CEQ attempts to resolve that circular logic through qualifying the term “major” by stating that “[m]ajor reinforces but does not have a meaning independent of significantly (40 CFR §1508.27).”¹⁸ The qualification of “major” seems to modify the CEQ definition to actions with effects that may be both major and significant. Adding the term “significant” to the mix requires more clarification.

CEQ goes on to define “significant” both in terms of “context and intensity”.¹⁹ CEQ defines “context” being “that the significance of an action must be analyzed in several contexts such as society as a whole ..., the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action.” “Intensity” is defined as “the severity of impact” and gives a list of considerations to be evaluated to determine intensity such as, among others, “beneficial and adverse” impacts, controversy of the proposed action, and “whether the action is related to other actions with individually

insignificant but cumulatively significant impacts.”²⁰ Again, CEQ is defining “significance” using the same term in some evaluations like whether a cumulative impact is “insignificant” but “cumulatively significant.” Such “dog chasing its tail” definitional logic leaves one to conclude that the determination of whether an agency action is “major” or “significant” is an inherently subjective determination.

Returning to the base definition from NEPA, one must determine whether the action is a Federal action. CEQ states that actions are Federal in nature if a Federal agency “partly financed, assisted, conducted, regulated, or approved” an action.²¹ Further, CEQ also deems “new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals” as Federal actions.²² Finally, CEQ defines an action as something that falls into several categories including “[a]doption of official policy,”²³ “[a]doption of formal plans,”²⁴ “[a]doption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive,”²⁵ and “[a]pproval of specific projects, such as construction or management activities located in a defined geographic area” to include “actions approved by permit or other regulatory decision as well as Federal and Federally assisted activities.”²⁶

b. NRC

The Commission has adopted the CEQ definition of a major Federal action in its

NEPA implementing rules.²⁷ By doing so, the Commission has adopted the circular logic and subjectivity of the CEQ definition. However, in some NRC actions, that subjectivity has been resolved because the Commission has dispensed with the exercise of determining whether certain, specific actions are major Federal actions. In these circumstances, the Commission has directed that a detailed statement, or environmental impact statement (EIS), will be developed, by policy, in all instances of similar agency action. Particularly, the Commission has directed that an EIS will be developed for, among others, construction permits and operating licenses for nuclear power plants, licenses to possess and use special nuclear materials²⁸ for processing and fuel fabrication, and licenses to mill uranium or produce uranium hexafluoride.²⁹ Additionally, the Commission has directed that an EIS may be developed in circumstances where a categorical exclusion would ordinarily suffice.³⁰ In special cases, the NRC will prepare an EIS in response, for example, to a court order, as is the case with the Waste Confidence Rule resulting from the recent decision by U.S. Circuit Court of Appeals for the District of Columbia Circuit³¹ on the Commission's Waste Confidence Rule.³²

c. **Case Law**

Subjectivity generates litigation. Litigation requires interpretation. Interpretation creates precedent that then provides a framework for future implementation and practice. The subjective nature of the definition of a major Federal action has generated litigation since the passage of NEPA in 1969.³³

Several early cases took on the challenge of defining a major Federal action under NEPA. Again, one needs to look at all aspects of the term—whether it is major; whether it is Federal; and whether it is significant.

The NEPA statute itself defines “Federal” in very broad terms. First, NEPA states that “all agencies of the Federal Government shall – [act]....”³⁴ And, that such action, by Congressional authorization and direction will be “to the fullest extent possible....”³⁵ Such strong, all-inclusive language appears to include all Federal entities, including independent agencies like the NRC.³⁶ The Atomic Energy Commission (AEC), predecessor agency to the NRC, argued that NEPA did not apply to it because the Atomic Energy Act of 1954³⁷ did not include environmental protection in the AEC's statutory mandate. This position was quickly put to bed by D.C. Circuit in the *Calvert Cliffs* case³⁸ and later by and the U.S. Supreme Court in the *Vermont Yankee* case.³⁹ The Supreme Court decision established that “NEPA contains largely “procedural” requirements that are **supplemental** to existing statutory requirements of the federal agencies.” (Emphasis added).⁴⁰ Inasmuch as the NRC is a Federal agency without an exemption, its actions—including licensing actions—are “Federal” actions under NEPA.

The determinations of “major” and “significant” are somewhat more complicated. In fact, the early court cases were mixed on whether a “major” action was, per se, a “significant” one. In the case *Hanly v. Kleindienst*, the court determined that the definition of the

word “significant” as contained in NEPA was a stand-alone question of law whose legal determination could be made by them.⁴¹ The court characterized the term “significantly” as “amorphous” and stated that almost every major federal action, no matter how limited in scope, has some adverse effect on the human environment.”⁴² The court further stated that if Congress had intended for all major Federal actions to require an environmental impact statement, it would not have qualified the language with the term “significant.” Since neither Congress nor CEQ clearly defined “significant” in this context, the court reasoned that “Congress apparently was willing to depend principally upon the agency’s good faith determination as to what conduct would be sufficiently serious from an ecological stand-point to require use of the full-scale procedure.”⁴³ To define “significant” this court ultimately fashioned a two-pronged threshold determination to ascertain whether an action was significant. The Court stated that:

we are persuaded that in deciding whether a major federal action will “significantly” affect the quality of the human environment the agency in charge, although vested with broad discretion, should normally be required to review the proposed action in the light of at least two relevant factors: (1) the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area affected by it, and (2) the absolute quantitative adverse

environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area. Where conduct conforms to existing uses, its adverse consequences will usually be less significant than when it represents a radical change.⁴⁴

Finally, the court reasoned that “it must be recognized that even a slight increase in adverse conditions that form an existing environmental milieu may sometimes threaten harm that is significant. One more factory polluting air and water in an area zoned for industrial use may represent the straw that breaks the back of the environmental camel. Hence the absolute, as well as comparative, effects of a major federal action must be considered.”⁴⁵ In short, the court added that “before a preliminary or threshold determination of significance is made the responsible agency must give notice to the public of the proposed major federal action and an opportunity to submit relevant facts which might bear upon the agency’s threshold decision.”⁴⁶ These so-called “threshold determinations” are difficult to establish and courts have ruled in contradictory manners (as indicated by the dissent in *Kleindienst*). Some agencies, including the NRC,⁴⁷ have resolved this challenge by simply making “the distinction [of significance] a programmatic one; that is, *all* actions under certain programs require environmental impact statements, and *all* actions under other programs do not.” (Emphasis in the

original).⁴⁸

d. Other Thoughts

As stated earlier, some agencies, including the NRC have resolved the “major” versus “significant” debate by deeming all actions of certain nature subject to preparation of an environmental impact statement. By doing this, the agency no longer needs to quibble over whether proposed action A needs an EIS and then later defend why proposed action A was deemed EIS-worthy when a similar proposed action B was not; or split hairs over why proposed action A was “significant” when proposed action B was not even though both were major Federal actions.

In 10 CFR 51.20(b), the Commission has stated that “[t]he following types of actions require an environmental impact statement or a supplement to an environmental impact statement:

1. Issuance of a limited work authorization or a permit to construct a nuclear power reactor, testing facility, or fuel reprocessing plant under part 50 of this chapter, or issuance of an early site permit under part 52 of this chapter.
2. Issuance or renewal of a full power or design capacity license to operate a nuclear power reactor, testing facility, or fuel reprocessing plant under part 50 of this chapter, or a combined license under part 52 of this chapter
3. Issuance of a permit to construct or a design capacity license to

operate or renewal of a design capacity license to operate an isotopic enrichment plant pursuant to part 50 of this chapter

4. Conversion of a provisional operating license for a nuclear power reactor, testing facility or fuel reprocessing plant to a full term or design capacity license pursuant to part 50 of this chapter if a final environmental impact statement covering full term or design capacity operation has not been previously prepared.”

These actions require an environmental impact statement because, in its discretion, the Commission believes that they are both major actions and significantly affect the quality of the human environment. This process, presumably, conserves resources by ensuring a predictable and stable process for both the agency and the applicant. When all parties know that an EIS will be required for certain actions—like licensing a nuclear power plant—those parties can plan accordingly. An additional benefit to the NRC is that, by deeming all nuclear power plant applications EIS-worthy, whether under 10 CFR Part 50 or 10 CFR Part 52, the agency can require applicants to submit an “environmental report” as a part of the application. CEQ regulations permit such practices so long as the agency conducts an independent evaluation of the information submitted.⁴⁹ The Commission defines an “environmental report” as “a document submitted to the Commission by an applicant for a permit,

license, or other form of permission, or an amendment to or renewal of a permit, license or other form of permission, or by a petitioner for rule-making, in order to aid the Commission in complying with section 102(2) of NEPA.”⁵⁰ All nuclear power plant applicants are required to submit an environmental report as part of their applications.⁵¹

Why licensing actions are considered Major Federal Actions

CEQ REGULATIONS APPEAR TO HAVE CONNECTED THE DOTS BETWEEN LICENSING AND A MAJOR FEDERAL ACTION.

Many Federal agencies actually build things. The Department of Defense builds military bases and ships and airplanes; the National Park Service builds infrastructure for the Nation’s parks; the Federal Aviation Administration builds control towers; the Bureau of Reclamation builds dams. Other Federal agencies, like the NRC, build nothing. They license others to build things. Yet, these agencies that are merely licensing and not actually building are still subject to the EIS requirements of NEPA because those licensing actions may be considered major Federal actions significantly affecting the quality of the human environment. But wait—it’s a piece of paper—a license. Is the NRC, for example, really undertaking a major Federal action by issuing a license? CEQ thinks so—and the

courts have validated their position.

CEQ regulations appear to have connected the dots between licensing and a major Federal action thusly: licensing creates effects and are thereby major Federal actions. 40 CFR §1508.18 states that a “[m]ajor Federal Action” includes actions with **effects** that may be major and which are potentially subject to Federal control and responsibility.” (Emphasis added). 40 CFR §1508.18(b)(4) further clarifies by stating that “[a]pproval of specific projects, such construction or management activities located in a defined geographic area. **Projects include actions approved by permit or other regulatory decision** as well as Federal and Federally assisted activities.” (Emphasis added). The NRC has specifically adopted this definition of a major Federal action.⁵² Hence, merely licensing a project may give rise to that project being a major Federal action even the Federal agency never turns a single shovelful of dirt.

The case law on this concept is extensive starting with the 1971 *Calvert Cliffs* case. In that case the D.C. Circuit, throughout its opinion, accepted as a given that issuance of a license constitutes a major Federal action.⁵³ Specifically, the Court states that:

The procedure for environmental study and consideration set up by the Appendix D rules is as follows: Each applicant for an initial construction permit must submit to the Commission his own “environmental report,” presenting his assessment of the environmental impact of the planned facility and possible

alternatives which would alter the impact. When construction is completed and the applicant applies for a license to operate the new facility, he must again submit an “environmental report” noting any factors which have changed since the original report. At each stage, the Commission’s regulatory staff must take the applicant’s report and prepare its own “detailed statement” of environmental costs, benefits and alternatives. The statement will then be circulated to other interested and responsible agencies and made available to the public. **After comments are received from those sources, the staff must prepare a final “detailed statement” and make a final recommendation on the application for a construction permit or operating license.**⁵⁴

(Emphasis added). The Court in this case accepted the Atomic Energy Commission’s rule requiring a “detailed statement”—read as EIS—before a licensing decision could be made.

Other cases that stand for the proposition that licensing actions alone are sufficient to constitute a major Federal action include *Scientists’ Institute for Public Information, Inc. v. Atomic Energy Commission*, 481 F.2d 1079, 1088 (D.C. Cir. 1973), (there is “Federal action” within the meaning of the statute not only when an agency proposes to build a facility itself, but also whenever an agency

makes a decision which permits action by other parties which will affect the quality of the environment.); *Foundation on Economic Trends v. Heckler*, 756 F.2d 143, 153 (D.C. Cir. 1985), ([t]he government has conceded that the approval is a “major action” and that it does not fall into a categorical exclusion to the EIS requirements.); and *Natural Resources Defense Council, Inc. v. United States E.P.A.*, 822 F.2d 104, 128 (D.C. Cir. 1987), (unless the construction itself is pursuant to federal financial assistance, NEPA review may only be conducted with regard to the issuance of a discharge permit, which constitutes, of course, the major Federal action.).

Is NRC Waste Confidence Rule a Major Federal Action?

In 1977, the Commission advanced a policy wherein it “would not continue to license reactors if it did not have reasonable confidence that the wastes can and will in due course be disposed of safely.”⁵⁵ Additionally, in *Minnesota v. NRC, the U.S. Circuit Court of Appeals for the District of Columbia Circuit* “directed the Commission to consider ‘whether there is reasonable assurance that an off-site storage solution [for spent fuel] will be available by ... the expiration of the plants’ operating licenses, and if not, whether there is reasonable assurance that the fuel can be stored safely at the sites beyond those dates.”⁵⁶ To implement that policy decision and Court directive, the Commission promulgated 10 CFR 51.23 otherwise known as the Waste Confidence Rule in 1984.⁵⁷ Generically applicable, the rule intended to resolve the

question of the safety and environmental impacts of high-level waste and spent nuclear fuel by stating, as a policy matter, that the Commission believed that spent nuclear fuel could be stored in the facility spent fuel pool or in an on-site independent spent fuel storage installation (ISFSI) for up to thirty years after a plant ceased operations. The rule further stated that Commission “believe[d] there [was] reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel [would] be available by the year 2007- 2009.”⁵⁸ The promulgation of this rule eliminated any consideration of post-operation spent fuel storage from the site-specific licensing decisions and no discussion of it was required in “any environmental report, environmental impact statement, environmental assessment or other analysis prepared in connection with the issuance or amendment of an operating license for a nuclear reactor or in connection with the issuance of an initial license for storage of spent fuel at an ISFSI, and any amendment thereto.”⁵⁹ Finally, the rule specifically states that it does not alter any environmental review requirements during the term of the operating license or in an ISFSI license proceeding. There is nothing in the Statement of Consideration for the 1984 rule that would indicate the Commission considered the rule to constitute a major Federal action under NEPA, nor was there any direction by the Court in the Minnesota case that such a rule-making would constitute a major Federal action under NEPA.⁶⁰ Further, by operation of the 1984 Waste Confidence Rule, consider-

ation of spent fuel storage was not part of the environmental analysis.

This decision was reviewed in 1990 wherein the Commission checked the validity of its five findings from the 1984 rule. At that time, the Commission revised two of the five findings in light of new circumstances. Most significantly, the Commission changed their prediction of the availability of a mined geologic repository to “the first quarter of the twenty-first century.”⁶¹ The change reflected the reality that the mined repository would most likely not be in service by 2009 as predicted in the 1984 rule. In doing so, the Commission believed that “[t]o specify a year for the expected availability of a repository decades hence would misleadingly imply a degree of precision now unattainable.”⁶² The Commission also, in this update, extended the periodic review of the Waste Confidence Decision from every five years to every ten years. Finally, in 2010, the Commission again revised the Decision and stated that, given the apparent demise of Yucca Mountain, that a repository would be available “when necessary” instead of setting a specific time window.⁶³

The Commission’s Waste Confidence Decision raises the question whether a mere opinion—the prognostication of the Commission as to when a geologic SNF repository would be built—constitutes a major Federal action under NEPA. Given the lack of “detailed statements” supporting this prognostication in 1984, 1990, and 2010, it appears that the Commission did not consider the “Decision” a



Map of Low-Level Waste Disposal Facilities

major Federal action. Moreover, the absence of such a discussion in 1979 in Minnesota seems to have set such a tone. Additionally, this question is exacerbated by the fact that no licensing actions would proceed **solely** based on the Waste Confidence Decision. The Waste Confidence Decision was a consequence of the Court's direction in Minnesota, not a pre-determined step in nuclear reactor power plant licensing. The D.C Circuit in *New York v. NRC* addressed this issue in 2012.⁶⁴

Case Study: *New York v. NRC*

The Commission had stated that they would revisit the Waste Confidence rule periodically and did so in 2010. The 2010 update modified two of the five findings—the time-line for roll-out of a National geologic repository and the length of time that spent

fuel could be stored on-site after the cessation of plant operations. The Department of Energy had, that same year, attempted to withdraw its application to license the Yucca Mountain repository.⁶⁵ By revising the prognostication of when a geologic repository would be available, it seems that the Commission “was no doubt influenced by the recent shelving of the Yucca Mountain proposal”⁶⁶ when it changed the language of the Waste Confidence Decision repository availability from the first quarter of the twenty-first century to that of “when necessary.” This change of position, as well as the revised finding that spent nuclear fuel could be stored on-site for up to sixty years after cessation of plant operations, caused a lawsuit to break out challenging the 2010 revision. The State of New York and the

Prairie Island Indian Community were the Petitioners and a number of other parties participated as intervenors.⁶⁷

There were a number of issues argued in *New York v. NRC* but this paper is limited to only one of the bases for vacating the rule—the fact that the Court considered the Waste Confidence Rule a major Federal action under NEPA.⁶⁸

In short, the U.S. Circuit Court of Appeals for the District of Columbia Circuit vacated the Commission’s 2010 Waste Confidence Decision update and the Temporary Storage Rule and remanded it to the Commission “for further proceedings consistent with this opinion.”⁶⁹

Discussion of the Ruling

The first issue the Court took up was whether the Waste Confidence Decision constituted a major Federal action under NEPA. Notwithstanding the three decades of Commission precedent wherein waste confidence decisions were not considered major Federal actions, the Court ruled that this one was. The opinion states that “[the Court has] long held that NEPA requires that ‘environmental issues be considered at every important stage in the decision making process concerning a particular action.’”⁷⁰ The Court stated that, because the “WCD makes generic findings that have a preclusive effects in all future licensing decisions—it is a pre-determined ‘stage’ of each licensing decision[,]”⁷¹ and thus a major Federal action.

The Court continued by citing CEQ regulation 40 CFR 1508.18, discussed earlier in

this paper, that defines a major Federal action as one having “indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” Again, the Commission has adopted the CEQ definition of a major Federal action from 40 CFR 1508.18. The Court states that “[i]t is not only reasonably foreseeable but eminently clear that the WCD will be used to enable licensing decisions based on its findings.”⁷² Additionally, the Court quotes *Andrus v. Sierra Club* that states, “CEQ’s NEPA interpretations are entitled to substantial deference.”⁷³ Finally, the Court states that, given the language of the Commission’s rules at 10 C.F.R 51.23(b), the WCD “renders uncontestable general conclusions about the environmental effects of general plant licensure that will apply in every licensing decision.”⁷⁴ The Court reasoned that, since these general conclusions cannot be contested during licensing, the WCD is a “pre-determined ‘stage’ of each licensing decision” and thus a major Federal action requiring an environmental impact statement, or an environmental assessment with an attendant finding of no significant impact.

The Court’s rationale for deeming the Waste Confidence Decision a major Federal action are based on the fact that the “general conclusions [from the Waste Confidence Decision] about the environmental effects of general plant licensure” are not contestable in the subsequent licensing decision. Presumably, that rationale is because the Commission does not allow challenges to its regulations in licensing proceedings.⁷⁵

However, there are several ways, under Commission practice, in which those conclusions are contestable—through public comment during initial rule-making,⁷⁶ by administrative litigation during license hearings when “new and significant” information emerges,⁷⁷ and by petitions for rule-making.⁷⁸

The NRC’s rule-making processes allow for public comment, usually for 75 to 90 days, during which comments are accepted for consideration.⁷⁹ The NRC staff reviews and analyzes these comments and, when persuaded, revises the rule to reflect the substance of the comment. Secondly, during licensing proceedings—those same proceedings where the Waste Confidence Decision is operative—putative intervenors may “make their case” to the Atomic Safety and Licensing Board or to the Commission as appropriate. If the petitioners are able to meet the admissibility standards of 10 CFR 2.309(f), they may be admitted as parties to the licensing proceeding wherein they may have an opportunity to challenge WCD conclusions on the basis of emergent “new and significant” information⁸⁰ if they are able to show “special circumstances” under 10 CFR § 2.335(b).⁸¹ Finally, anyone can petition the Commission at any time to engage in rule-making under 10 CFR § 2.802.⁸² This mechanism could be used to challenge or revise the language or conclusions of the Waste Confidence rule with persuasive justification. Certainly, these three mechanisms to address alleged deficiencies with the Waste Confidence Decision are not easy nor

are they straightforward. However, they are no more burdensome than the contemporaneous challenge during licensing that, the DC Circuit implies would be necessary for the Waste Confidence Decision to cease to be a “pre-determined stage” of licensing. Reliance on these three administrative processes for challenge to alleged WCD defects would have preserved the Commission’s decades-long precedent that WCD, standing alone, is not a major Federal action. In any event, the Commission did not appeal the 2012 *New York v. NRC* decision and, therefore, development of an EIS to support a replacement rule to the vacated 2010 WCD update is now underway. As of this writing, the NRC staff has issued a draft WCD EIS.

Conclusion

The concept of a major Federal action under NEPA is not as straightforward or intuitive as it may appear by simply reading NEPA. When one delves into the elements of the term, one quickly realizes that the terms “major” and “significant” muddy the definitional waters greatly. As seen by the discussion above and by the references list below, there have literally been entire books written on this seemingly simple term. Add to that all the case law that has arisen over the past four decades and one sees that ascertaining whether a specific action qualifies as a major Federal action is many times a subjective inquiry dependent on broad interpretation and differences of opinion.

With regard to NRC licensing actions, NEPA itself, the Courts, and regulations

promulgated by CEQ and the Commission, have by decree, removed the guesswork from the inquiry. There is no “integration by parts” for the NRC NEPA practitioner to determine whether one has a major Federal action at hand. One merely needs to look at NEPA Section 102(2)(C), *Minnesota v. NRC*, *New York v. NRC* (2009), *New York v. NRC* (2012), 40 CFR 1508.18 (CEQ), and 10 CFR 51.20(b) (NRC). Perhaps calculating reactor power densities would be easier.

References

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- a. *Andrus v. Sierra Club*, 442 U.S. 347
- b. *Calvert Cliffs' Coordinating Commission Inc. v. United States Atomic Energy Commission*, 449 F.2d 1109
- c. *Hanly v. Mitchell*, 460 F.2d 640
- d. *Hanly v. Kleindeinst*, 471 F.2d 823
- e. *Kleppe v. Sierra Club*, 427 U.S. 390
- f. *Minnesota v. NRC*, 602 F.2d 412
- g. *New York v. NRC*, 589 F.3d 551
- h. *New York v. NRC*, 681 F.3d 471
- i. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519

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- a. Anderson, Frederick R., *NEPA in the Courts; A Legal Analysis of the National Environmental Policy Act*, Johns Hopkins University Press (1973).
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- e. Fogleman, Valerie M., *Guide to the National Environmental Policy Act: Interpretations, Applications, and Compliance*, Quorum Books (1990).
- f. Harnett, Hillary H., *New York v. U.S. Nuclear Regulatory Commission*, *Harvard Environmental Law Review*, Volume 37, (2013).
- g. Liroff, Richard A., *National Policy for the Environment: NEPA and Its Aftermath*, Indiana University Press (1976).
- h. Rodgers, W., *Environmental Law* 763 (1977)
- i. Smith, Maxwell C. and Catherine E. Kanatas, *Acting with No Regret: A Twenty- Five Year Retrospective of Marsh v. Oregon Natural Resources Defense Council*, Social Science Research Network (2013).
- j. Sullivan, Thomas F.P. (Ed.), *Environmental Law Handbook*, 14th Edition,
- k. Government Institutes, Inc., Rockville, Maryland, (1997)

Endnotes

1. 42 USC §4332
2. *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972)
3. *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n. 21, (1976)
4. 42 U.S.C §4332 The categorical exclusion is included here because, in this author's opinion, a categorical exclusion is only arrived after a substantive review of similar actions and a finding by the decision maker that such are can be generically determined to have no adverse environmental impact. In short, before a category of actions is deemed a CatX, the decision maker studied that category of actions.
5. *Hanly v. Mitchell*, 2 ELR 20216, 20220 (2d Cir.), 460 F.2d 640; and *Hanly v. Kleindeinst*, 2 ELR 20717, 20723, 471 F.2d 823 (2d Cir.); both as cited in Liroff at 167
6. Clean Air Act Amendments of 1970, 42 U.S.C. §7401 et seq. Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. § 1251 et seq. Resource Conservation and Recovery Act of 1976, 42 U.S.C § 6901 et seq. Toxic Substances Control Act of 1976, 15 U.S.C. §2605 et seq. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C § 9601 et seq.
7. A discussion of enforcement provisions under CERCLA and RCRA can be found at <http://www.epa.gov/region1/enforcement/superfund/>.
8. <http://www.bloomberg.com/slideshow/2012-09-18/world-s-top-environmental-success-stories.html#slide1>
9. NEPA § 102(2)(C), (42 U.S.C. § 4332)
10. NEPA § 202 (42 U.S.C §4342)
11. NEPA § 204 (42 U.S.C §4344)
12. 42 USC §5841(a)(1)
13. 10 CFR §51.2
14. 10 CFR §51.10(b)(1).
15. See as examples 10 CFR §51.10(b)(2) and 10 CFR Part 51, Appendix A to Subpart A, passim.
16. 42 USC §4332(C). This characterization of agency action is modified by the term "other" in the text of the NEPA section. The use of such a modifier implies that the preceding items in the clause – "every recommendation or report on proposals for legislation" – are also major Federal actions under NEPA.
17. 40 CFR §1508.18
18. *Id.*
19. 40 CFR §1508.27
20. *Id.*
21. 40 CFR §1508.18
22. *Id.*
23. 40 CFR §1508.18(b)(1)
24. 40 CFR §1508.18(b)(2)
25. 40 CFR §1508.18(b)(3)
26. 40 CFR §1508.18(b)(4)
27. 10 CFR §51.14(b)
28. Special nuclear materials are defined as "(1) plutonium, uranium-233, uranium enriched in the isotope-233 or in the isotope-235, and any other material which the Commission, pursuant to the provisions of section 51 of the [Atomic Energy] act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material. (10 CFR §50.2)
29. 10 CFR 51.20(b)
30. 10 CFR 51.20(b)(14)

31. *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012)
32. 10 CFR §51.23
33. As of 1973, one author stated that “[t]he phrase, ‘major Federal action significantly affecting the quality of the human environment,’ has engendered the bulk of litigation under NEPA.” See Anderson (1973) at 57.
34. NEPA §102 (42 U.S.C §4332).
35. *Id.*
36. Only the Environmental Protection Agency has been exempted from the provisions of NEPA, albeit in a limited way, on the basis that EPA “has statutory responsibility for the protection of the environment.” See Sullivan at 533.
37. 42 U.S.C. §2011 et seq.
38. *Calvert Cliffs’ Coordinating Commission Inc. v. United States Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971).
39. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519 (1978).
40. Sullivan at 533.
41. *Hanly v. Kleindienst*, 471 F.2d 823 (2d Cir. 1972) at 829.
42. *Id.*, at 830.
43. *Id.*
44. *Id.*, at 830-831.
45. *Id.*, at 831.
46. *Id.* at 836.
47. See 10 CFR 51.20(b) and 49 Fed. Reg. 34,658
48. Baker at 64.
49. 40 CFR §1506.5.
50. 10 CFR §51.14
51. 10 CFR §51.45
52. 10 CFR §51.14(b)
53. *Calvert Cliffs’ Coordinating Committee, Inc. v. United States Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971)
54. *Id.* at 1116.
55. 42 Fed. Reg. 34391 at 34393.
56. *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979)
57. 49 Fed. Reg. 34658
58. 49 Fed. Reg. 3469
59. *Id.*
60. *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979), passim
61. 55 Fed. Reg. 38474
62. *Id.* at 38475.
63. 75 Fed. Reg. 81032
64. *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012)
65. The legality of DOE’s withdrawal of its Yucca Mountain application became the subject of litigation because, under the Nuclear Waste Policy Act of 1982, DOE was required to submit, and NRC to evaluate, an application for a repository at Yucca Mountain. (Pub. L No. 100-203, Title V, §§ 5011-5012 (1987) (amending 42 U.S.C. §§ 10132- 10134), as cited in Harnett, *New York v. U.S. Nuclear Regulatory Commission*, Harvard Environmental Law Review, Vol. 37, p. 591, Fn 13.
66. Harnett at 593.
67. Intervenors included the States of New Jersey, Vermont, and Connecticut; and some environ

mental advocacy groups. The Nuclear Energy Institute participated in support of the respondents.

68. *New York v. NRC* at 473

69. *Id.*, at 483

70. *Id.* at 476, citing *Calvert Cliffs' Coordinating Comm. Inc. v. Atomic Energy Comm'n*, 449 F.2d. 1109, 1118 (D.C. Cir. 1971)

71. *Id.*

72. *Id.* at 477

73. 442 U.S. 347, 358 (1979)

74. *New York v. NRC* at 477. 10 C.F.R. 51.23(b) states that “no discussion of any environmental impact of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations (ISFSI) for the period following the term of the reactor operating license or amendment, reactor combined license or amendment, or initial ISFSI license or amendment for which application is made, is required in any environmental report, environmental impact statement, environmental assessment, or other analysis prepared in connection with the issuance or amendment of an operating license for a nuclear power reactor under parts 50 and 54 of this chapter, or issuance or amendment of a combined license for a nuclear power reactor under parts 52 and 54 of this chapter, or the issuance of an initial license for storage of spent fuel at an ISFSI, or any amendment thereto.”

75. 10 CFR § 2.335

76. See Administrative Procedures Act, 5 U.S.C § 553(c)

77. 10 CFR § 2.335(b). In this context, “new and significant” information may serve as the “special circumstances with respect to the subject matter of the particular proceeding [] such that the application of the rule or regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted.

78. 10 CFR § 2.802

79. <http://www.nrc.gov/about-nrc/regulatory/rule-making/rulemaking-process.html>

80. There is an excellent article by two NRC staff attorneys discussing the meaning of “new and significant” information under NEPA titled “*Acting with No Regret: A Twenty-Five Year Retrospective of Marsh v. Oregon Natural Resources Defense Council.*” (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2354803)

81. *Id.*, footnote 77

82. 10 CFR § 2.802 allows “[a]ny interested person [to] petition the Commission to issue, amend or rescind any regulation.

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NEPA and Independent Regulatory Agencies

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Introduction

The National Environmental Policy Act of 1969 (NEPA) is the primary instrument for federal agencies to consider the environmental impacts caused by the decisions that they make pursuant to their statutory authority. NEPA requires all federal agencies to “stop, look, and listen” prior to taking significant actions that could affect the human environment. Agencies must consider the values of environmental preservation for all significant actions and adhere to procedural measures to ensure that those values are fully considered. Federal agencies are further required consider alternative ways of accomplishing their missions in ways which are less damaging to the environment. Section 101(b) of NEPA states that “it is the continuing responsibility of the federal government to use all practicable means, consistent with other essential considerations of national policy” to avoid environmental degradation, preserve historic, cultural, and natural resources, and “promote the widest range of beneficial uses of the environment without undesirable and unintentional consequences.” Also, NEPA created the Council on Environmental Quality (CEQ), a division of the Executive Office of the President, which coordinates the environmental efforts of federal agencies and other White House offices in the development of environmental policies and initiatives. NEPA assigns CEQ the task of overseeing the environmental impact assessment process of federal agencies ensuring that agencies meet their obligations under the Act. Further, CEQ

mediates disputes from time to time between agencies regarding the adequacy of assessments of environmental impacts.

Ultimately, NEPA makes environmental protection a part of the mandate of every federal agency. Virtually every agency of the federal government has prepared an environmental impact statement, and most agencies have also been subject to NEPA lawsuits. While there are differences among each agency’s unique approach to implementing NEPA, these differences are somewhat pronounced among so-called “independent” agencies. This paper examines the approach of one such independent agency: the U.S. Nuclear Regulatory Commission (NRC). This paper addresses the role of CEQ with respect to the NEPA obligations of independent agencies and offer examples of how several independent agencies approach NEPA.

ULTIMATELY, NEPA MAKES ENVIRONMENTAL PROTECTION A PART OF THE MANDATE OF EVERY FEDERAL AGENCY.

Independent Agencies

Before discussing NEPA’s unique relationship with independent agencies, we must first define an independent agency. Unfortunately, this is not a straightforward task. As a general matter, independent agencies are those agencies that exist outside of the federal executive departments (*i.e.*, agencies headed by a member of the presi-

dent's Cabinet). Independent regulatory agencies were created by Congress in an effort to bring expertise-driven decision making to administrative governance. Constitutionally-speaking, such agencies remain part of the executive branch, but may exercise some independence from executive control. Usually, independent agencies are headed by a multi-membered collegial body with each member serving a staggered term. Although members may be appointed by the president and confirmed by the Senate, the president's power to dismiss the agency head or a member may be limited to removals "for cause." In other words, the president usually cannot remove a member of such an agency because the president disagrees with his or her policies or politics.

The legal support for the existence of independent agencies was first established by the U.S. Supreme Court in *Humphrey's Executor vs. U.S.*¹ This case involved a claim by the executor of a former commissioner of the Federal Trade Commission for the payment of salary for the period of his term after President Roosevelt effectively removed him from office. The Court held that the president lacked the authority to remove the commissioner for the purpose of disagreeing with the commissioner's views. To support its conclusion, the Court found that Congress, in creating the Federal Trade Commission, had given the agency both legislative and judicial authority, and required the agency to discharge its duties independently of executive control. In holding that such distinction had a constitutional basis, the Court described the agency

accordingly:

"The Federal Trade Commission is an administrative body created by Congress to carry into effect legislative policies embodied in the statute in accordance with the legislative standard therein prescribed, and to perform other specified duties as a legislative or as a judicial aid. Such a body cannot in any proper sense be characterized as an arm or an eye of the executive. Its duties are performed without executive leave and, in the contemplation of the statute, must be *free from executive control.*"²

HOWEVER, THERE IS NO FORMAL DISTINCTION BETWEEN AGENCIES IN THE EXECUTIVE BRANCH; RATHER, THERE ARE SIMPLY LAYERS OF INDEPENDENCE THAT CONGRESS HAS PROVIDED EACH AGENCY.

The *Humphrey's Executor* decision provides some evidence of a constitutional basis for treating independent regulatory agencies somewhat differently than other agencies. However, there is no formal distinction between agencies in the executive branch; rather, there are simply layers of independence that Congress has provided each agency.

NEPA's Application to Independent

Agencies

Section 102 of NEPA makes it clear that the law applies to “all agencies of the Federal Government.” Therefore, NEPA does not make any distinction between independent and executive agencies. Section 102 further requires all agencies to “identify and develop methods and procedures, in consultation with the Council on Environmental Quality . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations.”³ Notwithstanding the broad scope of NEPA with respect to federal agencies, the uniform application of NEPA in coordination with CEQ remains a somewhat illusive concept.

NEPA does not address whether CEQ’s interpretation of NEPA’s requirements are binding upon federal agencies. Following President Nixon’s issuance of Executive Order 11514 in 1970 (“Protection and Enhancement of Environmental Quality,”)⁴, which authorized CEQ to provide guidance to federal agencies, CEQ issued guidelines for the preparation of environmental impact statements (EIS). However, federal agencies failed to apply CEQ’s guidelines consistently. Federal courts were also quick to point out that the guidelines were not binding upon federal agencies. For example, in *NRDC v. Callaway*,⁵ the court noted that “CEQ Guidelines are only advisory, since the CEQ has no authority to prescribe regulations governing compliance with NEPA.” As mentioned above, CEQ lacked the express statutory authority to promulgate

binding rules implementing NEPA. In 1977, perhaps in an effort to address CEQ’s apparent lack of legislative authority, President Carter issued Executive Order 11991 (“Relating to Protection and Enhancement of Environmental Quality,”)⁶, which expressly required federal agency compliance with CEQ’s NEPA regulations. The Executive Order required agencies to “comply with the regulations issued by the Council except where such compliance would be inconsistent with statutory requirements.”

Perhaps not surprisingly, Executive Order 11991 did not end the controversy surrounding CEQ’s authority. From a legal perspective, any executive order issued by the president must be based on either statutory authority or inherent constitutional authority. Therefore, in order for an executive order to become binding on an independent agency, Congress must have granted the president the authority to issue an executive order that applies to that agency. In many cases, however, the president will not have the specific statutory authority to include independent regulatory agencies within the scope of an executive order. In such situations, the president will have to rely on his or her authority under Article II of the Constitution to “take Care that the laws be faithfully executed.”⁷ Some legal scholars questioned the legal authority for CEQ’s role in legislating NEPA processes for federal agencies. For example, Professor Whitney (1991) argued that CEQ was intended to act primarily in an advisory capacity. He noted that Congress stopped short of granting any authority to

the CEQ to control or veto the activities of other agencies, and actually expressly rejected an original version of Section 102(2)(B) providing for CEQ “review and approval” of federal agency methods for giving “appropriate considerations to presently unquantified environmental amenities and values.” Rather, Congress simply required that agencies “consult” with CEQ. An example of this reasoning appeared in federal court in *TO-MAC v. Norton*,⁸ where the U.S. Court of Appeals for the D.C. Circuit openly questioned the authority of CEQ to issue binding regulations for any federal agency.

The Nuclear Regulatory Commission

Congress created the U.S. Nuclear Regulatory Commission (NRC) in 1974 as an independent agency in order to ensure the safe use of radioactive materials for beneficial civilian purposes while protecting people and the environment. The NRC regulates commercial nuclear power plants and other uses of nuclear materials, including nuclear medicine and nuclear fuel cycle activities. The NRC is headed by five commissioners, each appointed by the president and confirmed by the Senate for five-year terms. The president must designate one commissioner to be the chairman and official spokesperson of the Commission.

The NRC’s statutory authority and structure establish the agency’s independent status. The Atomic Energy Act of 1954, as amended (AEA), provides the NRC with the authority to issue regulations that govern nuclear reactor and nuclear material safety

and adjudicate related legal matters.⁹ In other words, the NRC exercises both legislative and judicial functions. In addition, NRC’s commissioners enjoy the aforementioned “for-cause” removal protection. The Energy Reorganization Act, Section 102(e), provides that “Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office.”¹⁰ This is in contrast to the concept ingrained in executive branch agencies, whose members serve “at the pleasure of the president” and can be removed for whatever reason the president decides.

NRC’s Relationship with CEQ

The NRC has held a longstanding policy that CEQ’s regulations cannot substantively bind independent agencies. The NRC first expressed this policy in response to CEQ’s issuance of its draft NEPA regulations for public comment.¹¹ The NRC believed that CEQ’s proposed regulations represented an improper interference with the decision-making of an independent regulatory agency. NRC’s opinion embodied the concept underlying Humphrey’s Executor, as Congress had provided NRC with an independent structure in the AEA and therefore had presumably intended the NRC to be free from executive control. In promulgating its NEPA regulations, CEQ did not address in the rule’s statement of considerations (SOC) whether its regulations could have a substantive impact on the duties and policies of independent agencies. Therefore, NRC and CEQ remained at a stalemate.

The NRC further articulated its position in the SOCs for NRC’s NEPA imple-

menting regulations in 10 C.F.R. Part 51, which added some clarity to its position. In issuing the final rule, the NRC stated that “as a matter of law, the NRC as an independent regulatory agency can be bound by CEQ’s NEPA regulations only insofar as those regulations are procedural or ministerial in nature.”¹² Therefore, NRC had acknowledged that CEQ regulations binding on the NRC, but only to the extent that such rules are “procedural” in nature. Further, the NRC has made attempts to comply with related Executive Orders to the extent possible, while maintaining that the NRC is not necessary bound by them. For example, President Clinton issued Executive Order 12,898, directing all federal agencies to develop strategies for considering environmental justice in their programs, policies, and activities.¹³ The NRC sent a letter to the White House confirming its commitment to endeavor to carry out the measures as part of its compliance with NEPA requirements.

NRC Cases Involving CEQ

As discussed above, the NRC has argued that CEQ regulations can only bind the agency where they are procedural in nature. Therefore, the NRC must evaluate on a case-by-case basis whether a particular CEQ regulation is either “substantive” or “procedural.” The NRC has confronted this issue infrequently, and only a few cases provide some insight into the NRC’s evaluation of concept. These cases are discussed below.

*a. Limerick Ecology Action*¹⁴

Limerick Ecology Action involved a

challenge to the NRC’s granting of an operating license to the Limerick Nuclear Power Generating Station. The intervening group in the case argued that NRC’s NEPA analysis was flawed because it did not comply with CEQ’s “worst case analysis” regulation in 40 C.F.R. § 1502.22(b). The NRC had previously declined to adopt this provision in its NEPA implementing regulations at 10 C.F.R. Part 51.¹⁵ Holding that the NRC was not required to conduct a worst case analysis, the U.S. Court of Appeals for the Third Circuit explained that CEQ guidelines are not binding on an agency to the extent that the agency has not expressly adopted them. The court also noted that CEQ had substantially amended its worst case analysis regulation while the case was still pending to eliminate the requirement that a worst case analysis be performed. Instead, CEQ required only “reasonably foreseeable” adverse impacts to be analyzed, even if the probability of such impacts is “low.”¹⁶

Limerick Ecology Action represents an example where the NRC considered the CEQ regulation at issue to be “substantive” in nature, and therefore could not bind the agency. NEPA contains no express or implicit requirement for the analysis of a worst case scenario. As evidenced by CEQ’s amendment of the regulations to more closely track NRC’s analysis, NRC’s view of NEPA’s requirement was likely well-founded and not necessarily at odds with CEQ’s ultimately policy views.

*b. Pacific Gas & Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 & 2)*¹⁷

Once again, this case involved CEQ’s regulation regarding “Incomplete or unavail-

able information.” This action involved the application to renew operator licenses for Diablo Canyon Nuclear Power Plant Units 1 and 2. The Intervenor, San Luis Obispo Mothers for Peace, argued that CEQ’s regulation at 40 C.F.R. § 1502.22 required that a probabilistic analysis of the risks posed by the a fault known as the “Shoreline Fault” was essential to the NRC’s environmental analysis and must be included unless the cost would be exorbitant. Section 1502.22 pertains to inclusion in an EIS of incomplete or unavailable information relevant to “reasonably foreseeable significant adverse impacts.” The NRC’s Atomic Safety and Licensing Board admitted the contention, but the Commission struck the Board’s reference to the CEQ regulation. The Commission stated that it may “look to CEQ regulations for guidance, including section 1502.22.” However, the Commission reiterated that its “longstanding policy is that the NRC, as an independent regulatory agency, is not bound by those portions of CEQ’s NEPA regulations that, like section 1502.22, have a substantive impact on the way in which the Commission performs its regulatory functions.”¹⁸

*c. Brodsky vs. NRC*¹⁹

This lawsuit involved a NEPA challenge to NRC’s action, but in a primarily “procedural” context. The plaintiff, Brodsky, challenged NRC’s approval of fire-protection exemptions at the Indian Point Energy Center and argued that the NRC should have held a hearing prior to granting the exemptions. The NRC had issued an environmental assessment (EA) finding that Entergy’s requested exemp-

tion would not significantly impact the environment and swiftly granted the exemption.²⁰ Although the Court of Appeals for the Second Circuit upheld the validity of the exemption, it found that NRC had not provided for any public input during its environmental review and had offered any explanation for why public participation was not required prior to the issuance of its EA.

The court devoted much of its analysis discussing the CEQ’s requirements for public participation during the implementing of NEPA. The court noted that CEQ’s regulations identify public scrutiny as an “essential” part of the NEPA process in 40 C.F.R. § 1500.1(b). Also, the court noted that CEQ requires agencies to make “diligent efforts to involve the public in preparing and implementing their NEPA procedures” and “solicit appropriate information from the public.”²¹ Such involvement can include public hearings “when-ever appropriate,” a determination informed by whether there is “[s]ubstantial environmental controversy concerning the proposed action or substantial interest in holding the hearing.”²² Ultimately, the *Brodsky* court never reached the question of whether CEQ regulations apply to NRC, but found that it could not uphold NRC’s action without an explanation of what public participation procedures NRC followed during its NEPA analysis.

The Federal Energy Regulatory Commission

While NRC has attempted to distinguish itself from CEQ in terms of substantive

NEPA requirements, the Federal Energy Regulatory Commission (FERC) has arguably taken a more aggressive approach. FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines as well as licensing hydropower projects. FERC's structure, with five commissioners at the helm of the agency, is very similar to NRC.

Similar to NRC, FERC's NEPA regulations are clear that CEQ regulations are not binding on the Commission. However, FERC noted that it agrees with the policies reflected in CEQ's regulations. Accordingly, FERC structured its NEPA regulations "as closely as practicable to the essential procedures reflected in the CEQ regulations, while ensuring that its regulations are consistent with its independent regulatory duties."²³

*a. Monongahela Power Co. vs. FERC*²⁴

Historically, FERC's policies have been hostile to the concept of environmental review. This hostility was expressed by FERC's Commissioners in *Monongahela Power Co. vs. FERC*. In *Monongahela*, the Allegheny Power System (APS) filed with the Commission, pursuant to section 205 of the Federal Power Act, three interrelated agreements for the sale by several utilities of up to 450 megawatts of firm energy and related capacity through APS. Several groups intervened in the proceeding, including the Natural Resources Defense Council (NRDC). In its petition, NRDC asserted that FERC was required to prepare an environmental impact statement (EIS) be-

FERC STRUCTURED ITS NEPA REGULATIONS "AS CLOSELY AS PRACTICABLE TO THE ESSENTIAL PROCEDURES REFLECTED IN THE CEQ REGULATIONS, WHILE ENSURING THAT ITS REGULATIONS ARE CONSISTENT WITH ITS INDEPENDENT REGULATORY DUTIES."

cause the acceptance for filing and approval of the rates constituted major federal actions that significantly affect the quality of the human environment, for which an EIS is mandated by section 102(2)(c) of NEPA. One of NRDC's primary environmental concerns was that the proposed sale would involve the increased use of existing generating plants that are not currently operating at full capacity. In addition, the plants involved in the sale were grandfathered from certain provisions of the Clean Air Act (42 U.S.C. § 7411) and were not required to meet the current source performance standards for coal-fired generating plants.

FERC concluded that the preparation of an Environmental Impact Statement was not required in *Monongahela* because the acceptance of rates is not an "action" affecting the environment within the meaning Section 102(c) of NEPA and 40 C.F.R. Part 1500. FERC noted that "major federal actions" are defined in 40 C.F.R. § 1508.18 as actions with environ-

mental “effects” that are actually or “potentially subject to federal control or responsibility.” Accordingly, FERC proposed a rule in 1987 that would establish as categorical exclusions from NEPA electric rate filings submitted by public utilities and the establishment of just and reasonable rates pursuant to sections 205 and 206 of the Federal Power Act. FERC maintained the position that Congress had not granted the Commission authority to reject rate filings on environmental grounds. FERC further opined that the provisions of NEPA were not intended to affect the specific statutory obligations of any Federal agency. In other words, in terms of NEPA and the environment, FERC takes power plants as it finds them.

b. Order 888

Subsequent to *Monongahela*, FERC reiterated its position on environmental reviews when it issued Order 888. This action consisted of a final rule requiring public utilities that own, control or operate facilities used for transmitting electric energy in interstate commerce to have on file open access non-discriminatory transmission tariffs that contain minimum terms and conditions of non-discriminatory service. FERC initially concluded that no EA or EIS was necessary because the regulation fell within the categorical exclusion for electric rate filings. However, FERC eventually acquiesced to the requests of several commenters, including the U.S. Environmental Protection Agency (EPA), and prepared an EIS. The commenters were concerned that promoting competition among generators could lead to an increase in harm-

ful emissions, especially nitrogen oxides. Although FERC concluded that the order would only affect air quality slightly (if at all) and that the environmental impacts are as likely to be beneficial as negative, FERC resisted on alternative grounds calls for it to adopt mitigation measures. Primarily, it asserted that it lacked the legal authority to adopt mitigation measures. FERC characterized itself as “in essence and by law” an “economic regulator.”²⁵

The Administrator of the EPA referred FERC’s environmental analysis to CEQ, pursuant to section 309 of the Clean Air Act, 42 U.S.C. § 7609, and 40 C.F.R. Part 1504. Although EPA did not necessarily oppose FERC’s underlying action or environmental analysis, EPA was concerned with potential longer term effects of Order 888 and held the position that the nitrogen oxide emissions associated with the rule should be addressed as part of a comprehensive emissions control program developed by EPA and the States under mechanisms available under the Clean Air Act. In essence, EPA was encouraging FERC to incorporate mitigation strategies in its EIS.

FERC disagreed with both the substantive and institutional reasons with EPA’s referral to CEQ. In its Order responding to the referral, FERC declined to take part in the process and voiced its disapproval of EPA’s interference. FERC stated that it was “inappropriate for EPA to refer this agency’s action based upon narrow analytic differences in the absence of strong and well-tested evidence of environmental harm.” FERC noted its greater concern with “the difficulties associated with

the referral of an action of an independent regulatory agency.” FERC stated that although the regulations of the CEQ are “useful as a mechanism for resolving disputes in the executive branch,” they “raise significant questions” with respect to their application to actions of independent regulatory agencies. FERC concluded that it must make its decisions with respect to Order 888 solely based on the record in the proceeding and without the interference from CEQ and the executive branch. FERC noted that, despite its opposition to EPA’s referral, it would appropriately engage in consultations and exchanges of information in order to facilitate resolution of disputes with other agencies.

Conclusion

In light of the foregoing, CEQ’s role with respect to independent agencies appears to be limited. However, this is not necessarily the case. In *Andrus v. Sierra Club*,²⁶ the Supreme Court stated that CEQ’s interpretation of NEPA is entitled to “substantial deference” in light of its important role in implementing the statute. The *Andrus* Court resolved a split among the circuit courts over the interpretive authority of CEQ (i.e., whether its interpretations were “merely advisory” or entitled to “great weight”). While *Andrus* may have settled this issue, it did entitle CEQ to the complete deference provided by *Chevron U.S.A. v. NRDC*,²⁷ because NEPA is administered by all federal agencies (not exclusively CEQ). In other words, CEQ’s interpretation of NEPA would not necessarily control where a

different agency proffered a different alternative (as in *Limerick Ecology Action*).

While both NRC and FERC have been careful to preserve their respective status as an “independent” regulatory agency, each agency has largely adopted CEQ’s guidelines and policies in their own NEPA regulations. Therefore, the only likely tension remaining between these independent agencies and CEQ requirements would involve “substantive” NEPA requirements that interfere with the agency’s statutory obligations. The examples discussed above with respect to *Limerick Ecology Action* and Order 888 have been rare.

Both NRC and FERC have demonstrated their willingness to work with CEQ as they implement NEPA, which highlights CEQ’s position as a valuable resource with special expertise regarding environmental analysis and government decision-making. Based on the lack of major disagreements between independent agencies and CEQ and the alignment of NEPA regulations with CEQ’s guidelines, the future will likely produce further harmony for environmental reviews within the executive branch.

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NEPA Compliance and the Adoption of an Environmental Impact Statement by a Regulatory Agency

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Introduction

Federal regulatory agencies have responsibilities under the National Environmental Policy Act of 1969 (NEPA)¹ at multiple stages of their regulatory responsibilities. This includes the development of regulations and when conducting their oversight responsibilities. This paper reviews the roles of regulatory agencies (the United States Nuclear Regulatory Commission (NRC) and the United States Environmental Protection Agency (EPA)) related to the disposal of high-level radioactive waste, spent nuclear fuel, and transuranic waste under NEPA and as modified by other laws. The focus of this paper is on how the NRC looked at how to address its responsibilities, with a brief review of the EPA to provide a contrast in how the two regulatory agencies comply with NEPA.

The development of a geologic repository for the disposal of high-level radioactive waste and spent nuclear fuel (HLW) is the responsibility of the DOE; this has included the site characterization and license application for a proposed repository at Yucca Mountain, Nevada. The development of a geologic repository for the disposal of transuranic waste is the responsibility of the DOE, which has resulted in the development of the Waste Isolation Pilot Plant (WIPP). The EPA has the responsibility for developing generally applicable environmental standards for the geologic disposal of these materials. The NRC is responsible for developing the implementing regulations and the licensing responsibility for the repository for the disposal of HLW

(e.g., Yucca Mountain). The EPA has the responsibility for developing the implementing regulations (certification criteria) and the regulatory certification of WIPP.

These projects involve major Federal actions with a significant overlap between Federal agencies. Subsequent to NEPA, laws have been promulgated that have modified how the regulatory agencies comply with NEPA for these specific activities. Consequently, the NRC and the EPA have had to adjust how they fulfill their NEPA responsibilities in light of these changes. Major Federal actions by the regulatory agencies include the development of regulations and regulatory decisions (e.g., certification, granting a construction authorization, or granting a license for the receipt and disposal of HLW).

The NEPA Responsibilities of the NRC and the EPA in the Disposal of HLW (Yucca Mountain, Nevada)

The DOE is responsible for the site characterization and development of a deep geologic repository for the disposal of high-level radioactive waste and spent nuclear fuel. The Nuclear Waste Policy Act (NWPA) of 1982,² amendments to the Nuclear Waste Policy Act,³ and, later, the Energy Policy Act of 1992⁴ established responsibilities for the DOE, the EPA, and the NRC for the regulation of HLW disposal and the development of a geologic repository. The DOE was responsible for characterizing the Yucca Mountain site; making interim decisions, such as the site suitability decision and the site sufficiency determination; and, if approved, developing

the geologic repository. The NRC was given the responsibility for promulgating the implementing regulations and licensing responsibility. The NRC was also given responsibilities during the period of site characterization. Under the Reorganization Plan No. 3 of 1970,⁵ the EPA was given the responsibility for promulgating generally applicable environmental regulations for the protection of the environment from radioactive material.

Section 102 of NEPA⁶ requires the responsible Federal official to consult and obtain the comments of any Federal agency that has jurisdiction by law or special expertise with respect to the environmental impacts involved with major Federal actions significantly affecting the quality of the human environment.

The NRC developed its regulations to implement Section 102 of NEPA. These regulations were first promulgated in 1974⁷ at Title 10 *Code of Federal Regulations* (CFR) Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." The Council on Environmental Quality published their regulations implementing NEPA, 40 CFR Part 1500, "Regulations for Implementing the Provisions of the National Environmental Policy Act," on November 28, 1978.⁸ On March 12, 1984, the NRC revised its regulations at 10 CFR Part 51 to develop regulations for the implementation of Section 102 of NEPA that voluntarily consider the CEQ regulations.⁹ The CEQ reviewed the NRC's draft final procedures for compliance with NEPA, which amended the NRC requirements at¹⁰ CFR Part 51.10. The CEQ

informed the NRC that the CEQ had determined that the NRC's procedures addressed the necessary sections of the CEQ regulations as required by 40 CFR 1507.3, "Agency procedures," which allow agencies to adopt their procedures after publishing their draft procedures for public comment and after a review by the CEQ as required by NEPA¹¹ and the CEQ requirements.

Under the NWPA, the DOE has the primary responsibility for evaluating the environmental impacts of the geologic repository at Yucca Mountain, Nevada. Under NEPA, NRC activities that qualify as major Federal actions that may significantly affect the human environment would require the development of an EIS. The development of regulations for HLW disposal and the licensing of a geologic repository would qualify as major Federal actions. However, section 121 of the NWPA¹² established that neither the promulgation of the generally applicable environmental standards nor the promulgation of the implementing criteria would require the development of an EIS. In addition, they would not require any environmental review under subparagraphs (E) (consideration of alternatives) or (F) (international cooperation) of Section 102(2) of NEPA.¹³ The NRC regulatory decisions on whether to grant an authorization to allow the DOE to begin constructing the repository and, later, whether to grant a license authorizing the DOE to receive and possess HLW for disposal in a repository would be major Federal actions under NEPA. Consequently, the NRC would normally be required to prepare an EIS for these decisions.

The NRC regulations for a repository at Yucca Mountain—10 CFR Part 60, “Disposal of High-Level Radioactive Wastes in Geologic Repositories,” and later 10 CFR Part 63, “Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada”—include Commission decisions on whether to issue a construction authorization and a license for receiving and disposing high-level radioactive waste at the repository, which may include conditions that the NRC may place on the DOE when granting the license. Under NEPA, the NRC would be required to comply with NEPA and develop an environmental impact statement. The NWPA specifies that any DOE EIS prepared in connection with a repository that is proposed to be constructed under Title I of the NWPA, “Disposal and Storage of High-Level Radioactive Waste, Spent Nuclear Fuel, and Low-Level Radioactive Waste” is, to the extent practicable, to be adopted by the NRC for its decisions on whether to grant the construction authorization and issue a license.¹⁴ The NWPA addresses the NRC’s compliance with NEPA by establishing that, to the extent that the EIS is adopted by the NRC, the adoption would also satisfy the NRC’s responsibilities under NEPA.

The DOE is required by the NWPA to make a site recommendation to the President of the United States. The NWPA declares that the site characterization activities are to be considered a preliminary decision making activity and shall not require the development of an environmental impact statement.¹⁵ As specified in Section 114(f) of the NWPA, the DOE site recommendation is considered to be

a major Federal action significantly affecting the quality of the human environment.¹⁶ Consequently, the DOE was required to prepare an EIS to support its site recommendation and which was required to accompany the site recommendation.

Prior to the NWPA, the NRC’s regulations required the DOE to characterize multiple sites, so as to allow the NRC to consider alternatives as part of the NRC’s responsibilities under NEPA.

***THE NWPA ADDRESSES
THE NRC’S COMPLIANCE
WITH NEPA BY
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RESPONSIBILITIES UNDER
NEPA.***

The NRC also required the DOE to submit an environmental report with its license application; the environmental report would provide information that the NRC would use during its preparation of an EIS.¹⁷ The NRC would then follow its procedures for developing an environmental impact statement; if the DOE were to submit an EIS, the NRC would not have to use the decisions made by the DOE. The EIS would also be subject to the NRC’s licensing process.¹⁸

The NWPA included language that

indicated that nothing in the Act should be considered as changing the NRC's licensing requirements.¹⁹ The NWPA changed the timing and procedures for the site characterization, recommendation, and decision processes and added a provision for the judicial review of the DOE's EIS. The NWPA included provisions that changed what the DOE was required to consider as part of its NEPA responsibilities, such as the need for a repository.²⁰ A provision of the NWPA instructs the NRC to adopt the DOE's EIS to the extent practicable; additional provisions provide for Presidential and Congressional review of the DOE's decision to recommend a site for a repository and the judicial review of the DOE's EIS.²¹ In a previous Commission decision, the NRC had previously stated that, under some conditions, the Commission believed that substantial weight can be given to the a responsible authority's approval of a site or project when conducting its own NEPA analysis.²² This contributed to the NRC's conclusion that the NWPA narrowed the scope of its NEPA responsibilities.²³

The NRC recognized the primary role that the DOE had in evaluating the environmental impacts and interpreted the NRC's role under the NWPA as being focused on health and safety issues. The NRC conducted a rule-making where the NRC established its role and process for addressing its NEPA responsibilities as influenced by the NWPA. In its final rule, the NRC addressed comments that required it to respond to its interpretation of the NWPA language that the NRC is to adopt the DOE EIS "to the extent practicable" and

whether it is appropriate to be a cooperating agency. The NRC's proposed rule did not address how the NRC would address adopting an EIS for a negotiator-selected site. In response to a comment on the proposed rule, the NRC made changes to address this possibility in its final amendments to 10 CFR Part 51.²⁴

The Nuclear Waste Policy Amendments Act of 1987 (NWPAA)²⁵ restricted site characterization activities to Yucca Mountain, Nevada, and discontinued the site characterization activities at all other sites. The NWPAA also restricted the required scope of the DOE's EIS by eliminating the requirement to consider alternative sites to Yucca Mountain, Nevada and established that the NRC would not need to consider alternative sites to Yucca Mountain.²⁶

The NRC relied on a review of the legislative history to the NWPA and the provisions of Section 119 of the NWPA, which establishes the framework for the judicial review of agency actions and deadlines for requesting the judicial review.²⁷ The DOE was required to include NRC comments at certain times in the process of recommending a site. This included NRC comments on the extent to which the DOE's site characterization analysis and waste form proposal seem to be sufficient for including in a license application and preliminary NRC comments on the DOE's EIS.²⁸ The NRC inferred from the detailed judicial and legislative review provisions that the intent of Congress was for the NRC to not reopen issues that have already been reviewed.²⁹

The responsibilities of a cooperating agency are addressed in 40 CFR 1501.6, “Cooperating agencies.” Cooperating agencies are required to:

1. participate in the NEPA process at the earliest possible time,
2. participate in the scoping process, and
3. be responsible for developing information and analyses upon request of the lead agency.

The NRC took has taken the position of being a “commenting agency” on the DOE’s EIS. The foundation of this approach is to be consistent with the requirements of 40 CFR Section 1503.2, “duty to comment,” which identifies the responsibility of Federal agencies with “jurisdiction by law or special expertise” to comment on EISs within their jurisdiction. The NRC procedures for compliance with NEPA at 10 CFR Part 51 address, with limited exceptions, those activities where the NRC has the lead responsibility. Consequently, the NRC procedures at 10 CFR Part 51 do not address its responsibilities (e.g., being a cooperating agency) with respect to EIS developed by other Federal agencies. However, the NRC has a policy of commenting on draft EISs prepared by other Federal Agencies; this is specifically addressed in the NRC regulations implementing NEPA.³⁰

The NWPA requires the NRC to adopt the DOE’s EIS, to the extent that it is practicable. The NRC conducted a rule-making to amend 10 CFR Part 51 to establish the standard that the NRC would use to adopt DOE’s EIS for Yucca Mountain. The standard adopted

by the NRC³¹ was that the NRC would find it practicable to adopt the EIS for a Yucca Mountain repository, unless:

1. the action [to be taken] by the Commission differs from that proposed by the DOE in its license application (10 CFR 51.109(c)(1)), provided that the difference may significantly affect the quality of the human environment, or
2. there is significant and substantial new information or considerations that would render the EIS inadequate (10 CFR 51.109(c)(2)).

At the time that the NRC was developing the requirements for adopting the DOE’s EIS for Yucca Mountain, the NRC also had to consider the potential that a different site could be selected. Such a site might arise through the negotiated site provisions of the NWPA.³² Section 407(c) of the NWPA requires the NRC to adopt the EIS prepared by the DOE for a site characterized under Title IV of the NWPA, “Nuclear Waste Negotiator,” to the extent practicable. However, the NWPA also specifies that the adoption by the NRC shall be in accordance with 40 CFR 1506.3.³³ The NRC would need to follow its customary practices for adopting an EIS, which would include being consistent with the CEQ requirements at 40 CFR 1506.3, “adoption.” However, by remaining a “commenting agency” and not participating as a cooperating agency, the NRC would not be able to take advantage of 40 CFR 1506.3(c), which allows a cooperating agency

to adopt an EIS without recirculating it, if after an independent review of the EIS, the cooperating agency concludes that its comments and suggestions have been satisfied.³⁴

The DOE suggested that the NRC's role was to be a cooperating agency, which has been appropriate for other instances where one agency had a regulatory oversight role over another. When addressing the DOE comment made during the NRC rule-making to update its regulations for complying with NEPA to reflect that amendments to the Nuclear Waste Policy Act, the NRC acknowledged that it may be appropriate for the regulatory agency to be a cooperating agency in the development of an EIS being developed by the agency responsible for the project. However, the NRC interpreted the NWPA as limiting its responsibilities, including limiting the NRC's balancing of environmental considerations during its licensing activities.³⁵

The many years of site characterization encompassed the time during which the DOE was developing the EIS. During the site characterization phase of the project, the NRC and the DOE had a significant amount of interaction. The comments and feedback that the NRC provided during this phase of the project addressed aspects of the DOE work in areas where the NRC has special expertise. This allowed the NRC to provide a constructive role as a commenting agency as envisioned in the response to the DOE suggestion that the NRC act as a cooperating agency.³⁶ By participating as a "commenting agency," the NRC did establish some distance between itself and the DOE on a highly contentious

project. Maintaining this independence has added value, because the NRC was created when the promotional and regulatory roles of the Atomic Energy Commission were separated. Although the NRC did not participate in the development of the EIS and had a focus on issues pertaining to radiological health and safety, the NRC's role as a "commenting agency" still included significant involvement on issues that the DOE had to consider in the EIS.

The conditions for adoption of an EIS under Title I of the NWPA, "Disposal and Storage of High-Level Radioactive Waste, Spent Nuclear Fuel, and Low-Level Radioactive Waste" are the conditions that would require a supplemental EIS (40 CFR 1502.9(c)), which require agencies to supplement the EIS, if:

1. there are substantial changes in the proposed action that are relevant to the environmental concerns, or
2. there are significant new circumstances or information relevant to the environmental concerns and bearing on the proposed action or its impact.

The first condition could occur if the NRC were to impose licensing conditions on the DOE, provided that they also meet the significance portion of the criterion. The license conditions would need to be substantially different from what the DOE had considered in its EIS. In addition, the license conditions would have to have the potential to significantly affect the quality of the human envi-

ronment. The second situation matches the condition where the DOE would be expected to develop a supplemental EIS pursuant to 40 CFR 1502.9(c)(ii); although the NRC's expectation was that the DOE would supplement its EIS, it was envisioned that there could be circumstances where the NRC would need to prepare its own supplement.

THE COUNCIL ON ENVIRONMENTAL QUALITY COMMENTED THAT "TO THE EXTENT PRACTICABLE" WOULD MEAN THAT THE NRC WOULD ADOPT SOME, OR ALL, OF THE DOE'S EIS TO AVOID UNNECESSARY DUPLICATION; THIS ADOPTION WOULD BE MADE AFTER THE NRC CONDUCTED ITS OWN EVALUATION OF THE DOE'S EIS.

Comments from both the State of Nevada and the Council on Environmental Quality addressed the NRC's interpretation of its responsibility when adopting the DOE's EIS. The State of Nevada commented that where a major federal action involves two or more federal agencies, each agency must evaluate the environmental consequences of the entire project and make its own, indepen-

dent determination. The State of Nevada's view was that the NRC's responsibilities under NEPA for a repository at Yucca Mountain were not changed by the NWPA and that the NRC would need to treat the DOE EIS the same as the NRC treats other EISs in fulfilling its responsibilities.³⁷ The Council on Environmental Quality commented that "to the extent practicable" would mean that the NRC would adopt some, or all, of the DOE's EIS to avoid unnecessary duplication; this adoption would be made after the NRC conducted its own evaluation of the DOE's EIS.³⁸

The NRC relied on its review of the legislative history of the NWPA, which the NRC discussed in detail in its Statements of Consideration (or preamble) to the proposed rule.³⁹ The NRC's interpretation of the NWPA is that it did modify the NRC's responsibility under NEPA. As the legislation was being considered in the House of Representatives, there were changes made to the language in the resolution that the NRC interpreted as modifying its responsibilities under NEPA; these changes included the need to consider alternate sites and the timing of the environmental assessment.⁴⁰

The NWPA includes provisions that limit the NRC's role at the time that the EIS is being developed. Section 114 of the NWPA⁴¹ requires the DOE to submit a site recommendation to the President of the United States. The site recommendation is to include the final EIS for the Yucca Mountain site, including comments on the EIS from the NRC. Also, the site recommendation is to be accompanied by preliminary comments of the NRC on the

extent to which the at-depth site characterization analysis and the waste form proposal for the site appear to be sufficient for including in a license application. The license application would then follow Presidential action on the recommendation. Consequently, it was envisioned that the EIS would first be submitted in support of an agency decision that would not involve an NRC decision; it would initially be provided to the President and not to the NRC for action. The DOE's EIS was seen as being subject to Congressional and judicial review before the EIS would be submitted to the NRC as part of an application for a license or construction authorization. This provided separation between the completion of the DOE's EIS and the NRC's licensing process and had the potential for defects in the EIS to be known, before the NRC evaluated the DOE's EIS for adoption.

The NRC had experience with a parallel case, which involved NRC regulations developed pursuant to the Uranium Mill Tailings Radiation Control act of 1978 (P.L. 95-604, 92 Stat. 3021).⁴² The NRC's interpretation of its responsibilities to consider economic costs and other factors included whether it could rely on information developed by the EPA during the development of the EPA's general environmental standards at 10 CFR Part 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings." The NRC concluded that the time permitted by the statute to develop its regulations did not provide enough time to conduct an independent study of the costs and benefits and that relying on the EPA analysis, was

appropriate in fulfilling its responsibilities. The Court — in *Quivira Mining Company v. NRC*,⁴³ — found that the legislative history and the statute were not clear and did not reject the NRC's interpretation.⁴⁴

The NWPA establishes timelines for certain actions, including a nominal three-year deadline for a licensing decision. The DOE's EIS for Yucca Mountain was expected to be similar in scope as that required for the NRC licensing decision. These factors had similarity to the development of regulations for uranium mill tailings. The NRC believed that there was ambiguity in the statutory language and the legislative history of NWPA addressing the adoption criteria that the NRC could use for the Yucca Mountain EIS.⁴⁵ This ambiguity provided flexibility in how the NRC could interpret the effect of the NWPA on the NRC's responsibilities under NEPA when adopting the DOE's EIS, where a reasonable interpretation is likely to receive deference when subjected to judicial review.

The NEPA Responsibilities of the EPA in the Disposal of Transuranic Waste (WIPP)

The regulation of the WIPP, illustrates some differences in the roles of the NRC and the EPA under NEPA. The WIPP is a geologic repository for the disposal of transuranic wastes. The DOE has the responsibility for the development and operation of the WIPP. The EPA has the responsibility for developing the environmental standards and the implementing regulations.

The EPA was given the responsibility

to develop generally applicable environmental standards for the disposal of radioactive material by the Energy Reorganization Act of 1970.⁴⁶ The EPA established generally applicable environmental standards at 10 CFR Part 191, “Environmental Standards for the Management and Disposal of Spent Nuclear Fuel; High-Level and Transuranic Radioactive Wastes.”⁴⁷ When the EPA began developing its generally applicable environmental standards at 10 CFR Part 191, the EPA began to prepare an EIS. This was consistent with the EPA’s policy for voluntarily preparing an EIS⁴⁸ that was in effect at the time. When the EPA published its final rule promulgating the requirements at 10 CFR Part 191, the EPA was exempted, by Section 121(c) of the NWPA, from preparing an EIS when developing the generally applicable environmental standards. The EPA was also exempted from having to conduct any environmental review required by paragraphs (E) and (F) of Section 102(2) of NEPA.⁴⁹ The EPA did, however, make information that would have been contained in an EIS available in Background Information Documents prepared for the final rule.⁵⁰ After the EPA completed its environmental standards for the disposal of HLW and transuranic waste at 10 CFR Part 191, the EPA regulations were remanded to the EPA for reconsideration.⁵¹

After the court remand, the EPA standards — with the exception of those requirements that were the subject of the court remand — were reinstated by Section 8 of the Waste Isolation Pilot Plant Land Withdrawal Act. The reinstated standards applied to the WIPP, but not for any site required to be

characterized under Section 113(a) of the Nuclear Waste Policy Act (e.g., Yucca Mountain, Nevada).⁵²

Section 8 of the Waste Isolation Pilot Plant Land Withdrawal Act requires the EPA to certify, through rule-making, whether the WIPP complies with the final disposal regulations.⁵³ The EPA promulgated the requirements for making its certification decision at 10 CFR Part 194, “Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant’s Compliance with the 10 CFR 40 CFR Part 191 disposal regulations.”⁵⁴ The EPA made its first certification decision in 1996⁵⁵ and recertification decisions in 2006⁵⁶ and 2010.⁵⁷ The EPA does not have the same procedural requirements for preparing, or adopting, an EIS that other agencies have. Consequently, the EPA did not need to develop an EIS or adopt the DOE’s EIS when making these decisions. This made the EPA process for making its decision simpler than it would be for other Federal agencies that would be obligated to prepare, or adopt, an EIS for their decision.

The EPA is required to comply with the procedural requirements for NEPA only for a limited set of activities. For example, Section 511(c)(1) of the Federal Water Pollution Control Act (or Clean Water Act) establishes that no action of the EPA taken pursuant to the Clean Water Act is to be considered a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA with an exception for Federal financial assistance for the construction of publicly owned waste treatment

plants.⁵⁸ The EPA initially interpreted the provisions of the Clean Water Act as limiting the EPA's voluntary preparation of EISs to only those outside of the exemption in Section 511(c)(1).⁵⁹ However, when the EPA updated its policy statement, it acknowledged that the voluntary preparation of an EIS for activities exempted under Section 511(c)(1) of the Clean Water Act or under a similar exemption for Clean Air Act activities were not precluded.⁶⁰ EPA response actions relating to Comprehensive Environmental Response, Compensation, and Liability Act are also exempted from the procedural compliance with NEPA.⁶¹ EPA's responsibility for compliance with the procedural requirements of NEPA has also been influenced by court decisions; the reasoning has been that the EPA's procedures or environmental reviews under its enabling legislation are functionally equivalent to the NEPA process.⁶² Another difference is that under Section 309 of the Clean Air Act, the EPA is obligated to review newly authorized Federal projects for construction and major Federal actions which require the preparation of an EIS pursuant to NEPA and to make the comments from its review public.⁶³

There are significant differences in how the NRC and the EPA have had to confront their compliance with NEPA when performing their regulatory oversight of the geologic disposal of radioactive material. These differences arise from the effects of other laws and court decisions. The EPA's process for certifying the compliance of the WIPP with the disposal regulations is through

rule-making, rather than through the hearings that the NRC would use for a Yucca Mountain repository. In addition, the EPA is not required to either to develop an EIS for its certification decision or its recertifications for the WIPP; consequently, the EPA does not have to adopt an EIS developed by the DOE. In contrast the NRC had to incorporate its NEPA responsibilities, which requires consideration of whether, and to what extent, the NRC is able to adopt an EIS developed by the DOE for its licensing decisions and to integrate this decision into the NRC's licensing process.

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Decision Making in the Environmental Impact Assessment Process

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Decision Making in the Environmental Impact Assessment Process

Making a decision is like standing at the proverbial fork in the road. One cannot stand still, one cannot take both forks, and one cannot be sure in advance which fork will prove to be the right path.
Frans H. van Eemeren et al.

Introduction

This essay analyzes the decision-making processes used by government agencies to approve or reject projects that have significant impacts on the environment. One may believe that an agency will use a well-defined procedural process for making decisions, but in reality, various internal and external factors have greater influences over the decision maker. This essay examines some of the real-life inputs into the decision-making process and analyzes the results of three agency decisions that affected the environment.

To begin with, I will describe some of the basic requirements for decision making as provided in the implementing regulations for the National Environmental Policy Act (NEPA). I will also discuss several academic observations about decision making with an emphasis on environmental assessments. I present three case studies involving different projects that were analyzed by government agencies using the Environmental Impact Statement (EIS) process. For each example, I provide an overview of the project and the significant issues as documented in the respective EISs. I also describe the agencies'

final decisions and the reasons given for each decision. I plan to demonstrate that government agencies tend to elevate social, cultural, and political concerns over the natural environment. In addition, I plan to demonstrate that unique factors influenced the decision maker in each situation.

In the next section, I describe some of the regulatory requirements for environmental decision-making.

Regulatory Requirements

In response to the 1960s environmental movement and several high-profile pollution incidents, the U.S. Congress passed NEPA in 1969. President Nixon signed NEPA into law on January 1, 1970. The Act created new requirements for assessing government-sponsored activities that have significant impacts on the environment. According to Diori Kreske¹, the U.S. Congress intended for NEPA to create a balance—a productive harmony—between environmental resources and people.

The Act has two main goals. First, agencies have to consider the environmental impacts of a proposed action before making a decision. Second, an agency has to inform the public that it considered these environmental impacts during its decision-making process. It is important to point out that NEPA does not require agencies to elevate environmental concerns over other appropriate political, economic, and social considerations. Rather, NEPA only requires agencies to take a hard look at the environmental consequences of a proposed action before implementing the action. Although Congress designed NEPA to

achieve environmentally positive results through a compulsory procedural mechanism, NEPA simply prohibits uninformed, not unwise, agency decisions².

On the other hand, scholars note that full disclosure of the environmental impacts can have a powerful influence on both the agency and the public³. The information gained through the EIS process may have the power to impact agency policy, the final decision, and/or society itself. If the public does not like the agency's final decision, it has the option of challenging the agency in court or electing influential politicians who support the public's position⁴.

The NEPA process is supposed to improve the *quality* of decisions that have an effect on the environment. In particular, regulation 40 CFR 1500.1(c) states that NEPA's purpose is not to generate paperwork—even excellent paperwork—but to foster excellent action. Attorneys Michelle Nowlin and Thomas Henry⁵ note that “NEPA is founded on the premise that, by educating Federal decision makers about the environmental consequences of their actions, these officials would select more environmentally-positive courses of action”⁶. In other words, by knowing the consequences of a proposed action, the decision maker is expected to choose the most environmentally friendly option.

Another impact of NEPA is the infusion of public comments into the decision-making process. The passage of NEPA gave everybody a voice in decisions regarding use of public funds and public lands⁷. The infusion of public input into the deci-

sion-making process is supposed to result in better agency decisions⁸. The Council on Environmental Quality agrees, noting that the best decisions are those that meet the needs of the community while minimizing adverse impacts on the environment⁹.

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In response to the passage of NEPA, government agencies developed procedures for assessing the effects of federal actions on the environment. These procedural requirements include instructions for conducting environmental impact assessments and preparing EISs. The EIS process is supposed to weigh the benefits versus the costs of the project. In accordance with regulation 40 CFR 1502.1, federal officials are supposed to use the information gained during the EIS development process, in conjunction with other relevant material, to plan actions and to make decisions. Through the EIS process, agencies have to publicly acknowledge the environmental consequences of their actions prior to actually taking the proposed action. Later in this essay, I describe three sets of EISs that were developed for projects that had significant impacts on the environment.

Both government agencies and the public have one potential shared misunder-

standing about the EIS process—whether agencies make decisions beforehand, and then develop EISs to justify these decisions. Regulations specifically prohibit government agencies from doing this¹⁰. However, members of the public recognize that the draft EIS, issued for public commenting, will present a proposed recommendation for the decision maker’s consideration, a rhetorical maneuver suggesting that the agency may have structured the EIS to support the proposed action under consideration. Ben Noller¹¹ notes that “there is significant public skepticism as to whether federal agencies truly remain objective and candid during the NEPA process, especially when the agency is itself a proponent of the particular project rather than a permit-issuing arbiter”¹². In other words, agencies that propose their own projects may be less objective in the NEPA process than third-party agencies.

Finally, in accordance with regulation 40 CFR 1505.2, each agency is required to prepare a concise public Record of Decision. The Record of Decision is supposed to state what the decision was, identify alternatives considered, and discuss relevant factors (economics, technical considerations, and agency mission) used by the agency when making its decision.

In the next section, I present several academic studies about decision making, with an emphasis on environmental assessments.

Literature Review

Academics have studied the decision-making process, and the results of these

studies indicate that the decision maker must take into consideration many internal and external factors during the decision-making process. For example, Carolyn Rude¹³ studied technical and business decision-making. Rude suggests that decision makers must consider three criteria (technical, managerial, and social) when making a decision. Technical criteria include legal restrictions, standards, codes, and past precedents. Social criteria include the environmental impacts, cultural issues, ethical issues, and human values. Managerial criteria include costs, equipment, personnel, training, and demand. Ideally, the agency decision maker will consider all three criteria prior to making a decision that affects the environment.

Academics also suggest that environmental decision-making is a complex process. For instance, Thomas Dietz and Paul Stern¹⁴ comment that “environmental decisions present very complex choices among interests and values, so much that the choices are political, social, cultural, and economic, at least as much as they are scientific and technical”¹⁵. Likewise, Robert Bartlett¹⁶ studied the rationality and logic of NEPA. Bartlett suggests that NEPA decisions are based in politics, in part, because NEPA does not mandate particular results. Bartlett reinforces this idea by suggesting that NEPA “decisions are expected to be made in political ways, by political persons, in political settings”¹⁷. Similarly, Richard Shepard¹⁸ comments that the selection of the proposed action “almost always is based on social values, economic priorities, and political considerations”¹⁹. In other words,

agency decision makers tend to elevate social and political concerns over the environmental costs of a project.

The ultimate goal of the environmental assessment process is a decision that is informed and defensible. However, this goal is difficult for several reasons due to the multiple objectives and pressures of the various stakeholders, the many conflicting constraints between the various environmental options, and the accumulation of large amounts of project-specific information that the public and decision maker have to consider. As a result, environmental assessment decisions fall into the “broad category of multi-objective, multi-criteria decisions”²⁰.

***BARTLETT REINFORCES
THIS IDEA BY SUGGESTING
THAT NEPA “DECISIONS
ARE EXPECTED TO BE
MADE IN POLITICAL WAYS,
BY POLITICAL PERSONS, IN
POLITICAL SETTINGS.”***

One may wonder if agency decision-makers actually use the information presented in an EIS. Various scholars have researched certain projects or specific agencies, and these scholars believe that the *conclusions* of the environmental impact assessment have little influence on the decision maker. Instead, the decision maker is influenced by the decision making *process*.

To begin with, Anne Hansen, Lone

Kornov, Matthew Cashmore, and Tim Richardson²¹ suggest that decision-making is influenced by structures and actors. In particular, environmental impact assessment decision making “is not necessarily determined in the final approval at the end of the process, but is shaped by input from actors more or less continuously during the [assessment] process”²². In a case study, Hansen et al. concluded that the actors in a working group influenced the decision maker, and the findings presented in the environmental impact assessment report had little influence on the final decision.

Similarly, Ytsen Deelstra, Sibout Nooteboom, Ralph Kohlmann, Job van den Berg, and Sally Innanen²³ suggest that “the world of decision-making is determined not only by formal procedures and governmental bodies, but also consists largely of informal processes wherein various actors negotiate with each other”²⁴. The authors suggest that planned and structured environmental research seems of little importance to policy decision makers. Instead, the authors believe that “decision-making can be perceived as a game played by negotiating actors operating in informal and semi-formal forums”²⁵. The goal of the game is to influence the decision maker. For this reason, the authors suggest that the environmental impact assessment report should concentrate on the issues that are important to the involved actors; otherwise, the report may not be used for decision making.

In addition, Luuc van Breda and Gerard Dijkema²⁶ note that environmental “decision-making is unstructured, uncontrol-

lable, and unpredictable. Furthermore, the actual contents of the [environmental impact assessment] contributed little to decision-making”²⁷. Instead, the authors believe that the *process* of decision-making influenced the final decision more than the *content* of the environmental impact assessment report.

Finally, Marc Stern and Andrew Predmore²⁸ studied the results of NEPA decisions within the U.S. Forest Service. They noted that NEPA and decision-making were not always coupled, but were commonly separated. The authors suggest that decision makers “tended to emphasize the importance of efficiency in NEPA processes while deemphasizing the importance of minimizing the negative social and environmental consequences of their actions”²⁹. One reason for this mindset is agency accountability. The authors suggest that agency decision makers are accountable to produce measurable outcomes dictated by fiscal year targets. As a result, decision makers desire to get proposed actions implemented as “cleanly and efficiently as possible”³⁰. For example, the initial preferred alternative presented in an environmental assessment was selected about half of the time for complex projects and about three-fourths of the time for simple projects. That is, the agency demonstrated efficiency by consistently selecting the original proposed alternative.

In the following section, I present three examples of environmental decision-making, and I explain the major influences on the decision maker. Later in this essay, I will explain whether these three examples are in compliance with NEPA requirements and

whether they are representative of the academics’ conclusions.



Figure 1a: Spc. Frank J. Magni, 17th PAD , Makua Military Reservation, Island of Oahu

Three Examples of Environmental Decision-Making

U.S. Department of the Army, Makua Military Reservation

The first example involves the U.S. Army’s decision to conduct live-fire training at the Makua Military Reservation. The Makua Valley is located on the western side of the Hawaiian island of Oahu. Perched between the Pacific Ocean and the volcanic bluffs of the Waianae Mountains, the valley is home to endangered plant and animal species as well as numerous archaeological ruins. The name *Makua* means “parent” in the Hawaiian language, and some claim that the Makua Valley is the mythic birthplace of the Hawaiian people³¹. The Makua Valley is also home to the U.S. Army’s Makua Military Reservation (Figure 1b).

The Makua Military Reservation has a long and storied history that dates back to the 1920s, when the military first installed gun emplacements in the valley. After the attack



Figure 1b: Makua Military Reservation, Island of Oahu

on Pearl Harbor, the Army confiscated around 6,600 acres and evicted ranchers from the valley in order to train troops for World War II. The Army still controls around 4,200 acres of the valley. For many years, the Army and other military services bombed, strafed, and shot bullets within the Makua Valley “with relative impunity”³². In 1998, live-fire training caused wildfires in the valley, catching the attention of the local residents as well as the U.S. Fish

and Wildlife Service. Because of these wildfires, the Army suspended training activities at the Makua Military Reservation.

A group of residents and the advocacy group Earthjustice Legal Defense Fund filed a lawsuit against the Army in response to the wildfires. The plaintiffs demanded that the Army comply with the requirements of NEPA and conduct a thorough review of the environmental impacts of training on the Makua Valley. Local activists also believed that the Army did not fully understand and respect the sacredness of the Makua Valley³³.

The Army subsequently completed a limited environmental impact assessment in 2000 and then announced that it would resume partial training activities. The Army’s analysis concluded that it could conduct live-fire training without damaging historic sites and the environment. The residents and activists were not impressed with the assessment and took the Army to court again in

***THE PLAINTIFFS
DEMANDED THAT THE
ARMY COMPLY WITH THE
REQUIREMENTS OF NEPA
AND CONDUCT A
THOROUGH REVIEW OF
THE ENVIRONMENTAL
IMPACTS OF TRAINING ON
THE MAKUA VALLEY.***



Figure 2: Meteorological monitoring at Makua Military Reservation

2001 to block the Army from using the property pending completion of an EIS. The activists believed that implementation of the EIS process would ensure that the Army conducted a thorough review of the environmental impacts of military training.

The Army initially balked at the idea because of the time and money that would be necessary to complete the EIS process, and the Army tried to have the lawsuit dismissed. The local activists prevailed in court, and the Army had to refrain from using the Makua Valley for live-fire operations pending completion of the EIS process.

The Army subsequently issued the draft EIS³⁴ in August 2005 and the final EIS³⁵ in July 2009. The proposed action, and the various alternatives to the proposed action, involved different levels of training. In other words, the Army intended to conduct training at the Makua Military Reservation, and the decision maker was expected to choose the level of training that would be conducted. The final EIS, with all attachments, consisted of about 6,000 pages of

text.

The primary inputs into the decision-making process included training range capacity, range design (size, location), quality of life of the soldier, and time and cost considerations. The Army's goal was to provide the training needed to keep soldiers ready for battle. The Army developed selection criteria that only the Makua Military Reservation would meet; therefore, the EIS process purposely limited the options of the decision maker. In fact, the Army authors included a no-action alternative that would have allowed low levels of training to continue in the Makua Valley.

During its environmental impact assessment (Figure 2), the Army identified over 100 different cultural sites on the 4,200-acre property including temples, alters, burial sites, and petroglyphs. The Army also determined that the valley was home to about 50 occurring or potentially occurring endangered plant and animal species. Army officials were forced to acknowledge, through the EIS process, that



Figure 3: Mt. Taylor, New Mexico (www.fs.usda.gov/cibola)

live-fire training would cause some environmental and cultural damage to the Makua Valley.

The Army issued its Record of Decision³⁶ in July 2009. The decision maker clearly stated that training was required to comply with the Army's mission and procedural requirements. The Record of Decision also states that training would have significant natural environment and social effects. The Army chose to implement a hybrid alternative in lieu of the preferred alternative; that is, live fire training would still be conducted but with restrictions to minimize environmental harm.

Another lawsuit ensued, and the activists won a partial court victory in November 2009. The activists successfully argued that the Army had incompletely documented the cultural and marine assessments in the EIS. The Army unsuccessfully counter-argued that the long-term suspension of training was causing a slow degrad-

ation in troop readiness. Currently, under court order, the Army is studying the impacts of military training on marine resources at the Makua Beach.

In summary, the Makua Military Reservation EIS was an environmental assessment of the impacts of live-fire training within a sacred valley on the Island of Oahu. The Army had to decide how much training would be conducted in the valley, despite the potential damage to wildlife, habitats, and cultural resources. During the EIS process, the Army emphasized its statutory mission and concluded that it must conduct military training in the Makua Valley to fulfill its mission. Although the mission of an agency is one of several relevant factors in the decision-making process, the Army focused its rhetorical efforts on this factor. These rhetorical efforts were not entirely successful with the local population who did not support the Army's mission.

The Army was the primary beneficiary

of its decision. Others who supported the decision included those who stood to financially benefit from training activities, including local businesses. Those who championed the natural environment and local culture, including activists and some Hawaiians, did not agree with the Army's decision. The Army did not voluntarily implement the EIS process. Instead, the Army implemented the EIS process in response to lawsuits initiated by the opposition.

U.S. Forest Service, Rinconada Communication Site

The second example involves the construction of a communication tower on Mt. Taylor, New Mexico. Mt. Taylor was named after former President Zachary Taylor. The mountain is a dormant volcano located

notably the Navajo Nation. To the Navajo, Mt. Taylor is known as Tsoodzil, one of four sacred mountains. The four sacred mountains are the geographic boundary points for the Navajos' ancestral homeland. According to American Indian scholar Sharon Milholland³⁷, the sacred mountains "are imbued with...deep personal spiritual meaning transcending the physical and the metaphysical³⁸. Similarly, Tony Joe, a member of the Navajo Nation Historic Preservation Department, comments that:

Mt. Taylor plays a vital role in all major Navajo ceremonies, sand-paintings, and prayers....And it is the responsibility of the Navajo people to give offerings, prayers, and ceremonies to the mountain. The mountain in return [sic] provides



Figure 4: Mt. Taylor in the fall (www.fs.usda.gov/cibola)

northeast of Grants, New Mexico. At 11,305 feet, it's the tallest mountain in the San Mateo mountain range.

The area around Mt. Taylor is home to a number of Native American tribes, most

the people with protection, and direction so we can continue to thrive as a Nation.³⁹

Mt. Taylor (Figure 3) is situated within the Cibola National Forest. In August 2006, KD

Radio, Inc. applied for a communication use lease with the U.S. Forest Service to construct a new high-power FM broadcast facility on Mt. Taylor (Figure 4). KD Radio wanted to install the tower and associated support equipment on the mountain to widen its listening range. The location of the proposed tower was the Rinconada Communication Site. The Spanish-based word *rinconada* means “dead end” or “secluded place,” suggesting that the site would be situated at a secluded location on Mt. Taylor. As lead agency, the Cibola National Forest had the responsibility to conduct an environmental impact assessment of the construction and operation of the communication tower.

***MT. TAYLOR PLAYS A
VITAL ROLE IN ALL
MAJOR NAVAJO
CEREMONIES,
SAND-PAINTINGS, AND
PRAYERS.***

The benefits of the tower were significant. Besides providing the public with oldies music and local news, the station could provide emergency response broadcasts, especially during hazardous weather conditions. Support-ers of the project included the Governor’s office, local school district, and local law enforcement agencies. However, the local tribes objected to the radio tower because it would be constructed on *Tsoodzil*, one of four sacred mountains.

The battle lines were drawn—technol-

ogy and progress (and oldies music) on one side and the traditions of the local tribes on the other. The Cibola National Forest was the government agency responsible for being the arbitrator in this battle. The Forest Supervisor had final say in the matter, unless someone filed an appeal.

The Cibola National Forest conducted a formal review of the environmental and social impacts of the tower. The draft EIS⁴⁰ was issued for public comment in May 2009. The Forest Service concluded that the tower would have significant impacts on cultural resources; however, there were no natural environmental impacts. Following its review of public comments, the agency issued the final EIS⁴¹ in January 2011. The agency published its Record of Decision⁴² in April 2011. The Forest Supervisor ruled in favor of tradition by rejecting KD Radio’s application.

Interestingly, the Forest Service reversed its preferred alternatives between EIS revisions. In the draft EIS, the Forest Service supported the tower, but in the final EIS, the agency supported the no-action alternative. The agency changed its mind based on external pressure from the Navajo and internal agency pressure to preserve Mt. Taylor as a traditional cultural property.

KD Radio filed an appeal in June 2011. The decision was upheld a month later by the Forest Service⁴³. The agency ruled that the EIS

process was conducted in accordance with Forest Service procedures; therefore, it was a valid and defensible decision. However, based on the wording of the final decision, the door

was left open for KD Radio, or some other company, to reapply—if the applicant could successfully reach out and obtain the support

decision, while the applicant and those who would have gained from improved radio service did not benefit.



Figure 5: Absaloka Mine (U.S. Department of Interior, draft EIS, 2008a)

of the local tribes.

In summary, the agency's analysis concluded that the construction and operation of the tower would have resulted in little to no impact on the natural environment. Instead, the agency concentrated its rhetorical efforts on the cultural impacts of the tower. The Forest Service eventually denied the application due to these cultural impacts. In my opinion, the agency downplayed the beneficial social and economic impacts of expanded radio service during the EIS process. The Forest Service also appears to have rejected the application primarily to appease the Navajos. The Navajo benefitted from the

What is remarkable about this decision is that it deviates from the norm. Nancy Coppola⁴⁴ suggests that, “for mainstream America, the dominant ideology is progress-oriented, economic, and technologically situated”⁴⁵. The final EIS for the Rinconada Communication Site, and the agency decision, took the opposite approach. That is, the agency chose tradition over technological advancement.

Bureau of Indian Affairs, Absaloka Mine Expansion

The third example involves the Bureau of Indian Affairs' (BIA) review and approval of the expansion of the Absaloka



Figure 6: Typical landscape in South Extension area of Crow Indian Reservation (U.S. Department of the Interior, Record of Decision, 2008c)

coal mine by Westmoreland Resources, Inc. (WRI). Westmoreland Resources obtained its first lease from the Crow Tribe in 1972. This lease included the rights to coal reserves situated in the 1.1-million acre Crow Ceded Area located north of the Crow Indian Reservation in Big Horn County, Montana.

The Absaloka Mine opened in 1974. Through 2006, about 147 million tons of coal had been produced at the mine⁴⁶. In February 2004, WRI entered into a new lease agreement with the Crow Tribe, under the provisions of the Indian Mineral Leasing Act, for two undeveloped and interconnected coal reserves encompassing 3,660 acres. The two leases were called the Tract III lease and the South Extension lease. The Tract III lease is located between the existing mine in the Crow Ceded Area and the Crow Indian Reservation, and the South Extension lease is located wholly within the reservation. Western Resources exercised its lease options for these two properties in June 2006 because it was running out of coal in the Crow Ceded Area (Figure 5).

Before WRI could begin strip-mining operations within the two new properties, it needed to obtain a number of government approvals and permits. One hurdle was an environmental impact assessment of the proposed activity. In November 2006, the BIA published a Notice of Intent in the *Federal Register*⁴⁷ notifying the public that the agency planned to prepare an EIS for the two proposed extensions of the Absaloka Mine. In the Federal Register Notice, the BIA notified the public that the proposed action was to approve the mineral leases and associated surface use agreements. That is, the BIA planned to give WRI the necessary approvals to conduct strip-mining operations on the two properties.

With the help of a contractor, the BIA issued the draft EIS in March 2008⁴⁸. Similar to the wording of the 2006 Notice of Intent, the agency's proposed action was to approve the two extensions of the permit area to allow WRI to strip-mine coal on the two properties. The draft EIS concluded that strip-mining operations would have positive effects on the

Crow's socioeconomics but negative effects on air quality, groundwater quality, surface water quality, and wildlife habitats (Figure 6).

The BIA simultaneously issued the final EIS⁴⁹ and Record of Decision⁵⁰ in October 2008. The final EIS recommended approval of the proposed action, and the Record of Decision formally approved the proposed action. The decision was finalized in November 2008, after the expiration of the regulatory-required 30-day waiting period.

In 2009, after receipt of all remaining government approvals and permits, WRI began mining operations in the expanded areas. These expanded areas contains an estimated 77 million tons of coal. According to the executive vice president for WRI, "the Absaloka mine is somewhat unique in that it's one of the very few mines mining Native American coal"⁵¹. This partnership "has produced a significant amount of revenue for the Tribe"⁵² through royalty payments, taxes, and employment opportunities.

In summary, the BIA conducted an assessment of the impacts of coal mining on the Crow Indian Reservation in Montana. The BIA focused its attention on the short-term socioeconomic benefits—efficient mining operations, use of coal for power production, and income to the Crow Indians—over all other factors. Despite the environmental damage that mining would cause, the Crow supported these strip-mining operations because of the short-term financial benefits they would receive. In my opinion, the BIA downplayed the negative effects of coal mining and coal burning during the environ-

mental assessment process. There are indications that the BIA intended to approve the project prior to development of the draft EIS, and the agency appeared to implement the EIS process simply to comply with NEPA requirements.

After completion of the EIS process, the Crow discovered that mining operations had destroyed one of their cherished cultural sites—a bison kill site. The Crow tribe was critical of the mine operator and the BIA after it became aware of the loss. This incident initiated a public debate as to whether the BIA conducted a sufficient cultural resource inventory during the EIS process. In my opinion, the BIA didn't provide sufficient information to the public about the cultural resources that would be impacted during mining. Instead, the BIA apparently expected the public to obtain this information outside of the EIS process.

In recent years, the coal industry has experienced a significant downturn, and the downturn has dramatically affected the Absaloka Mine. The mine's annual output has decreased in recent years, due to decreased domestic demand for coal, and the economic benefits to the Crow have declined accordingly. The mine operator hopes that international demand for coal will increase; otherwise, the future looks bleak for the Absaloka coal mine.

Discussion

Recall that NEPA has two main goals—that an agency has to consider the environmental impacts of a proposed project and that the agency has to inform the public about

these impacts. All three agencies—Army, Forest Service, and BIA—implemented the requirements of NEPA by conducting the required analyses although the Army conducted its analysis under court order. All three agencies informed the public of their respective conclusions via draft EISs, final EISs, and Records of Decision.

The Army chose to conduct live-fire training in the Makua Valley due to political considerations, the Forest Service chose the no-action alternative due to cultural concerns, and the BIA approved strip-mining operations due to economic and mining efficiency priorities. All three agencies concluded that the economic and social aspects of the human environment outweighed the natural environment. That is, each agency chose a course of action based on social, cultural, or political impacts of the project versus the natural or physical environmental impacts. This finding is in agreement with the opinions of Dietz and Stern⁵³ as well as Bartlett⁵⁴ who point out that NEPA does not require agencies to elevate environmental concerns over other appropriate political, economic, and social considerations. Daniel Bronstein, Dinah Baer, Hobson Bryan, Joseph DiMento, and Sanjay Narayan⁵⁵ remind us that “the underlying principle of NEPA is that all impacts of a project are eventually social, as they ultimately affect people”⁵⁶.

During my review of the three sets of EIS documents, I noted that the agency authors concentrated on a particular angle or point of view. The Army concentrated its rhetorical efforts on fulfilling its mission.

Timothy Brady⁵⁷ points out that the temptation is great for the agency seeking to perform some action to write an EIS to allow itself to achieve its statutory mission. Since the Army rhetorically structured the EIS to support its position, one could argue that this was analogous to the Army being a biased proponent of the project.

Lisa Berzok⁵⁸ discusses several mistakes that agencies make during the environmental assessment process. One mistake is that agencies incorrectly design and define the projects prior to the environmental impact assessment. For example, many agencies “define their objectives so narrowly that only a similarly narrow project definition can meet them”⁵⁹. I suggest that the Army fell into this trap when it established criteria so narrow that only the Makua Military Reservation met the project objectives. Not surprisingly, the Army chose to use the Makua Military Reservation for training based on the criteria that it had established.

The Forest Service was a third-party arbitrator, and the agency concentrated its rhetorical efforts on the cultural drawbacks of the project. I believe that the Rinconada Communication Site EIS decision could have gone either way. There was no clear evidence that the agency was a proponent or opponent of the project, although the Navajo’s opinions weighed heavily on the final decision of the agency.

The BIA concentrated its rhetorical efforts on the short-term benefits over the costs to society and the environment. Because the BIA appeared ready to approve the mine

expansion from the beginning, I wondered whether the BIA used the EIS process to justify its decision. Regulation 40 CFR 1502.5 prohibits government agencies from using the EIS process to justify decisions already made. After my review of this EIS process, I decided that the BIA was demonstrating a paternalistic attitude towards the Crow, instead of being a proponent of the strip-mining project itself. The Indian Mineral leasing Act of 1938 stipulates that the U.S. government must approve all mineral leases, and the BIA is the agency responsible for the federal government-Indian trust relationships. Because of this paternalistic attitude, I suspect that the BIA would have approved any project that benefitted the Crow.

Earlier in this essay, Rude⁶⁰ suggested that decision makers must consider three criteria (technical, managerial, and social) when making a decision. The Army appeared to concentrate on technical and managerial criteria when it emphasized its statutory mission, procedural requirements, training requirements, and costs. The Army appears to have initially downplayed the social criteria, much to the chagrin of the local public. The Forest Service and BIA both appear to concentrate on the social criteria at the expense of the technical and managerial criteria.

As discussed earlier, academics⁶¹ suggest that decision making is influenced by the decision-making process and by actors who negotiate with each other. Of my three examples, only the Forest Service's final decision appears to have been influenced by external actors. The Forest Service changed its mind about the communication tower, from

acceptance to rejection, based on its negotiations with the Navajo. The Army decision maker appeared determined to approve the project regardless of external influence. The influences on the Army appear to have originated entirely within the agency. The decision maker's selection of a hybrid of the proposed alternative appears to be a compromise to the outside stakeholders; although, one could argue that this compromise was still in the Army's favor. Finally, the BIA also appeared determined to approve the expansion of the coal mine, in part, because there was no real opposition to the project, prior to tribal discovery that mining operations had destroyed a sensitive bison kill site.

Stern and Predmore⁶² suggested that agency decision makers are influenced by efficiency and accountability. All three decision makers demonstrated some level of focus on agency goals. To begin with, the Army was focused on meeting its mission and internal procedures. However, the Army's EIS process was not efficient due to various external factors. First, the Army spent years creating a 6,000-page EIS document that was not rhetorically effective with the local public. Further, the Army was forced, multiple times, to implement the NEPA process by local courts. The Army might have been more successful if it had effectively reached out to the public during the original scoping process.

The Forest Service appeared to demonstrate efficiency and accountability when it denied the appeal. In its denial, the agency focused on its compliance with

internal procedures⁶³ claiming that the original decision—denial of the permit for the tower—was appropriate. According to the Forest Service, the denial was appropriate because the EIS process was conducted in accordance with agency procedures.

Finally, the BIA completed the EIS process as expeditiously as possible. The agency notified the public that it planned to implement the EIS process in November 2006. The agency issued the draft EIS for public comment in March 2008, and the agency issued the final EIS and Record of Decision in October 2008. Ben Noller⁶⁴ notes that “since the inception of NEPA, the timeline for implementing [the NEPA process] has increased from just over two years to something in excess of five years”⁶⁵. The BIA completed the Absaloka Mine Expansion EIS process within two years, suggesting that the BIA was motivated to complete the project in a timely manner.

In a different matter, the Army appears to have been unsuccessful in its implementation of the EIS process. To begin with, the Army spend considerable resources to create a 6,000-page EIS that was unconvincing to the local public, primarily because the Army didn’t really address the concerns of the audience. Earlier in this essay, Deelstra et al.⁶⁶ suggested that the environmental impact assessment report should concentrate on the issues that are important to the involved actors; otherwise, the report may not be used for decision making. Initially, the Army did not concentrate on the issues that were important to

***HOWEVER, IN ALL THREE
CASE STUDIES (ARMY,
FOREST SERVICE, AND
BIA), THE AGENCIES
ELEVATED SOCIAL,
CULTURAL, AND POLITICAL
CONSIDERATIONS OVER
ENVIRONMENTAL CONCERNS.***

the locals, and as a result, the Army had to spend more time and resources upgrading the EIS product. Further, I question whether anyone, including the deciding official, actually read the entire 6,000-page final EIS.

I suggest that the Army incorrectly assessed the external social and political influences and failed to incorporate these influences until later into the EIS process. As Carolyn Rude⁶⁷ notes that “social and political factors, which are hard to measure or prove, can nevertheless affect the success of the decision”⁶⁸. The Army’s failure to consider the social and political factors early in the process resulted in considerable losses of time and money. In addition, the Army appeared committed to using the Makua Valley for live live-fire training from the beginning. As Rude⁶⁹ points out, “a commitment to a position discourages a change”⁷⁰. The Army was committed to using Makua Military Reservation for live-fire testing, and its commitment to this position resulted in considerable costs and years of legal battles.

Conclusions

This essay analyzed the results of three

decision-making processes used by government agencies to approve or reject projects that have significant impacts on the environment. I tried to determine how these decisions fit into NEPA requirements. The purpose of NEPA, as provided in regulation 40 CFR 1500.1(c), is to promote better decisions:

Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork—even excellent paperwork—but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

However, in all three case studies (Army, Forest Service, and BIA), the agencies elevated social, cultural, and political considerations over environmental concerns. Both the Army and the BIA made decisions that didn't necessarily protect, restore, and enhance the environment.

Academics⁷¹ have previously suggested that government agencies would elevate human concerns over environmental concerns. Bronstein et al.⁷² agree, pointing out that “the underlying principle of NEPA is that all impacts of a project are eventually social, as they ultimately affect people”⁷³. I suggest that many decision makers will probably decide that a project's social, cultural, and political impacts are more important than the environmental impacts. The U.S. Congress

intended for NEPA to create a balance—a productive harmony—between environmental resources and people⁷⁴. I question whether today's decision-making processes are representative of this balance, as intended by Congress, or whether Bartlett⁷⁵ is correct—all environmental decisions are political in nature.

I considered the role of the EIS in environmental decision-making. According to regulation 40 CFR 1502.1, an EIS is more than a disclosure document. Further, the EIS shall be used by federal officials in conjunction with other relevant material to plan actions and make decisions. Some academics⁷⁶ suggest that the EIS process, not the EIS conclusion, influences the decision maker. Of my three case studies, only one decision (the Forest Service) appears to have been influenced by the process. The Army appears to have been influenced by internal pressures, while the BIA didn't experience any real internal or external pressures.

I would like to close this essay with the advice of Joseph Arvai⁷⁷. Arvai provides several recommendations for an effective decision-making process. This process should include a well-defined problem, the incorporation of values and objectives, and informed trade-offs between the various positions. Arvai suggests that “people may be more likely to accept decisions resulting from processes that seem fair, reasonable, and amenable to allowing all interested parties an opportunity to voice their feelings and concerns”⁷⁸. This “suggests that it is not necessarily the results of participatory decision-making process that are

important to people...rather, the process employed in attaining the decisions may be equally, if not more, important”⁷⁹. In other words, members of the public who participate in the decision-making process may be able to support the resulting policy decision, even if that decision does not result in the outcome that the public wanted. Perhaps the Army could have saved itself a lot of time and trouble if it had allowed the public to become more involved at an earlier time in the decision-making process?

Future Research Opportunities

During my research of environmental decision-making, I identified a number of academic articles discussing the growing use of formal analytical tools and methodologies for systematic decision-making. For example, Ivy Huang, Jeffrey Keisler, and Igor Linko^{v80} describe a tool called multi-criteria decision analysis (MCDA), a formal methodology that can be used to compare alternative courses of action.

According to Huang et al.⁸¹, one commonly used MCDA is analytic hierarchy processes/analytic network processes (AHP/ANP). This tool compares paired criteria, asking which is more important, to produce weighted scores. Using the AHP/ANP process, it is possible that each alternative in an EIS could be assigned a numerical score. The alternative with the highest score could be considered the best alternative for selection; although, the score of each alternative could be manipulated by how the problem is structured and weights

assigned.

None of the agencies discussed in this essay (Army, Forest Service, and BIA) used analytical tools or methodologies for their systematic decision-making. As noted earlier, many academics suggest that the process of decision making appears to have more impact over the decision maker than the results of an environmental assessment. Perhaps agencies can use these types of tools to promote decisions that are based on the recommendations provided in an environmental assessment report.

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**Circuit-Splitting the Atom:
How the Nuclear Regulatory
Commission and the Department
of Energy Reached Different
Conclusions on the
Need to Consider
Hypothetical Terrorist Attacks
Under NEPA**

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April 2014

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Introduction

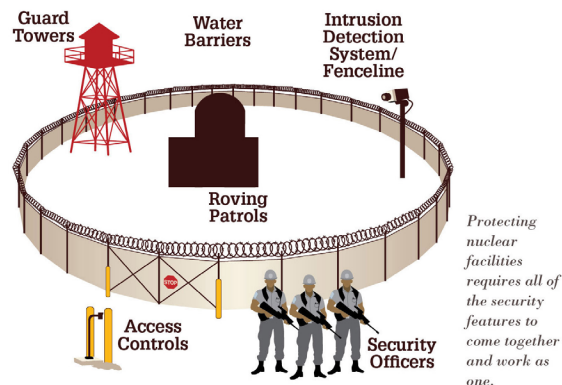
Following the terrorist attacks of September 11, 2001, the United States Nuclear Regulatory Commission (NRC) implemented new regulations aimed at increasing the security of the nation's civilian nuclear facilities.¹ However, NRC did not examine the potential effects of a hypothetical terrorist attack in its National Environmental Policy Act (NEPA) Environmental Assessment (EA) for a proposed spent fuel storage facility at the Diablo Canyon power reactor.² In *San Luis Obispo Mothers for Peace v. NRC* (SLOMP),³ the Ninth Circuit found this approach violated NEPA.

The Department of Energy (DOE) had similarly concluded that consideration of the effects of a hypothetical terrorist attack was not required in its EA for the construction and operation of a Biosafety Level-3 Facility at Lawrence Livermore National Laboratory.⁴ The Ninth Circuit rejected that position in *Tri-Valley CAREs v. Department of Energy* (Tri-Valley),⁵ citing its decision in SLOMP.

Following the Tri-Valley decision, DOE chose to consider intentional destructive acts in all of its NEPA documents nationwide.⁶ But NRC adopted a policy of only examining terrorism impacts in major Federal actions within the jurisdiction of the Ninth Circuit.⁷ Subsequently, on appeal from a license renewal action for the Oyster Creek power reactor, the Third Circuit affirmed NRC's decision to exclude the potential effects of a hypothetical terrorist attack in its NEPA documents in *New Jersey Department of Environmental Protection v. NRC* (NJDEP).⁸

Part I of this Paper examines NEPA's requirement to consider "reasonably foreseeable" effects and the relationship of this requirement to the legal concept of "proximate cause." Part II discusses the effects of adverse circuit court rulings on Federal agencies. Part III recites relevant case law on "proximate cause" and intervening criminal and terrorist acts. Part IV turns to the specific rulings in *SLOMP* and *Tri-Valley*, as well as the respective agency responses to these rulings and the eventual circuit split created by *NJDEP*. Part V parses the various legal and pragmatic considerations that may have led NRC and DOE to adopt different responses to the *SLOMP* and *Tri-Valley* decisions, despite their circumstantial similarity. The author concludes that, notwithstanding the possibility of a future Supreme Court ruling or legislative intervention, both approaches are workable and serve the unique interests of the respective agencies.

Security Components



as of July 2015

U.S. NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Part I – The National Environmental Policy Act of 1969

NEPA, enacted by the 91st United States Congress and signed into law by Presi-

dent Richard Nixon on January 1, 1970, established a national policy designed to:

encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.⁹

NEPA has been called an environmental “Magna Carta” because of its ambitious goals and its emulation around the world.¹⁰

In general terms, NEPA requires Federal agencies to “consider every significant aspect of the environmental impact of a proposed action,” and to take a “hard look” at environmental consequences.¹¹ However, NEPA does not demand any specific outcome; agencies have the latitude to decide that “other values outweigh the environmental costs.”¹² NEPA “merely prohibits uninformed—rather than unwise—agency action.”¹³ The Supreme Court has noted that NEPA’s “twin aims” are (1) to force agencies to consider environmental impact as part of its decision making, and (2) to make information available to the public so that it can play a role in the decision making process.¹⁴

Specifically, NEPA requires “all agencies of the Federal government” to prepare a “detailed statement” for all proposed “major Federal actions significantly affecting the

quality of the human environment.”¹⁵ This “detailed statement” is commonly referred to as an Environmental Impact Statement (EIS).¹⁶ Alternatively, if an agency determines that its proposed major Federal action will not have a significant impact on the human environment, it may make a “Finding of No Significant Impact” (FONSI).¹⁷ In this situation, an agency need only prepare a more limited Environmental Assessment (EA).¹⁸ If an EIS is required, it must describe, among other things, the “environmental impact of the proposed action,” and “any adverse environmental effects which cannot be avoided should the proposal be implemented.”¹⁹

In the NEPA vernacular, “effects” and “impacts” are synonymous.²⁰ Regulations from the Council on Environmental Quality (CEQ)²¹ note that effects include both “[d]irect effects, which are caused by the action and occur at the same time and place,” as well as “[i]ndirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”²²

A. “Reasonably Foreseeable” Effects

So what, exactly, does “reasonably foreseeable” mean? What degree of causal relationship between an environmental effect and the proposed Federal action is necessary to trigger NEPA obligations? The contours of causation have been at the core of many NEPA cases litigated in the Federal courts.

The Supreme Court has examined these questions in two important cases addressing causation under NEPA: *Metropolitan Edison v. People Against Nuclear Energy*,²³ and

Department of Transportation v. Public Citizen.²⁴ In these cases, the high court declared that a mere “‘but for’ causal relationship is insufficient to make an agency responsible for a particular effect under NEPA.”²⁵ According to the Supreme Court, the appropriate test for determining whether NEPA requires a Federal agency to analyze the postulated environmental impacts of a proposed action is whether there is a “reasonably close causal relationship” between the two. The Court “analogized that test to the ‘familiar doctrine of proximate cause from tort law.’”²⁶

B. Proximate Cause

Black’s Law Dictionary defines “proximate cause” as:

the limitation which the courts have placed upon the actor’s responsibility for the consequences of the actor’s conduct. In a philosophical sense, the consequences of an act go forward to eternity, and the causes of an event go back to the dawn of human events, and beyond. But any attempt to impose responsibility upon such a basis would result in infinite liability for all wrongful acts, and would ‘set society on edge and fill the courts with endless litigation.’ As a practical matter, legal responsibility must be limited to those causes which are so closely connected with the result and of such significance that the law is justified in imposing liability. Some boundary must be set to

liability for the consequences of any act, upon the basis of some social idea of justice or policy.²⁷

According to traditional tort law, these ideas of justice and policy generally recognize a break in the chain of causation when there is intervening criminal conduct.²⁸ For example, imagine that a suicide bomber detonates an explosive device in a coffee shop. The mere act of constructing or operating a coffee shop would generally not be considered a “proximate cause” of the resulting harm because of the intervening criminal act. One does not “proximately cause” criminal activity simply by providing an object for a criminal act.

This begs the question: can a major Federal action ever be considered the “proximate cause” of the environmental effects that could result from a successful terrorist attack? The Supreme Court has not addressed this specific question. And Federal appellate courts have reached different conclusions, creating a “circuit split” on this point of law.

Part II – Adverse Circuit Decisions and Federal Agencies

Before moving on to the specific court rulings at issue in this Paper, a general discussion of Federal appellate courts, and the effects of their decisions on Federal agencies, will provide some relevant context.

A. Federal Court Structure

There are 94 Federal district courts which are organized into twelve regional circuits, each having a United States court of appeals. These “circuit courts” hear appeals

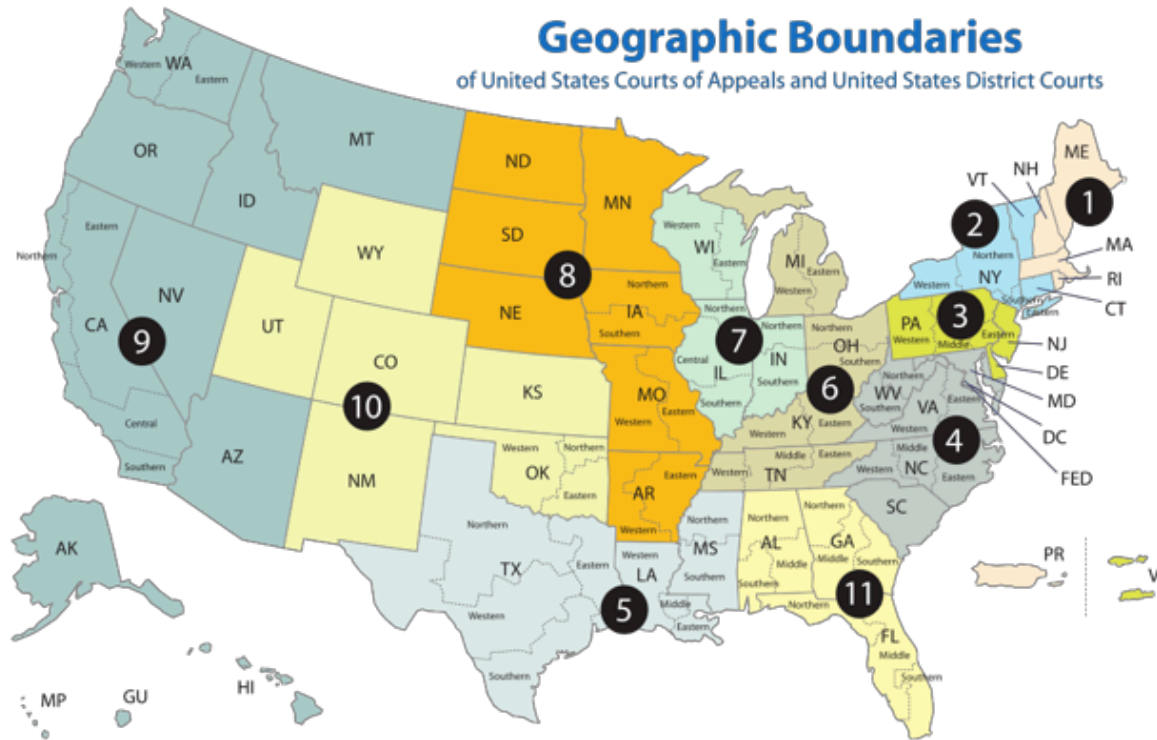


Figure 1³¹

from the district courts located within that circuit, as well as appeals from decisions of Federal administrative agencies.²⁹ Eleven of the regional circuits are numbered (e.g., the “First Circuit” through the “Eleventh Circuit”), and the District of Columbia has its own circuit (i.e., the “D.C. Circuit”).³⁰ Figure 1, below, is a map of the district and circuit boundaries.

Only the Supreme Court has the authority to issue legally-binding precedent for all lower Federal courts.³² Rulings from the regional circuits are only binding jurisprudence within the geographic area of that particular circuit.³³ Thus, it is possible to have divergent interpretations and applications of Federal law based solely on geography. When two or more

circuits reach different conclusions on questions of law, it is known as a “circuit split.” While the Supreme Court is not required to resolve circuit splits, these differences in interpretation are generally an important consideration in the Court’s case selection (known as “*certiorari*”).³⁴

B. Effect on Federal Agencies

What effect do adverse circuit rulings have on Federal agencies that have nationwide programs across multiple circuits? Federal courts have explicitly noted that, “[i]t is clear, of course, that an agency of the United States is not required to accept an adverse determination by one circuit court of appeals as binding throughout the United States.”³⁵

Agencies are “free to litigate the same issue in the future with other litigants.”³⁶ In fact, the Supreme Court values a concept known as “percolation,” and has noted that forcing nationwide agency compliance with a single circuit court ruling:

would substantially thwart the development of important questions of law by freezing the first final decision rendered on a particular legal issue. Allowing only one final adjudication would deprive this Court of the benefit it receives from permitting several courts of appeal to explore a difficult question before this Court grants *certiorari*.³⁷

FEDERAL AGENCIES MAY CHOOSE TO ACCEPT AN ADVERSE CIRCUIT COURT RULING AND PURSUE A SINGLE, NATIONWIDE APPROACH.

However, the courts have also noted that there is “some point when the Government should stop trying to treat citizens differently in different circuits In cases involving statutory interpretation, principles of fairness, consistency and judicial and governmental efficiency militate against repetitious litigation.”³⁸

Federal agencies may choose to accept an adverse circuit court ruling and pursue a single, nationwide approach. Alternatively, agencies may elect to implement a regional approach for their various activities. For

example, the Fourth Circuit issued a decision adverse to the Environmental Protection Agency (EPA) and the Army Corps of Engineers (ACOE).³⁹ The agencies responded by issuing guidance claiming that the decision was “incorrect” in light of “longstanding interpretation of the regulations,” and noting that the government “reserve[d] the right to litigate the[] issues in other circuits.”⁴⁰ The guidance made clear that, “[t]he Fourth Circuit’s decision is not binding outside the Fourth Circuit, and therefore will not be implemented outside the Fourth Circuit.”

Similarly, when the Federal Circuit⁴¹ and the Sixth Circuit⁴² reached different conclusions regarding the question of whether severance payments were “wages” subject to FICA tax, the Internal Revenue Service (IRS) took a regional approach in addressing the adverse ruling.⁴³ The IRS, which preferred the Federal Circuit ruling, suspended review of certain claims in the Sixth Circuit (pending an appeal to the Supreme Court) and applied the Federal Circuit ruling to all other taxpayers.⁴⁴

Agencies may consider a wide range of legal and pragmatic factors in deciding how to address an adverse circuit court decision. Possible considerations specific to NRC and DOE in the NEPA-terrorism context are discussed in detail, below. But, first, we turn to the circuit court opinions relevant to the topic of this Paper.

Part III – Can Federal Actions ‘Proximately Cause’ Terrorist Attacks under NEPA?

In the wake of the horrific terrorist attacks of September 11, 2001, the United

States became more focused than ever before on the possibility of future attacks.⁴⁵ Environmental groups began lodging challenges to major Federal actions, claiming that the environmental effects of hypothetical terrorist attacks must be considered under NEPA. The Supreme Court has yet to consider this issue, precisely, but several Federal appellate courts have ruled on this and other highly-relevant questions of law.

A. Proximate Cause and Intervening Terrorist Acts in Tort

As noted above, the Supreme Court looks to the paradigm of proximate cause when examining NEPA obligations, and intervening criminal conduct generally breaks a chain of causation. Two Federal appellate courts have specifically ruled, in basic tort cases, that terrorist acts are “superseding events” that sever the causal chain in a proximate cause analysis.

In the wake of the 1993 World Trade Center bombing, fertilizer manufacturers were sued under theories of negligence. The Third Circuit held “as a matter of law the World Trade Center bombing was not a natural or probable consequence of any design defect in defendants’ products. In addition, the terrorists’ actions were superseding and intervening events breaking the chain of causation.”⁴⁶ The Tenth Circuit reached the same result following the Oklahoma City bombing and held that fertilizer manufacturers were not responsible for the criminal conduct of the bomber.⁴⁷

B. Proximate Cause and Intervening Criminal or Terrorist Acts under NEPA

THE LONE FEDERAL APPELLATE COURT TO EXPRESS A CONTRARY VIEW IS THE NINTH CIRCUIT, WHICH HELD, IN TWO SEPARATE CASES, THAT NEPA REQUIRES ANALYSIS OF THE POTENTIAL IMPACTS OF A HYPOTHETICAL TERRORIST ATTACK.

In applying the proximate cause analysis to NEPA, specifically, the Supreme Court instructed courts to “look to [NEPA’s] underlying policies” to draw a “manageable line” for proximate causation.⁴⁸ Four of the five Federal circuit courts of appeals that have considered the question of causation in the context of NEPA have drawn that “manageable line” to exclude intervening criminal or terrorist activity, finding that such acts are too far removed from Federal action to require NEPA analysis.

The D.C. Circuit rejected a claim that agencies must review criminal acts in NEPA analyses. The court held that the acts of “deranged criminals” far exceed “[t]he limits to which NEPA’s causal chain may be stretched before breaking.”⁴⁹ The Second Circuit upheld the Department of Transportation’s conclusion that the risks of terrorism or sabotage “were too far afield for consideration” in the NEPA analysis of a regulation governing the shipment of radioactive material.⁵⁰ Similarly, the Third Circuit upheld a decision by NRC

declining to analyze the risks of sabotage under NEPA because the analysis would not be meaningful.⁵¹ And, in 2003, the Eighth Circuit determined that it was legally permissible for the Surface Transportation Board to decline to consider “generalized” risks of terrorism in NEPA analyses.⁵²

The lone Federal appellate court to express a contrary view is the Ninth Circuit, which held, in two separate cases, that NEPA requires analysis of the potential impacts of a hypothetical terrorist attack. In *SLOMP*, the Ninth Circuit ruled against the NRC in a spent fuel storage facility licensing action.⁵³ The court then applied the *SLOMP* decision to DOE in *Tri-Valley*, remanding DOE’s action to construct and operate a facility at a national lab.⁵⁴

The Ninth Circuit likely reached a different conclusion than each of the other circuits because it declined to apply the Supreme Court’s “reasonably close causal relationship” standard, finding it “inapplicable.” The opinion claimed to distinguish the Metropolitan Edison decision as involving a change in the physical environment and an effect, whereas *SLOMP* involved the relationship between a Federal action and a change in the environment.⁵⁵ Instead, the Ninth Circuit applied its own test, noting that “[t]he appropriate inquiry is . . . whether [terrorist] attacks are so ‘remote and highly speculative’ that NEPA’s mandate does not include consideration of their potential environmental effects.”⁵⁶ The court applied this unique test and found that, in both *SLOMP* and *Tri-Valley*, NEPA

required consideration of terrorist attacks.

Part IV – Agency Responses to the Ninth Circuit Ruling and Eventual Circuit Split

In the aftermath of the adverse Ninth Circuit rulings, with no Supreme Court review in sight,⁵⁷ NRC and DOE were left with difficult policy choices about how to move forward with NEPA reviews. Ultimately, the agencies implemented different approaches to the adverse decisions.

A. DOE Response to Tri-Valley

The Ninth Circuit issued its decision in *Tri-Valley* (adverse to DOE) on October 16, 2006. Within a matter of weeks, on December 1, 2006, the Director of DOE’s Office of NEPA Policy and Compliance issued interim guidance implementing the Ninth Circuit ruling on a nationwide basis:

In light of two recent decisions by the United States Court of Appeals for the Ninth Circuit, DOE National Environmental Policy Act (NEPA) documents, including environmental impact statements (EISs) and environmental assessments (EAs), should explicitly address potential environmental consequences of intentional destructive acts (i.e., acts of sabotage or terrorism). . . . This applies to all DOE proposed actions, including both nuclear and non-nuclear proposals.⁵⁸

This document pointed to pre-existing guidance on intentional destructive acts that DOE had previously developed.⁵⁹ Indeed, DOE had

been considering “sabotage and terrorism . . . in NEPA documents for many years [on a discretionary basis]” prior to the Ninth Circuit ruling.⁶⁰

B. NRC Response to *SLOMP*

The Ninth Circuit issued its decision in *SLOMP* (adverse to NRC) on June 2, 2006. Several months later, on February 26, 2007, the Commission, acting in its appellate adjudicatory capacity, issued four decisions reaffirming its previous NEPA policy. The Commission noted that “the Ninth Circuit decision does not control” in matters outside that circuit,⁶¹ and stated that the Commission “continue[s] to believe that the [NEPA] does not require the NRC to consider the environmental consequences of hypothetical terrorist attacks on NRC-licensed facilities,”⁶² notwithstanding the dissent of Commissioner Jaczko.⁶³

The Commission explained its decision in Oyster Creek:

Respectfully . . . we disagree with the Ninth Circuit’s view. We of course will follow it, as we must, in the Diablo Canyon proceeding itself. But the NRC is not obliged to adhere, in all of its proceedings, to the first court of appeals decision to address a controversial question. Such an obligation would defeat any possibility of a conflict between the Circuits on important issues. . . . The Ninth Circuit brushed aside the Supreme Court’s “proximate cause” test as somehow “inapplicable” to NRC licensing decisions. But the

Supreme Court has held, unconditionally, that the test is “required.” . . . [A] NEPA-driven review of the risks of terrorism would be largely superfluous here, given that the NRC has undertaken extensive efforts to enhance security at nuclear facilities And, as the NRC has pointed out in other cases, substantial practical difficulties impede meaningful NEPA-terrorism review, while the problem of protecting sensitive security information in the quintessentially public NEPA and adjudicatory process presents additional obstacles.⁶⁴

This Commission decision was appealed to the Third Circuit and affirmed in *NJDEP*. The Third Circuit applied the Supreme Court precedents of *Metropolitan Edison* and *Public Citizen* and held that NRC licensing actions cannot reasonably be viewed as the “proximate cause” of terrorist attacks. The court reasoned that a terrorist attack “requires at least two intervening events: (1) the act of a third-party criminal and (2) the failure of all government agencies specifically charged with preventing terrorist attacks,” and that “this causation chain is too attenuated to require NEPA review.”⁶⁵ This ruling created a true circuit split with the Ninth Circuit’s *SLOMP* decision.

Part V – Similar Circumstances, Different Approaches

As a matter of law, no agency is required to follow the favored approach of other

agencies in complying with NEPA.⁶⁶ But, why did NRC choose the regional approach? Why did DOE elect a national approach? Both agencies have significant dealings with similar nuclear subject matters; both suffered the same adverse ruling from the Ninth Circuit; and both likely performed the decisional calculus using similar legal and pragmatic considerations. So how could they end up on such different paths? The answer is likely because, despite their similarities, the agencies are fundamentally different animals.

A. *Popularity and Political Expediency*

Obviously, NRC's decision to limit the application of *SLOMP* to only the Ninth Circuit was not universally embraced. The non-profit advocacy group, Public Citizen, wrote a caustic letter to NRC, stating that "[b]ifurcating NRC [p]olicy [i]s a [t]errible [w]ay to [r]egulate," and that "[d]ividing NRC policy into a region of 'the Ninth Circuit' and 'the rest of the country' is a highly inappropriate response."⁶⁷

However, NRC is an independent Federal agency,⁶⁸ whereas DOE is a cabinet-level agency.⁶⁹ Generally speaking, independent agency decision making is more removed from popular opinion than that of their executive counterparts. This design was intended to insulate, for example, important safety regulation functions from the occasional ill-considered whims of an electorate.⁷⁰ Considering the amount of public pressure on the Federal government to take action to prevent terrorist attacks, DOE may have given greater weight to the demands of the public,

where NRC may have given greater weight to other legal and pragmatic considerations.

However, even independent agencies are not immune to political pressure. NRC Commissioner Jaczko entered a dissent in the *Oyster Creek* decision noting that the Commission's decision "not to implement the Ninth Circuit's mandate nationwide" was "unnecessary and risky" and would "not provide regulatory stability or national consistency."⁷¹ However, Commissioner Merrifield fired-back in a scathing concurring opinion, countering that Commissioner Jaczko's approach was to create "regulatory strangulation . . . not based on ensuring adequate protection of the public health and safety, but rather, based on political expediency."⁷² At some level, popular opinion and political considerations likely entered the decision making process for both agencies, but perhaps to a lesser extent at the NRC.

B. *Uniformity and Consistency*

Both agencies likely considered the need for uniformity and consistency in their operations. While DOE could have concluded that uniformity would be best-achieved through a national approach, NRC may have legitimately reached a different conclusion on the same issue. For example, DOE prepares NEPA documents on both nuclear and non-nuclear actions, whereas NRC's sole sphere of authority is regulation of civilian use of atomic energy. Perhaps DOE found significant value in establishing uniformity between nuclear and non-nuclear programs; NRC would not experience a similar

benefit from a national approach.

DOE may have also considered the need for geographic consistency. Twenty of seventy- three “Major DOE Laboratories and Field Facilities” (27%) are located in the Ninth Circuit.⁷³ However a significantly smaller number of major NRC-licensed facilities, just eight of one hundred fourteen (7%) are in the Ninth Circuit.⁷⁴ NRC could have reasonably concluded that consistency was best achieved by not disturbing the status quo for the 93% of stakeholders outside the Ninth Circuit.

C. *Finality*

Consistency also spills into the concept of finality. After all, finality is the only true consistency. As discussed above, circuit courts lack authority to settle an area of law uniformly throughout the United States. Only the Supreme Court can provide finality to an unsettled question of law. One of the most important precursors to Supreme Court review is a circuit split. Perhaps DOE, which was already implementing NEPA terrorism reviews prior to the *Tri-Valley* ruling, simply did not see a likely candidate for creating a circuit split in its NEPA pipeline. With these facts, perhaps DOE concluded that it had reached that point when it should “stop trying to treat citizens differently in different circuits.”

Meanwhile, at NRC, *Oyster Creek* was waiting in the wings. NRC could have concluded that *Oyster Creek* would create a circuit split and allow the question to proceed to the Supreme Court, achieving true finality. The reasonableness of NRC’s position is reinforced by the fact that the case did, indeed, create a

circuit split. (Unfortunately, petitioner did not seek certiorari.)

THE SENSITIVITY OF SECURITY INFORMATION, ALONE, DOES NOT EXCUSE COMPLIANCE WITH NEPA BECAUSE THOSE PARTS OF THE ANALYSIS CAN BE WITHHELD FROM THE PUBLIC.

D. *Efficiency*

In admonishing the lower courts to draw a “manageable line” for imposing NEPA responsibilities on agencies, the Supreme Court noted that NEPA’s demands must “remain manageable” if its goals are to be met.⁷⁵ Otherwise, “available resources may be spread so thin that agencies are unable to adequately pursue protection of the physical environment and natural resources.” Efficient use of scarce resources is a particularly important consideration in the austere, post-sequestration Federal budget environment in which agencies must operate.⁷⁶

Both agencies may have considered the need to take further action to adequately address the ongoing threat of terrorism in the post-9/11 world. DOE, which conducts NEPA reviews in nuclear, as well as non-nuclear, actions, may have perceived an internal deficiency related to proactive consideration of terrorist threats in non-nuclear space. DOE may have found that it would be *efficient* to implement reviews uniformly across the

agency using NEPA as an appropriate vehicle. However, NRC, which *only* has nuclear actions, had already implemented robust security measures throughout its regulatory framework.⁷⁷ In fact, NRC's statutory authority does not allow it to issue a license unless it can determine that a facility would not constitute an unreasonable risk to the health and safety of the public and would not be inimical to the common defense and security.⁷⁸ NRC found that analyzing potential impacts of terrorist attacks under NEPA would duplicate work and consume significant agency resources.⁷⁹

As noted earlier, the first of the "twin aims" of NEPA is to force agencies to consider environmental impacts as part of its decision making.⁸⁰ While DOE likely found that NEPA would be an efficient means of considering environmental impacts of terrorist attacks in its decision making process for non-nuclear actions, there is clearly no need to use NEPA to force NRC to consider terrorism.

Turning to the second of the "twin aims" of NEPA: to make information available to the public so that it can play a role in the decision making process.⁸¹ DOE and NRC both consider sensitive security information in evaluating proposed actions. But the sensitivity of security information, alone, does not excuse compliance with NEPA because those parts of the analysis can be withheld from the public.⁸² But what if it is necessary to withhold the *entire* analysis from the public? It is unclear whether DOE has ever had such a situation. However, NRC did precisely that, and the Ninth Circuit upheld that decision, when *SLOMP* was remanded.⁸³ But when no

information is provided to the public, the process does not further the aims of NEPA.

If the NEPA process could help an agency *gather* valuable information pertinent to terrorism impacts, it could still further the aims of NEPA. However, on the issue of terrorism, the NRC found it unlikely that a public input process would yield any useful new information. Various Federal agencies within the executive branch with intelligence, arms control, foreign policy, law enforcement, and homeland security responsibilities possess significant expertise on the international threat environment and have access to diplomatic and other channels to assess foreign nations, sub-national organizations, and other threats to national security, where the public does not.

If the NRC was unable to gather useful information *from* the public, unable to share sensitive information *with* the public, and found that the reviews merely encumbered scarce agency resources to duplicate work, it appears reasonable for the agency to conclude that voluntarily conducting NEPA terrorism reviews, outside the Ninth Circuit, would detract from the agency's ability to pursue the goals of NEPA in *actually* meaningful ways.

But DOE's opposite conclusion is also logically consistent. DOE would not be duplicating work in non-nuclear actions, and could legitimately discover efficiency gains with across-the-board NEPA terrorism reviews. Plus, the geographic diversity of DOE actions lends itself to a finding that a nationwide strategy is the best path to consistent application of the law.

Conclusion

Despite similar nuclear responsibilities, and similar adverse circuit court decisions, DOE and NRC arrived at differing NEPA strategies through reasoned logic. Both agencies appear to have a genuine concern for marshalling resources in the most efficient, effective manner that will allow them to achieve the aims of NEPA.

Ideally, a nationwide position would be articulated through clarification of the statute by Congress, or a binding precedential decision by the Supreme Court. But, given the challenges of the current political environment, and the current lack of a viable “case or controversy” on this precise issue coming up through the court system, neither seems likely. In the meantime, the well-reasoned approaches of both agencies will allow the nation to continue moving toward a “productive and enjoyable harmony between man and his environment.”

Endnotes

1. NRC implemented a new Design Basis Threat (DBT) in 2007. Design Basis Threat, 72 Fed. Reg. 12,705 (Mar. 19, 2007) (codified at 10 C.F.R. pt. 73). The DBT describes “general adversary characteristics that designated licensees must defend against with high assurance. These NRC requirements include protection against radiological sabotage . . . and theft or diversion of NRC-licensed [nuclear material].” Id. NRC also promulgated new proscriptive physical protection requirements in 2009. Power Reactor Security Requirements, 74 Fed. Reg. 13,926 (Mar. 27, 2009) (codified at 10 C.F.R. pt. 73). And the Energy Policy Act of 2005 amended the Atomic Energy Act of 1954 (AEA) to require NRC to conduct force-on-force inspection exercises at least once every three years for designated licensees. AEA § 170D, as amended by P.L. 109-58 § 651(a)(1), 119 Stat. 799 (2005).
2. NRC, ENVIRONMENTAL ASSESSMENT RELATED TO THE CONSTRUCTION AND OPERATION OF THE DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION (Oct. 24, 2003), available at <http://pbadupws.nrc.gov/docs/ML0329/ML032970370.pdf>.
3. *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm’n*, 449 F.3d 1016 (9th Cir. 2006).
4. DOE, NATIONAL NUCLEAR SECURITY ADMINISTRATION, OAKLAND OPERATIONS OFFICE, ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A BIOSAFETY LEVEL 3 FACILITY AT LAWRENCE LIVERMORE NATIONAL LABORATORY, LIVERMORE, CALIFORNIA, DOE/EA-1442 (Dec. 2002), available at http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/EA-1442-FEA-2002.pdf.
5. *Tri-Valley CAREs v. Dep’t of Energy*, 203 F. App’x 105, 107 (9th Cir. 2006).
6. Memorandum from Carol S. Borgstrom, Director, DOE Office of NEPA Policy and Compliance, to DOE NEPA Community, “Need to Consider Intentional Destructive Acts in NEPA Documents” (Dec. 1, 2006), available at http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-intentdestructacts.pdf.
7. *Amergen Energy Co. LLC* (License Renewal for Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124, 128-31 (2007).
8. *N.J. Dep’t of Env’tl. Prot. v. U.S. Nuclear Regulatory Comm’n*, 561 F.3d 132 (3d Cir. 2009).
9. 42 U.S.C. §§ 4321-4370 (2011).
10. See, e.g., Todd S. Aagaard, A Functional Approach to Risks and Uncertainties under NEPA, 1 MICH. J. ENVTL. & ADMIN. L. 87 (2012), available at http://students.law.umich.edu/mjeal/index/wp-content/uploads/Aagaard_1MJEAL87_2012.pdf.
11. *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519, 553 (1978); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) (quoting *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976)).
12. *Robertson*, 490 U.S. at 350.
13. *Id.* at 351.
14. *Baltimore Gas & Elec. Co. v. Natural Res. Def. Counsel, Inc.*, 462 U.S. 87, 97 (1983) (quoting *Vt. Yankee*, 435 U.S. at 553 and *Weinberger v. Catholic Action of Haw.*, 454 U.S. 139, 143 (1981)).
15. 42 U.S.C. § 4322(2)(C) (2011).
16. 40 C.F.R. § 1501.11 (2013).
17. 40 C.F.R. §§ 1501.4(e), 1508.13 (2013).
18. *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 757-58 (2004); 40 C.F.R. § 1508.9 (2013).
19. 42 U.S.C. § 4322(2)(C) (2011).
20. 40 C.F.R. § 1501.8 (2013).
21. NEPA established the CEQ. NEPA § 202 (codified at 42 U.S.C. § 4342). The President issued an executive order instructing CEQ to “[i]ssue regulations to Federal agencies for the implementation of the procedural provisions of [NEPA].” E.O. 11514, “Protection and enhancement of environmental

quality” § 3(h), 35 Fed. Reg. 4247 (Mar. 5, 1970). As an independent agency, NRC is not bound by these regulations but “takes account” of them “voluntarily, subject to certain conditions” in conjunction with its own NEPA regulations. 10 C.F.R. § 51.10(a).

22. 40 C.F.R. § 1501.8 (2013).
23. *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983)).
24. *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 757-58 (2004).
25. *Id.* at 767.
26. *Id.* (quoting *Metro. Edison*, 460 U.S. at 774).
27. BLACK’S LAW DICTIONARY, “cause” (9th ed. 2009) (internal citations omitted).
28. See generally Restatement (Second) of Torts § 442, 448.
29. Courts of Appeals, UNITED STATES COURTS, <http://www.uscourts.gov/FederalCourts/UnderstandingtheFederalCourts/CourtOfAppeals.aspx> (last visited Apr. 12, 2014).
30. In addition, the Court of Appeals for the Federal Circuit has nationwide jurisdiction to hear appeals in specialized cases, such as those involving patent laws and cases decided by the Court of International Trade and the Court of Federal Claims.” *Id.*
31. Geographic Boundaries of the United States Courts of Appeals and United States District Courts, UNITED STATES COURTS, <http://www.uscourts.gov/uscourts/images/CircuitMap.pdf> (last visited Apr. 12, 2014).
32. The judicial Power of the United States, shall be vested in one supreme Court.” U.S. CONST. art. III, § 1.
33. *Generali v. D’Amico*, 766 F.2d 485, 489 (11th Cir. 1985); *United States v. Carson*, 793 F.2d 1141, 1147 (10th Cir. 1986), cert. denied, 479 U.S. 914 (1986).
34. See SUP. CT. R. 10.
35. *Georgia Dep’t of Med. Assistance v. Bowen*, 846 F.2d 708, 710 (11th Cir. 1988) (citing *Railway Labor Executives’ Ass’n v. I.C.C.*, 784 F.2d 959, 964 (9th Cir. 1986)).
36. *United States v. Stauffer Chem. Co.*, 464 U.S. 165, 173 (1984).
37. *United States v. Mendoza*, 464 U.S. 154, 160 (1984).
38. *Bowen*, F.2d at 711 (citing *Thomas v. Fla. Power and Light Co.*, 764 F.2d 768, 770 (11th Cir. 1985)).
39. *United States v. Wilson*, 133 F.3d 251 (4th Cir. 1997).
40. EPA & ACOE, Guidance for Corps and EPA Field Offices Regarding Clean Water Act Section 404 Jurisdiction Over Isolated Waters in Light of *United States v. James J. Wilson* (May 29, 1998), available at <http://1.usa.gov/1iGnwtt>.
41. *CSX Corp. v. United States*, 518 F.3d 1328 (Fed. Cir. 2008).
42. *In re Quality Stores, Inc.*, 693 F.3d 605 (6th Cir. 2012).
43. IRS, Office of Federal, State and Local Governments, FSLG Newsletter (July 2013), available at http://www.irs.gov/pub/irs-tege/p4090_0713.pdf. http://www.irs.gov/irm/part21/irm_21-007-002r-cont03.html. See also, IRS, Internal Revenue Manual § 21.7.2.5.16 (Oct. 1, 2013), available at http://www.irs.gov/irm/part21/irm_21-007-002r-cont03.html.
45. The IRS ultimately prevailed on appeal. *United States v. Quality Stores, Inc.*, 134 S. Ct. 1395 (2014).
46. See generally James B. Steinberg & Miriam R. Estrin, Harmonizing Policy and Principle: A Hybrid Model for Counter terrorism, 7 J. NAT’L SECURITY L. & POL’Y 161, 165 (2014) (discussing the shift “to prevent attacks instead of simply prosecuting those who try to carry them out.”).
47. *Port Auth. of N.Y. & N.J. v. Arcadian Corp.*, 189 F.3d 305, 319 (3d Cir. 1999). 47 *Gaines-Tabb v. ICI Explosives, USA, Inc.*, 160 F.3d 613, 618 (10th Cir. 1998). 48 *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004).
48. *Glass Packaging Inst. v. Regan*, 737 F.2d 1083, 1091-92 (D.C. Cir. 1984).
49. *City of N.Y. v. Dep’t of Transp.*, 715 F.2d 732 (2d Cir. 1983), cert. denied, 465 U.S. 1055 (1984).
50. *Limerick Ecology Action v. Nuclear Regulatory Comm’n*, 869 F.2d 719, 743-44 (3d Cir. 1989).

51. *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 543-44 (8th Cir. 2003).
52. *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm’n* (SLOMP), 449 F.3d 1016, 1035 (9th Cir. 2006).
53. *Tri-Valley CAREs v. Dep’t of Energy*, 203 F. App’x105, 107 (9th Cir. 2006).
54. SLOMP, 449 F.3d at 1029. The court did not, however, explain how it was able to depart from Pub. Citizen, which says that “NEPA requires a reasonably close causal relationship.” 541 U.S. at 767 (emphasis added).
55. SLOMP, 449 F.3d at 1030 (citing *No GWEN Alliance of Lane Cnty., Inc. v. Aldridge*, 855 F.2d 1380, 1386 (9th Cir. 1988)).
56. The Supreme Court rejected the petition for a writ of certiorari without comment. *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm’n*, 449 F.3d 1016 (9th Cir. 2006), cert. denied subnom. *Pac. Gas & Elec. Co. v. San Luis Obispo Mothers for Peace*, 549 U.S. 1166 (2007).
57. Memorandum from Carol M. Borgstrom, supra note 6 (emphasis added).
58. DOE, RECOMMENDATIONS FOR ANALYZING ACCIDENTS UNDER NEPA (July 2002), available at http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-AccidentAnalysis.pdf.
59. See DOE, “NEPA Hot Topics: Sabotage and Terrorism; Global Climate Change,” 57 NEPA Lessons Learned Quarterly Report 6 (Dec. 1, 2008), available at <http://energy.gov/sites/prod/files/LLQR-2008-Q4.pdf>.
60. Sys. Energy Res., Inc. (Early Site Permit for Grand Gulf ESP Site), CLI-07-10, 65 N.R.C. 144, 146 (2007).
61. Nuclear Mgmt. Co., LLC (Palisades Nuclear Plant), CLI-07-09, 65 N.R.C. 139, 141 (2007).
62. Pac. Gas & Elec. Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-07-11, 65
63. N.R.C. 148, 149 n.5 (2007).
64. Amergen Energy Co., LLC (License Renewal for Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124, 128-31 (2007) (internal citations omitted).
65. *N.J. Dep’t of Env’tl. Prot. v. U.S. Nuclear Regulatory Comm’n*, 561 F.3d 132, 140 (3d Cir. 2009).
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67. Letter from Michele Boyd, Legislative Director, Energy Program, Public Citizen, to the NRC Secretary (Mar. 12, 2006), available at <http://pbadupws.nrc.gov/docs/ML0707/ML070720562.pdf>.
68. Energy Reorganization Act of 1974, Pub. L. 93-438, 88 Stat. 1233 (Oct. 11, 1974).
69. Department of Energy Organizing Act of 1977, Pub. L. 95-91, 91 Stat. 565 (Aug. 4, 1977).
70. See generally Marshall J. Breger & Gary J. Edles, Established by Practice: The Theory and Operation of Independent Federal Agencies, 52 ADMIN L. REV. 1111 (2000).
71. Amergen Energy Co., LLC (License Renewal for Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124, 135 (2007).
72. *Id.* at 134.
73. See DOE, Facilities Information Management System, “Major DOE Laboratories and Field Facilities,” http://fimsinfo.doe.gov/doe_at_a_glance.htm (last visited Apr. 12, 2014).
74. See NRC, INFORMATION DIGEST (NUREG-1350) Vol. 25 (2013-2014), available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v25/facts-at-a-glance.pdf>.
75. *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 776 (1983)).
76. See generally Scott Fulton, Dialogue: Key Legal Issues Facing the Administration in 2013: Environment, Energy and Natural Resources, 43 ENVTL. L. REP. NEWS & ANALYSIS 10395, 10397-98 (May 2013).
77. See DBT Rule, Power Reactor Security Rule, and Energy Policy Act of 2005, supra note 1.
78. See generally Atomic Energy Act of 1954, as amended (42 U.S.C. § 2201 et seq.)
79. Amergen Energy Co., LLC (License Renewal for Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124, 128-31 (2007). *This page intentionally left blank.*

- 80. *N.J. Dep't of Envtl. Prot. v. U.S. Nuclear Regulatory Comm'n*, 561 F.3d 132, 138 (3d Cir. 2009).
- 81. *Id.*
- 82. *Weinberger v. Catholic Action of Haw.*, 454 U.S. 139, 146 (1981).
- 83. *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n*, 635 F.3d 1109 (9th Cir. 2011).

Fragmented Governance and Overlapping Jurisdictions Among Cooperating Agencies

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September 2014

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Introduction

The cooperating agency role derives from the National Environmental Policy Act of 1969 (NEPA), which calls on Federal, state, and local governments to cooperate with the goal of achieving “productive harmony” between humans and their environment.¹ The Council on Environmental Quality’s (CEQ) regulations implementing NEPA allow Federal agencies (as lead agencies) to invite tribal, state, and local governments, as well as other Federal agencies, to serve as cooperating agencies in the preparation of environmental impact statements.

President Obama’s Executive Order 13563 on improving regulation and regulatory review recognized that some agencies “face a significant number of regulatory requirements, some of which may be redundant, inconsistent, or overlapping. Greater coordination across agencies could reduce these requirements, thus reducing costs and simplifying and harmonizing rules.”²

Background

The U.S. Nuclear Regulatory Commission (NRC), gearing up for the gearing up for an anticipated surge in applications for new nuclear power plant combined licenses, nuclear renaissance, entered into a MOU with the U.S. Army Corps of Engineers (Corps). With the projection of over twenty or more applications being submitted to the NRC, it made sense to enter into the MOU with the Corps. Especially since both agencies “are responsible for assuring that the nuclear plants that are built on coastal and inland navigable waters and offshore sites are built and operated safely and with minimum impact on the

environment.”³ The goal of the MOU is to eliminate duplication of agency resources and manage overlapping statutory responsibilities. This would provide the most effective and efficient use of Federal resources by both agencies to comply with NEPA and related laws to make their regulatory decisions. We first need to understand each agency’s mission and statutory requirements to understand whether the agencies effectively managed their statutory overlap to create regulatory synergy rather than dysfunction.

NEPA 101

NEPA was enacted to create a framework within the Federal government for including environmental considerations among factors ordinarily examined in the decision-making process. The heart of NEPA is the EIS, which must be prepared for all major Federal actions significantly affecting the quality of the human environment. The EIS requirement must be satisfied by the Federal agency responsible for the proposed action. An EIS must include a detailed statement of:

1. “the environmental impact of the proposed action;
2. any adverse environmental effects which cannot be avoided should the proposal be implemented;
3. alternatives to the proposed action;
4. the relationship between local short-term uses of the human environment and the maintenance and enhancement of long-term productivity; and
5. any irreversible and irretriev-

able commitments of resources which would be involved in the proposed action should it be implemented.”¹

The CEQ regulations at 1502.4(c) state as follows with regard to the preparation of an EIS on broad programs:

“(c) When preparing statements on broad actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways:

1. Geographically, including actions occurring in the same general location, such as a body of water, region, or metropolitan area.
2. Generally, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.
3. By stage of technological development including federal or federally assisted research, development or demonstration programs for new technologies, which if applied, could significantly affect the quality of the human environment.”⁴

An EIS has two primary purposes: to ensure that the Federal agency makes a fully informed decision in light of the potential

environmental consequences of its actions, and to keep the public informed about those consequences and allow them an opportunity to comment on the proposed action. However, NEPA does not mandate any particular outcome. It is a procedural statute that specifies particular procedures that must be followed and information that must be presented before a Federal agency may make a project decision.

NRC Mission and Statutory Requirements

The NRC staff when asked what the agency mission is will reply that the mission of the agency is the protection of public health and safety and protect the environment in the use of nuclear material. The NRC's 1997-2002 Strategic Plan provides this definition which states:

“NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment.”⁵

Commercial use of nuclear energy in the United States came about through the Atomic Energy Act (AEA) in 1954. In 1946, The U.S. Atomic Energy Commission (AEC) had the responsibility of both promoting the growth of nuclear power and regulating its use. NRC did not yet exist. Section 1 of the AEA states,

“...Atomic energy is capable of application of peaceful as well as military purposes. It is therefore

declared to be the policy of the United States that

- a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and
- b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise."⁶

Due to public concerns in the early 1970's over the declining quality of the environment, Congress took several actions. Congress passed the 1970 Reorganization Plan which established the U.S. Environmental Protection Agency (EPA). Next, Congress passed the Energy Reorganization Act of 1974 (PL 93-438) that split the former AEC into the Energy Research and Development Administration (ERDA) [later to be renamed the U.S. Department of Energy (DOE)] and the NRC.

Also, an environmental review is performed by the NRC staff in accordance with NEPA to evaluate the potential environmental impacts and benefits of the proposed plant. Part 51 to Title 10 of the Code of Federal Regulations outlines NRC's environmental protection regulations for implementing

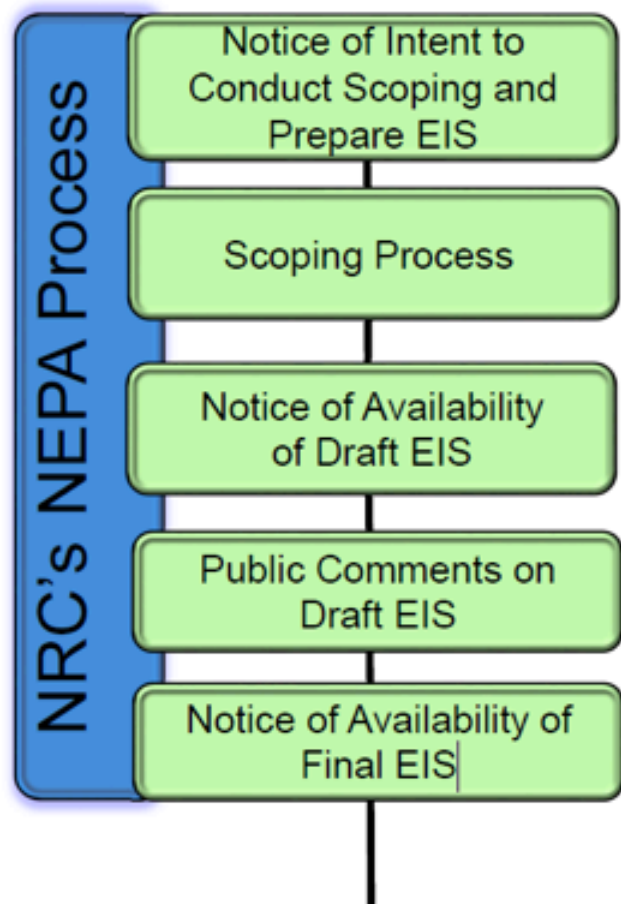
Section 102(2) of NEPA, as amended, that are applicable to NRC's domestic licensing and related regulatory functions.

NRC Environmental Review Process in a Nutshell

The NRC environmental review begins when an applicant submits information to request authorization to start construction of a nuclear facility and an Environmental Report is included with that submittal. A Notice of Intent to prepare an EIS is published in the Federal Register Notice.

The review process will include analysis of impacts to air, water, animal life, vegetation, natural resources, and property of

Review Process



historic, archaeological, or architectural significance. The review will evaluate cumulative, economic, social, cultural, and other impacts and environmental justice.

After the scoping meeting where the applicant's environmental report is discussed with the public, a Draft Environmental Impact Statement (DEIS) is drafted and issued for public comment to the appropriate Federal, State, and local agencies as well as by the public. After the comments are considered a Final Environmental Impact Statement (FEIS) is issued and made public. All comments that are received are addressed in the document.

Corps Mission and Statutory Requirements

"The Corps implements the regulatory and permitting program for any work, including construction and dredging, that occurs in the Nation's waters, including wetlands. The Corps' stated mission is to provide "quality, responsive engineering services to the nation," including planning, designing, building and operating water resources and other civil works projects such as navigation, flood control, environmental protection, and disaster response. The mission of the Corps' regulatory program is to protect the nation's aquatic resources, while allowing reasonable development through "fair, flexible and balanced permit decisions."⁷

The issuance of a permit under Section 404 of the Clean Water Act ("CWA"), 33 U.S.C. § 1344, or Section 10 of the Rivers and Harbors Act ("RHA"), 33 U.S.C. § 403, constitutes a Federal action subject to the requirements of

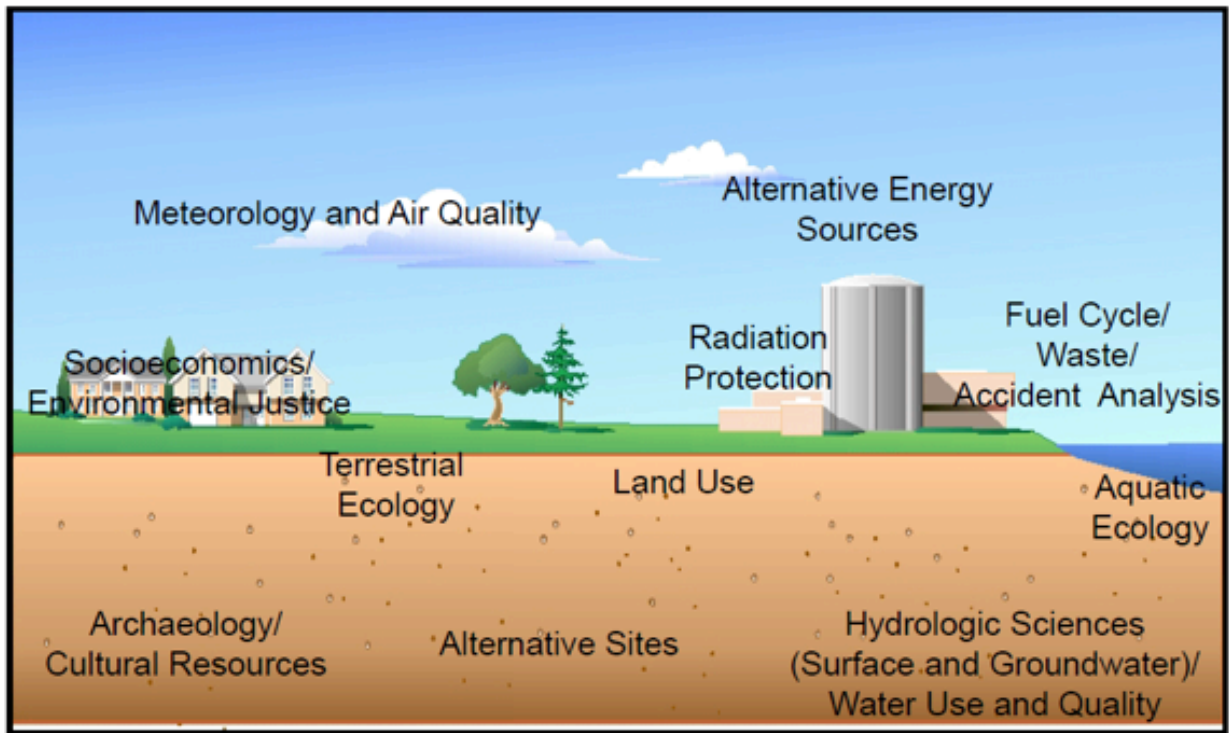
NEPA, including the preparation of an EIS if the environmental effects of the permit issuance are deemed to be significant.

The Corps evaluates the permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands. Corps permits are also necessary for any work, including construction and dredging, in the Nation's navigable waters. The Corps balances the reasonably foreseeable benefits and detriments of proposed projects, and makes permit decisions that recognize the essential values of the nation's aquatic ecosystems to the general public, as well as the property rights of private citizens who want to use their land.

The Corps administration of its regulatory responsibilities under various mandates such as the Clean Water Act often includes synchronization of regulatory processes with the Corps' responsibilities under the National Environmental Policy Act (NEPA). Regulatory activities are often geographically defined by boundaries that derive from the Corps' "jurisdictional limits." Sometimes the same approach is used to define the boundaries of the Corps' NEPA analysis, with the study boundaries being legally defined rather than functionally defined.

With respect to actions subject to NEPA, the Section 404(b)(1) Guidelines specifically state:

"Where the Corps of Engineers is the permitting agency, the analysis of alternatives required for NEPA environmental documents . . . will in most cases provide the information for the



Environmental Resource Areas

evaluation of alternatives under these Guidelines. On occasion, these NEPA documents may address a broader range of alternatives than required to be considered under [the Section 404(b)(1) Guidelines] or may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information.”⁸

The Corps environmental review evaluation process for its permit includes analysis of waters of the United States including wetlands; water quality; aquatic species; air quality; environmental justice; socioeconomic environment; archaeological and cultural resources; recreation and recreational resources; energy supply and natural resources;

hazardous waste and materials; aesthetics; public health and safety; navigation; erosion and accretion; invasive species; cumulative impacts; public benefit and needs of the people along with potential effects on the human environment.

A scoping meeting is held once the Draft EIS is made publically available and issued for comment to the appropriate Federal, State, and local agencies as well as by the public.

Synergy in Regulatory Overlap

NEPA requires agencies to use a multidisciplinary approach to decision making and to consider all types of risks and benefits to both people and to the environment. The environmental impacts of agency decisions must always be considered and documented. This act requires that agencies with overlap-

ping responsibilities, such as NRC and the Corps, consult or cooperate with one another before establishing possible requirements in those areas.

The EIS is shaped and overseen by the “lead” agency whose permit approval or other required action has triggered the EIS. For many major projects, however, other Federal and state (“cooperating”) agencies also will be asked to process permits or reviews of their own later in the process, typically after the lead agency has prepared the EIS (i.e. Corps). This can create disconnects as environmental issues relevant to the permitting agencies may be inadequately addressed in the lead agency’s EIS, creating the need for more environmental reviews late in the process. This situation creates inefficiencies, at the least, as the lead agency must scramble to address the permitting agency concerns after the lead agency put together what it hoped would be a comprehensive draft EIS.

NRC being proactive and to avoid the above situation enacted the MOU with the Corps. The Council on Environmental Quality (CEQ) regulations calls on lead agencies to request participation from “cooperating” agencies in the NEPA process at the earliest possible time.”⁹ To reduce delay, agencies are told to “emphasize” inter-agency cooperation before the EIS is prepared, rather than after the document has been completed.⁹ NRC was proactive by inviting the Corps as a cooperating agency and working together early in the process to define the project. NRC and the Corps defining the stakeholders and to whom each party needs to communicate with; also

defining the regulatory programs that apply to the site early in the process was useful in avoiding dysfunction in the process by identify common goals and project objectives.

The stake holders (i.e. Federal, state and local agencies, tribe and public) that NRC and Corps coordinate with have a vested interest in the project. To improve and address potential regulatory program overlap, early coordination in the EIS process begins with recognition that the NEPA review process should not be done in isolation. The coordination with these varying parties and resource agencies require early planning and commitment by the agencies to ensure they obtain all necessary input from the stakeholders to ensure that the final product, the EIS, meets both agencies’ regulations. This is attainable if and only if the agencies define their roles early in the process. This approach also eliminates over-coordination and duplication.

NRC and the Corps also established what mechanisms of communication would be necessary to receive the appropriate documentation from the agencies. They held several meetings with the resource agencies to solicit input. Participation by the resource agencies during site visits was vital in addressing any siting issues. The agencies were able to provide their perspectives and hear the different agencies’ viewpoints. This encounter was effective and efficient because each agency had an opportunity to hear one another’s concerns and perspectives on the project.

A good scoping process helps identify over-arching issues that require analysis in the EIS. The regulations state that “scoping de-

creases time and resources costs” because “early investment of time and resources to collect information, engage stakeholders, and define parameters for the environmental review process, will prevent duplication of effort and focus the use of time and resources on those issues of greatest importance.”¹⁰ Scoping regulations’ requirements for public input also are lauded for “allowing different values and interests to be integrated into the project.... and to minimize potential conflict and promotes consensus around environmental impacts.”¹¹ During the scoping process of the project the NRC and Corps reached out to other Federal, state, local agencies, tribes and the public to calibrate on the development of the EIS. The NRC and Corps held scoping meetings to gather the public perspectives on the project and to understand if there were any significant environmental issues that neither agency was aware of. The goal of the scoping process is to gather information related to the project. This information is very important in preparing the EIS.

Once the necessary information was gathered, the NRC and Corp set their sights on drafting the EIS. They developed a realistic project schedule that was bought into to by the reviewers and agency management. They had various team meetings to discuss the various activities to plan and coordinate their efforts. Because of the upfront planning, the NRC and Corps were able to stay on task and meet their projected schedule milestones.

Despite their upfront planning and constant communication, complexities and inconsistencies in the agencies’ regulatory

programs did result in occasional friction. Some schedule changes were necessary; but that the inter-agency cooperation minimized the impact of those changes. The overlapping regulatory jurisdictions sometimes caused confusion and uncertainties. Time and resources were spent to provide clarification and minimize duplication, overlap, or fragmentation of their regulatory processes. For example, although NRC assesses wetlands in the EIS, NRC deferred to Corps regulatory jurisdiction over wetlands before determining the wetland impacts that should be documented in the EIS. By addressing these issues the project was able to move forward with little delay. The NRC and Corps were able to work through their regulatory differences and create an EIS that met both agency regulatory programs.

Conclusion

The NRC and Corps recognized that regulatory overlap did not necessarily mean duplication of their regulations. Despite their overlapping regulation under NEPA, they avoided the overlap by defining their roles early in the process and addressing issues promptly whenever they arose. Even though the two agencies have to coordinate with the same Federal, state and local agencies, their regulations are not completely duplicative. Differences between the NRC and Corps programs reflect different expertise and regulatory missions. The NRC and Corps effectively managed their agencies’ regulatory overlap, which minimized duplication and wasted resources. NRC and Corps demonstrat-

ed that fragmented governance and overlapping jurisdictions among cooperating agencies can lead to efficiencies while trying to meet their NEPA obligations.

Endnotes

1. National Environmental Policy Act of 1969, as amended (NEPA). 42 U.S.C. 4332,
2. Improving Regulation and Regulatory Review, Exec. Order No. 13,563, 76 Fed. Reg 3821, 3822 (Jan 2011)
3. Regulation of Nuclear Power Plants, Memorandum of Understanding FR noc.75-22244 Filed 8-22-75
4. CEQ Regulations 1502.4(c)
5. NRC's 1997-2002 Strategic Plan
6. Atomic Energy Act of 1954, as Amended
7. Center for Environmental Excellence by AASHTO (the American Association of State Highway and Transportation Officials)
8. Section 404(b)(1) Guidelines
9. 40 C.F.R. §1501.2(a)
10. 40 C.F.R. § 1500.5
11. 43 CFR 46.235

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Use by the U.S. Nuclear Regulatory Commission of the Obviously Superior Criterion for Alternative Sites

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Introduction

In its consideration of alternative sites for new nuclear power plants, the U.S. Nuclear Regulatory Commission (NRC) uses a standard that the applicant's proposed site will not be rejected in favor of an alternative site unless the NRC staff determines that the alternative site is "obviously superior" to the proposed site¹. In this paper I will summarize the historical development of this standard and how this standard has fared in the courts. I will then examine the extent to which this standard complies with the requirements of National Environmental Policy Act (NEPA) of 1969, as amended² and the associated regulations published by the Council on Environmental Quality³. I will also examine how the standard compares to the approaches used by other agencies, such as the U.S. Army Corps of Engineers (which uses a standard of the least environmentally damaging practicable alternative). In conclusion, I will discuss whether the NRC should consider modifying the standard either because of challenges to its past implementation, or foreseeable changes in future implementation.

What is the "obviously superior" criterion and how is it used?

The obviously superior criterion is used by the NRC during its evaluation of sites for new nuclear power plants under NEPA. The use of the criterion is described in the NRC staff's guidance for the evaluation of the power plant applicant's site selection process in the Environmental Standard Review Plan (ESRP), Section 9.3⁴. The ESRP directs the staff

to determine whether any of the alternative sites is obviously superior to the applicant's proposed site.

In order to determine whether an alternative site is obviously superior, the staff must first determine whether it is environmentally preferable. The basis for this part of the evaluation is that the staff will not consider whether an alternative site is obviously superior unless it offers environmental advantages over the proposed site. If the staff concludes that an alternative site is environmentally preferable to the proposed site, then it must determine whether the alternative site is obviously superior to the proposed site. In this stage of the evaluation the staff will consider non-environmental factors such as the cost of building and operating the plant at each site, and institutional factors⁵.

The obviously superior criterion was developed specifically for use in the site selection process. However, by logical extension the NRC staff guidance includes similar considerations in the evaluation of alternative energy sources (ESRP Section 9.2.3)⁶. In this case, if the staff determines that an energy alternative is environmentally preferable to the proposed nuclear plant(s), then the staff would consider the cost of the alternative versus the proposed action to determine whether the alternative is obviously superior.

If the staff identifies an obviously superior alternative (either a site or an energy alternative), the guidance indicates that the staff should recommend to the Commission that the proposed action not be approved. The staff cannot recommend the adoption of the

obviously superior alternative because the NRC does not have the authority to do so – it can only approve or disapprove the proposed action. The Commission is not required to follow the staff’s recommendation. NEPA does not mandate a specific outcome – it requires the consideration of environmental values in the decision-making process.

What are the origins of the “obviously superior” criterion?



Seabrook Station, Unit 1

Based on a search of historical records, the earliest record in which the term “obviously superior” was used in a licensing decision was during the licensing of the Seabrook Station. In the December 1974 final environmental statement for a construction permit for Seabrook⁷, the U.S. Atomic Energy Commission staff summarized its review of the proposed and alternative sites on page 9-10 and concluded by stating:

“Of the 19 potential sites that were evaluated, the staff concludes that none of the other sites offer any obvious superiority to the Seabrook location.”

Intervenors challenged the Seabrook application, in part because they believed the NRC staff had failed to properly consider alternative sites and had failed to recognize advantages at some of those sites. The Commission reviewed the staff’s evaluation, and the associated Licensing Board Panel decision⁸. The Commission stated its standard for the review of alternative sites in its March 31, 1977, decision, CLI-77-8⁹. In its decision, on pages 522 and 526, the Commission wrote:

“What has proved less clear, however, is the basis on which this comparison [of sites] is to occur – whether we may approve a proposed reactor only if the proposed site proves the most advantageous among those considered, i.e., the optimal site, or whether some less rigorous standard is appropriate.

...

In this context, we conclude that our staff has correctly stated the test to be employed in assessing whether a proposed site is to be rejected in favor of any of the alternative sites considered, namely, whether an alternate site is obviously superior to the site which the applicant had proposed.” [Citation omitted]

The Commission went on to point out the nature of the consideration of alternatives under NEPA– specifically that NEPA does not require the selection of the best alternative from an environmental perspective. Rather, it requires the consideration of environmental values in making a decision. The Commission

explained the basis for its reasoning regarding the obviously superior criterion in more detail on pages 528 to 530 of the decision:

“Two significant realities of the NEPA process support the use of the standard of obvious superiority—the inherent imprecision of cost/benefit analysis and the probability that more adverse information has been developed regarding the closely examined proposed site than any alternates. The imprecision springs from the nature of the cost/benefit analysis the Commission must perform: in the nuclear licensing context the factors to be compared range from broad concerns of system planning, safety, engineering, economic and institutional factors to environmental concerns, including ecological, biological, aesthetic, sociological, recreational, and so forth. Much of the underlying cost-benefit data is difficult of articulation, much less quantification. Given these difficulties, any evaluation of a particular site must inevitably have a wide margin of uncertainty. ... But where the data to be compared necessarily present a wide margin of uncertainty, one site must appear to be substantially “better.” To reject an application – the only means available for indicating the preferability of an alternate site – at this late stage in the licensing process requires substantial

confidence that one’s judgment is correct – a confidence that can only arise where an alternate site is obviously superior. [Footnote omitted.]

...

This conclusion appears the stronger when one considers that the applicant’s proposed site comes before the Board after having been intensively studied by the applicant, staff, and intervenors for a period of years. ... The alternate sites to which the proposed site is compared have undergone no comparable study. Common sense teaches that the more closely a site is analyzed, the more adverse environmental impacts are likely to be discovered. It would, therefore, be mistaken to conclude that an alternate site which appeared marginally superior to the proposed site, would remain superior upon further investigation, considering all of the possible but unknown disadvantages of the alternate site. [Footnote omitted.]

...

Our acceptance of the “obviously superior” standard for site selection derives, as well, from the reality of our situation in passing on license applications. The licensing process is structured for rejection or acceptance of the proposed site rather than choice of sites.... In sum, we think it appropriate that a licensing

board refuse to take the proposed “major Federal action,” i.e., deny the requested license, not when some alternative site appears marginally “better” but when the alternative site is obviously superior.”

This Commission decision publicly documented the approach that the NRC staff was to use in its consideration of alternative sites and explained the legal basis for that approach.

***THUS, THE COURT
CONCLUDED THAT THE
APPROACH THAT WAS
BEING EMPLOYED BY THE
NRC – THE USE OF THE
OBVIOUSLY SUPERIOR
CRITERION – WAS
APPROPRIATE AND
LEGALLY SOUND.***

Intervenors challenged the Commission’s March 1977 decision regarding Seabrook in court. Included in this challenge was the use of the obviously superior criterion. On August 22, 1978, The U.S. Court of Appeals, First Circuit, decided in favor of the Commission regarding this criterion in *New England Coalition on Nuclear Pollution v. NRC*¹⁰. In explaining the basis for its decision the Court stated in paragraph 30:

“The obvious superiority standard, as it is explained in the Commission’s opinion, says nothing about whether or how the required studies

[i.e., the “hard look” at alternatives required by NEPA] will be performed. Rather it goes to what the Commission will do with findings that the studies will generate. The standard is designed to guarantee that a proposed site will not be rejected in favor of a substitute unless, on the basis of appropriate study, the Commission can be confident that such action is called for. Given the necessary imprecision of the cost-benefit analyses involved and the fact that the proposed site will inevitably have been subjected to far closer scrutiny than any alternate site, we cannot say that it is unreasonable to insist on a high degree of assurance that the extreme action of denying an application is appropriate. This is especially so since NEPA does not require that a plant be built on the single best site for environmental purposes. All that NEPA requires is that alternative sites be considered and that the effects on the environment of building the plant at the alternative sites be carefully studied and factored into the ultimate decision.”

Thus, the Court concluded that the approach that was being employed by the NRC – the use of the obviously superior criterion – was appropriate and legally sound.

In the meantime, in the wake of the Commission’s decision on Seabrook, the NRC staff was working to address concerns related

to the process of siting nuclear power plants. On August 16, 1977, the staff submitted to the Commission SECY-77-433, *Policy Statement on Alternative Site Evaluations under NEPA for Nuclear Generating Stations*¹¹. This paper was focused on a discussion of the appropriate decision standard that the NRC staff should use when comparing the proposed and alternative sites. The staff considered various options in the paper, and on pages 8-9 of the SECY recommended to the Commission the use of:

“A multi-part decision standard which reflects the three stages in the evaluation of alternative sites. For the identification of candidate sites a decision standard of among the best that could reasonably be found should be employed. For the selection of a preferred site from a set of candidate sites, a decision standard of no obviously superior alternative should be employed. To determine whether to reject the preferred site because of contentions about its relative merit that arise during the CP [construction permit] review of its environmental suitability a decision standard which requires demonstration of an obviously superior alternative and consideration of the costs of completion should be employed.”

The first part of the decision standard, which is still used today, is that the NRC staff must conclude that the candidate sites identified by the applicant are among the best that

could be identified. Implicit in this part of the standard is the recognition that the NRC staff is not required to determine that the candidate sites are the best sites. These sites are then considered in the next part of the process, in which the staff must determine whether any of the alternative sites is obviously superior to the proposed site. The final part of the standard recommended in this paper addresses a case in which site selection is challenged after construction at the site has commenced. In those cases, the NRC staff concluded that the sunk costs at the proposed site could be considered in weighing the advantages of the alternative sites because the applicant had spent those funds based on the NRC staff's approval of a construction permit, i.e., the applicant had acted in good faith. Although the policy statement that was recommended in SECY-77-433 was never published, the explanation of the decision standard aligns with the practice employed by the NRC staff then, and today.

The obviously superior criterion was also prominent in an early site review performed by the NRC staff regarding the proposed Perryman site. In response to a request from Baltimore Gas & Electric (BG&E)¹², the staff prepared a report dated November 1977, *Evaluation of Alternative Sites – Perryman Early Site Review*¹³. In its review, the NRC staff was most concerned with the population around the site, although it also expressed concerns related to nearby industrial and mil-

itary activities – the site was adjacent to the U.S. Army’s Aberdeen Proving Grounds. On page 3 of the *Summary and Conclusions*, the NRC staff stated:

“In summary, the preliminary balancing by the staff of significant environmental, economic, and safety related aspects of the alternative sites has led us to the conclusion that there is at least one alternative site available to BG&E which is obviously superior to the Perryman site.”

The staff considered the population issue and associated risks from accidents to be a factor that would be considered a part of the review performed under NEPA. See Section 9.2 of the February 1979 ESRP, Appendix C, *Criteria for Identifying Obviously Superior Sites*¹⁴.

Intervenors also challenged the NRC staff’s handling of the alternative sites issue for the Sterling site, which Rochester Gas and Electric had proposed for use for a new nuclear station. The intervenors contended that the Ginna site, which already hosted a nuclear power plant, was a better choice. The issue was reviewed by the Atomic Licensing Appeal Board (ALAB) and in its October 19, 1978, decision, ALAB-502¹⁵, the Board stated:

“Application of this [obviously superior] standard mandates rejection of Ecology Action’s assertion that the Licensing Board was required to disapprove use of the Sterling site given its findings that the Ginna site is marginally preferable.

...

Indeed, were we called upon to determine on the record brought to us which site was on balance the best choice from an environmental standpoint, our task would be a most difficult one. Fortunately, however, we need not make that determination. All that we must decide is whether Ginna is “obviously” – in other words, clearly and substantially – superior to Sterling.”

Summarizing this history, the obviously superior criterion was developed by the NRC staff in the mid-1970s as part of the process used to evaluate alternative sites. It has been supported by licensing boards, the Commission, and the Courts. The criterion is intended to ensure that the NRC will not reject a proposed site in favor of an alternative unless such an action is clearly justified.

Is the obviously superior criterion consistent with Council on Environmental Quality (CEQ) guidance?

Guidance related to the consideration of alternatives is provided by CEQ in its “Forty Most Asked Questions about NEPA.”¹⁶ In the response to Question 6a, CEQ states:

“The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physi-

cal environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.”

The response goes on to discuss a key challenge agencies face in the process of identifying an environmentally preferable alternative:

“The Council recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another. The public and other agencies reviewing a Draft EIS can assist the lead agency to develop and determine environmentally preferable alternatives by providing their views in comments on the Draft EIS. Through the identification of the environmentally preferable alternative, the decisionmaker is clearly faced with a choice between that alternative and others, and must consider whether the decision accords with the Congressionally declared policies of the Act.”

The final sentence of the response references a key aspect of NEPA – that the decision maker is not required by NEPA to choose the alternative that causes the least environmental damage. Rather, the decision maker must consider environmental values in reaching a decision. But other non-environmental factors may lead to a decision to choose other than the environmentally preferable alternative.

This issue is further amplified in CEQ’s

response to Question 4a, in which it states:

“The “agency’s preferred alternative” is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The concept of the “agency’s preferred alternative” is different from the “environmentally preferable alternative,” although in some cases one alternative may be both.”

In other words, NEPA does not require the decision maker to consider only environmental factors, to the exclusion of all other considerations, when choosing among alternatives.

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ALTERNATIVES.***

The obviously superior criterion, as used by the NRC staff, is consistent with this guidance. First, the NRC staff determines whether any of the alternative sites is environmentally preferable to the proposed site. In other words, the staff first determines whether, based purely on environmental

factors, any alternative appears to be measurably better than the proposed site. If the answer to this question is “no”, then the proposed site prevails. This is appropriate because if no alternative site offers measurable advantages over the proposed site, then there is no reason under NEPA to reject the proposed site.

If the NRC staff determines that there is an environmentally preferable alternative site, then the staff must determine whether that alternative site is obviously superior to the proposed site, considering the cost of building and operating the plant at each site, and institutional factors. The term “institutional factors” is not currently defined in ESRP 9.3. However, information on this subject has been included in Interim Staff Guidance (ISG)-026¹⁷ Attachment 6, page 6 where it states:

Institutional constraints could include items such as (1) known objections of regulatory agencies, (2) grid stability issues at the alternative site, (3) lack of franchise privileges and eminent domain powers, (4) the need to restructure existing financial and business arrangements, and (5) the feasibility of obtaining the alternative site.

The staff’s approach is consistent with the CEQ guidance, under which economic, technical and other factors may be considered in choosing an agency preferred alternative that is not the environmentally preferable alternative.

Part of the underlying basis for the

obviously superior criterion is that the proposed site has been studied in greater depth than the alternative sites. Because of this fact, the Commission and the Courts have recognized that it is likely that further study of the alternative sites would reveal additional problems at those sites. But is it acceptable to make a decision without having studied the alternative sites to the same depth as the proposed site? In the response to Question 5b, CEQ states:

“The degree of analysis devoted to each alternative in the EIS is to be substantially similar to that devoted to the “proposed action.” Section 1502.14 is titled “Alternatives including the proposed action” to reflect such comparable treatment. Section 1502.14(b) specifically requires “substantial treatment” in the EIS of each alternative including the proposed action. This regulation does not dictate an amount of information to be provided, but rather, prescribes a level of treatment, which may in turn require varying amounts of information, to enable a reviewer to evaluate and compare alternatives.”

The approach used by the NRC staff comports with this portion of the CEQ guidance. The consideration of the alternative sites is based on the collection of reconnaissance level information for those sites – see Regulatory Guide (RG) 4.7, *General Site Suitability Criteria for Nuclear Power Stations*¹⁸, page 4, and RG 4.2, *Preparation of Environmen-*

*tal Reports for Nuclear Power Stations*¹⁹, Sections 9.2.1 and 9.2.2. Under this NRC staff guidance to applicants, the applicants are expected to obtain whatever information is available regarding the alternative sites. However, the NRC staff expects the applicants to compare the sites in a fair and unbiased manner. See the discussion under “Proposed and Alternative Sites” in Revision 1 to ESRP 9.3²⁰, *Site Selection Process*. Indeed, there have been cases in recent years in which the NRC staff has challenged a process used by an applicant because it did not treat all of the sites in the same way. For example, the NRC staff raised a number of questions related to the process used by the applicant in its original site selection process for the South Texas Plant, Units 3 and 4, combined license application, including questions related to the equitable treatment of sites^{21,22}. In response, the applicant performed a new siting evaluation, developed a revised set of alternative sites, and submitted an associated revision to its application²³.

As discussed previously, in *New England Coalition on Nuclear Pollution v. NRC*, the Court found the approach used by the NRC to be consistent with the intent of NEPA. In its decision the Court recognized that “the proposed site will inevitably have been subjected to far closer scrutiny than any alternate site.” In *Roosevelt Campobello International Park Commission v. United States Environmental Protection Agency*²⁴, a case involving similar issues before the U.S. Court of Appeals, First Circuit, the Court stated in paragraph 21:

No purpose would be served by

requiring EPA to study exhaustively all environmental impacts at each alternative site considered once it has reasonably concluded that none of the alternatives will be substantially preferable to the proposed site. Moreover, the guideline adopted by EPA to limit its study of alternatives appears, in this case, to be consistent with the “rule of reason” by which a court measures federal agency compliance with NEPA’s procedural requirements.”

Based on the CEQ guidance and the Court cases, it’s clear that the alternative sites need not be studied to the same depth as the proposed site. Therefore, the use of reconnaissance-level information, as discussed in NRC staff guidance, is an appropriate approach for the consideration of alternatives. But equally important is the need to compare the sites in a way that is balanced and unbiased in order to conclude whether there is an obviously superior alternative site.

How does the obviously superior criterion compare to the approaches used by other agencies?

While the Courts have upheld the approach used by the NRC, how does it compare with the methods used by other agencies with a regulatory role? In considering this question, this paper compared the NRC approach with the approaches used by the U.S. Army Corps of Engineers (USACE) and the Federal Energy Regulatory Commission (FERC), two other agencies with regulatory (as

opposed to resource management) functions.

The USACE evaluates alternatives using the Section 404(b)(1) guidelines under the Clean Water Act²⁵. Under the guidelines, the USACE must identify the least environmentally damaging practicable alternative (LEDPA). In order to accomplish this, the USACE must consider both the environmental impacts of an alternative (with specific emphasis on impacts to the aquatic ecosystem) and the practicability of the alternative. The environmental component of the evaluation is similar to the NRC staff's evaluation of alternatives to determine whether any are environmentally preferable. However, for the USACE there will be special emphasis on impacts to the aquatic ecosystem (and in particular, to wetlands). The practicability portion of the evaluation is similar to the evaluation that the NRC staff would perform to determine whether an environmentally preferable alternative site is obviously superior to the proposed site. Specifically, the Section 404(b)(1) guidelines direct the USACE to consider an alternative to be practicable "if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." This is very similar to the NRC staff's consideration of the cost of building and operating the plant at each site, and institutional factors.

The USACE also considers "public interest factors" in its consideration of alternatives. As discussed in the introduction to Chapter 2 of the USACE draft EIS²⁶ for the Moffat Collection System Project near Denver,

page 2-1:

"The alternatives must satisfy the Guidelines as well as the public interest review (33 CFR 320.4[a]). Therefore, for Corps permit actions, ***the range of practicable alternatives is typically a subset of reasonable alternatives under NEPA.*** According to the Corps' NEPA guidance, the alternatives analysis for actions subject to NEPA and the Guidelines can be integrated simultaneously to ensure alternatives carried forward for analysis are practicable and that the LEDPA has not been eliminated from further consideration. The comparison of alternatives should "allow a complete and objective evaluation of the public interest and a fully informed decision regarding the permit application" (33 CFR 325 Appendix B 9 [b][5])." (Emphasis added.)

The NRC staff has direct experience in the relative similarities and differences between its evaluations of alternative sites as compared to the evaluations of the USACE because the USACE has been a cooperating agency on recent EISs for new reactors (e.g., Levy County²⁷). In general, the NRC and the USACE have reached the same conclusions regarding the alternative sites, with one notable exception. For the Levy County application, the NRC staff concluded that the Crystal River site (with its existing power plants) was a reasonable alternative for consideration under NEPA. But the USACE, based on input from the applicant,

accepted that the Crystal River site was not a practicable alternative²⁸. The applicant for Levy County stated that the site was impracticable because installing so much generating capacity (over 5000 MW) in one location on the Florida coast would present a significant risk to the grid because a single event (hurricane, tornado) could cause the loss of all of that generating capacity²⁹. As a result of these different conclusions, the Crystal River site was considered in the NEPA evaluation prepared jointly by the NRC and the USACE, but it was not considered by the USACE in a comparison of sites to determine the LEDPA site.

Based on the regulatory requirements and on experience working with the USACE, the processes used by each agency to consider alternatives are similar.

FERC uses a somewhat different approach, as discussed in its guidance document, *Preparing Environmental Documents; Guidelines for Applicants, Contractors, and Staff*³⁰. The method that FERC uses essentially looks at all of the factors (environmental, economic, technical) at once to determine the best overall alternative. The guidance appears to be based on the assumption that it will be clear to the decision maker which alternative offers the best results overall, although the guidance also recognizes the difficulty in comparing disparate resources. For example, on page 73 the guidance states:

In evaluating alternatives, first we need to understand how the value of each competing resource varies for each option we are considering. This could be based on quantitative or

IT'S CLEAR THAT FERC HAS MORE AUTHORITY TO IMPOSE CONDITIONS THAN DOES THE NRC.

qualitative information. This could involve a relatively straightforward relationship, such as the relationship between quantity of adult fish habitat (weighted usable area) and power benefits. Or it could be more involved. For example, how does raising the instream flow to improve fish habitat in the bypassed reach affect riparian vegetation, swimming and boating, and the project's power value or how does releasing more water to improve downstream water quality affect reservoir boating and fish habitat and amount of generation?

Based on the way the guidance is written (see, for example, page 72), it's clear that FERC has more authority to impose conditions than does the NRC. Starting around the time of the Yellow Creek decision³¹ in 1978 the NRC staff began to move away from its then common practice of placing environmental conditions on its licenses for resources that were under the authority of other agencies. Although the NRC's regulations still allow the staff to impose environmental conditions for other than the aquatic environment (see 10 CFR 50.36b³²), a recent rulemaking³³ has made clear that the NRC staff's reach is very limited. This difference in the authority between FERC and NRC may explain the difference in the approaches.

Because FERC is in a position to impose conditions over a wider range of resources, it can essentially modify projects to minimize environmental impacts, while considering costs and the project purpose and need.

However, although the NRC is limited in its ability to impose conditions for issues not related to its mission of radiological protection, it does often rely in its EISs on conditions that other agencies plan to implement in other permits that an applicant must obtain to build and operate a nuclear plant. So for example, the NRC will not set a limit on the discharge temperature from the plant. But in evaluating the impacts to the receiving water body, the NRC staff will rely on the limit that the State has imposed (or will impose) in its National Pollutant Discharge Elimination System (NPDES) permit.

In developing its conditions for a license, FERC does consider the cost-benefit balancing for each condition. See Sections 4.3 and 5.2 of the FERC guidance. So in the end, the action recommended by FERC would be the practicable alternative that best limits the environmental impacts. While FERC has taken a rather different path based on its regulatory authority, it seems likely that the outcome would be similar to that which would be reached by either the NRC or the USACE.

Summary and Conclusions

The NRC staff developed the obviously superior criterion during the 1970s, at the height of the boom in new reactor licensing that was occurring at that time. The criterion was developed to ensure that the NRC would

not reject a site (through the associated reactor licensing application) unless it was clearly justified in doing so. In addition, the criterion and its usage appear to be consistent with CEQ guidance and with the processes used by other regulatory agencies. The essential reasons that led to the development of the criterion – the nature of the NRC licensing decision as either approval or rejection of the proposed site and the use of reconnaissance level information for the alternative sites – remain unchanged.

The criterion has been challenged in front of licensing and appeal boards, the Commission, and the courts, and has consistently withstood those challenges. During the more recent reactor licensing reviews, starting in 2003, there have been no challenges specifically aimed at the obviously superior criterion, although the criterion has been invoked in every associated environmental impact statement.

Based on the preceding, there would appear to be no reason to consider changing the criterion. The process works as intended and provides the decision-maker with the information that is needed to make an informed decision under NEPA.

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How Does the NRC Comply with the National Environmental Policy Act and the National Historic Preservation Act In Light of its New Limited Work Authorization Rule?

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Introduction

The Nuclear Regulatory Commission (NRC) modified its Limited Work Authorization (LWA) rule in October 2007 with the intent of easing the regulatory burden on applicants. A LWA is explicit permission from the NRC for an entity to undertake some preliminary construction activities before NRC issues them an official license to build the entire nuclear power plant. This new rule enables an applicant to undertake many construction activities prior to even obtaining an LWA, because of how it defines construction. This change is significant because it effects how NRC complies with other regulations, such as the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA). NEPA requires Federal Agencies to assess what impact a federal action, such as building a nuclear power plant, could have on the environment. NHPA requires Federal Agencies to assess the impact of construction on historic preservation efforts in particular. NHPA requires that a federal agency also give the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. Another significant impact of this rule has been that the appearance that NRC is trying to skirt the NEPA law by breaking the construction project in to little pieces, thus avoiding the need to do an overall Environmental Impact Statement. This paper will examine how the NRC complies with the NHPA and NEPA since much of the construction activities that take place on a site are completed before NRC comes in.

History of NRC

In 1946 the Congress created the Atomic Energy Commission for (AEC) which was responsible for regulating all aspects of nuclear energy. In 1954 Congress passed the Atomic Energy Act, (AEA) which for the first time made it possible for private developers to build nuclear power plants. The AEC was responsible for both encouraging the use of nuclear power and regulating its safety. AEC failed miserably at this and the Congress decided to abolish the AEC and create the Nuclear Regulatory Commission (NRC) in the Energy Reorganization Act of 1974. NRC was given the responsibility of protecting public health and the environment by regulating the nonmilitary use of nuclear materials. NRC's job to this day is still to protect public health by regulating the nonmilitary use of nuclear materials. The NRC regulates all peaceful use of nuclear energy including reactor safety, reactor license renewal of existing nuclear power plants, nuclear materials and nuclear waste. In addition, the NRC evaluates new applications for building nuclear power plants. An entity that wants to build a nuclear power plant needs to obtain from the NRC for both a construction license and an operating license. They can request the construction permit (CP) first and when they have finished building, they can request an operating license (OL). An alternate approach is to request a Combined license (COL). In a COL, NRC gives the applicant permission to both construct and operate the plant with the same license. The advantage to an applicant to request a permit under Part 50 is that the applicant does not have to

provide all design information when they submit their application. However the drawback is that this process gives people who are opposed to nuclear energy many chances to formally try to stop construction because there is a hearing before the CP is issued and again before the OL issued. The main advantage of the COL under Part 52 is that there's only one hearing but the licensing process does require the applicant to provide a complete design with their license application.

History of Limited Work Authorization (LWA)

The AEA prohibits the production of commercial nuclear power reactors without a license from the NRC. However, the term "construction" is not defined anywhere in the AEA. In order to prevent a company from building a facility before a construction permit has been issued, the NRC proposed a regulatory definition of construction in 1960. Construction was defined as "*pouring the foundation for, or the installation of, any portion of the permanent facility on the site*". The law also prohibited an entity from starting construction of a facility on a site until a construction permit had been issued. The following activities were excluded from the definition of construction, meaning an applicant could do these things without prior permission from the NRC:

1. Site exploration, site excavation, preparation of the site for construction of the facility and construction of roadways, railroad spurs, and transmission lines;

2. Procurement or manufacture of components of the facility;
3. Construction of non-nuclear facilities (turbine buildings) and temporary buildings (such as construction equipment storage sheds) for use in connection with the construction of the facility; and
4. The construction of buildings which will be used for activities other than operation of a power plant such as a college laboratory building with space for installation of a training reactor.

In 1972 following the enactment of the NEPA, NRC adopted a much broader and inclusive definition of construction. Specifically, the new NRC rule stated that no one can begin "commencement of construction" of a facility until a construction permit had been issued. "Commencement of construction" was defined as: "*... any clearing of land, excavation, or other substantial action that would adversely affect the natural environment of a site and construction of non-nuclear facilities (such as turbine buildings) for use in connection with the facility...*"

Activities such as site preparation and site excavation that were previously not regulated under the 1960 definition of construction now required NRC permission, due to NRC's interpretation of NEPA. The NRC justified the expansion of its authority by saying that since site preparation causes much of the environmental damage that is associated with the building of a new power plant, the new rules will provide better protection of

the environment. Thus, the NRC's interpretation of its responsibilities under NEPA, not the AEA, was the reason NRC interpreted its responsibility in such a broad way.

***BEFORE THE NRC CAN
ISSUE AN LWA, THE NRC
HAS TO HAVE A
COMPLETED A SITE
SUITABILITY REPORT,
PREPARED A FINAL
ENVIRONMENTAL IMPACT
STATEMENT (FEIS), HAVE
FOUND THE SITE TO BE
SUITABLE AND THE
ENVIRONMENTAL AND,
SAFETY-RELATED FINDINGS
TO BE ACCEPTABLE.***

Under the 1972 definition of construction, an applicant could make changes for the temporary use of the land for public recreational uses, do borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site, procure or manufacture components for the facility; and construct buildings which would be used for activities other than operation of a facility. However the applicant could not do any site preparation work or excavation. If they wanted to do site preparation or excavation, they would have to request and be granted an exemption from the NRC five member Commission before they could

begin. In 1974 the NRC created the current Limited Work Authorization (LWA) process. LWA was added to allow an applicant to do site preparation, excavation, and certain other on-site preliminary construction activities before they got their construction permit from the NRC. This saves the applicant time because they can get started on some construction activities before the applicant receives its building permit - which can take NRC years to issue. However the standard for receiving an LWA is also relatively very high. Before the NRC can issue an LWA, the NRC has to have a completed a site suitability report, prepared a final environmental impact statement (FEIS), have found the site to be suitable and the environmental and, safety-related findings to be acceptable.

In 2006 NRC modified the LWA rule and redefined "construction". The new rule allows many of the activities that were previously defined as construction in the 1972 rule to be performed without NRC permission. This allows an applicant the freedom to begin some construction activity even earlier in their project timeline, because, it does not require any NRC oversight. Under the current LWA rule, NRC authorization is only necessary for an applicant when he performs activities that have a reasonable connection to radiological health and safety and / or common defense and security. This means that an applicant must get an LWA before he begins construction on parts of the nuclear power plant that has to do with safety related, structures, systems or components (SSCs). By this definition, the applicant can do things such as site

preparation and excavation without NRC oversight because it has nothing to do with safety related, SSCs.

SSCs are those structures, systems and components that must remain working during and following a nuclear accident and make sure that the consequences of accidents which could result in radiation leaks are prevented. SSCs also make sure that in case of an accident the reactor shuts down safely and stays in a safe shutdown mode. SSCs include all the components that are under high pressure in nuclear power reactors. These are parts such as pressure vessels, piping, pumps, and valves which are part of or are connected to the reactor coolant system.

Under the current rule, activities involving the installation of permanent parts of the overall facility are also defined as construction. The term “permanent” means anything that will stay in its final plant location after the nuclear fuel has been loaded and the power plant is ready to start operations. The installation of temporary structures which will not become part of the final facility, and are removed, are not considered as “construction,” because they have no ongoing connection to radiological health and safety.

Activities performed within an excavation are considered construction. Construction activities include:

1. driving piles into the ground;
2. preparing the subsurface soil compactio;
3. placing backfill ando concrete;
4. installing permanent drainage systems;

5. placing permanent retainin walls; and
6. installing reinforcing bars or erecting concrete forms for the foundations.

Under the current rule, NRC does NOT consider the following activities to be construction and thus does not require an applicant to have any kind of NRC permit to perform them. Among the things an applicant may do without prior NRC authorization include:

1. Excavate the site, including removing soil, rock, gravel, or other material below the ground to the final parent material;
2. Erect support buildings (such as, equipment storage sheds, warehouses, utilities, concrete mixing plants, docking facilities, and office buildings) for use in connection with the construction of the facility;
3. Build service facilities, such as paved roads, parking lots, railroad spurs, exterior utility and lighting systems, potable water systems, sanitary sewerage treatment facilities, and transmission lines; and erect fences;
4. Conduct activities to determine the suitability of the site which include drilling borings to determine foundation conditions and doing pre-construction monitoring to establish background information;

5. Fabricate components of the proposed facility at a site other than the final location of the facility. "On-site, in place, fabrication, erection, integration or testing" of SSCs in a warehouse and then transporting it to the permanent site does not require NRC permit. (However, to integrate that SSC into its final, permanent plant location requires NRC permission in the form of a construction permit.);
6. Conduct activities that have to do with preparing a site for construction, including clearing the site, grading the area, installing drainage, erosion and other environmental mitigation measures as long as these things are removed from the excavation before nuclear fuel is loaded. The NRC chose fuel loading as good point for marking the time by which temporary SSCs must be removed from the excavation;
7. Make changes for temporary use of the land for public recreational purposes; and
8. Drive piles for a non SSC structure. For example, piles driven to support the construction of a bridge for a temporary or permanent road would not be considered "construction" and may be performed without NRC permission.

So How Does NRC Reconcile These Activities with NEPA and NHPA?

Most of the impacts to the environment come from a builder's preconstruction activities such as excavating; clearing and grading the land; and building roads and non-nuclear buildings (such as cooling towers and visitor's centers). Activities such as these are no longer regulated by NRC and could potentially do a lot of harm to the land. So how is NRC justifying not regulating these preconstruction activities? NRC is making a distinction between private action and federal action. NRC says that the private actions are those that have no connection to radiological health. Federal actions on the other hand, are those actions that have a connection to radiological health and have something to do with building the actual power plant. NRC believes that its authority to regulate nuclear power comes from the AEA and the AEA does not give the NRC the power to regulate private actions. NHPA and NEPA also does not give NRC additional authority not already provided in the AEA. For instance if a private company was building a drugstore, NRC would not get involved because there is no connection to nuclear energy in that instance. NRC says the same thing applies when a company is building a nuclear power plant and they are building the parts of the facility that has nothing to do with nuclear energy.

NRC initially expanded its permitting authority in the 1970s because of its interpretation of NEPA, which in hindsight NRC concedes was a mistake. Over the years since the implementation of NEPA, verdicts from

many court cases have made it clear to NRC that NEPA is a procedural statute and it does not expand the authority of NRC from its original statute. In other words the authority NRC has to regulate nuclear energy comes from the AEA, not NEPA or NHPA. Therefore, while NEPA requires the NRC to consider the environmental effects caused by the building of nuclear power plants, NEPA or NHPA cannot give the NRC additional authority to require builders to obtain construction permits for activities that are not related to radiological health and safety. Since NEPA and NHPA cannot expand the NRC's licensing authority under the AEA, NRC does not have the authority to require an applicant to get a permit to do site preparation activities.

NRC believes that the power company building the nuclear power plant is still held accountable for their preconstruction activities, even if NRC is not providing direct oversight. While NRC does not consider the changes to the environment caused by the private actions of the power company to be associated with the NRC licensing action, NRC does consider these private actions when they are evaluating the cumulative impacts associated with the power company's LWA application. The pre-construction private actions of clearing, grading, access road construction, etc, are used as the baseline for analyzing the environmental impacts associated with the Federal actions. The preconstruction activity information provided by the applicant is used when NRC determining the overall environmental impacts of the construction and operation of the proposed nuclear power

plant. To ensure that the NRC has sufficient information to perform the cumulative impacts analysis, the NRC requires the environmental report submitted by an applicant for a licensing action to include a description of impacts of the applicant's preconstruction activities and an analysis of the cumulative impacts that would result if the NRC authorized the additional construction activities requested in the LWA. If an excavation activity uncovers adverse geologic, soil, and hydrological conditions not anticipated or if excavation activities cause unanticipated damage to the surrounding native rock, the applicant has to provide accurate description of the geologic, soil, and hydrologic conditions of the site in its environmental report to the NRC. NRC believes that by putting the onus on the applicant to provide complete and accurate information provides an acceptable way of safeguarding public health and safety even if NRC is not providing direct oversight.

When the rule was written the nuclear power industry argued that allowing excavations without an NRC permit would be beneficial to the environment. They said that later in the licensing process, when the NRC was trying to determine if the site selected by the applicant was suitable, NRC could look at the actual underground geologic, soils, and hydrological conditions uncovered by the applicant during its excavations. NRC would not have to make a site suitability decision based on assumptions from test borings and other indirect information.

Segmentation

NRC CAN CONSIDER THE ENVIRONMENTAL IMPACTS DUE TO LWA ACTIVITIES ONLY OR AS PART OF A COMPREHENSIVE EIS WHEN AN APPLICANT SUBMITS A COMPLETE APPLICATION.

Another significant change in this final rule is how an applicant can apply for an LWA. The applicant now has the option of submitting its license request in two different parts. The applicant can submit either a complete application at one time, or the applicant can submit it at two different times. For the two part application, the applicant can submit all the information required for the NRC to make a decision on the applicant's LWA submittal only and then submit the second part that has all other information required to obtain the overall combined license up to 18 months later. NRC can consider the environmental impacts due to LWA activities only or as part of a comprehensive EIS when an applicant submits a complete application. After consideration of the environmental impacts and the relevant safety-related issues associated with the LWA activities, the NRC may allow the applicant to undertake the LWA activities, even if the EIS on the underlying request (i.e., construction permit or combined license) is not complete.

The NRC believes that this phased application and approval process is more efficient because it prevents unnecessary delay in nuclear power plant construction

schedules. This delay would result if an applicant had to wait until the final EIS and adjudicatory hearings on the entire underlying license application were complete before an applicant could begin preconstruction activities. In addition, the final rule's application and approval process allows NRC to resolve any safety and environmental issues at an earlier stage in the licensing process. The NRC believes that these efficiencies are gained without compromising the agency's NEPA responsibilities, as the phased approach presented in this rule does not constitute illegal segmentation. Generally, the NEPA segmentation problem arises when the environmental impacts of projects are evaluated in a piecemeal fashion and, as a result, the comprehensive environmental impacts of the entire Federal action are never considered. Another associated segmentation problem arises when pieces of a Federal action are evaluated separately and, as a result, none of the individual pieces are considered "major Federal actions" requiring an EIS.

Neither of these segmentation concerns applies to this LWA final rule. First, under both LWA application options the environmental effects associated with the LWA activities and the project as a whole are evaluated in an EIS. Therefore, the segmentation problem of considering a project in phases is not applicable. In addition, all of the environmental impacts associated with the construction and operation of the proposed plant, including the impacts associated with the LWA activities, would be considered together in the EIS prepared on the overall

license application. This comprehensive consideration of environmental impacts would take place before the NRC commits to issuing any licenses.

Conclusion

In conclusion, NRC complies with NEPA and NHPA by redefining “major federal action”. NRC defines federal action only as being that portion of the construction that has to do with nuclear radiation. All other aspects of a construction project are considered nonfederal. NRC defends this redefinition by stating that NRC’s authority is limited to regulating nuclear energy and that authority comes from the AEA. While NEPA and NHPA have directives that

NRC is obligated to follow these statutes. The statutes themselves do not give NRC additional regulatory power. NRC argues that they are also not trying to circumvent the NEPA laws by breaking up the construction project into little bits to avoid doing an overall impact statement. It’s true, NRC does not provide oversight when an applicant is doing preconstruction, but there are agencies such as the COE who are stepping in to fill the void, so the applicant is not completely unmonitored. NRC looks at the impact caused by the applicants preconstruction activity when they are evaluating the overall impact to the environment from the construction of the plant and considering giving the applicant a construction and operating license.

Endnotes

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6. U.S. Nuclear Regulatory Commission Regulations, Title 10 Code of Federal Regulations Part 50
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14. *Natural Resources Defense Council v. U.S. Environmental Protection Agency*, 1987
15. *Kitchen v. Federal Communications Commission* (D.C. Cir. 1972)
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The Role and Use of Programmatic Environmental Impact Statements and Environmental Assessments in Fulfilling NEPA and State Environmental Mandates

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Introduction

The Council on Environmental Quality (CEQ) has promulgated regulations that implement Section 102(2) of the National Environmental Policy Act of 1969, as amended (NEPA). The CEQ's regulations, found in the Code of Federal Regulations (CFR), Title 40, Part 1500¹ (40 CFR 1500), tell federal agencies what they must do to comply with the procedures and achieve the goals of NEPA. These regulations are applicable to and binding on federal agencies for implementing the procedural provisions of NEPA.

The CEQ's regulations at 40 CFR 1502.4(b) and (c) address the preparation of environmental impact statements (EISs) on "broad actions" in which federal proposals can be evaluated geographically, generically, or by stage of technological development. 40 CFR 1502.4(b) states that

"Environmental impact statements may be prepared, and are sometimes required, for broad federal actions such as the adoption of new agency programs or regulations (§1508.18). Agencies shall prepare statements on broad actions so that they are relevant to policy and are timed to coincide with meaningful points in agency planning and decisionmaking."

40 CFR 1502.4(c) states:

"When preparing statements on broad actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways:

(1) Geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area.

(2) Generically, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.

(3) By stage of technological development including federal or federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements shall be prepared on such programs and shall be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives."

The CEQ's regulations provide additional guidance as to the ways by which federal agencies can relate broad and "narrow actions" and avoid duplication and delay. Among the approaches identified are tiering and incorporation by reference. Tiering is intended to "eliminate repetitive discussions of the same issues and to focus on actual issues ripe for decision at each level of environmental review."² Agencies may also incorporate by reference material from higher level documents (e.g., PEISs, GEISs, programmatic EAs) to lower (i.e., site-specific) documents, by citing and briefly describ-

ing the content incorporated.³

Broad action EISs have become known either as Programmatic EISs (PEISs) or Generic EISs (GEISs). The U.S. Department of State's NEPA-implementing regulations at 22 CFR 161.9(l) distinguish between these two types of EISs. GEISs review "the environmental effects that are generic or common to a class of ... actions," while PEISs, on the other hand, focus on "the environmental effects of the program." In addition to these two types of broad action EISs, agencies, as appropriate, also may prepare programmatic Environmental Assessments (EAs) in complying with NEPA when the programmatic environmental effects are found to be not significant.

In this capstone paper, I survey a select number of PEISs, GEISs, and programmatic EAs prepared by both Federal and State agencies. The goals of the survey are to (1) examine the agency's expressed reasons for preparing the document; (2) discuss the manner in which the PEIS, GEIS, or programmatic EA met the agency's regulatory mandate; and (3) evaluate the agency's use of the document in its decision-making process on "narrow" agency actions. The PEISs, GEISs, and programmatic EA selected for this survey were prepared by or for the following agencies:

- U.S. Nuclear Regulatory Commission (NRC)
- U.S. Department of Energy (DOE)
- U.S. Bureau of Land Management (BLM)
- U.S. National Aeronautics and Space Administration (NASA)

- U.S. Food and Drug Administration (USDA)
- U.S. Food and Drug Administration, Forest Service (USFS)
- New York State Department of Environmental Conservation
- Minnesota Environmental Quality Board

Discussion

NRC GEIS for In-Situ Leach Uranium Milling Facilities

The NRC is a Federal agency created under the Energy Reorganization Act of 1974. This act split the Atomic Energy Commission into two separate agencies, the NRC and Energy Research and Development Agency (later called the DOE), with distinct regulatory missions. The NRC's mission is to license and regulate the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment. In fulfilling part of NRC's mission to protect the environment during the use of radioactive materials, the agency has prepared GEISs for broad actions such as (1) the relicensing of nuclear power plants, (2) the handling and storage of spent nuclear reactor fuel, (3) the decommissioning of nuclear facilities, and (4) in support of rule-making on radiological criteria for license termination.

In 2009, the NRC also completed preparation of a GEIS for in-situ uranium recovery (ISR) facilities.⁴ Under NRC's NEPA-implementing regulations in 10 CFR Part

51, the issuance of an NRC license to possess and use source materialⁱ for uranium milling requires the preparation of an EIS.⁵ The NRC determined that a GEIS would help in fulfilling this requirement by providing a starting point for NRC's NEPA analyses for site-specific license applications for new ISR facilities, as well as for applications to amend or renew existing ISR licenses.⁶ The GEIS assessed the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISR facility in four specified regions in the western United States where such future facilities were likely to be located.

Since the issuance of the GEIS in 2009, the NRC has completed five supplemental EISs (SEISs), each in support of an NRC licensing decision related to a site-specific ISR facility to be located in one of the four regions identified in the GEIS. In each SEIS, the NRC staff evaluated site-specific data and information to determine whether the applicant's proposed activities and the site's characteristics were consistent with those evaluated in the GEIS. NRC staff then determined relevant sections, findings, and environmental impact conclusions in the GEIS that could be incorporated by reference into the SEIS and areas that required additional analysis.

DOE PEIS for Alternative Strategies for the Long-Term Management and Use of

ⁱ Source Material means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof.

Depleted Uranium Hexafluoride

As discussed previously, the DOE was created in 1974 as part of the split of the Atomic Energy Commission. The DOE's current mission is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.⁷

In 1999, the DOE published the "*Final Programmatic Environmental Impact Statement for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride*".⁸ Recognizing the need for a strategy to manage stockpiles of depleted uranium hexafluoride (UF₆) at three DOE sites, the DOE prepared the PEIS to assess the potential environmental impacts of alternative strategies for achieving the safe long-term storage, use, or disposal of the depleted UF₆ inventory at these sites. The DOE recognized that additional NEPA analyses were likely once the long-term strategy had been selected, with these additional analyses evaluating issues such as where to locate facilities, which specific technologies or processes to use, and what site-specific impacts might result from construction and operations. In the Record of Decision issued for the PEIS,⁹ DOE decided to

(1) promptly convert the depleted UF₆ inventory to a more stable uranium oxide form; (2) use the resultant depleted uranium oxide as much as possible, storing the remaining for potential uses or disposal; and (3) convert the depleted UF₆ to depleted uranium metal only if uses for the metal were available. DOE,

however, did not select specific sites for the conversion facilities.

In 2004, the DOE published two site-specific EISs for the construction and operation of separate depleted UF₆ conversion facilities at the Paducah, Kentucky, and Portsmouth, Ohio, sites.¹⁰ These EISs considered the construction, operation, maintenance, and decontamination and decommissioning of a proposed depleted UF₆ conversion facility at three locations within each site; transportation of depleted uranium conversion products and waste materials to a disposal facility; transportation and sale of the hydrogen fluoride (HF) produced as a conversion co-product; and neutralization of HF to calcium fluoride and its sale or disposal in the event that the HF product is not sold. Both depleted UF₆ conversion facilities have been constructed and are currently converting the nation's 800,000 metric ton inventory of depleted UF₆ to more benign forms for sale, ultimate disposal or long-term storage.

BLM PEIS for Geothermal Leasing in the Western United States

In August 2005, the U.S. Congress enacted the Energy Policy Act of 2005, *Public Law 109-58*, which recognized the increasing demand for renewable energy and the need to facilitate leasing decisions for geothermal resources on public lands. Section 225 of that Act, titled "Coordination of Geothermal Leasing and Permitting on Federal Lands," required that the Secretary of the Interior and Secretary of Agriculture establish a program for reducing by 90 percent the backlog of

geothermal lease applications that were pending as of January 1, 2005. The Act also mandated that action be taken by August 8, 2010.

Partially in response, the BLM in cooperation with the USFS, prepared the "*Final Programmatic Environmental Impact Statement (PEIS) for Geothermal Leasing in the Western United States*," with the expressed purposes of (1) to make geothermal leasing decisions on 19 pending lease applications submitted prior to January 1, 2005; and (2) to facilitate geothermal leasing decisions on other existing and future lease applications and nominations on the federal mineral estate in 12 western States, including Alaska.¹¹ The BLM and USFS proposed to allocate hundreds of millions of acres of public lands and National Forest System lands as open to geothermal leasing. In doing so, the BLM and USFS developed a comprehensive list of stipulations, best management practices (BMPs), and procedures to serve as consistent guidance for future geothermal leasing and development on public and National Forest System lands. The PEIS programmatically evaluated direct and indirect impacts based on the foreseeable on-the-ground actions, including exploration, drilling, and utilization. Beyond some general and programmatic discussion of the possible effects, the PEIS did not include evaluations for site-specific issues associated with on-the-ground actions of geothermal exploration, drilling, utilization, or reclamation and abandonment.¹²

Based on the PEIS analysis, the BLM amended 114 land use plans in order to allo-

cate roughly 111 million acres of BLM-administered lands as open to geothermal leasing and to adopt a reasonably foreseeable development scenario, stipulations, BMPs, and leasing procedures for geothermal resources in 11 western States and Alaska.¹³ Additionally, the PEIS provided information that the USFS could use to facilitate subsequent consent decisions for any leasing on National Forest System lands.

In public workshops for the PEIS, BLM stated its intent that, upon receiving future geothermal lease nominations or applications, the affected BLM offices would be able to determine conformance with the appropriate Land Use Plan and also a NEPA adequacy evaluation. BLM's goal was to determine that its lease sale decisions could be made without further plan amendments or NEPA analysis, unless new information or special circumstances required additional environmental evaluation.¹⁴

An example of the "site-specific" use of the BLM PEIS was with the USFS's *Final Environmental Impact Statement for Geothermal Leasing on the Humboldt-Toiyabe National Forest*.¹⁵ In this case, the USFS determined that additional site-specific environmental analysis was needed to supplement the BLM PEIS in order for the USFS to make a decision about providing concurrence/consent to the BLM to lease lands in the Humboldt-Toiyabe National Forest for the purpose of developing geothermal resources.¹⁶

Therefore, the USFS prepared an EIS tiered to and incorporating by reference appropriate elements of the BLM PEIS (e.g.,

resource impact analysis, stipulations, leasing procedures, and BMPs), but with an analysis refined to include other, more site-specific protective provisions. Subsequent site-specific ground-disturbing geothermal exploration or development projects would require further environmental analysis, such as an environmental assessment or an EIS that could tier to the 2012 site-specific EIS and the 2008 PEIS.¹⁷

NASA Programmatic "Environmental Assessment for Launch of NASA Routine Payloads on Expendable Launch Vehicles"

NASA was established under the National Aeronautics and Space Act of 1958 for the purposes, in part, to "plan, direct, and conduct aeronautical and space activities; [and] arrange for participation by the scientific community in planning scientific measurements and observations to be made through use of aeronautical and space vehicles, and conduct or arrange for the conduct of such measurements and observations." Among NASA's stated objectives under the Act is "(t)he preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere."

NASA recognized the need for a programmatic assessment given its objectives of U.S. space and Earth exploration and the use of a continuing series of scientific spacecraft to be designed, built, and launched into Earth orbit or towards other bodies in our solar system. In November 2011, NASA published

the “*Final Environmental Assessment for Launch of NASA Routine Payloads on Expendable Launch Vehicles*”.¹⁸ In programmatically analyzing the associated environmental impacts, the design and operational characteristics of the routine payloads were rigorously bounded.¹⁹ Additionally, these spacecraft would use the materials, launch vehicles, facilities, and operations normally and customarily employed at the designated launch sites. The 2011 EA incorporated by reference the existing NEPA documentation for the launch vehicles and payload processing facilities to be used.

Updating a 2002 document that focused on launches from Cape Canaveral Air Force Station in Florida and Vandenburg Air Force Base in California, the 2011 EA added additional launch vehicle families and the additional launch sites of (1) the Ronald Reagan Ballistic Missile Defense Test Site at the U.S. Army Kwajalein Atoll in the Republic of the Marshall Islands; (2) NASA’s Wallops Flight Facility in Virginia; and (3) the Kodiak Launch Complex in Alaska.

In its Finding of No Significant Impact or FONSI,²⁰ NASA noted that (1) routine payloads would not increase the launch rates nor use launch systems beyond the scope of approved programs at the launch sites; and (2) no significant new circumstances or information related to environmental concerns associated with the launch vehicles had been identified that would affect earlier NASA environmental findings. NASA also stated that as a specific new spacecraft mission was defined, the mission first will be reviewed to

determine whether it falls within or outside the scope of the programmatic EA, and if so, an additional environmental review would be conducted and documented, as appropriate.²¹

USDA PEIS on Fruit Fly Cooperative Control Program

The USDA is authorized under Title IV – Plant Protection Act, *Public Law 106-224, 114 Stat. 438-455*, to take measures to prevent the dissemination of a plant pest that is new or is not known to be widely prevalent or distributed within or throughout the United States. Recognizing the destructive potential of fruit flies and the serious threat they represent to U.S. agriculture, the USDA, Animal and Plant Health Inspection Service (APHIS) had, in concert with State agricultural agencies, responded often in expensive, complex and even controversial emergency actions to exclude, detect, and eradicate the fruit fly pests. In 2001, APHIS, in cooperation with other federal and state agencies, prepared the “*Fruit Fly Cooperative Control Program — Final Environmental Impact Statement*”.²²

The 2001 EIS was a broad, programmatic analysis of the alternatives for fruit fly programs that collectively make up the Fruit Fly Cooperative Control Program.²³ The document focused on then available program control methods and the associated environmental impacts by providing an overview of the programs and incorporating by reference previous fruit fly species-specific control programs. The EIS also identified the specific procedures which APHIS would follow prior to implementing a program, to ensure that

site-specific characteristics of the program area are considered.²⁴ The site-specific environmental reviews would then summarize and incorporate by reference the programmatic analyses in the EIS. The EIS also identified the site-specific aspects of the program areas to be considered (e.g., land use patterns, human population density) and presented the specific procedures for the site-specific evaluations.

Two recent site-specific applications of the EIS occurred in 2012, to address respectively, infestations of Mexican fruit flies in Cameron County, Texas and of Mediterranean fruit flies in Rancho Cucamonga, San Bernardino County, California. For both of these infestations, APHIS prepared Environmental Assessments (EAs) to analyze the environmental consequences of alternatives considered to eradicate the subject fruit fly populations, and to consider the site-specific environmental issues relevant to the implemented eradication program.²⁵ In each EA, APHIS incorporated by reference the alternatives analysis from the 2001 EIS, along with other fruit fly-specific chemical risk assessments and insecticide risk assessments, to support its analysis. Both EAs were issued in the same month as the respective identification of the fruit fly infestation and supported a timely response to the destructive potential of these fruit fly populations.

USFS's PEIS on National Forest System Land Management Planning

The Secretary of Agriculture is vested with broad authority to make rules: "to regulate occupancy and use and to preserve [the

forests] from destruction".²⁶ The Multiple-Use Sustained Yield Act of 1960 authorizes and directs that the national forests be managed under principles of multiple use and to produce sustained yield of products and services and for other purposes. The National Forest Management Act of 1976 directs the Secretary to promulgate regulations for the development and revision of land management plans and prescribes a number of provisions that the regulations shall include, but not be limited to.⁷

In 2012, the USFS published the "*Final Programmatic Environmental Impact Statement – National Forest System Land Management Planning*".²⁸ This PEIS was prepared in support of a new USFS regulation (i.e., planning rule) to guide the development, revision, and amendment of land management plans for units of the National Forest System. The purpose of and the need for the new planning rule was to provide the direction for national forests and grasslands to develop, revise, and amend land management plans to enable land managers to consistently and efficiently respond to social, economic, and ecological conditions. The preferred alternative in the PEIS would require preparation of an EIS and a Record of Decision for new plans and plan revisions. This alternative would provide guidance for plans to require monitoring that evaluates changes on the unit and across the broader landscape. Monitoring would be used to assess progress toward achieving desired conditions in plans, and for evaluating whether there is a need for re-assessment and plan revision or amendment.

The USFS planning rule supported by the PEIS analysis was published in the Federal Register on April 9, 2012, and it became effective on May 9, 2012.²⁹ Since then, the USFS has released proposed planning directives for public review and comment. These directives are the key set of agency guidance documents that direct implementation of the 2012 planning rule.³⁰

NYSDEC GEIS on the Oil, Gas, and Solution Mining Regulatory Program

In New York, the State Environmental Quality Review Act has as its basic purpose “to incorporate the consideration of environmental factors into the existing planning, review and decision-making processes of state, regional and local government agencies at the earliest possible time.” The State regulations implementing this Act allow the preparation of a GEIS for separate actions having similar types of impacts.

In 2011, the New York State Department of Environmental Conservation (NYSDEC) published the “*Revised Supplemental Draft GEIS on the Oil, Gas and Solution Mining Regulatory Program – Well Permit Issuance for Horizontal Drilling and High-Volume -Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs*”.³¹ NYSDEC identified high-volume hydraulic fracturing as “an approach to extracting natural gas in New York that raises new, potentially significant, adverse impacts” that were not studied previously in a 1992 GEIS on the State’s oil, gas and solution mining regulatory program. The revised draft SGEIS discuss-

es in detail high-volume hydraulic fracturing and describes the potential significant environmental impacts from this activity as well as measures that would fully or partially mitigate the identified impacts.³² Specific mitigation measures would be adopted as part of the NYSDEC Final GEIS in the event high-volume hydraulic fracturing is authorized in New York.

NYSDEC’s public internet site for the Revised Supplemental Draft GEIS stated that NYSDEC had received more than 60,000 public comments on the document.³³ Following resolution of those comments and issuance of the Final SGEIS, the NYSDEC would then process and, as appropriate, issue well permits for gas well development using high-volume hydraulic fracturing in accordance with both the 1992 GEIS and the Final SGEIS.

MEQB GEIS on Timber Harvesting and Forest Management

The Minnesota Environmental Quality Board (MEQB) was established by the Minnesota Legislature in 1973 to serve as an interdepartmental forum for addressing and resolving environmental problems and issues. Under Minnesota Rules 4410.3800: Subpart 5, criteria are provided for the preparation of a GEIS, among which is the potential for significant environmental effects as a result of the cumulative impacts of such projects.

In 1994, in response to a growing concern about the impact of increased timber harvesting on Minnesota’s environment, MEQB contracted for the preparation of the “*Final Generic Environmental Impact Statement*

Study on Timber Harvesting and Forest Management in Minnesota".³⁴ The GEIS examined the impacts of timber harvesting and forest management on Minnesota's environment and on relevant sectors of the state and regional economies with an emphasis on the examination of cumulative impacts of timber harvesting and forest management activities occurring on all timberlands in Minnesota. The GEIS assessed three levels of statewide timber harvesting activity as the basis for incremental analyses of the potential impacts of timber harvesting and forest management. Since its publication, topical areas identified in the GEIS have been used to develop timber harvest and forest management guidelines that were integrated with the existing best management practice publications.³⁵ These guidelines, issued in 1996, were revised and republished in 2005 and later modified in 2007 to include biomass harvesting guidelines for forestlands, brushlands and open lands.

Conclusion

The CEQ's regulations at 40 CFR 1502.4(b) and (c) allow federal agencies to prepare EISs on "broad actions" in which federal proposals can be evaluated geographically, generically, or by stage of technological development. This capstone paper surveyed seven broad action EISs (i.e., PEISs and GEISs) and a programmatic EA, for the purpose of evaluating the role and usefulness of these types of documents in meeting an agency's compliance with NEPA or State environmental mandates, consistent with the agency's regulatory authorities.

As shown in this paper, federal and state regulatory agencies have used programmatic EISs or EAs to (1) establish criteria for subsequent site- or technologically-specific environmental analyses (e.g., NRC's licensing of uranium recovery facilities, NASA's approval of routine payload launches, USDA's authorizing of fruit fly eradication programs, and NYSDEC's permitting of high-volume hydraulic fracturing); (2) support agency rule-making and guideline development efforts (e.g., USFS's planning rule for National Forest System land management, MEQB's timber harvesting guidelines); and (3) support agency program decisions (e.g., DOE's long-term management of DUF6 stockpiles, BLM's permitting of geothermal leasing in the western U.S.).

When these programmatic EISs and EAs have been used in an agency's decision process for site- or technologically-specific actions, the agency has made use of tiering and incorporation by reference to link the programmatic and "narrow action" documents and to support environmental impact conclusions in the site- or technologically-specific document. Tiering and incorporation by reference, as discussed previously, are recommended approaches in the CEQ's regulations. Using these approaches also allowed the regulatory agency to account for site characteristics and the technology specific to the permitting or licensing decision, such that additional environmental analysis could be performed if warranted.

Finally, in preparing these programmatic EISs and EAs, agencies have consistent-

ly done so within the legal authority and mandates that govern the respective agency's actions. Agencies have demonstrated that, when used consistent with the CEQ's NEPA regulations, programmatic EISs and EAs can aid the agency decision-making process.

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Section TWO

Impact Analysis

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Use and Documentation of Categorical Exclusions

By
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September 2014

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Introduction

The National Environmental Policy Act (NEPA) of 1969, as amended,¹ is a procedural statute designed to help ensure that the Federal government evaluates environmental impacts before taking action; it does not impose substantive duties on agencies mandating particular results.²

NEPA also created the Council on Environmental Quality (CEQ) to oversee agencies' implementation of NEPA.³ CEQ regulations provide procedural requirements for reviewing potential environmental impacts of a proposed agency action. CEQ regulations also require each agency to, as necessary, adopt procedures to supplement the CEQ regulations to address implementing procedures.⁴ These procedures will include designation of actions that normally require an environmental impact statement, environmental assessment, or are categorically excluded.⁵

According to CEQ, "[c]ategorical exclusions are the most frequently employed method of complying with NEPA."⁶ The following sections 1) address the development of CEQ guidance for using and documenting categorical exclusions, 2) compare a handful of agencies implementation of categorical exclusion related requirements and guidance, and 3) explore how the courts have addressed agencies' implementation of categorical exclusion related requirements.

CEQ Regulations and Guidance for Use and Documentation of Categorical Exclusions

In 1978, the Council on Environmental Quality (CEQ) issued final regulations implementing procedural provisions of NEPA.⁷ CEQ stated that it expected that these regulations would "reduce paperwork, [] reduce delays, and . . . produce better decisions which further the national policy to protect and enhance the quality of the human environment."⁸ One of the provisions CEQ identified for reducing delays, was section 1508.4, Categorical Exclusions⁹:

Categorical Exclusion means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (§ 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required. An agency may decide in its procedures or otherwise, to prepare environmental assessments for the reasons stated in § 1508.9 even though it is not required to do so. Any procedures under this section shall provide for extraordinary circumstances in which a normally excluded action may have a significant environmental effect.

Over the years, CEQ has developed guidance

on the use and documentation of categorical exclusions.

In 1981, CEQ sought public comment on how agencies were implementing the 1978 CEQ regulations.¹⁰ Specifically, CEQ asked “Have categorical exclusions been adequately identified and defined?”¹¹ The response was that categorical exclusions were not adequately identified and defined.¹² In addition, comments included concerns about agencies “requiring too much documentation for projects that were not major federal actions with significant effects and also that agency procedures to add categories of actions to their existing lists of categorical exclusions were too cumbersome.”¹³

In 1983, CEQ issued guidance to agencies on ways to carry out activities under the CEQ regulations that addressed public comments.¹⁴ This guidance included a section devoted to categorical exclusions in which CEQ “strongly encourage[d] agencies to re-examine their environmental procedures and specifically those portions of the procedures where ‘categorical exclusions’ are discussed to determine if revisions are appropriate.”¹⁵ Specific areas of concern identified by CEQ were “(1) the use of detailed lists of specific activities for categorical exclusions, (2) the excessive use of environmental assessments/findings of no significant impact and (3) excessive documentation.”¹⁶

CEQ noted that identifying categorical exclusions using a list of specific activities would not provide agencies “with sufficient flexibility to make decisions on a project-by-project basis with full consideration to

the issues and impacts that are unique to a specific project” if this list is applied too narrowly.¹⁷ Accordingly, CEQ encouraged agencies “to consider broadly defined criteria which characterize types of actions that, based on the agency’s experience, do not cause significant environmental effects.”¹⁸ CEQ also encouraged agencies “to examine the manner in which they use the environmental assessment process in relation to their process for identifying projects that meet the categorical exclusion definition.”¹⁹

Specifically, with respect to documentation requirements CEQ “strongly discourage[d] procedures that would require the preparation of additional paperwork to document that an activity has been categorically excluded.”²⁰ CEQ expressed its belief that “sufficient information will usually be available during the course of normal project development to determine the need for an EIS and further that the agency’s administrative record will clearly document the basis for its decision.”²¹ As result of this guidance, some agencies reevaluated and broadened their use of categorical exclusions.²²

However, while this guidance appears to give agencies broad discretion to identify categorical exclusions, it did provide for a check by CEQ. Specifically, the guidance states that “[c]ategorical exclusions promulgated by an agency should be reviewed by the Council at the draft stage. After reviewing comments received during the review period and prior to publication in final form, the Council will determine whether the categorical exclusions are consistent with

the NEPA regulations.”²³

In September 2003, the NEPA Task Force, established in 2002 by the CEQ Chairman, issued a report to CEQ titled “Modernizing NEPA Implementation,” which provided specific recommendations for categorical exclusion development and revisions.²⁴ Relevant to this capstone paper, the Task Force found that agencies were confused “about the level of analysis and documentation required to use an approved categorical exclusion, although CEQ consistently has stated that categorical exclusions should have minimal, if any, documentation developed at the time of the specific action application.”²⁵ Also, the Task Force found that categorical exclusions were infrequently developed and updated by agencies, and that the process varies between agencies.²⁶

In February 2010, CEQ announced “steps to modernize, reinvigorate, and ease the use and increase the transparency of the implementation of NEPA.”²⁷ As part of this, CEQ issued draft guidance for public comment about establishing and applying categorical exclusions.²⁸ Like the 1983 guidance, the February draft guidance indicated that a purpose of establishing categorical exclusions is to “eliminate unnecessary paperwork and effort reviewing the environmental effects of categories of actions that, absent extraordinary circumstances, do not have significant environmental effects.”²⁹ The February draft guidance reiterated the 1983 guidance about crafting categorical exclusions (i.e., agencies should broadly define criteria).³⁰ The draft guidance also restated the 1983 CEQ belief

that “sufficient information will usually be available during the course of normal project development,” and went on to state that agencies “should decide if a categorical exclusion determination warrants preparing separate documentation.”³¹ Specifically, CEQ suggested that,

In cases when an agency determines that documentation is appropriate, the extent of the documentation should be related to the type of action involved, the potential for extraordinary circumstances, and compliance requirements for other laws, regulations, and policies. In all circumstances, categorical exclusion documentation should be brief, concise, and to the point. The need for lengthy documentation should raise questions about whether applying the categorical exclusion in a particular situation is appropriate.³²

The February draft guidance also provided guidance on substantiating a new categorical exclusion.³³ For example, CEQ identified sources an agency could use to substantiate a new categorical exclusion including previously implemented actions, impact demonstration projects, information from professional staff or scientific analyses, and other agencies’ experiences.³⁴ In addition, it addressed procedures for establishing a new categorical exclusion, which should include opportunities for public review and comment.³⁵

Several months later, in December

2010, CEQ issued its final guidance on categorical exclusions.³⁶ CEQ's responses to public comments indicate that commenters on the draft February guidance were concerned with potentials for delay and creation of administrative burdens.³⁷ In response, CEQ stated that its final "guidance makes it clear that the documentation prepared when categorically excluding an action should be as concise as possible to avoid unnecessary delays and administrative burdens."³⁸ Documentation "is the responsibility of the agency and should be tailored to the type of action involved, the potential for extraordinary circumstances, and compliance requirements of other laws, regulations, and policies."³⁹ The final guidance modified previous CEQ guidance in that it "recognizes that each Federal agency should decide – and update its NEPA implementing procedures and guidance to indicate – whether any of its categorical exclusions warrant preparation of additional documentation."⁴⁰ The guidance explained that in some cases, courts required documentation to demonstrate that the environmental effects associated with extraordinary circumstances had been considered by the agency.⁴¹ If an agency determines that documentation is appropriate, CEQ states that this documentation should "show that the agency determined that: (1) The proposed action fits within the category of actions described in the categorical exclusion; and (2) there are no extraordinary circumstances that would preclude the proposed action from being categorically excluded."⁴²

***THE NRC'S
REGULATIONS DO NOT,
HOWEVER, PROVIDE
SPECIFIC REQUIREMENTS FOR
DOCUMENTING
CATEGORICAL EXCLUSIONS
THAT DO NOT MEET THE
SPECIAL CIRCUMSTANCES
CRITERIA.***

Agency Procedures for Using and Documenting Categorical Exclusions

U.S. Nuclear Regulatory Commission

In 1974, the U.S. Nuclear Regulatory Commission (NRC) published a final rule adding 10 CFR Part 51, then titled "Licensing and Regulatory Policy and Procedures for Environmental Protection," to its regulations. These requirements included four categorical exclusions.⁴³ In 1980, soon after CEQ published its regulations for implementing NEPA, the NRC issued a proposed rule for comment implementing the CEQ regulations. Specifically, with respect to categorical exclusions, the NRC described the function of the categorical exclusions and proposed expanding its list of categorical exclusions.⁴⁴

The final NRC rule implementing CEQ's regulations was published in 1984.⁴⁵ This final rule expanded the list of categorical exclusions from four to eighteen.⁴⁶ Since then, the Commission, through notice and comment rule-making, has revised its list of categorical exclusions on a couple of occasions.⁴⁷

The NRC's regulations do not, however, provide specific requirements for document-

ing categorical exclusions that do not meet the special circumstances criteria. Provisions for documenting NRC's use of categorical exclusions is contained in NRC guidance documents. For example, NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, provides flexibility, stating that all categorical exclusions should be documented "in some manner."⁴⁸ It explains that this documentation provides "evidence that the staff carried out the NEPA process and provides the rationale for applying the [categorical exclusion]."⁴⁹ The guidance also provides that, "[a]t a minimum the categorical exclusion should be documented in the safety or technical review or a letter of response to the applicant/licensee noting which categorical exclusion applies and how it applies" and for actions not clearly encompassed by the categorical exclusion, additional documentation should be placed in the license file.⁵⁰

***DOE'S REGULATIONS
PROVIDE THAT
"CATEGORICAL EXCLUSION
DETERMINATIONS FOR
ACTIONS LISTED IN
APPENDIX B SHALL BE
DOCUMENTED AND MADE
AVAILABLE TO THE PUBLIC
BY POSTING ONLINE,
GENERALLY WITHIN TWO
WEEKS OF THE
DETERMINATION.***

U.S. Department of Energy

Like NRC regulations, the Department of Energy's (DOE) regulations also include a list of categorical exclusion determinations involving classes of actions.⁵¹ Consistent with CEQ guidance, and like the NRC, DOE has updated its regulations regarding categorical exclusions to help ensure that the categorical exclusions align with the Department's activities and experiences.⁵²

However, unlike NRC's regulations which do not include specific documentation requirements for categorical exclusions, DOE's regulations provide that "categorical exclusion determinations for actions listed in Appendix B shall be documented and made available to the public by posting online, generally within two weeks of the determination, unless additional time is needed in order to review and protect classified information, 'confidential business information,' or other information that DOE would not disclose pursuant to the Freedom of Information Act" ⁵³ DOE's procedures for online posting were established to further transparency and openness in the Department of Energy's implementation of the NPA process in response to a directive to take affirmative steps to use modern technology to inform the public about DOE operations.⁵⁴ DOE's website allows members of the public to search categorical exclusions by date, the categorical exclusion applied, State and Program/Field/Site Office.⁵⁵

DOE also has detailed guidance regarding documentation and online posting of categorical exclusion determinations.⁵⁶ Like

the NRC guidance in NUREG-1748, DOE's guidance provides the agency some flexibility in its categorical determination documentation, stating "[t]he format and content of the documentation for a [categorical exclusion] determination is not prescribed and, appropriately, may vary among Program and Field Offices."⁵⁷

Department of Agriculture, U.S. Forest Service

The Department of Agriculture regulations identify specific categorical exclusions for the U.S. Forest Service.⁵⁸ These categorical exclusions are organized in two groups: 1) "[a]ctions requiring a supporting record and a decision memo documenting the decision to proceed," and 2) "actions where a supporting record and a decision memo are not required, but may be prepared at the discretion of the responsible official."⁵⁹ In addition to categorical exclusions identified by the Forest Service, Congress has also statutorily established categorical exclusions. For example, the Energy Policy Act of 2005 established a categorical exclusion for five types of actions related to oil and gas exploration and development conducted pursuant to the Mineral Leasing Act.⁶⁰

Like the NRC and DOE, the Forest Service also has agency documents that outline policies and procedures with respect to categorical exclusions.⁶¹ For those categories of actions for which a project case file and decision memo are required, the Forest Service Handbook states that "[a]s a minimum, the project or case file should include any records prepared, such as: the names of

interested and affected people, groups, and agencies contacted; the determination that no extraordinary circumstances exist; a copy of the decision memo; and a list of the people notified of the decision."⁶² The Handbook also provides prescriptive requirements for the format and content of a decision memo.⁶³ In addition, it explains that the decision memos are distributed to or notice thereof is provided to "agencies, organizations, and persons interested in or affected by the proposed action."⁶⁴

***"[A]T THE DISCRETION OF
THE RESPONSIBLE
OFFICIAL, A PROJECT OR
CASE FILE AND A DECISION
MEMO . . . MAY BE
PREPARED FOR" SPECIFIED
CATEGORIES OF ACTIONS.***

Alternatively, for those actions that do not require a decision memo, the Handbook states that "[a]t the discretion of the responsible official, a project or case file and a decision memo . . . may be prepared for" specified categories of actions.⁶⁵ For example, the official may choose to prepare a document if it is determined that public interest on the proposed action is high.⁶⁶ Even when a decision memo is not required, the Forest Service Handbook states that "any interested and affected persons shall be informed in an appropriate manner of the decision to proceed with the proposed action."⁶⁷

Department of Interior

Like agency regulations discussed above, the Department of Interior's regulations also include a list of categorical exclusions for Department wide-application, most of which are administrative in nature (e.g., routine financial transactions, nondestructive data collection, and budget activities).⁶⁸

In addition, the Department has a manual for its Environmental Programs; various chapters address programs for the Department's different Bureaus and Services.⁶⁹ For example, the chapter for the Bureau of Reclamation includes Bureau specific categorical exclusions.⁷⁰ This Bureau also has a NEPA handbook that provides guidance for documenting the use of categorical exclusions.⁷¹ According to this guidance, this documentation should be a fairly rapid process, taking a few hours or a few days and involving a little research, a few coordination telephone calls, and/or short face-to-face discussions to get information, as needed, to fill out the checklist. Some internal and external scoping of issues and documentation may also be required. . . . It should include a description of the proposed action, documentation on how it meets the exclusion category, and a list of any environmental commitments associated with the action.⁷²

The Department of Interior also had a Manual for the Minerals Management Service (MMS), which includes a list of categorical exclusions.⁷³ MMS's use of a categorical exclusion recently came under scrutiny after the BP oil disaster.⁷⁴ On August 16, 2010, the Secretary of Interior issued a statement that the use of categorical exclusions for offshore

oil and gas drilling development activities would be restricted while the Department undertook a comprehensive review of its NEPA process and the use of categorical exclusions.⁷⁵

Views from the Courts on the Use and Documentation of Categorical Exclusions

Over the years, questions regarding categorical exclusions have been addressed by courts. The decisions below illustrate the information and analysis courts may look for when reviewing an agency's use and documentation of a categorical exclusion.

For example, in 2002, the Court of Appeals for the Ninth Circuit held that the Department of Interior did not adequately document its reliance on a claimed categorical exclusion.⁷⁶ Specifically, environmental groups and the State of California challenged the United States' use of a categorical exclusion for lease suspensions because the United States had not made a categorical exclusion determination at the time it granted the suspensions.⁷⁷ The groups argued that, therefore, the United States was improperly relying on a categorical exclusion as post hoc rationalization.⁷⁸

The Court, quoting a 1996 decision, explained that

"An agency satisfies NEPA if it applies its categorical exclusions and determines that neither an EA nor an EIS is required, so long as the application of the exclusions to the facts of the particular action is not

arbitrary and capricious.” It is difficult for a reviewing court to determine if the application of an exclusion is arbitrary and capricious where there is no contemporaneous documentation to show that the agency considered the environmental consequences of its action and decided to apply a categorical exclusion to the facts of a particular decision. Post hoc invocation of a categorical exclusion does not provide assurance that the agency actually considered the environmental effects of its action before the decision was made.⁷⁹

The court went on to state that even “a brief statement that a categorical exclusion is being invoked will suffice.”⁸⁰ The court further explained that, “[w]here there is substantial evidence in the record that exceptions to the categorical exclusion may apply, the agency must at the very least explain why the action does not fall within one of the exceptions.”⁸¹ The Court directed the agency to “provide a reasoned explanation for its reliance on the categorical exclusion.”⁸²

Another example where an agency’s categorical exclusion was examined by the courts, is a challenge by environmental groups to the Forest Service’s establishment of a categorical exclusion regarding fuel reduction projects.⁸³ The categorical exclusion at issue was developed in response to the Healthy Forests Initiative, which was announced by President Bush in August 2002.⁸⁴ The Forest Service announced its intention to develop a

categorical exclusion and then issued a data call.⁸⁵ Environmental groups alleged that this categorical exclusion was invalid for a number of reasons, including that it inappropriately included activities that had significant effects; was not supported by data; and the Forest Service did not adequately identify activities covered by the categorical exclusion.⁸⁶

THE COURT WENT ON TO STATE THAT EVEN “A BRIEF STATEMENT THAT A CATEGORICAL EXCLUSION IS BEING INVOKED WILL SUFFICE.”

The court found “that because the Forest Service failed to demonstrate that it made a ‘reasoned decision’ to promulgate this categorical exclusion, that its promulgation was arbitrary and capricious.”⁸⁷ Specifically, the court concluded that the Service erred by conducting the data call as a post-hoc rationale for its predetermined decision to promulgate the Fuels CE, failing to properly assess significance, failing to define the categorical exclusion with the requisite specificity, and therefore basing its decision on an inadequate record. . . . Post-hoc examination of data to support a pre-determined conclusion is not permissible because “[t]his would frustrate the fundamental purpose of NEPA, which is to ensure that federal agencies take a ‘hard look’ at the environmental consequences of their actions, early enough so that it can serve as an important contribution to the decision making process.” *California v. Norton*, 311 F.3d 1162,

1175 (9th Cir.2002) (citation omitted). Post-decision information [] may not be advanced as a new rationalization either for sustaining or attacking an agency's decision." *Sw. Ctr. for Biological Diversity v. U.S. Forest Serv.*, 100 F.3d 1443, 1450 (9th Cir.1996).⁸⁸ The court addressed numerous additional failures including, for example, failure to engage in the required "scoping process" prior to establishment of the categorical exclusion; failure to consider adequately the unique characteristics of the applicable geographic areas, and failure to define the categorical exclusion with requisite specificity.⁸⁹

More recently, in 2013, the Bureau of Land Management's use of a categorical exclusion for a "free use permit" to extract certain amounts of gravel was challenged.⁹⁰ The Bureau found that certain free use permits fell within a categorical exclusion and that no extraordinary circumstances existed that would merit more extensive environmental analysis.⁹¹

The District Court found that the Bureau "'provided no more than a ' cursory statement' of no cumulatively significant impacts in applying the categorical exclusion'" when issuing the permit.⁹² BLM later provided further explanation as to its use of the categorical exclusion, which the District Court found was sufficient and therefore, use of the categorical exclusion was not arbitrary and capricious.⁹³ The Court of Appeals for the Ninth Circuit affirmed this opinion, concluding that the Bureau "appropriately found that issuance of the gravel permit fell into a categorical exclusion and adequately explained

why the permit had no 'cumulatively significant' environmental effects preventing application of the categorical exclusion."⁹⁴

BLM also successfully defended a claim that its application of a categorical exclusion to authorization of road maintenance on various routes throughout public land was arbitrary and capricious.⁹⁵ In upholding BLM's application of the categorical exclusion, the court explained that "[A]n agency's interpretation of the meaning of its own categorical exclusion should be given controlling weight unless plainly erroneous or inconsistent with the terms used in the regulation."⁹⁶

Conclusion

This capstone paper illustrates the evolution and implementation of guidance and requirements related to the use and documentation of categorical exclusions by Federal agencies. As illustrated above, agencies have adopted practices and procedures over the years to address changes in CEQ guidance as well as their own experiences. While agencies have discretion in when and how to document decisions for using and applying categorical exclusions, as illustrated by case law, it behooves agencies to ensure that their decisions for using categorical exclusions are reasoned and supported, particularly where there is significant public interest in a proposed action.

Endnotes

1. National Environmental Policy Act of 1969, as amended, 42 USC 4331 et seq.
2. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 333 (1989) (“it is well settled that NEPA itself does not impose substantive duties mandating particular results, but simply prescribes the necessary process for preventing uninformed-rather than unwise-agency action”).
3. 42 USC 4342.
4. 40 CFR § 1507.3.
5. CEQ, Report Regarding the Minerals and Management Service’s National Environmental Policy Act Policies, Practices, and Procedures as they Relate to Outer Continental Shelf Oil and Gas Exploration and Development, at 8-9 (Aug. 16, 2010), available at <http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100816-ceq-mms-ocs-nepa.pdf> (last visited Sept. 30, 2014) (“CEQ Report Regarding MMS”) (outlining NEPA and CEQ requirements).
6. Memorandum for Heads of Federal Departments and Agencies, from Nancy Sutley, Chair, CEQ, Establishing and Applying Categorical Exclusions Under the National Environmental Policy Act, at 2 (Feb. 18, 2010) (“2010 Memorandum”).
7. National Environmental Policy Act – Regulations, 43 Fed. Reg. 55,978 (Nov. 29, 1978).
8. *Id.*
9. *Id.* at 55,979. Other measures designed to reduce delay included requirements related to time limits on the NEPA process, integrating EIS requirements with other environmental review requirements, accelerated procedures for legislative proposals, and finding of no significant impact. *Id.*
10. Publication of Memorandum to Agencies Containing Guidance on Agency Implementation of NEPA Regulations, 48 Fed. Reg. 34,263 (July 22, 1983) (explaining that CEQ requested comments on August 14, 1981).
11. *Id.*
12. 48 Fed. Reg. at 34,264
13. *Id.* at 34,264-65.
14. *Id.* at 34,263.
15. *Id.* at 34,265.
16. *Id.*
17. *Id.*
18. *Id.*
19. *Id.*
20. *Id.*
21. *Id.*
22. See Kevin Moriarty, Circumventing the National Environmental Policy Act: Agency Abuse of the Categorical Exclusion, 79 N.Y.U. L.REV. 2312, 2325 (2004).
23. 8 Fed. Reg. at 34,265.
24. The NEPA Task Force, Report to the Council on Environmental Quality, Modernizing NEPA Implementation, at vii (Sept. 2003), available at http://cdn.ca9.uscourts.gov/datastore/library/2013/02/26/Pacific_NEPA%20final.pdf (last visited Sept. 29, 2014) (“Task Force Report”).
25. Task Force Report at 57-58.
26. *Id.* at 58.
27. National Environmental Policy Act (NEPA) Draft Guidance, Establishing, Applying, and Revising Categorical Exclusions Under the National Environmental Policy Act, 75 Fed. Reg. 8045 (Feb. 23, 2010).
28. *Id.*
29. 2010 Memorandum at 3.

- 30. *Id.* 4 (quoting 1983 Guidance).
- 31. *Id.* at 10.
- 32. *Id.*
- 33. *Id.* at 5-10.
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- 35. *Id.* at 8.
- 36. Final Guidance for Federal Departments of Agencies on Establishing, Applying, and Revising Categorical Exclusions Under the National Environmental Policy Act, 75 Fed. Reg. 75,628 (Dec. 6, 2010).
- 37. *Id.* at 75,630.
- 38. *Id.*
- 39. *Id.*
- 40. *Id.* at 75,636.
- 41. *Id.* (citing *California v. Norton*, 311 F.3d 1162, 1175-78 (9th Cir. 2002)).
- 42. *Id.*
- 43. 39 Fed. Reg. 26,279 (July 18, 1974).
- 44. Proposed Rule, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments, 45 Fed. Reg. 13739, 13742 (Mar. 3, 1980).
- 45. Final Rule, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments, 49 Fed. Reg. 9352 (Mar. 12, 1984).
- 46. Categorical Exclusions from Environmental Review, 75 Fed. Reg. 20248, 20249 (Apr. 19, 2010) (describing changes between 1980 proposed rule and 1984 final rule).
- 47. See, e.g., *id.* (explaining that as of 2010, NRC had made 14 amendments to the categorical exclusions in 10 CFR 51.22 since 1984).
- 48. NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, at 2-1 (2003).
- 49. *Id.*
- 50. *Id.*
- 51. 10 CFR Part 1021, Appendices A & B to Subpart D.
- 52. National Environmental Policy Act Implementing Procedures, 76 Fed. Reg. 63,764, 63,764 (Oct. 13, 2011).
- 53. 10 CFR 1021.410(e).
- 54. Online Posting of Certain DOE Categorical Exclusion Determinations; Policy Statement, 74 Fed. Reg. 52,129 (Oct. 9, 2009). See also National Environmental Policy Act Implementing Procedures, 76 Fed. Reg. 63,764, 63,770 (“DOE is codifying at 10 CFR 1021.410(e) its policy to document and post online appendix B categorical exclusion determinations.”) (Oct. 13, 2011).
- 55. See Categorical Exclusion Determinations, energy.gov/nepa/nepa-documents/categorical-exclusion-determinations (last visited Sept. 29, 2014).
- 56. Implementation Guidance for the DOE Policy on Documentation and Online Posting of Categorical Exclusion Determinations: NEPA Process Transparency and Openness, Rev. 1 (May 25, 2010), available at <http://energy.gov/sites/prod/files/G-DOE-ImplGuide-post-CXs-2010.pdf> (last visited Sept. 29, 2014).
- 57. *Id.* at 1.
- 58. 36 CFR 220.6.
- 59. National Environmental Policy Act Procedures, 73 Fed. Reg. 43084, 43088 (July 24, 2008).
- 60. Section 390 of the Energy Policy Act of 2005, 42 USC 15492. See also Memorandum to Regional Foresters, Energy Policy Act of 2005, Use of Section 390 Categorical Exclusions for Oil and Gas (June 9, 2010), available at <http://www.fs.fed.us/emc/nepa/includes/390guidance2.pdf> (last visited Sept. 30, 2014).

61. FSH 1909.15, National Environmental Policy Act Handbook, Chapter 30 – Categorical
62. Exclusion From Documentation (May 28, 2014), available at http://www.fs.fed.us/emc/nepa/nepa_procedures/index.htm (last visited Sept. 29, 2014).
63. *Id.* at 32.2 – Categories of Actions for which a Project or Case File and Decision Memo are Required.
64. *Id.* at 33.3 – Format and Content of a Decision Memo. *Id.* at Chapter 34 – Notice and Distribution of Decision Memo.
65. *Id.* at Chapter 32 – Categories of Actions Excluded from Documentation.
66. *Id.* at 33.1.
67. *Id.*
68. 43 CFR 46.210.
69. See Department of Interior, Series 31 – Environmental Quality Programs, available at <http://elips.doi.gov/ELIPS/Browse.aspx?startid=1715> (last visited Sept. 29, 2014) (listing separate chapters for the various Bureaus and services, including for example, Bureau of Indian Affairs, National Park Service, and the Bureau of Reclamation).
70. *Id.* at Chapter 14, Section 14.5 (last updated Aug. 2012), available at <http://elips.doi.gov/ELIPS/DocView.aspx?id=1727> (last visited Sept. 29, 2014).
71. Reclamation Managing Water in the West, Reclamation’s NEPA Handbook (Feb. 2012), available at http://www.usbr.gov/nepa/docs/NEPA_Handbook2012.pdf (last visited Sept. 29, 2014).
72. *Id.* at 5-1.
73. CEQ Report Regarding MMS, at 20 n.60 (citing Chapter 15 of DOI’s Departmental Manual).
74. See Anne Brinkmann, The BP Oil Spill and Calls to Improve NEPA’s Categorical Exclusions, posted February 26, 2011 at <http://gwujeel.wordpress.com/2011/02/26/the-bp-oil-spill-and-calls-to-improve-nepas-categorical-exclusions/> (last visited Sept. 30, 2014) (discussing the use of a categorical exclusion for Deepwater drilling); CEQ, Report Regarding MMS.
75. Press Release, Categorical Exclusions for Gulf Offshore Activity to be Limited While Interior Review NEPA Process and Develops Revised Policy (Aug. 16, 2010), available at <http://www.doi.gov/news/pressreleases/Categorical-Exclusions-for-Gulf-Offshore-Activity-to-be-Limited-While-Interior-Reviews-NEPA-Process-and-Develops-Revised-Policy.cfm>.
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78. *Id.*
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91. *Id.* at 1089.
92. *Id.*
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94. *Id.* at 1097.
95. *Oregon Natural Desert Ass’n v. Cain*, 2014 WL 1706457 (D. Oregon Apr. 29, 2014) (slip op.).
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Uses of Tiered Significance Levels in NEPA Documents

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Introduction

The significance of environmental impacts plays a key role in how agencies of the Federal government implement the National Environmental Policy Act (NEPA).¹ Section 102 of NEPA establishes a requirement that agencies include a detailed statement of the environmental impacts (environmental impact statement, or EIS) of “proposals for legislation and other major Federal actions *significantly* (emphasis added) affecting the quality of the human environment”.² The Council on Environmental Quality (CEQ) has established a process by which agencies can identify categorical exclusions allowing for expedited NEPA documentation for “categories of actions which do not individually or cumulatively have a *significant* (emphasis added) effect on the human environment...”³. CEQ also allows agencies to prepare “Findings of No Significant Impact” (FONSI) in lieu of EISs for actions lacking potentially significant impacts.⁴ CEQ has developed limited but useful direction on evaluating the possible significance of environmental impacts calling for an integrated consideration of “context and intensity”.⁵ Caselaw has established that agencies must supplement an EIS only if there is new information indicating that a previously evaluated action “will affect the quality of the human environment in a *significant* (emphasis added) manner or to a *significant* (emphasis added) extent not already considered.”⁶

Most agencies distinguish between impacts that are significant and those that are

not significant. Few however have attempted to more finely classify impacts on the basis of significance. The tendency has been to identify each environmental impact as either significant or not significant and then focus on those impacts passing this initial significance screen. A more analytical approach would be to recognize impacts as occurring on a spectrum of significance. Somewhere on this spectrum a threshold would theoretically exist above which an impact would be significant; however, it may not always be possible to sharply delineate a meaningful threshold. Impacts may lie above or below the threshold, but those falling closer to the threshold may display intermediate stages of significance that still warrant further consideration. Expressed mathematically, significance could perhaps be better expressed as a smooth curve representing a continuous distribution rather than as a simple two-point discrete distribution. Impacts whose significance is substantially greater than the threshold could warrant greater subsequent focus than impacts only slightly above the threshold; impacts whose significance falls just under the threshold may not warrant being discounted as impacts clearly falling short. The need for evaluating impacts in the context of a continuous distribution could be especially apparent when considering cumulative impacts; multiple impacts falling just below the threshold of significance can more rapidly escalate to cumulative significance than multiple impacts falling well below the threshold.

In contrast to the simplistic tendency described above, one agency that prepares

multiple EISs annually, the U.S. Nuclear Regulatory Commission (NRC), recognizes three rather than two levels of possible significance. Rather than merely identifying environmental impacts as significant or not significant, NRC identifies impacts as SMALL, MODERATE, or LARGE in its EISs, using the following definitions:⁷

SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The three NRC significance levels are delineated on the basis of what constitutes a “noticeable” impact (delineates SMALL from MODERATE) and a “destabilizing” impact (delineates MODERATE from LARGE). The interpretation of what is “noticeable” or “destabilizing” is no less subjective than the interpretation of what is “significant”, although the expanded palette of possible conclusions allows for an expanded ability to resolve differences. Having three rather than two possible significance determinations conveys more information by way of a single conclusory word.

Interestingly, the NRC definitions do not identify a point where the traditional NEPA significance threshold lies. Clearly, SMALL impacts are not significant and LARGE impacts are significant. The NEPA significance threshold must theoretically therefore fall somewhere within the range of MODERATE impacts, somewhere between the point where an impact becomes noticeable and where it causes environmental destabilization.

The following analysis examines the advantages and challenges of using the NRC three- stage sequence of significance levels instead of the traditional two-stage approach of significant versus not significant. It explores how the NRC system might be expanded to develop an even more precisely graduated system of significance levels and how such a system might be useful in future NEPA practice. It also evaluates several potential advantages and disadvantages of utilizing such a graduated system in place of the traditional absolute system. The analysis builds upon an oral presentation given by the author at the 39th Annual Conference of the National Association of Environmental Professionals.⁸

Background

The concept of significance has come to pervade NEPA practice. However, the word “significant” (and its inflected forms, e.g., significantly) appears only once in the NEPA statute. Section 102 (1) (C) of NEPA states that all agencies of the Federal Government shall:

Include in every recommendation or report on proposals for legislation

and other major Federal actions *significantly* [emphasis added] affecting the quality of the human environment, a detailed statement by the responsible official on...⁹

In other words, NEPA requires Federal agencies to prepare EISs only for substantive proposed actions that might affect the environment to a meaningful extent. But what does it mean to *significantly* affect the environment? Clearly, the authors of the statute did not intend for agencies to prepare EISs just because an action might have some impact on the environment. They undoubtedly thought that the direction to prepare EISs only for “major” Federal actions “significantly” affecting the environment provided adequate guidance to prevent agencies from spending resources on purposeless EISs for trivial actions. The process received greater formalization with the establishment of the categorical exclusion¹⁰ and the environmental assessment (EA)¹¹ and finding of no significant impact (FONSI)¹² by CEQ in 1978. Introduction of these expedited NEPA compliance processes elevated the importance of significance; successful demonstration of a lack of significance could save agencies substantial time and effort when complying with NEPA.

Even though CEQ elevated the role and importance of significance in NEPA practice, it offered little concrete guidance on how to assess significance. What little guidance it offered was presented under its definition of the term “significantly”, where it stated that use of that term in NEPA “requires considerations of context and intensity”.¹³ Context

refers to the spatial and temporal setting of an action.¹⁴ Intensity refers to the impact’s severity based on consideration of ten factors.¹⁵ Some of the factors refer to specific resources, e.g., historic or cultural resources, wetlands, and public health and safety; while others refer to specific analytical considerations, e.g., risk or controversy. CEQ offered no quantitative guidance. Despite the specificity of how CEQ defined context and the ten intensity factors, CEQ in no way removed subjective judgment from the process of evaluating significance for NEPA.

The word “significant” is a relatively simple and widely recognizable word outside of NEPA and other environmental contexts. Merriam-Webster’s online website offers a summary definition as follows:

- large enough to be noticed or have an effect
- very important
- having a special or hidden meaning¹⁶

A variety of terms exist to describe concepts of less than significance: minor, minimal, trivial, miniscule, small, unnoticeable, and inconsequential. Clearly, effects that justify any of these terms do not rise to the level of significance. The element of noticeability is particularly relevant, considering the role of noticeability in delineating the NRC conclusions of SMALL and MODERATE.

The word “significant” also plays a key role in statistical analyses, including those performed as part of technical investigations sometimes cited in NEPA documents. Used in a statistical context, significance is a strictly mathematical concept pertaining to the

probability of replication of differences in the outcome of experimental trials. It conveys no information regarding the meaningfulness or relevance of information revealed by an experiment. It may be possible through careful experimental design and exhaustive replication of observational events to demonstrate that the application of multiple exposures of some sort results in statistically significant differences in the response of some test organism. But that difference may not be great enough in a practical context to represent a meaningfully significant observation. One statistical website cautions researchers not to “use the word ‘significant’ to describe a finding that may have decision-making utility to a client” and to always use the term “statistical significance” when referring to significance in a purely statistical context.¹⁷

The dictionary definition of significance presented above encompasses elements of importance and noticeability. It also implies a threshold: large enough. Having a threshold implies some underlying quantitative basis, although casual use of the word is rarely connected with actual measurement. It is this threshold that CEQ fails to offer; NEPA practitioners are instead forced to rely on their technical knowledge and scientific judgment to determine where the threshold lies. That determination might consist of some numerical setpoint for one or more quantitative metrics (e.g., significance is reached when the estimated population of an endangered species falls below a certain number of individuals) or might comprise a more qualitative or conceptual threshold

(e.g., significance is reached the population of a species is reduced to levels where it might not be able to sustain itself indefinitely in the surrounding landscape). Such an approach would resemble that used for development of recovery plans under the Endangered Species Act¹⁸. Guidance for development of recovery plans calls for development of recovery criteria that are “specific, measurable, achievable, realistic, and time-referenced.”¹⁹ As an example, the guidance references three recovery criteria for the piping plover (*Charadrius melodus*) calling for attainment of a minimum of 2,000 breeding pairs among four geographically defined populations (recovery units) and achievement of a five-year average productivity of 1.5 fledged chicks per pair in each unit.²⁰ These clearly defined quantitative setpoints sharply and meaningfully delineate recovery from non-recovery, which lies at the heart of the Endangered Species Act’s objectives.

Such quantitative thresholds are rarely available to define significance in the context of NEPA. However, the fact that NEPA practitioners must rely on their own intuition, gained over years of education and experience, rather than relying on simple referral to preset quantitative setpoints may not be a bad thing. Practitioners must weigh evidence from multiple sources and carefully consider the context, applicability, and reliability of each source to arrive at a meaningful overall conclusion. This is NEPA at its best: a planning and decisionmaking process, not a standard operating procedure following some lockstep sequence of actions laid out in a handbook.

The seemingly casual wording in the NEPA statute regarding significance may be telling today's NEPA practitioners something: the founders of NEPA may have never intended for significance to play as large a role as it now does in NEPA practice. The CEQ emphasizes that alternatives, not significance, lie at the heart of an EIS.²¹ An EIS is in essence a comparative document that compares the environmental effects of one alternative against those of another, not against some preset notion of significance. The environmentally preferable alternative may have no significant impacts or a lot of significant impacts; if an alternative meets the purpose and need of the proposed action with the least environmental impacts then it's choice is an environmentally informed and likely a desirable decision²². According to CEQ, the objective of NEPA is "not to generate paperwork – even excellent paperwork – but to foster excellent action."²³ In other words, the objective of NEPA is excellent decisions, not excellent documents. Parsing fine differences among various terms for significance will only further the objectives of NEPA if it serves to foster better consideration of alternatives and therefore foster better decisionmaking.

Significance Levels in NRC EISs

As stated above, NRC does not explicitly state how its NEPA significance levels compare to the traditional NEPA approach regarding the simple presence or absence of significance. Table 1 provides an interpretation but is not based on official agency direction. There is little room for debate that

SMALL corresponds to a lack of significance and that LARGE corresponds to significance. Any uncertainty surrounds the MODERATE designation. The basis for the designation is noticeability. Intuitively, something can be noticeable without being significant. In a general context, the concept of being "noticeable" is defined based on the capability to attract attention.²⁴ There is no implication that a noticeable event is necessarily of substantial importance. Still, the concept of being noticeable does at least approach the concept of being significant. The relative heights of the cells in Table 1 are not accidental; impacts designated as MODERATE in NRC's EISs tend to be significant as well, but one can still intuitively conceptualize a scenario in which an impact is noticeable (i.e., MODERATE) without being significant.

The term "destabilizing" is less nebulous than either of the terms "significant" or "noticeable", but it is still subjective. One definition of "destabilizing" is "to undermine or subvert ... so as to cause unrest or collapse."²⁵ Another definition is "to upset the stability or smooth functioning of" something.²⁶ Both definitions focus on the concepts of collapse or loss of function. Intuitively, the construction of a new housing development within the viewshed of a historic house may certainly result in noticeable (i.e., MODERATE) aesthetic impacts to visitors seeking to experience the historic ambience of the house's setting. But unless the housing development entails razing the house or acoustic effects capable of shattering the house's

foundations, one could clearly argue that the impacts are not destabilizing to the house (i.e., LARGE impacts). But there is still an element of subjective interpretation. A dense and noisy housing development could so intrude on visual and acoustic senses that visitors could no longer understand or appreciate the historical context of the house. In contrast, a lower density development could be so screened as to have little effect at all on visitors to the house (perhaps reaching the level of only SMALL aesthetic impacts). Conversely, one could conclude that even impacts so severe as to result in the permanent loss of the house may only be MODERATE or SMALL if the house is not the last of its type or if its importance is not particularly noteworthy; in this context the loss of a house once belonging to a signer of the Declaration of Independence might be destabilizing (LARGE), while the loss of a house once belonging to a regional politician or tradesperson might only be noticeable (MODERATE)

***DISTINGUISHING EFFECTS
THAT ARE DESTABILIZING
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DESIGNATION AS
SIGNIFICANT OR NOT
SIGNIFICANT.***

or even SMALL if other such houses remain in the region. Perhaps more obviously, one could interpret effects leading to the extinction (or elimination of that species from a region, i.e., regional extirpation) of a species as destabilizing (LARGE), while effects that substantially reduce the regional population of that species could only be MODERATE or even SMALL if regional distributions of wildlife and patterns of natural habitat remain substantially unchanged. In any event, distinguishing effects that are destabilizing from those that are just noticeable provides important information that could not be conveyed through simple designation as significant or not significant.

Examples of Use of NRC Graduated Significance Levels

Table 2 presents multiple examples of how the three NRC significance levels of SMALL, MODERATE, and LARGE were used to evaluate terrestrial ecology impacts in a series of recently completed EISs addressing the proposed licensing of new nuclear reactors. The first example from Table 2 (appendix) illustrates the use of SMALL as a conclusion for a new reactor project in South Carolina involving the loss of several hundred acres of terrestrial habitat containing only about 0.26 acre of wetlands and no Federal or state listed species or critical habitats. The reviewers supported their conclusion by stating “The affected terrestrial habitat types are common in the surrounding landscape, and much of the affected habitat consists of planted pine forest and successional vegetation on soils previous disturbed during development of [a previous

nuclear reactor]”²⁷. The reviewers note that wetland impacts would be mitigated (likely through purchasing credits from a local wetland mitigation bank²⁸)²⁹, and that population-level impacts on wildlife would be minimal.³⁰ For this analysis, the reviewers drew separate conclusions for the proposed reactor site and for the offsite impacts resulting from the need to build several long electric transmission lines to deliver the new electric output to the regional grid. The reviewers concluded that the impacts from building the transmission lines would be MODERATE because they would involve a substantially greater and more diverse area of terrestrial habitats and wetlands.³¹ The reviewers also concluded³² that the overall terrestrial ecology impacts from building the overall project would also be MODERATE.³³ Although the FEIS does not directly state it, the reviewers’ conclusions clearly suggest that the terrestrial ecology impacts on the site would not be significant, while the terrestrial ecology impacts from the transmission lines would be significant.

The second example from Table 2 likewise illustrates the use of SMALL to characterize several hundred acres of terrestrial habitat impacts on a proposed project site in Texas but the need for a MODERATE conclusion when characterizing offsite impacts from associated transmission lines. Building the reactor and other on-site facilities would disturb several hundred acres of previously disturbed land and land dominated by Ashe juniper (*Juniperus ashei*), a native but invasive plant of low habitat value that has

expanded its range in Texas because of overgrazing and wildfire suppression.³⁴ Wetland impacts on the site would be limited to a portion of a small (less than one acre) stock pond and to a 0.78-acre littoral (shoreline) wetland at the edge of a man-made reservoir.³⁵ The reviewers assessed potential impacts to new transmission lines associated with the project based on the applicant’s identification of broadly defined corridors within which the transmission line developer would ultimately select exact rights-of-way.³⁶ The reviewers used a range of SMALL to MODERATE to characterize terrestrial ecology impacts from the project, “depending on the exact route ultimately selected for [one of the transmission lines].”^{37 38} They state that the potential for MODERATE impacts is limited only to the possibility that the right-of-way ultimately selected for one of the transmission lines might encompass lands containing habitat suitable for two Federally-listed bird species.³⁹

As with the Summer FEIS, the Comanche Peak FEIS does not directly state whether terrestrial ecology impacts would be significant based on CEQ’s traditional definition. It does however suggest that the terrestrial ecology impacts on the site would not be significant and that the significance of the transmission line impacts would depend upon final route. The reviewers do not use SMALL to MODERATE as an intermediate classification between SMALL and MODERATE; they instead use it to characterize the potential outcome of two separate possibilities: the possibility that the selected right-of-way crosses the subject habitat and the possibility

that it does not. While a range of possible significance may not seem to be an ideal analytical objective, the reviewers decided that the indicated range, backed by the details presented in the text of the FEIS, provided enough information to support informed environmental decisionmaking and hence meet the objectives of NEPA.

The third example from Table 2 illustrates the use of SMALL to MODERATE to characterize several hundred acres of impacts to terrestrial habitats (roughly comparable in area to the plant site impacts from VC Summer and Comanche Peak) from the construction⁴⁰ of a third unit (Fermi 3) at the Fermi Nuclear Power Plant site in Michigan. Unlike VC Summer and Comanche Peak, the impacts at the Fermi 3 site would be substantial if not mitigated: they involve the loss of an estimated 197 acres of terrestrial habitat specifically managed for wildlife that includes over 34 acres of wetlands and that provide specialized habitat for a state-listed snake species, the eastern fox snake (*Elaphe gloydi*), and a state-listed plant species, American lotus (*Nelumbo lutea*).⁴¹ The reviewers state that their conclusion is “based in part on [their] independent review of mitigation measures proposed by [the applicant], especially the compensatory wetland mitigation required by [Federal and state agencies], mitigation for American lotus impacts ... and [the applicant’s] proposed mitigation measures for the eastern fox snake.”⁴² The implication is that without any mitigation, impacts could not be SMALL. They go on to state that “The potential for MODERATE impacts is limited to

possible adverse effects on the eastern fox snake.”⁴³ Although the reviewers relied on the successful implementation of the wetland mitigation, for which Federal law requires successful implementation backed by extended monitoring and adaptive management, they did not feel confident in assuming that the state would similarly ensure the success of the state-required mitigation for the eastern fox snake. The EIS uses a SMALL to MODERATE range similar to that used in the Comanche Peak EIS, but in this case the range is driven by the possible outcomes of proposed mitigation.

The fourth example from Table 2 illustrates the use of MODERATE to characterize several hundred acres of impacts from building a proposed reactor in central Florida to natural terrestrial habitats, including several hundred acres of wetlands and habitat suitable for multiple Federal and state-listed species. The reviewers states that their conclusion “reflects the impacts on wetlands, wildlife, and Federally and State-listed species...”⁴⁴ The reviewers acknowledge the extensive mitigation proposed by the applicant to address the terrestrial ecology impacts and demonstrate that the proposed wetland mitigation would provide the “functional lift” required to offset the wetland impacts using a functional assessment methodology widely recognized by state and Federal agencies that regulate wetland impacts in Florida.⁴⁵ Specifically, the proposed wetland mitigation involves “enhancing and restoring ecological functions to several hundred acres of wetland habitat and

supporting uplands in each watershed affected by [the project].”⁴⁶ They state that even with the proposed mitigation, they believe that “the impacts to wetland and upland terrestrial habitats and their associated wildlife would still be noticeable in the surrounding landscape, especially in the short term.”⁴⁷ However, the reviewers also explain that because of the proposed mitigation, the terrestrial ecology impacts “would not destabilize the continued existence of any wetland or upland habitats and associated wildlife in the surrounding landscape.”⁴⁸ As noted above, the ability of an impact to “destabilize” a resource is the inherent basis of a LARGE conclusion.

The reviewers recognize that most compensatory wetland mitigation of the type proposed for this project requires substantial time after initial implementation to achieve its stated goals. The US Army Corps of Engineers recognize this phenomenon as “temporal loss”, defined as “the time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site.”⁴⁹ Note that “replacement” refers to the replacement of “aquatic resource functions”, not simply to establishment of compensatory wetland acreage.

None of the recently completed NRC new reactor EISs conclude that terrestrial ecology impacts for a proposed reactor would be LARGE. In most of the EISs, e.g., that for Fermi⁵⁰, LARGE impacts from the proposed reactors are limited to certain expected beneficial socioeconomic benefits attribut-

able to the increased employment resulting from constructing and operating the new facilities. The conclusions for terrestrial ecology impacts from building the proposed Levy reactors indicate that without mitigation, the impacts could destabilize terrestrial resources.⁵¹ The terrestrial ecology reviewers for the Fermi FEIS stated in written testimony for a hearing connected with the EIS that destabilizing (i.e., LARGE) impacts to a terrestrial species, the eastern fox snake, would have to be “capable of extirpating the species from a broad geographic area.”⁵² Under the traditional approach to significance determination in NEPA, a project that causes the loss of enough individuals of a species to be noticeable in the region and a project that causes regional extirpation of the species would both likely be termed “significant”; the NRC’s three-grade system allows for one word conclusions that resolve this difference.

Use of Graduated Significance Levels to Compare Alternatives

Although NRC’s three-grade graduated approach clearly provides enhanced flexibility in characterizing the significance of impacts, it may also serve to further NEPA’s decision-making objectives. The CEQ Regulations emphasize that the section of an EIS comparing the effects of reasonable alternatives to a proposed agency action is the “heart” of the EIS⁵³ and that each EIS should:

should present the environmental impacts of the proposal and the alternatives in comparative form

[emphasis added], thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.⁵⁴

Most EISs therefore contain a tabular comparison summarizing the effects of each alternative analyzed in detail. When carefully prepared, such tables can provide succinct summaries of impacts for each affected resource in a side-by-side format. CEQ states that the comparison of alternatives in an EIS must provide a “clear basis for choice among options by the decisionmaker and the public.”⁵⁵ But even summary tables containing succinct summaries can be difficult to interpret. The reason is that there is no common quantifiable currency or metric for comparing the effects of different resources. A useful comparative metric used for land use might be acres; for water consumption, gallons; for socioeconomic issues, dollars or jobs; or for ecological impacts, acres of habitat or individuals of a species. Some resource areas such as aesthetics may not be capable of being expressed using in any quantitative metrics or even verifiable qualitative metrics (such as presence or absence of protected species or structures) and must therefore rely on subjective interpretations. The NRC new reactor EISs actually use multiple quantitative and qualitative metrics to characterize and draw significance conclusions for individual environmental resources. In the terrestrial ecology examples discussed above, the reviewers used a combination of affected habitat acreages (quantitative), affected wetland acreages

(quantitative), population-level wildlife impacts (semi-quantitative), and occurrence of Federally and state-listed species (qualitative) to draw significance conclusions.

Consider, for example, the comparison of environmental impacts presented in the FEIS for the proposed two new VC Summer reactors (Table 3). The table suggests in a visually impressive manner that land use, surface water use, surface water quality, groundwater quality, and terrestrial ecology are not meaningful comparators for the five sites.⁵⁶ However it suggests that one of the four alternative sites would result in substantially impacts with respect to groundwater use, aquatic ecology, and aesthetics and recreation. The reason for MODERATE groundwater use impacts at one of the alternative sites is that adequate groundwater withdrawals at that site, but not the other sites, could cause disruptive drawdowns at other nearby wells and could be difficult to sustain.⁵⁷ The reason for MODERATE aquatic impacts at one site versus SMALL impacts at the others is the possible presence of endangered and proposed endangered⁵⁸ fish species at that site.⁵⁹ Conversely, the table suggests that all of the four alternative sites would result in lesser impacts to historic and cultural resources than would the proposed site. The MODERATE impacts on the proposed site are associated with potential disturbance of four archaeological sites.⁶⁰

However, despite its usefulness as a summary tool, the table (even when expanded to include all environmental resources) obscures several salient differences in the poten-

tial impacts among the sites. It does not indicate the reasons explained above for the differing significance conclusions; one would have to read the text to discover the reasoning. With respect to ecology, it obscures the meaningful fact that terrestrial ecology impacts at some of the sites would be minimized by optimal use of partially disturbed lands within sites already dedicated to operating energy generation facilities, while other sites are greenfield sites where the entire project would occupy lands without a history of previous industrial or urban disturbance. It provides no information as to whether the impacts are associated with the more intensive ground disturbance from building the reactor structures or from the lighter disturbances associated with building electric transmission lines. It provides no information as to whether the most substantial impacts are to upland or wetland habitats or involve threatened or endangered species. All such information is contained within the text of the EIS, but readers skimming the EIS for easily gleaned comparisons may be drawn only to the summary tables and never read of the meaningful differences conveyed only in the text.

Finally, one might wonder whether it could be possible to use the graduated significance conclusions presented in Table 3 to identify an environmentally preferable alternative. One might be tempted to conclude that Alternatives A, C, and D are environmentally preferable because impacts to all resources are SMALL for those alternatives other than for MODERATE impacts to two resources.

This contrasts with MODERATE impacts to three resources for the proposed site and Alternative B. However, such a comparison would rest on two errant assumptions: first, that the graduated significance levels are based on a meaningful and additive common metric (somewhat analogous to the lowest common denominator used in the arithmetic of fractions) and second, that the resources are each of equivalent overall value.

Indeed, the FEIS concludes based on a holistic qualitative comparison of impacts to all environmental resources (not just ecology) that none of the sites are environmentally preferable.⁶¹ It states “Although there are differences and distinctions between the cumulative environmental impacts of building and operating two new generating units at the VCSNS [proposed] site and the alternative sites, the review team concludes that none of these differences is sufficient to determine that any one of the alternative sites is environmentally preferable to the VCSNS site.”⁶² This statement reflects the significance differences reflected in Table 3 without attempting to extrapolate any definitive overall comparisons from such high-level resource-based summary comparisons.

To summarize, the ease of making comparisons using spectrum of multiple significance levels provides both an opportunity to improve how alternatives are compared in EISs and a possible pitfall. The pitfall is the temptation to rely too heavily on the designations and too little on the details of the underlying analyses. This may not be a serious problem when interpreting SMALL or LARGE

designations reflecting trivial versus catastrophic impacts. But the MODERATE designation can cover a broad diversity of middling impacts. And those differences can clearly play a substantive role in making an informed choice among alternatives. Even when provided with comparisons using meaningfully resolvable graduated significance determinations, decision-makers must look beyond one-word summary designations to truly understand the multifaceted character of the impacts.

Other Environmental Applications of Graduated Scales

While not common in the context of NEPA significance determinations, the use of graduated scales has considerable precedence in environmental science in other contexts. The demonstrated success of using graduated scales in these other contexts suggests that similar application to NEPA significance determinations, as is currently done by NRC, might be useful to decision-makers. Both of the examples presented below are outside the specific context of NEPA but apply to environmental issues that are frequently addressed in NEPA documents. In both examples, there are two contrasting poles to a spectrum for an environmental comparator, separated by one or more interim designations. In both cases, the availability of the interim designations provides increased flexibility to the analytical process. Both examples provide case studies of how graduated conclusory determinations have successfully enhanced environmental practice relevant to NEPA.

The first example involves wetland

indicator statuses used to indicate the apparent preference of a plant species for wetland conditions. The indicator statuses of plant species in an area of vegetation are used to evaluate whether the vegetation is indicative of wetland conditions (“i.e., is hydrophytic vegetation”). The U.S. Fish and Wildlife Service (FWS) established five graduated statuses⁶³. These statuses occur on a continuum from Obligate Wetland plants (OBL, occur almost always in wetlands) to Obligate Upland plants (UPL, occur almost always out of wetlands). The interim statuses use the term “facultative”, which reflects the capacity of the ability of those plant species to grow either in or out of wetlands. The FWS formerly used the symbols “+” and “-” as modifiers to establish even more interim grades; use of the former indicated a slightly greater wetland habit than suggested by the unmodified status and use of the latter indicated a slightly lesser wetland habit (i.e., a slightly greater upland habit).⁶⁴ Drawing a parallel to the NRC three-stage significance system, one may view UPL plants as displaying a SMALL indication of wetlands, the three “facultative” statuses (FACU, FAC, and FACW) as displaying a MODERATE indication of wetlands, and OBL plants as displaying a LARGE indication of wetlands.

Although the USFWS could have designated plant species as simply wetland or non-wetland (or upland) plants (analogous significant versus not significant), they recognized the need for meaningful interim statuses. For example, common cattail (*Typha latifolia*), which almost universally occurs in

wetlands, has a status of OBL in the Atlantic and Gulf Coast Coastal Plain⁶⁵. Common reed (*Phragmites australis*), which also occurs mostly in wetlands but commonly extends uphill into borderline areas and spoil piles, has a status of FACW, while red maple (*Acer rubrum*), which is common in both wetlands and uplands is FAC. All three species can be considered “wetland” plants, but the indicator statuses reflect the substantial variation in the preferences of the plants for wetlands versus uplands.

The graduated system of indicator statuses provides substantial practical function. The USACE has since 1987 instructed persons delineating wetlands subject to the Clean Water Act to identify the indicator statuses for each dominant plant species occupying part of a study area. According to what wetland delineators commonly refer to as the “Fifty Percent Rule”, if more than fifty percent of the dominant plant species in an area have an indicator status of obligate, facultative wetland, or facultative, then that area supports hydrophytic vegetation. If plant species could only be designated as OBL or UPL without the intergraded facultative statuses, the resolution provided by the “Fifty Percent Rule” would not be available for wetland delineation.

The second example of graduated conclusions in wide use today is the system of conclusions used by the U.S. Fish and Wildlife Service (FWS) for evaluating effects on threatened and endangered species under the Endangered Species Act. Federal agencies proposing actions capable of affecting species

listed under the Act must complete a consultation process with the FWS (termed the Section 7 consultation process, named after the section of the Act establishing the consultation process.)⁶⁶ The FWS recognizes a three-step gradient of possible effects of an action on a species: no effect (NE), is not likely to adversely affect (NLAA), and likely to adversely effect (LAA).⁶⁷ The NE conclusion typically reflects the absence of potentially suitable habitat or occurrence of the project outside of the known geographic range. The intermediate designation of NLAA reflects effects that “are expected to be discountable, or insignificant, or completely beneficial.”⁶⁸ The LAA designation covers those adverse effects not meeting the limitations established for NLAA. The FWS provides additional but still vague and subjective guidance as to what is insignificant or discountable. Insignificant effects “relate to the size of the impact and should never reach the scale where take occurs.”⁶⁹ “Take” is what the Endangered Species Act seeks to avoid; it is defined in the statute as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect [a listed species], or to attempt to engage in any such conduct.”⁷⁰ Discountable effects are those extremely unlikely to occur.”⁷¹

The FWS system offers considerably more information than would a more simplistic that recognized only possible effects (may affect) versus no possible effects (no effects). The difference between the two “may affect” designations (NLAA and LAA) is meaningful: a demonstration of NLAA successfully terminates the consultation process, while LAA

necessitates a biological opinion. Mitigative actions are not needed in the case of NLAA to stave off possible extinction, while such actions could be necessary in the case of LAA. The graduated scale offers FWS a useful discriminator not available in a two-step system.

Conclusion

Despite an EIS serving in essence as a comparative process for considering alternatives, NEPA practice relies heavily on the descriptive threshold termed significance. As traditionally used in a two-point discrete presence or absence framework (where impacts can be significant or not significant), the significance concept contributes little to the comparison of alternatives and decision-making objectives of NEPA. However, if it were possible to expand significance into a multi-graded continuum of possible conclusions, then it could serve as a useful summary indicator to use in making comparisons. The established process used by NRC to classify environmental impacts from nuclear reactor licensing activities as SMALL, MODERATE, or LARGE offers insight into how a such graduated continuum of significance determinations might work. It reveals advantages such as simplicity and ease of tabular comparison of alternatives. However, the NRC process also reveals possible pitfalls such as ease of misinterpretation and over reliance on high-level summary data. While there are few examples of other agencies using a graduated range of

significance levels in NEPA, interesting parallels exist in long-used conclusory terminology used in the context of wetland delineation and the Endangered Species Act.

The experience from NRC's graduated significance levels and the use of graduated determination ranges in other environmental contexts suggests that more general application in the context of NEPA may be possible. However, agencies must carefully consider potential misapplications and issue clear guidance to ensure that use of graduated significance levels improves communication without inducing misinterpretation. Graduated significance levels could offer a valuable tool for interpreting significance and rapidly comparing alternatives. But agencies developing a process for using graduated significance levels must proceed with caution. Readers of EISs and other NEPA documents must not be misled into interpreting graduated significance levels quantitatively. Use of the graduated significance levels must not oversimplify comparisons; the significance levels must not serve as a crutch that diverts attention away from the underlying multifaceted details of the impact assessment. The process must not promote shallow comparisons.

Table 1

Comparison of NRC and Traditional NEPA Significance Levels

Traditional NEPA Significance Levels	NRC NEPA Significance Levels	Inherent Meaning of NRC Significance Levels
Not Significant	SMALL	Minor, Negligible
	MODERATE	Noticeable
Significant		
	LARGE	Destabilizing

Table 2

Examples of SMALL, MODERATE, and LARGE Conclusions; Reactor Construction Impacts on Terrestrial Ecology; NRC New Reactor EISs

EIS/Alternative	Conclusion	Basis	Notes
FEIS for VC Summer Units 2 and 3 Proposed Action	SMALL	Disturb approximately 556 ac of habitat on site. Loss of approximately 258 ac of forest. Roughly half of affected forest was planted pine. Fill 0.26 ac of wetland. No listed species.	Reviewers drew separate conclusions for site and transmission line impacts. Example addresses site impacts only. Transmission line impacts were more extensive and concluded to be MODERATE.
FEIS for Comanche Peak NPP Units 3 and 4	SMALL to MODERATE	Disturb approximately 675 ac on site consisting mostly of land dominated by invasive species and land previously disturbed to build older reactors. No listed species on site. Transmission lines would involve approximately 1103 ac, but most is crop and range land not substantially affected by installation of overhead conductors. Possible occurrence of two listed species depending on exact ultimate routing of transmission lines.	Potential for MODERATE impacts limited to transmission lines. Site impacts by themselves would be SMALL.
FEIS for Fermi Unit 3	SMALL to MODERATE	Disturb approximately 197 ac of terrestrial habitat, including over 34 ac of wetlands. Disturbed area provides habitat for state-listed threatened species.	Conclusion represents a range of uncertain outcome based on success of proposed mitigation: SMALL if mitigation is successful, MODERATE if not.
FEIS for Levy Units 1 and 2	MODERATE	Disturb approximately 777 ac of mostly forested land on site. Disturb approximately 450 ac of wetland. Single analysis for site and offsite (including transmission line) impacts. Numerous Federal and state-listed species affected.	Example addresses entire project including transmission lines.

Table 3

Comparison of Cumulative Impacts for Individual Resources for Alternative New Reactor Sites Final EIS for Proposed VC Summer Units 2 and 3ⁱ

Resource Category ²	VC Summer (Proposed Site)	Alternative Site A³	Alternative Site B	Alternative Site C	Alternative Site D
Land Use	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Surface Water Use	SMALL	SMALL	SMALL	SMALL	SMALL
Groundwater Use	SMALL	SMALL	MODERATE	SMALL	SMALL
Surface Water Quality	SMALL	SMALL	SMALL	SMALL	SMALL
Groundwater Quality	SMALL	SMALL	SMALL	SMALL	SMALL
Terrestrial Ecology	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Aquatic Ecology	SMALL	SMALL	MODERATE	SMALL	SMALL
Historic and Cultural Res.	MODERATE	SMALL	SMALL	SMALL	SMALL

- i Adapted from Table 9-35 on Page 9-202 of Final EIS for Combined Licenses for Virgil C. Summer Nuclear Station Units 2 and 3
- ii The full table also addressed multiple socioeconomic issues, environmental justice, aesthetics and recreation, air quality, non-radiological health, radiological impacts, and postulated accidents.
- iii The FEIS specified actual names for each site; the simplified names used here are intended to focus the reader on comparative elements in the table.

Table 4

Theoretical Application of Hypothetical Five-Graded Significance Scale

Resource	SMALL	MODERATE -	MODERATE	MODERATE +	LARGE
Land Use	Abundant buildable land, no land use conflicts	Limited buildable land but no conflicts in foreseeable future	Potentially noticeable conflicts for buildable land to extent that future development options could be limited	Conflicts with regional comprehensive plans but could be adapted into a modified plan	Conflicts with regional comprehensive plans and would severely limit future development options
Ecology	No adverse effects on listed species; no widespread effects on general pattern of habitat distribution in surrounding landscape	No adverse effects on listed species but could alter patterns of wildlife migration over surrounding landscape	Could adversely affect listed species; could noticeably alter wildlife migration patterns over surrounding landscape in short term	Could adversely affect listed species; require incidental take permit, could severely alter wildlife migration patterns over surrounding landscape in short term	Could jeopardize listed species with extinction or could severely and permanently alter wildlife migration patterns over surrounding landscape.

Endnotes

1. 42 USC 4321 et seq.
2. 42 USC 4332
3. 40 CFR 1508.4
4. 40 CFR 1508.9
5. 40 CFR 1508.27
6. 490 U.S. 360, *Marsh v. Oregon Natural Resources Council* (1989), available at <http://supreme.justia.com/cases/federal/us/490/360/>, Quoted from “Syllabus”.
7. 10 CFR 51, Subpart A, Appendix B
8. Doub, J. P. 2014, Uses of Tiered Significance Levels in NEPA Documents, Oral presentation at 39th Annual Conference of the National Association of Environmental Professionals, April 10, 2014, Tampa, Florida.
9. 42 USC 4331(1)(C)
10. 40 CFR 1508.4
11. 40 CFR 1508.9
12. 40 CFR 1508.13
13. 40 CFR 1508.27
14. 40 CFR 1508.27(a)
15. 40 CFR 1508.27(b)
16. <http://www.merriam-webster.com/dictionary/significant>
17. StatPac website for Survey Software for Online, Web, and Paper Surveys, Crosstabs, and Banner Tables, Statistical Significance page, Available at <http://www.statpac.com/surveys/statistical-significance.htm>.
18. 7 U.S.C. 136, 16 U.S.C. 1531 et seq.
19. National Marine Fisheries Service, October 2010, Interim Endangered and Threatened Species Recovery Planning Guidance, Version 1.3, Silver Spring, Maryland, Originally published October 2004 and updated in 2006, 2007, and 2010, Available at <http://www.nmfs.noaa.gov/pr/pdfs/recovery/guidance.pdf>.
20. Interim Endangered and Threatened Species Recovery Planning Guidance, p. 5.1-15.
21. 40 CFR 1502.14
22. One must however recognize that NEPA does not require that agencies base their decisions only upon environmental considerations.
23. 40 CFR 1500.1
24. <http://dictionary.reference.com/browse/noticeable>.
25. <http://dictionary.reference.com/browse/destabilize>.
26. <http://www.thefreedictionary.com/destabilize>.
27. US Nuclear Regulatory Commission and US Army Corps of Engineers, April 2011, Final Environmental Impact Statement for Combined Licenses for Virgil C. Summer Nuclear Station Units 2 and 3 (Summer FEIS), Final Report, US Nuclear Regulatory Commission, Washington DC, Office of New Reactors, Washington, DC and Regulatory Division, Special Projects Branch, Charleston District, US Army Corps of Engineers, Charleston, SC, NUREG-1939, p. 4-30.
28. A wetland mitigation bank is a project where a party (usually for-profit) creates, restores, or enhances wetlands and receives approval from wetland permitting agencies (U.S. Army Corps of Engineers or state agencies) to sell credits to developers for the purpose of satisfying wetland mitigation requirements established by permits.
29. Summer FEIS, p. 4-22.
30. Summer FEIS, pp. 4-30 to 4-31.

31. Summer FEIS, pp. 4-31.
32. Most of the recently issued NRC new reactor EISs present two separate conclusions regarding the impacts from constructing a new reactor to each environmental resource. The first conclusion refers to the impact from the building the totality of the new reactor project. The second conclusion refers only to those construction activities defined as NRC-authorized construction in 10 CFR 50.10(a). The NRC-authorized construction activities constitute only a subset of the total construction activities. The remaining construction activities are termed “preconstruction” by the NRC and are accounted for in the first conclusion as well as in the cumulative impacts determination. The definition of NRC-authorized construction is not the subject of this paper and is not addressed further. For this and other examples drawn from the construction chapters of NRC EISs, the discussion pertains only to the conclusions drawn for the more inclusive consideration of construction activities.
33. Summer FEIS, p. 4-31.
34. US Nuclear Regulatory Commission and US Army Corps of Engineers, May 2011, Final Environmental Impact Statement for Combined Licenses for Comanche Peak Nuclear Power Plant Units 3 and 4 (Comanche Peak FEIS). Final Report, US Nuclear Regulatory Commission, Washington DC, Office of New Reactors, Washington, DC and Regulatory Branch, Planning, Environmental, and Regulatory Division, US Army Engineer District Fort Worth, US Army Corps of Engineers, Fort Worth, TX, NUREG- 1943, p. 4-15.
35. Comanche Peak FEIS, pp. 4-27 to 4-28.
36. The transmission line is not directly part of the power plant project and would be developed by a separate party independent of the applicant. The company responsible for the transmission lines would design the transmission line only once power delivery is imminent. The agencies preparing the EIS therefore could only evaluate the combined effects of the power plant and transmission lines based on the applicant’s identification of broadly-defined corridors within which the rights-of-way would ultimately be defined.
37. Comanche Peak FEIS, p. 4-25 to 4-26.
38. See note above regarding NRC definition of construction
39. Comanche Peak FEIS, p. 4-26
40. See note above regarding NRC definition of construction
41. US Nuclear Regulatory Commission and US Army Corps of Engineers, April 2012, Final Environmental Impact Statement for the Combined License for Enrico Fermi Unit 3 (Fermi FEIS), Final Report, US Nuclear Regulatory Commission, Washington DC, Office of New Reactors, Washington, DC and Regulatory Office, Permit Evaluation, Eastern Branch, US Army Engineer District, Detroit, US Army Corps of Engineers, Detroit, MI, pp. 4-23 to 4-26 and 4-31 to 4-43.
42. Fermi EIS, p. 4-47
43. Fermi EIS, p. 4-47
44. US Nuclear Regulatory Commission and US Army Corps of Engineers, April 2012, Final Environmental Impact Statement for Combined Licenses for Levy Nuclear Plant Units 1 and 2 (Levy FEIS), Final Report, US Nuclear Regulatory Commission, Washington DC, Office of New Reactors, Washington, DC and Regulatory Division, Jacksonville District, US Army Corps of Engineers, Jacksonville, FL, NUREG-1941, p. 4-71.
45. Levy FEIS, pp. 4-67 to 4-70.
46. Levy FEIS, p. 4-68
47. Levy FEIS, p. 4-71
48. Levy FEIS p. 4-71
49. 33 CFR 332.2
50. Fermi EIS, pp. 4-78 to 4-79 and pp. 5-86 to 5-87.
51. Levy FEIS, p. 4-71

52. NRC Staff Pre-Filed Direct Testimony of J. Peyton Doub and David A. Weeks Regarding Contention 8, ML 13088A486, March 29, 2013, A21, Page 24.
53. 40 CFR 1502.14
54. 40 CFR 1502.14
55. 40 CFR 1502.14
56. To avoid distraction, generic names were substituted for the actual names of the alternative sites in the table and this text.
57. VC Summer FEIS, p. 9-94.
58. Before being officially listed as endangered or threatened under the Endangered Species Act, species must first be proposed for listing in the Federal Register and the public be offered an opportunity to comment.
59. VC Summer FEIS, pp. 9-101 to 9-106.
60. VC Summer FEIS, pp. 4-70 to 4-73.
61. VC Summer FEIS, pp. 9-203 to 9-206.
62. VC Summer FEIS, p. 9-206.
63. Reed, P. B., Jr., 1988, National list of plant species that occur in wetlands: national summary, U.S. Fish Wildl. Serv. Boil. Rep. 88(24), 244pp. The U.S. Army Corps of Engineers issued a new list in May 2012, termed the National Wetland Plant List, that superseded the 1988 list for purposes of regulatory wetland delineation. The most recent update to the National Wetland Plant List, dated May 2014, is available at http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/nwpl/nwpl_fact-sheet_4Apr2014.pdf. It uses the same five wetland indicator statuses as the 1988 list but reflects updated information about the plant species and does not use the “+” and “-” indicators.
64. Reed, P. B., Jr., 1988. National list of plant species that occur in wetlands: national summary, U.S. Fish Wildl. Serv. Boil. Rep. 88(24), 244pp.
65. Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner, 2014, The National Wetland Plant List: 2014 Update of Wetland Ratings, Phytoneuron 2014-41: 1-42.
66. Procedures for the Section 7 consultation process are established in 50 CFR 402.
67. US Fish and Wildlife Service and National Marine Fisheries Service, 1998, Endangered Species Act Consultation Handbook, Procedures for Conducting Section 7 Consultations and Conferences (Section 7 Consultation Handbook), March, Final.
68. Section 7 Consultation Handbook, p. 3-12.
69. Section 7 Consultation Handbook, p. 3-12.
70. 16 USC 1532(19).
71. Section 7 Consultation Handbook, p. 3-12.

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Defining Appropriate Spatial and Temporal Scales for Ecological Impact Analysis

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Introduction

Many environmental impact analyses, including those pursuant to the National Environmental Policy Act of 1969, as amended, do not identify the spatial and temporal scales used in the analysis. Without definition of analytical scales, the reader is left to infer scale, which could confound decision making when different readers infer different scales of analysis. For ecological analysis, site-specific spatial and temporal scales based on unique natural features and phenomena are most appropriate, given the inability of ecological resources to restrict themselves according to political boundaries or arbitrary time lines. Definition of scale in the environmental impact document allows the reader or decision maker to consider the impacts in the intended context. Scales of ecological analysis should be based on ecological principles as applied to a specific study area and the ecological resources that may be affected by the proposed action or activity. The multiscale concept of biological connectivity should be addressed in spatial and temporal analysis, which inherently includes cross-scale considerations such as those for potential effects on metapopulations. Definition of spatial and temporal scales is critical to bound the impact analysis and to inform readers and decision makers, and suggested guidelines are provided as an example of an acceptable method. Although several different scales could be correctly chosen, analysts should

identify and define spatial and temporal scales used to promote consistent interpretations of results and to facilitate the decision-making process.¹

Analytical scope inherently influences the degree of environmental impact analysis. Inappropriate scale selection could exaggerate or underestimate the magnitude or significance of potential environmental effects. Therefore, definition of analytical scales is often a subject of much discussion—or at least should be—while preparing environmental impact statements (EISs) or environmental assessments (EAs) in accordance with the National Environmental Policy Act of 1969, as amended.² Multidisciplinary teams of subject matter experts and project managers contribute well-founded arguments supporting often different, sometimes opposing, perspectives regarding scale. The notion of a single analytical scale for all resources provides the benefit of consistency and facilitates reader comprehension regarding the overall project. However, such a scale is often selected based on political boundaries or project-specific components or limitations and, thus, hinders proper analysis for some disciplines. Definition of scale frames the scope of environmental impact analysis, and although some schools of thought propose that identical spatial and temporal scales should be used for all resources for a particular project or action, comprehensive analyses would likely have spatial and temporal scales defined according to resource-specific logic and analytical criteria.

Identification of analytical scales is part of methodology that should be disclosed in NEPA documents in an effort to maintain professional and scientific integrity.ⁱ Some NEPA disciplines, such as socio-economics, environmental justice, and perhaps land use, may share scalar boundaries, but several areas of study have unique features and phenomena that warrant definition of resource-specific analytical scales. Levin argues that scale is “the fundamental conceptual problem in ecology, if not in all of science”³. This article focuses on definition of scales for ecological resources, including trans-boundary organisms, and processes that incorporate a variety of natural features and phenomena. Because of the dynamic nature of many ecological resources and different life-history characteristics and reproductive strategies, definition of spatial or geo-graphic boundaries and appropriate temporal scales can be challenging. Moreover, such scales are best defined not only based on ecological principles and theory, but also on site-specific characteristics related to habitats and species in scope of the analysis, as opposed to a standardized distance measurement applied to all sites. NEPA ecological analyses commonly focus on several important

species or populations, but scales are often based on ecological communities, which may not always correspond with particular species or populations, especially when identifying impacts on migratory species. Additionally, climate change is an important consideration to account for spatial and temporal shifts in habitats, species distributions, and behaviors. While the concepts and analytical approach discussed herein apply to many types of projects or federal actions, this article focuses on approaches for defining appropriate spatial and temporal scales from the perspective of analyzing ecological environmental impacts related to siting, building, and operating commercial nuclear power plants in the United States (US).

Spatial Scale

Environmental analytical reports, such as NEPA documents, provide useful information only when spatial scale is adequately defined. Joao⁴ found that the analytical scale is not usually stated explicitly in environmental assessments, so readers are required to infer scale. Undefined, thus inferred, scale often results in inconsistent interpretation of the extent and importance of the environmental impacts described. Such inferences and inconsistent interpretations contribute to different conclusions and ongoing debates among decision makers. For example, when analyzing impacts of nuclear power plants, the US Nuclear Regulatory Commission⁵ explicitly defines site boundaries but simultaneously recognizes that impacts may occur “in the site

i In the 40 CFR 1500-1508: Council on Environmental Quality Regulations Implementing the National Environmental Policy Act (CEQ, 2005), 40 CFR 1502.24 requires agencies to “insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements” and to “identify any methodologies used.” Although the regulation does not explicitly require definition of spatial and temporal scales, identification of scales is an integral part of scientific methodology.

vicinity” and requires the reader to infer the spatial extent of “vicinity.”ⁱⁱⁱⁱⁱ Definition of spatial scale for environmental analyses should be as necessary as statements of assumptions for quantitative modeling. An explicitly defined spatial scale bounds the context of the environmental impacts, and thus a decision maker can make a better-informed decision based on the spatial framework implemented by the analyst. Moreover, NEPA documents with explicitly defined scales enable any reader or decision maker to consider impacts within the context intended by the analysts without the possibility of various reader-based inferences of scale.

***DEFINITION OF SPATIAL
SCALE FOR ENVIRONMENTAL
ANALYSES SHOULD BE AS
NECESSARY AS STATEMENTS
OF A ASSUMPTIONS FOR
QUANTITATIVE MODELING.***

Spatial scale comprises two interrelated components: spatial extent and geographic detail⁶. Spatial extent refers to the size of the

study area, and geographic detail refers to the grain or spatial resolution⁷. These two components are generally inversely proportional. Analysis of ecological or other impacts covering a large spatial extent limits the geographic detail of the results. A large spatial extent could limit the number of features or even feature classes included in analysis because they become undetectable with loss of detail in a large study area, particularly without a ground-truthing exercise to confirm correctness of historical data. Such lack of geographic detail could introduce analytical errors (e.g., simplified or reduced sinuosity of streams may result in an incorrect conclusion that some species do not have suitable habitat in a particular location) but simultaneously facilitates predictability by eliminating details or potential outliers that may otherwise produce disparate results. In contrast, a small spatial extent facilitates greater geographic detail but may result in inadvertent omission of analysis of broader-reaching impacts or patterns. For example, a riverside project may affect some diadromous fish species; a small spatial scale may result in an analysis that omits impacts that occur to such species and their important marine habitat.

Species, populations, and communities are distributed based on a suite of biotic and abiotic features and processes that influence spatial boundaries⁸. For ecology, a distance-related spatial scale, albeit explicitly identified, is not appropriate because it is not based on ecological principles. The strength of interrelationships between physical characteristics (i.e., habitat features) and ecological processes

ii On page 2.2.1-1 of the NRC’s Environmental Standard Review Plan (NRC, 1999), “vicinity” is loosely defined as a 10-km buffer around the explicitly identified site boundary for the purpose of analyzing land use impacts. The definition includes caveats that it can be defined in other manners, and the definition is not stated for the purpose of analyzing impacts to disciplines other than land use. Therefore, NRC’s environmental reviews should include resource-specific definitions of “vicinity,” but most NRC EISs do not define “vicinity” for all resources. For example, in one EIS (NRC and US Army Corps of Engineers, 2011), vicinity is first defined as a 16-km (9-mile) radius at the 35th occurrence (of 166) and only in regard to human population for socioeconomic analysis. Contextual reading implies that even a 16-km radius is likely not the spatial extent intended by the author for each occurrence of “vicinity.”

can be analyzed statistically to determine the appropriate spatial scale⁹. Or a simpler approach for some study areas is to define ecological spatial scale according to ecosystem or habitat attributes such as substrate type, grain size, vegetation coverage, upwelling, and/or intertidal zone, among many others.

Another important consideration for defining a spatial scale of ecological analysis is to determine which species or groups of species would be included in the analysis. A community- or ecosystem-based scale may be appropriate for streamlined, concise analyses. However, such a spatial extent should be defined with careful consideration to include appropriate habitats for protected species by maintenance of proper geographic detail required to analyze species-specific impacts. As mentioned earlier, scale frames context, which is a salient consideration. For direct impacts, most readers infer that the spatial extent of the 282 Environmental Practice 16 (4) December 2014 analysis is aligned discretely with that of the impacts, but grasping context for indirect impacts is more difficult for complex projects. The author should define the extent of the analysis, for both direct and indirect impacts concurrently, to reduce or eliminate ambiguity among readers and decision makers as they read to understand the context of the project's impacts in the ecological environment.

Definition of spatial scale for cumulative impacts is much more difficult and requires careful consideration because the combination of direct, project-related impacts

with other natural and anthropogenic activities and processes often has more extensive incremental effects on ecological resources that extend beyond the scales identified for the project alone. An interesting case study is the Calvert Cliffs Nuclear Power Plant, which is located on the western coast of the Chesapeake Bay. For cumulative estuarine impacts, the spatial scale of analysis was defined to be the mesohaline boundary¹⁰. Therefore, the spatial extent could fluctuate with tidal, current, and wind pattern changes, but geographic detail would unlikely change noticeably at such a scale. The mesohaline boundary exemplifies a biologically meaningful demarcation, which is critical to delineating distributions of species and populations within a study¹¹. The novel concept is that the spatial scale is determined by physical criteria that could be fluid, which accounts for ecosystem dynamics according to ecological processes and limitations, instead of a static political boundary or arbitrarily selected distance.

Temporal Scale

Environmental shifts and changes in community composition and species distributions occur over time. Using the similar concepts as just described for spatial scale selection, temporal scale is best identified based on ecological processes and limitations rather than on a standard or arbitrarily chosen time frame. For example, migratory species move according to various seasonal cues, including changes in lighting, lunar gravitational pull, photoperiod, and temperature. For some species, such as salmonids,

proper impact analysis may focus on particular life stages, thus introducing the temporal factor based on life history and seasonal reproductive activities. Timing of project-related activities must also be revealed by using a corresponding temporal scale to identify potential impacts properly. For example, in-water activities that suspend sediment may have a significant, adverse effect on corals if the activities coincide with a mass spawning event but only a minimal effect other times of the year. Also, timing is important for higher trophic levels and even some entire communities, as demonstrated by varying significance of effects on forests, depending on their current successional stage. The temporal nature of ecological resources and their responses to anthropogenic stressors often prompt ecologists to design mitigation measures that include seasonal restrictions on specific activities of a project.

Interdependence of Spatial and Temporal Scales

Ecosystems are dynamic, and ecological interactions and processes occur within and across both levels and types of scales (e.g., spatial, temporal, and other scales)¹². Spatial and temporal scales are interrelated and require joint consideration and multidimensional definition. Definition of analytical scope by scale and resource (individual, population, community, etc.) according to the spatial and temporal extents of project-related effects without constraining multidimensional ecological units is critical. Both spatial

SPATIAL AND TEMPORAL SCALES ARE INTERRELATED AND REQUIRE JOINT CONSIDERATION AND MULTIDIMENSIONAL DEFINITION.

and temporal scales must be reasonable and linked to address project-related impacts with proper granularity to maintain relevance to the agency's decision for a site-specific project. For example, a proposed nuclear power plant's consumptive water use from a river could affect downstream aquatic resources year round; however, during certain times of the year, the same water use could affect upstream aquatic resources if the adverse impact impedes the ability of a diadromous fish to swim beyond the withdrawal point. Appropriate spatial and temporal scales of analysis would include upstream and downstream portions of the river throughout an entire migratory cycle of the fish species, whereas narrower scales would preclude disclosure of all potential impacts to aquatic resources near the project.

The ecological concept of biological connectivity is multi-scalar, extending beyond migratory species; therefore, the analyst should consider biological networks when assigning spatial and temporal scales, especially for cumulative effects. Cross-scale consideration is particularly challenging when analyzing cumulative impacts, which include various activities as well as complex phenomena such as global climate change, that inter-

face across different spatial and temporal scales¹³. Although study results cannot be extrapolated or applied to different scales, analysis of metapopulations and metacommunities¹⁴ combines cross-level and cross-scale analysis based on the ecological principle of connectivity via dispersal and may be appropriate in some cases. Metapopulations and other types of patchy distributions may facilitate or complicate scale definition, depending on the environmental variability and type of impact considered in particular NEPA documents. For example, habitat fragmentation resulting from construction of linear features, such as a transmission-line corridor, may have substantial effects on a metapopulation but may have less-detectable near-term effects on a subpopulation that occupies habitat that does not abut the proposed corridor. However, effects over time on the subpopulation may increase as future generations lose genetic connectivity with the metapopulation, thus reducing genetic diversity, which can be manifested as loss of phenotypic variation and ecosystem function. This example demonstrates that description of environmental impacts could vary significantly, depending on both spatial and temporal scales that bound the analysis. Moreover, because short-and long-term effects should be considered, the foregoing example of a genetically isolated subpopulation could include two sets of local impact descriptions, depending on the spatial and temporal scales used for analysis.

An analyst should heed the regulatory requirement to consider context when deter-

mining significance of an impact in NEPA documents.^{iviii} Context addresses spatial and temporal scales implicitly. However, note that scales of operation do not usually align with the scales of observation¹⁵, which substantiates the importance of defining spatial and temporal analytical scales respective to the scope of potential effects rather than to the scope of activities or phenomena that result in the observed patterns.

Suggested Guidelines for Definition of Ecological Scale

Because ecosystems are dynamic and complex, ecological interactions occur continuously within and among several trophic levels and spatial and temporal scales. Hence, patterns identified at one scale may not be observed when a different scale of analysis is used¹⁶. Nonetheless, definition of scale is important to bound the ecological impact analysis. Generally, selection of an appropriate scale is aligned with the context of the analysis. Regardless, the scoping process may reveal stakeholders' preferences for appropriate scale choice, and such information should be considered during scale selection. Depending on the type and design of a project, a single NEPA document could disclose impacts at more than one ecological scale as appropriate for various project or analytical components. For example, for a project to

iii 40 CFR 1508.27(a) (CEQ, 2005) provides examples of "context" as being "society as a whole (human, national), the affected region, the affected interests, and the locality." The regulation also states that "both short-and long-term effects are relevant." However, the regulation does not direct the analyst to identify the scale(s) for the reader.

build and operate a new commercial nuclear power plant, three different ecological scales may be chosen to assess impacts from three distinct project components: main reactor site, linear features (e.g., transmission line and pipeline corridors), and off-site activities, such as construction activities for plans to mitigate consumptive water use or for acquisition of fill material. Finally, cumulative impact analysis typically uses an expanded geographic boundary when compared to the boundary for project-specific analysis; therefore, two spatial scales for ecological analysis would be in the NEPA document. Per guidance on cumulative effects, the same logic may or may not apply to temporal scales and should be considered on a project-specific basis.¹⁷

Several acceptable approaches for defining ecological scale likely exist. One approach that works well for NEPA analyses is outlined in the following suggested guidelines:

State specifically what resources would be included in the ecological analysis. For example, would the scale apply at a systems level to all limnological resources, or would the scale vary according to populations, species, or groups of species affected by the proposed project? Migratory species and protected species warrant separate consideration, given their special life-history requirements.

Focus on the extent of the potential ecological responses, not the

scope of the project, when setting scales for environmental impact analysis. For example, if a cooling water intake structure is located in an estuary where entrainment of fish eggs and larvae would likely be substantial, the analysis should include the loss of equivalent adults, which factors into the consideration of spatial and temporal scales for the impact analysis.

Set spatial and temporal scales according to ecological principles and processes. Ecological resources ignore anthropocentric scales; therefore, jurisdictional boundaries and arbitrarily selected distances and time lines are inappropriate limits of analysis. For example, if any populations in step 1 exist as metapopulations, the identification of the mode and areal extent of dispersal to determine spatial and temporal scales should be based on the life-history characteristics and availability of suitable habitat.

Identify all sets of scales at the onset of analysis to maintain a consistent approach and to ensure alignment with ecologically based scalar boundaries. Analytical scales for ecological impacts from linear components, off-site activities, and cumulative impacts should be set following the same guidelines that were used for the main site for a specific project. Even if the cumula-

***ECOLOGICAL SCALES VERY
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tive analysis is conducted at a later time during the NEPA phase of the (284 Environmental Practice 16 (4) December 2014) project, setting scales concurrently with those for the direct impacts ensures that the scales are defined according to the potential ecological response from the proposed action and other activities; otherwise, a scale could be expanded or contracted as triggered solely by other activities that are considered only in the cumulative analysis.

Create scale-based maps and time lines to use throughout the NEPA process as tools to maintain awareness of the analytical basis. Occasionally during lengthy, complex, or evolving projects, the scope of analysis may intentionally or unintentionally shift. Maps and time lines are helpful in both cases—to redirect an analysis or to remind the analyst to conduct a complete, yet not expansive, review. Such maps and time lines may also serve as helpful figures in the NEPA document.

Conclusion

Ecological scales very rarely, if ever, correspond with jurisdictional scales or measured units of distance or time. While more than one appropriate choice of scale may exist for a project, some scales are better than others, depending on the project, site, and potential ecological effects. The critical point is to carefully identify spatial and temporal scales used for analysis and to clearly define the scales in the NEPA document to facilitate the decision-making process. As with any scientific analysis, a well-defined method, such as shown in the guidelines suggested in this article, should be followed. Otherwise, impacts will vary, and analyses and conclusions will inherently include inconsistencies that could mislead decision makers. The definition of spatial and temporal scales for ecological analysis is critical for predicting effects that are based on the interactions of concurrently changing activities and phenomena, which occur at different scales. Many NEPA documents omit the definition of scales, which is a critical step that needs to be addressed early in the process. The most logical, scientific approach for defining spatial and temporal scales for ecological impact analysis is based on scopes of natural ecological processes and habitats, which do not adhere to anthropocentric boundaries.

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Challenges in and Solutions for Integrating Biological Assessments Into Environmental Impact Statements

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Introduction

NEPA¹ and its implementing regulations² direct Federal agencies to integrate analyses required under the ESA³ into EISs prepared pursuant to NEPA. Likewise, the ESA's implementing regulations⁴ allow Federal agencies to consolidate the preparation of biological assessments with the NEPA process. Although each statute's regulations mean to enable a more streamlined and efficient review, in practice, incorporating biological assessments into EISs can create challenges due to differences in how each statute directs agencies to define environmental scope; evaluate impacts; consider mitigation; and frame impact conclusions. This paper briefly reviews Federal agency obligations under NEPA and the ESA; considers the types of actions that require preparation of an EIS and biological assessment; discusses potential challenges in integrating an EIS and biological assessment; and presents solutions for these challenges that enable Federal agencies to concurrently fulfill requirements of both NEPA and the ESA in a single, integrated document.

Overview of Federal Agency Obligations Under NEPA and the ESA

NEPA Requirements

Section 102(2)(C) of NEPA requires Federal agencies to prepare detailed statements that consider the environmental impacts of and alternatives to proposed legislation or other major Federal actions significantly affecting the quality of the

human environment. These statements are commonly referred to as EISs. NEPA's implementing regulations at Title 40, Parts 1500–1508, of the *Code of Federal Regulations* (40 CFR 1500–1508) further specify the process through which Federal agencies should develop EISs and include requirements pertaining to EIS content; scoping of issues to be addressed in the EIS; public participation; coordination with affected Federal, state, and local agencies and Indian tribes; and integration of the NEPA process with the requirements of other Federal acts. In general, prior to acting, the Federal agency is to publish a draft EIS for comment followed by a final EIS that considers comments received on the draft, and at the time of its decision, a record of decision that documents the agency's decision.

ESA Requirements

Section 7(a)(2) of the ESA requires Federal agencies to consult with the Secretary (of the Interior or of Commerce) to insure that any action that the Federal agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species ("listed species") or result in the destruction or adverse modification of the habitat of such species determined by the Secretary to be critical ("critical habitat"). In practice, the FWS (for terrestrial and freshwater species) or NMFS (for marine and anadromous species) act as the consulting party, and the process is commonly referred to as "section 7 consultation." The regulations that implement ESA section 7 at 50 CFR 402

further describe the consultation procedures. Consultation may be conducted informally or formally, may include the Federal agency's development of a biological assessment, and may result in the FWS's or NMFS's (individually, "Service," or collectively, "the Services") issuance of a biological opinion.

Integrating the NEPA and ESA Processes

Both the NEPA and ESA regulations include provisions to consolidate the requirements of each act into a single process. The NEPA regulations at 40 CFR 1502.25(a) direct Federal agencies to integrate analyses required under the ESA into the EIS "to the fullest extent possible." The ESA regulations at 50 CFR 402.06 allow Federal agencies to fulfill their obligations under the ESA in conjunction with the requirements of NEPA. In such cases, the Federal agency should include the results of its consultation with the Services in the EIS⁵.

EIS and Biological Assessment Preparation Requirements

The ability for Federal agencies to satisfy the requirements of NEPA and the ESA in a single, integrated process can shorten review timelines and gain agencies other resource efficiencies. However, the two statutes' regulations are silent on how exactly Federal agencies should carry out such a process. While the regulations' lack of direction on this matter allows Federal agencies flexibility, it can also create confusion beginning with the simple question: if an agency has to prepare an EIS under NEPA, does it also

have to prepare a biological assessment under the ESA? To answer this question, we must first consider separately when a Federal agency must prepare an EIS and when a Federal agency must prepare a biological assessment.

"Major Federal Actions" Under NEPA

NEPA requires Federal agencies to prepare EISs for "proposals for legislation and other major Federal actions significantly affecting the quality of the human environment."⁶ The CEQ's regulations provide further guidance on the term "major Federal action"⁷; however, what constitutes such an action has been litigated many times, and courts have found that Congress's intentionally vague language allows the term to apply to a broad range of agency operations.⁸ NEPA may require Federal agencies to prepare EISs for:

- projects, activities, or programs funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency;
- projects carried out with Federal financial assistance;
- projects requiring a Federal permit, license, or approval; and
- projects subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.⁹

"Major Construction Activities" Under the ESA

The ESA requires Federal agencies to

prepare biological assessments for Federal actions that are “major construction activities.”¹⁰ The term “major construction activity” is defined in the regulations as “a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in [NEPA].”¹¹ *The Services’ Endangered Species Consultation Handbook*¹² (“*Consultation Handbook*”) further clarifies that “as a rule of thumb, if an [EIS] is required for the proposed action and construction-type impacts are involved, it is considered a major construction activity.” In its 1986 *Federal Register Notice*¹³ (FRN) accompanying the final rule establishing regulations for interagency cooperation under ESA section 7, the Services envisioned the term to encompass dams, buildings, pipelines, roads, water resource developments, channel improvements, and other such undertakings which significantly modify the physical environment.

Does an EIS Necessitate a Biological Assessment?

While the preparation requirements of both EISs and biological assessments appear to be similar (the ESA even borrows NEPA’s term “major Federal action”), actions requiring the preparation of an EIS must meet one condition—is the action a major Federal action?—while actions requiring the preparation of a biological assessment must meet two—is the action a major Federal action? *and* does the action include construction-type impacts? Thus, while agencies must prepare

EISs for a broad range of actions, biological assessments are only necessary for a subset of those same actions.

Actions such as renewing the operating license for a hydropower facility or nuclear power plant, which constitute major Federal actions under NEPA and necessitate preparation of an EIS, often do not include construction-type impacts because such impacts have already been undertaken and accounted for at the initial licensing stage. The Federal Energy Regulatory Commission’s (FERC) guidance on ESA compliance¹⁴ confirms that its staff is not required to prepare biological assessments for its relicensing actions “except where major new construction is proposed.” FERC notes that while biological assessments are not mandatory in such cases, they are still highly recommended because they can help in identifying and resolving endangered species issues early in the review process. The U.S. Nuclear Regulatory Commission’s (NRC) *Standard Review Plan* for nuclear power plant license renewal¹⁵ indicates that its staff should prepare a biological assessment if listed species or critical habitats are present in the area affected by the proposed license renewal or if requested by the Services as a prerequisite to making a finding under informal section 7 consultation. The presence or absence of construction-type impacts are not addressed, nor is the NRC’s guidance explicit that its staff must prepare a biological assessment for nuclear power plant license renewal. NRC’s guidance appears to be drawn from ESA section 7(c), which indicates that the Federal agency shall prepare a biological assessment

for an agency action if the Services advise that listed species may be present in the area of the proposed action, rather than the more nuanced preparation requirements in the ESA regulations.

The ESA section 7(c) preparation requirement creates further confusion because it hinges on an “agency action,” which is defined as “any action authorized, funded, or carried out” by a Federal agency.¹⁶ Neither major Federal actions under NEPA nor construction-type impacts are mentioned in the act itself. The FWS’s section 7 consultation “Frequently Asked Questions” (FAQs) webpage offers a blended preparation requirement:

A biological assessment must be prepared if listed species or critical habitat may be present in the area to be impacted by a “major construction activity”...A biological assessment is not required if the action is not considered a major construction activity; however, if listed species are present in the action area, the Federal agency must document to the Services its evaluation of the effects of the action to the listed species.¹⁷

The FAQ description combines the “species may be present” preparation requirement of ESA section 7(c) with the “major construction activity” requirement of the ESA regulations.

Similarly, the Services’ *Consultation Handbook* notes that biological assessments are not required for actions that are not major construction activities but that the agency must provide the Services an account of the

basis for evaluating the likely effects of the action if listed species or critical habitat are likely to be affected.¹⁸

Thus, it appears that Federal agencies can make a case that preparation of an EIS does not necessitate preparation of a biological assessment as long as the major Federal action does not involve construction-type impacts. However, the EIS should still address any listed species present or critical habitats in the action area because the Federal action could still necessitate section 7 consultation if the Federal agency determines that the action “may affect” listed species or critical habitat¹⁹ even if a biological assessment is not required. The Services’ 1986 FRN supports this conclusion in stating that:

The Service will not require biological assessments for projects that are not major Federal actions for purposes of NEPA. Further, the Service will not require biological assessments for actions that do not involve construction or activities having physical impacts similar to construction...²⁰

Integrating the EIS and Biological Assessment

In cases where a Federal agency has determined that it must prepare both an EIS and a biological assessment, NEPA and the ESA allow the Federal agency²¹ to fulfill its requirement to prepare a biological assessment²² concurrently with the preparation of the EIS. Because the contents of biological assessments are at the discretion of the

Federal agency and the ESA regulations do not specify a particular format, the agency may fulfill the biological assessment preparation requirement in a variety of ways, including using the EIS to document the biological assessment by incorporating the relevant information within subsections of the EIS or attaching the biological assessment to the EIS as an appendix.

Challenges in Integrating the EIS and Biological Assessment

Although undertaking preparation of an EIS and biological assessment concurrently can be an efficient way to meet the requirements of both NEPA and the ESA, each statute includes different terminology with different definitions, which can make assessing impacts to listed species and critical habitats in one integrated document challenging. The following sections discuss these challenges.

Determining Environmental Scope

“Affected Environment” vs. “Action Area.” In NEPA, Federal agencies must evaluate the impacts to the environment affected or created by the alternatives under consideration (i.e., the “affected environment”).²³ CEQ guidance directs agencies to include all potentially affected resources, ecosystems, and human communities in its description of the affected environment with attention to geographic and temporal scope and potential for resource or system interactions.²⁴ Under the ESA, impacts to listed species and critical habitats are evaluated within the “action area,” which includes all areas to be affected

directly and indirectly by the Federal action and not merely the immediate area involved in the action.²⁵ From these definitions, we can see that NEPA’s affected environment includes temporal, geographic, and relational elements, while the ESA’s action area is focused more narrowly on a particular geographic area.

A more significant distinction between the two statutes’ environmental scopes lies in the fact that NEPA requires Federal agencies to consider alternatives to the proposed action, while the ESA does not. Consequently, whether alternatives are considered will greatly affect the environmental scope. Alternatives are discussed in more detail in the subsection entitled “Considering Alternatives” below.

Evaluating Impacts

“Environmental Consequences” vs. “Effects of the Action.” When considering impacts, NEPA directs Federal agencies to evaluate the “environmental consequences,” while the ESA directs Federal agencies to evaluate the “effects of the action.” Evaluation of the environmental consequences under NEPA includes the direct and indirect environmental impacts of the proposed action and alternatives as well as means to mitigate any adverse effects.²⁶ Under the ESA, the “effects of the action” include the direct and indirect effects of the action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.²⁷ “Interrelated actions” are those that are part of a larger action and depend on the larger action for their justifica



Fish Species at Savannah River

tion, and “interdependent actions” are those actions that have no independent utility apart from the proposed action.²⁸ For instance, in its May 2014 *Programmatic Biological Opinion on the U.S. Environmental Protection Agency’s Issuance and Implementation of the Final Regulations Section 316(b) of the Clean Water Act*,²⁹ the Services found that though the 316(b) regulations address requirements for cooling water intake structures at existing facilities, thermal discharges are an interrelated action because discharges would not occur but for the withdrawal of cooling water. The construction of power lines associated with a new energy-generating facility would be an example of an interdependent action: the power lines would have no independent utility apart from the construction and operation of the new generating facility. In general, though interrelated and interdependent actions are specific to the ESA, such actions would also fall within the scope of indirect effects and, thus, would be considered under NEPA, as well. The main differences in evaluating impacts under NEPA and the ESA lie in whether and how the Federal agency must consider

alternatives and cumulative effects.

Considering Alternatives. NEPA requires Federal agencies to consider alternatives to the proposed action, while the ESA does not. In its regulations for implementing NEPA, CEQ considers alternatives to be the “heart” of the EIS.³⁰ The EIS is to present a clear picture of the impacts of the various options in order to inform the public and to provide a basis for the decisionmaker to take action. On the other hand, the ESA does not require the Federal agency to consider alternatives in the formulation of biological assessments.^{i,31} Nevertheless, the ESA regulations suggest that the Federal agency *may* include “an analysis of alternate actions considered by the Federal agency” in the biological assessment, if prepared, but inclusion of this information is at the discretion of the Federal agency.³²

Addressing Cumulative Effects. The cumulative effectsⁱⁱ of other actions must be addressed as part of the impacts analysis under both NEPA and the ESA. However, the way in which each statute directs Federal agencies to consider cumulative effects represents one of the most significant differences between the two statutes.

NEPA’s regulations define “cumulative impact” to be the impact on the environment which results from the incremental impact of the action when added to other past, present,

i Although the ESA does not require the Federal agency to consider alternatives, the ESA section 7 regulations at 50 CFR 402.14(g)(5) require the Services to consider alternatives (“reasonable and prudent alternatives”) if the...

ii Unless otherwise noted, the terms “cumulative effects” and “cumulative impacts” are used interchangeably in this paper and are intended to be synonymous.

and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.³³ Actions that overlap spatially or temporally with the proposed action or alternatives can contribute to cumulative impacts, and therefore, cumulative impacts are to be evaluated with the direct and indirect effects of each alternative.³⁴

The ESA's regulations define "cumulative effect" to be those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.³⁵ Unlike the NEPA definition of cumulative impacts, cumulative effects under the ESA do not include past actions or other Federal actions requiring separate ESA section 7 consultation. The Services must consider the ESA's definition of cumulative effects when determining the likelihood of jeopardy or adverse modification. Notably, the Services found enough confusion on the two competing definitions that in the *Consultation Handbook*, the Services caution their staff to apply the ESA's more narrow definition of cumulative effects when preparing biological opinions rather than relying on the broader discussion of cumulative actions that the Federal agency may include in any associated NEPA documents.³⁶

The differences between the NEPA and ESA definitions of cumulative impacts can be summarized in three questions: who? when? and how certain? (see Table 1, next page). The "who?" refers to the entity or person taking action. Under NEPA, the actor does not mat-

ter; the actions of all groups or individuals must be evaluated. Under the ESA, Federal actions are excluded from consideration because the effects of such actions on listed species or critical habitat would have been addressed in previous section 7 consultations and accounted for in the environmental baseline.ⁱⁱⁱ

The second difference lies in the timing of the cumulative action. Under NEPA, a cumulative action can occur any time in the past, present, or future as long as the effects of the action can be shown to meaningfully overlap with the effects of the proposed action or alternatives. Under the ESA, only the cumulative impacts of future actions are to be addressed because past and present actions would have already been captured in the environmental baseline.^{ciii}

The third difference between the NEPA and ESA definitions of cumulative effects pertains to how certain the Federal agency must be that a future action will occur. The threshold for NEPA is that the action must be "reasonably foreseeable." In its *Forty Most Asked Questions*,³⁷ CEQ notes that although Federal agencies should not speculate on future actions for which there is total uncertainty, agencies can often reasonably foresee many future activities, such as general development trends or the likelihood of land being used for energy projects, shopping

iii The "environmental baseline" is defined at 50 CFR 402.02 to mean "the past and present impacts of all Federal, State, or private actions and other human activities in an action area, the anticipated impacts of all proposed Federal projects in an action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process."

centers, subdivisions, farms, or factories. However, if enough information is not available on future actions for the agency to perform a meaningful analysis, such actions need not be included, even if they are reasonably foreseeable.³⁸

For the ESA, the threshold for considering an action in the cumulative analysis is that it must be “reasonably certain to occur.” The Services provide several examples of such actions in the *Consultation Handbook*. Cumulative actions could include State, tribal, or local government approval of an action

specific approvals or investments and for which such approvals or investments have been (or have been committed to being) made. The U.S. Court of Appeals of the Ninth Circuit (“9th Circuit”) confirmed the ESA’s narrower definition in a 2013 opinion, which states, “consideration of federal projects, past projects, and projects outside the [project] area exceed the scope of a cumulative effects analysis, as defined under 50 C.F.R. § 402.02.”⁴¹

Considering Mitigation

Table 1. Cumulative Actions Considered Under NEPA and the ESA

Cumulative Action Characteristic	NEPA	ESA
Who is taking the action?	anyone	State agencies and private individuals or entities
When is the action occurring?	in the past, present, or future	in the future
How certain must it be that the action will occur?	reasonably foreseeable	reasonably certain to occur

through the issuance of permits or grants or other indications that approval is imminent; a project sponsor’s assurance that an action will proceed; a project investor’s obligation of venture capital; or the initiation of contracts associated with a project.³⁹ The Services note that “the more State, tribal or local administrative discretion remaining to be exercised before a proposed non-Federal action can proceed, the less there is a reasonable certainty the project will be authorized.”⁴⁰ The ESA definition once again proves narrower in that it focuses on actions that require

Mitigation is another area that varies considerably under NEPA and the ESA. Simply put, NEPA requires Federal agencies to consider mitigation, while the ESA is silent on the matter.

Mitigation Under NEPA. Under NEPA, mitigation can include voluntary activities that:

- avoid the impact,
- minimize the impact,
- rectify the impact,
- reduce or eliminate the impact over time, or

- e. compensate for the impact through replacement or substitution.⁴²

Federal agencies must include such measures among the alternatives compared in the EIS.⁴³ Agencies may develop mitigation as a component of the project design, in which case the mitigation would be implemented with the proposed action.⁴⁴ In cases where the Federal agency uses mitigation to support its findings, the NEPA process should result in enforceable mitigation measures, and the agency should take steps to ensure that any mitigation commitments are appropriately implemented.⁴⁵

Mitigation Under the ESA. Neither section 7 of the ESA nor its implementing regulations at 50 CFR 402 specifically indicate whether a Federal agency should consider mitigation in its biological assessments to address a proposed action's adverse impacts to listed species or critical habitats. However, in a 2012 ruling, the 9th Circuit determined that the Services cannot rely on mitigation in its jeopardy determination unless the mitigation is part of the proposed action itself.⁴⁶ This is because mitigation that is not part of the proposed action and not required under another statute or permit is not enforceable by *the Services* (i.e., failure to implement such mitigation measures would not trigger the duty for the Federal agency to reinstate section 7 consultation, would not be enforceable through the threat of penalties for takings of listed species if the mitigation is not complied with, and would effectively evade the potential for an ESA citizen suit to enforce the measures).⁴⁷ The 9th Circuit's 2012 ruling

appears to indicate that under ESA section 7, Federal agencies should only consider mitigation as part of the proposed action, thereby effectively rendering it part of the proposed agency action, rather than mitigation *per se*.

If further measures are required to avoid the likelihood of adverse impacts to listed species or critical habitat or to minimize the amount or extent of incidental take that would result from a proposed action, the Services could include such measures in the biological opinion. Thus, the section 7 process (rather than the Federal agency's biological assessment, specifically), may include the Services' consideration of mitigation measures, some of which fall into the categories of NEPA mitigation listed in the section above. Each type of NEPA mitigation is considered separately below in terms of whether the Services may address it through the section 7 consultation process or in the biological opinion.

Mitigation to Avoid the Impact. The first type of mitigation under NEPA avoids the impact altogether by not taking a certain action or parts of an action.⁴⁸ The informal consultation process allows the Services to suggest modifications to the action that the Federal agency or applicant could implement that would avoid the likelihood of adverse effects.⁴⁹

Mitigation to Minimize the Impact. The second type of mitigation limits the degree or magnitude of the action and its implementation.⁵⁰ Under formal consultation, the Services may include in the biological opinion "reasonable and prudent alterna-

tives” (R&PAs), which are alternate actions that can be implemented consistent with the intended purpose of the action and that would avoid the likelihood of jeopardizing the continued existence of listed species or destroying or adversely modifying critical habitat.⁵¹ R&PMs do not assure that all adverse impacts are avoided; they only assure that adverse impacts do not reach the level of jeopardy or adverse modification. The Services may also include “reasonable and prudent measures” (R&PMs) that are necessary or appropriate to minimize the amount or extent of incidental take.⁵²

Mitigation to Rectify the Impact. This type of mitigation repairs, rehabilitates, or restores the affected environment.⁵³ Because Federal agencies may not take an action that jeopardizes listed species or destroys or adversely modifies critical habitat,⁵⁴ this type of mitigation is not appropriate under the ESA, and the section 7 consultation provisions do not allow for either the Federal agency or the Services to consider actions that would compensate for adverse impacts to listed species or critical habitats through future restoration.

Mitigation to Reduce or Eliminate the Impact Over Time. Impacts may be reduced or eliminated over time through the preservation and maintenance operations during the life of the action.⁵⁵ Within the section 7 process, the Services could implement this type of mitigation through a biological opinion’s R&PMs.

Mitigation to Compensate for the Impact Through Replacement or Substitution. The final type of mitigation under NEPA

allows for compensatory actions that replace or provide substitute resources or environments.⁵⁶ As mentioned previously, Federal agencies may not take an action that jeopardizes listed species or destroys or adversely modifies critical habitat, so this type of mitigation, which assumes the loss of resources, would not be appropriate under the ESA.

Forming Conclusions

The final difference that this paper will consider is how NEPA and the ESA direct Federal agencies to form conclusions.

NEPA Conclusions. NEPA and its regulations do not specify how an agency should characterize its conclusions. Agencies must include in the EIS’s discussion of environmental consequences any adverse environmental effects which cannot be avoided, the relationship between short-term uses and long-term productivity of the environment, and any irreversible or irretrievable commitments of resources that would occur, should the proposed action be taken.⁵⁷ However, Federal agencies can choose to express such effects in a variety of ways, both qualitatively and quantitatively. For instance, in a recent EIS, the National Park Service frames impacts qualitatively as: negligible, minor, moderate, or major.⁵⁸ Similarly, the NRC summarizes impacts as small, moderate, or large.⁵⁹ The NMFS describes the “risks” and “benefits” of various alternatives in a draft EIS on two salmonid management plans,⁶⁰ while the Federal Highway Administration describes the impacts of a road construction project qualitatively as either “adverse” or “beneficial” and

further refines these effects in quantitative terms where possible.⁶¹

ESA Conclusions. The ESA regulations direct Federal agencies to determine in a biological assessment whether listed species or critical habitats “are likely to be adversely affected.”⁶² The Services’ *Consultation Handbook* further specifies that ESA effect determinations should be characterized as “no effect,” “is not likely to adversely affect,” or “is likely to adversely affect.”⁶³ A conclusion of “is not likely to adversely affect” is the appropriate conclusion when effects on listed species are expected to be “beneficial,” “discountable,” or “insignificant,” each of which carries a specific meaning under the ESA.⁶⁴ If the Federal agency concludes “is likely to adversely affect,” the Services then review the Federal agency’s determination(s) to determine if the proposed action would “jeopardize the continued existence of” listed species or “result in destruction or adverse modification of” designated critical habitat.⁶⁵

A Federal agency’s ESA conclusions trigger specific section 7 consultation requirements. Consultation is required whenever a Federal agency determines that an action “may affect” listed species,⁶⁶ whether the action “is likely” or “is not likely” to result in adverse effects. The 9th Circuit has found that “may affect” includes any possible effect, whether beneficial, benign, adverse, or of an undetermined character⁶⁷ and includes effects that have any chance of affecting listed species or critical habitat—even if it is later determined that the action is “not likely” to do so.⁶⁸ If the agency determines that a particular

action will have no effect on listed species, the consultation requirements are not triggered.

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Solutions for Integrating the EIS and Biological Assessment

After reviewing the differences in NEPA and ESA terminology and definitions, a Federal agency may be left with several questions. Assuming a project requires both an EIS and a biological assessment, should the scope of a project be defined to meet the definition of NEPA’s affected environment or the ESA’s action area? Should the ESA analysis take into account NEPA alternatives? How should cumulative effects be addressed? What about mitigation? And finally, how should conclusions be characterized? These questions are addressed in the following sections and summarized in Table 2. The remainder of this paper assumes that the Federal agency has chosen to fulfill its duty to prepare an EIS and biological assessment in one integrated document, which is herein referred to as an “EIS/BA.”

Environmental Scope

Describing the affected environment is a regulatory requirement under NEPA. Conversely, the ESA regulations do not explicitly mention the action area when listing items that the Federal agency might include in the biological assessment.⁷¹ Because a description of the affected environment is a regulatory requirement, and a description of the action area is not, the Federal agency should describe the project in

terms of the NEPA definition of affected environment.

If the Federal agency determines that the ESA action area differs from the NEPA affected environment, the agency could also separately describe the action area in the EIS/BA. While a description of the ESA action area is not required by regulation because the contents of a biological assessment are at the discretion of the Federal agency, the ESA does require that the Federal agency determine what species occur in the action area, determine whether the action may affect listed species, and consult with the Services if effects are anticipated. Additionally, the Services must evaluate impacts to listed species and critical habitats according to the ESA's definition of action area, not NEPA's definition of affected environment. Thus, framing the scope of the EIS/BA's ESA analysis in terms of the ESA action area facilitates both the agency's compliance with the consultation requirements of ESA section 7 and the Services' review of the action and formulation of a biological opinion, if warranted. To do this, the Federal agency could include a subsection that specifically addresses the ESA action area within the EIS/BA's affected environment description. This would allow the Federal agency to describe the NEPA affected environment for ecological resources, while narrowing the focus to the ESA action area for listed species and critical habitats.

Impact Analysis

Alternatives. A Federal agency's

consideration of alternatives is required by NEPA and optional under the ESA. Accordingly, the Federal agency must address alternatives in its EIS/BA to fulfill the requirements of NEPA. Although not required under the ESA, addressing the effects of alternatives on listed species and critical habitats could help the Services formulate R&PAs in a situation where the Services determine that the agency's preferred NEPA alternative would result in jeopardy or adverse modification.

To meet the requirements of NEPA and facilitate the agency's fulfillment of ESA section 7 requirements, the Federal agency should address the impacts of alternatives on listed species and critical habitats in biological assessment section(s) of the EIS/BA. Because only a difference in the requirement to include alternatives exists between NEPA and the ESA (rather than a conflict in the definition of the term "alternatives"), the Federal agency would apply the same scope and format to its alternatives impact analysis for listed species and critical habitats as it applies to all other resource areas addressed in the EIS/BA.

Cumulative Effects. Cumulative effects under NEPA are inclusive of all reasonably foreseeable past, present, and future actions, while cumulative effects under the ESA focus on only future actions of State agencies and private individuals or entities. Although NEPA's definition is broader, it is reasonable for a Federal agency to narrow the EIS/BA's cumulative impact analysis for listed species and critical habitats to only those actions that would fit the ESA cumulative impact definition for two reasons.

First, inherent in the Services' listing of a species is the fact that past and present actions have already cumulatively threatened or endangered the species' continued existence. Thus, including past and present actions in the cumulative effects discussion may cloud the agency's analysis and bias conclusions towards those actions, which have already had substantial impacts. Such an assessment could prohibit the agency from meaningfully evaluating whether future actions have the potential to further jeopardize the continued existence of listed species.

Second, and as already discussed, the Services must consider the ESA's definition (not NEPA's definition) of cumulative effects when determining the likelihood of jeopardy or adverse modification. Accordingly, narrowing the discussion of cumulative effects on future actions of State agencies and private individuals or entities would facilitate the Services' review of the project during section 7 consultation.

The question remains, however, of how a Federal agency should evaluate past and present actions and other Federal actions required under NEPA as these remain a regulatory requirement. The Federal agency could address these actions within the EIS/BA's affected environment discussion. Because such actions would have shaped the environmental baseline for listed species, the affected environment section would be an appropriate place to describe actions that have cumulatively brought the Services to a point where listing of a species is warranted. The EIS/BA's ESA cumulative impact analysis could then

describe the differences between the two definitions of cumulative impacts and refer the reader to the affected environment for a description of non-ESA cumulative actions.

Mitigation

NEPA requires Federal agencies to consider mitigation among the various alternatives considered in the EIS. However, under "Considering Mitigation," this paper finds that it is most appropriate for the Services, and not the Federal agency, to consider and identify mitigation measures to avoid or minimize adverse impacts to listed species and critical habitats. The Services can develop such mitigation in coordination with the Federal agency during the section 7 consultation process or include it in the biological opinion as R&PAs or R&PMs.

Nonetheless, the requirement for Federal agencies to consider mitigation in its EISs remains. One way NEPA allows Federal agencies to consider mitigation is to develop mitigation measures as a component of the project design such that the measures would be implemented with the proposed action. The 9th Circuit has found that mitigation included in the proposed action is the only appropriate type of mitigation for the Services to rely upon in jeopardy determinations under the ESA. Accordingly, the most prudent way for a Federal agency to address mitigation that reduces or avoids impacts to listed species or critical habitat is to include such mitigation as a component of the proposed action or alternatives themselves. For clarity, the EIS/BA impact analysis could describe the ways in

which the proposed action or alternatives have been modified to mitigate adverse effects and refer the reader to the corresponding description of those components in previous sections of the EIS/BA.

Impact Conclusions

NEPA does not specify how conclusions should be characterized, while the ESA regulations and the Services' *Consultation Handbook* direct Federal agencies to conclude whether an action will result in "no effect," "is not likely to adversely affect," or "is likely to adversely affect." As discussed previously, each of these conclusions triggers specific consultation requirements under ESA section 7. Accordingly, it is most appropriate for Federal agencies to characterize conclusions using the ESA's terminology.

As with alternatives, because NEPA and the ESA do not contain conflicting requirements or definitions, a Federal agency can fulfill its duties under both statutes in a relatively straightforward manner by using the ESA's terminology in its EIS/BA conclusions for listed species and critical habitats.

Conclusion

Although NEPA and the ESA allow Federal agencies to concurrently fulfill their obligations under each statute, agencies can face several practical challenges when integrating biological assessments into EISs in a manner that complies with both statutes. Such challenges arise from differences in how NEPA and the ESA direct Federal agencies to address

environmental scope; evaluate impacts, including how to consider alternatives and cumulative effects; consider mitigation; and frame impact conclusions. This paper's review of each of these challenges reveals that Federal agencies can successfully fulfill the requirements of both NEPA and the ESA in one, integrated document.

Table 2. Solutions to Address Conflicting NEPA and ESA Requirements

EIS/BA Component	NEPA Requirement	ESA Requirement	Conflict?	Resolution
Environmental Scope	An EIS must contain a description of the affected environment.	A Federal agency must initiate section 7 consultation if listed species or -critical habitat in the action area may be affected.	Yes. The definitions of “affected environment” and “action area” could result in different environmental scopes.	The EIS/BA could describe the ESA action area within the ecological resources affected environment description.
Alternatives	An EIS must consider the environmental consequences of alternatives.	The ESA does not require Federal agencies to consider alternatives.	No. The absence of a requirement for agencies to consider alternatives under the ESA does not present a conflict.	The EIS/BA should address alternatives for listed species and critical habitats.
Cumulative Effects	Cumulative effects include all reasonably foreseeable past, present, and future actions.	Cumulative effects include only future actions of State agencies and private individuals or entities.	Yes. The definition of cumulative effects is different under NEPA and the ESA.	The EIS/BA should address ESA cumulative effects in its impact analysis and include non-ESA cumulative effects in the description of the affected environment as part of the environmental baseline.
Mitigation	An EIS must consider mitigation.	When forming its jeopardy statements, the Services can only rely on mitigation that is part of the proposed action or implemented as R&PAs or R&PMs.	Yes. The ESA is narrower in its allowance for Federal agencies and the Services to consider mitigation.	The EIS/BA should only include mitigation that would reduce or eliminate impacts to listed species or critical habitats if such mitigation is incorporated as a component of the proposed action or alternatives.
Impact Conclusions	NEPA does not specify how an EIS should characterize conclusions.	A Federal agency’s determination of “may affect” triggers consultation requirements under section 7.	No. The absence of specificity in how agencies should characterize conclusions under NEPA does not present a conflict.	The EIS/BA should characterize conclusions for listed species and critical habitats using the ESA’s terminology.

Endnotes

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5. See 4 at §402.06(b).
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19. See 4 at §402.14(a).
20. See 13 at 19936.
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Cumulative Effects on the United States Military Academy National Historic Landmark District Since 1960

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Background

The United States Military Academy stands as one of America's great icons. Located on the Hudson River in New York's Hudson Highlands region, it dates back to the Revolutionary War, when it was established as an Army post in January of 1778. Its location was key in preventing the British from controlling the Hudson River. Continental soldiers constructed forts, batteries and redoubts, and built a 100-ton chain that crossed the Hudson River from West Point to Constitution Island, the narrowest area of the Hudson River. The post continues, today, as an active Army post, America's oldest continuously occupied military installation.



Map of West Point Defenses Circa 1780

After the war, a number of soldiers and legislators, desiring not to rely on foreign engineers, urged the creation of an institution

that would be devoted to art and science of warfare. In 1802, President Thomas Jefferson signed legislation establishing the United States Military Academy (Academy). In 1817, Colonel Sylvanus Thayer, known as the "father of the Military Academy," upgraded academic standards, and instilled military discipline and honorable conduct. It is America's oldest military academy.

The Academy is located in New York State's Hudson Highlands, a Scenic Area of Statewide Significance. In the mid-19th century, a group of landscape painters established what was known as the Hudson River School. The school's paintings reflected three themes of America in the 19th century – discovery, exploration and settlement. The region of the Hudson Highlands, which included the Academy, was especially popular with the artists, as they depicted the ruggedness and sublimity of the region.

The Academy continued to develop through the latter half of the 19th century and into the 20th century. Many of the old wooden buildings were replaced with granite structures.

The vast majority of the Academy campus is military gothic, which are massive fortress-like structures. Other buildings on the post, most notably the oldest private residences, were built in the Federal, Georgian and English Tudor styles. Some of these residences date back to the early 19th century.

As the Corps of Cadets grew, over the years tents were replaced by barracks, first made of wood, later by granite. Barracks and academic buildings were set back from a level

area called The Plain. The Plain is the area on Academy grounds where the cadets 'form up' then march in review. In the past, when the Corps of Cadets was small, tents were erected on The Plain, and recreation areas were also set up. Doubleday Field, where baseball is played, was dedicated in 1939. Eventually, The Plain became 'sacred' and was only used

the appearance of a fortress, with several massive granite structures rising from its banks. As seen from the east side of the river, additional massive structures are evident, including the main academic building, just off The Plain, and the Cadet Chapel, which rises high above The Plain. The latest granite structure to be built at the academy is the new



Cadet Chapel

for formal cadet formations and passing in review before ranking military officials.

It was in the early 20th century that many of the military gothic (granite) structures that still stand today were erected, mainly during the period 1905-1915. As seen from the Hudson River, the Academy takes on

cadet library, erected on a portion of The Plain.

Many other buildings and structures, as well as scenic vistas and roadways make up the main academic area of academy's total 16,000 acres (most of the Academy's land is given to training, both infantry and artillery.)

The main academic (central) area, however, only occupies 2,500 acres, and lies to the east of New York State Route 9W, a scenic byway (the training areas lie to the west). In 1960, the academic area, also known as the central area, was designated a National Historic Landmark District because of its Revolutionary War ruins and the historic significance of the Academy itself. Most of the buildings and structures are historic. It is noted that the Landmark District comprises more than the Corps of Cadets barracks and academic areas. Also included are residential areas where instructors and their families (including military and academic) live, medical facilities, public works facilities, and both intercollegiate and intramural athletic facilities. In addition, the central area is home to numerous monuments and statues. It is interesting to note, that this designation came six years before the National Historic Preservation Act of 1966 was signed.

This paper will describe some of the more significant changes that have taken place since 1960, and their effect on the National Historic Landmark District. Some of these changes pre-date not only the National Historic Preservation Act, but also the National Environmental Policy Act, signed January 1, 1970. As a result, many of the changes didn't receive the environmental scrutiny that a change, today, would make. This paper presents three distinct periods of change since 1960.

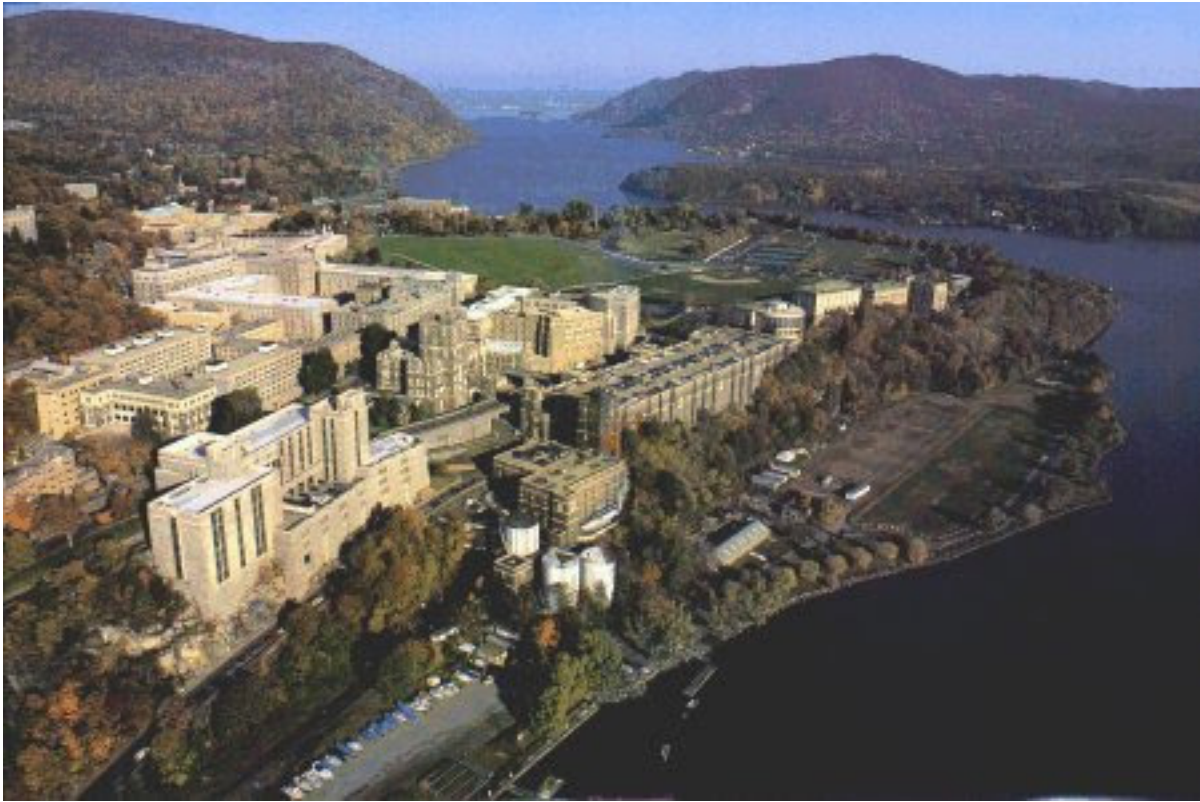
The Period from 1960 through 1969

This is the initial period after the

central area was designated a National Historic Landmark District. This period was marked by a major expansion of the Corps of Cadets. As a result of the war in Vietnam, the Corps grew to over 4,000 cadets. With this increase, the need arose for larger barracks, more housing for instructors, additional classrooms, more space for athletic facilities. Each of these changes had an impact upon the Landmark District in some way. However, because neither the National Historic Preservation Act nor the National Environmental Policy Act were in effect during this period, historic effect analysis and environmental impact assessment of the changes were not given due diligence.

Three primary roads are used to access the central area, Thayer Road from the south, and Stony Lonesome and Washington Roads from the west, and all hold historic significance. Thayer Road is the main road to the central area, and is accessed from the south by passing through the Village of Highland Falls. Along it are the Historic Hotel Thayer, Buffalo Soldiers Field (formerly called Cavalry Plain), historic residences of military instructors, and the historic academic (central) area. The changes that were made along this route were primarily to Cavalry Plain, where intramural athletic fields were created, changing the visual landscape of the scenic Thayer Road corridor.

Major changes during this period were the additions to the intercollegiate football stadium. Originally constructed in 1923-24, the stadium was shaped like a



West Point Military Academy, Photo credit: USMA

horseshoe, open to the east, with a view of Lusk Reservoir, water supply to the central area. It also offered a scenic view of the trees lining the reservoir, and the east bank of the Hudson River. In the late 1960s the east stands were added to Michie Stadium, completely encircling the football field. During the same time, upper seating was added to the west stands. The National Historic Preservation Act was in place at this time, so in response, the architecture closely followed the existing 1923-24 architecture of the original stadium.

Changes also started to take place on The Plain: 1) reviewing stands were erected, not only for the 'top brass,' but for visitors; 2) parking areas were created for visitors; 3) additional monuments and statues were erected; 4) athletic facilities for rugby and

tennis were added in the northeast portion of The Plain; and 5) a monument, honoring General Douglas MacArthur was also added to The Plain. The large area of The Plain that remained is called The Parade. While these new features impacted the scenic view from The Plain and academic area toward the Hudson Highlands, they did not affect the view from the Hudson River, nor the view from the area of The Plain called Trophy Point towards the North Gate of the Hudson Highlands. Here, on display, are remnants (canons) from various wars, as well as links from the great chain the spanned the Hudson River from West Point to Constitution Island.

New residences were also built during this period to house the additional instructors and their families needed to train the increase in the Corps of Cadets. An area called New

Brick was built on the hillside to the west of, and away from, Washington Road, one of the Landmark's three historic corridors. Trees shield the view of the Landmark from Washington Road, as well as from the east side of the Hudson River.

In all, while there were major changes made to the U.S. Military Academy during the 1960s, none of the undertakings had an adverse effect on the Landmark District.

The Period from 1970 to 1996

This period is marked by major changes to the U.S. Military Academy's infrastructure, including a new commissary, new hospital, additional instructional buildings, additional residences, and building to house military police.

In 1972, Stony Lonesome I housing was opened to field grade officers and their families. It became, and still is, the largest residential area in the Landmark District. It was constructed in a wooded area, and is only partly visible from Stony Lonesome Road, one of three historic roads that lead into the heart of the Landmark District. Stony Lonesome I is not visible from either the Hudson River or its east bank. Also constructed along Stony Lonesome Road, but shielded, for the most part, by vegetation, is the new commissary, built in 1989.

In the Central Area, a new academic building was constructed in 1973. It was constructed in military gothic style, and is similar to the surrounding buildings built in the same architectural design. The building, Mahan Hall, contains classrooms and instructors offices. Though the building is not 50

years old, it is designated as a historic structure because of its architecture and its association with the buildings around it. It is visible from the Hudson River, as well as from its east bank. It blends with the surrounding structures and gives the appearance of being a much older building.

A major change to the Landmark District took place in 1974 when Eisenhower Hall was opened. It is the largest theater on the east coast, outside of Radio City Music Hall in New York City, seating 4,400 people. Unfortunately, it was not constructed in architectural style of the surrounding structures. It is entirely visible from the Hudson River, including Constitution Island, and it shields the view of the Hudson Highlands from Washington Road, and especially from the residences of the three generals that oversee the U.S. Military Academy. Little is available on either the environmental or cultural reviews that took place regarding Eisenhower Hall.

Another major change that had a negative impact on the Landmark District was the construction of Keller Army Community Hospital. Constructed just off Washington Road, it is a massive concrete structure with no architectural features that are found in the Central Area. It is entirely visible from the Washington Road historic corridor. It gives the impression of being out of place in an otherwise historic area. It is not, however, visible from the Hudson River, and only slightly visible from the historic houses, buildings and landscapes on the east bank of the Hudson River. Once again, little is known of the envi-

ronmental and cultural reviews that took place before this structure was built.

In the southern portion of the Landmark District, just inside the Thayer Gate (the southern entrance to the U.S. Military Academy), Cavalry Plain, upon which soldiers trained on horseback, was dedicated Buffalo Soldiers Field. The stables where the horses were kept (on the west side of the field) had been made into offices. On the field the women's intercollegiate softball facility was constructed, adjacent to Thayer Road. On the southwest side of Buffalo Soldiers Field, the facility housing the military police and the provost marshal was constructed. The building, a brick structure with limestone accents, blends into the other brick structures (stables) that encircle Buffalo Soldiers Field, enhancing the Landmark District

Moving northward along Thayer Road, past Buffalo Soldiers Field and immediately below the Lusk Reservoir dam, the Association of Graduates constructed a facility for their offices and use for special functions. While not constructed in massive granite, it is a brick building with limestone accents that has an attractive architectural style. It is visible from Thayer Road, only.

Just to the southwest of Michie Stadium, and highly visible from both Thayer and Stony Lonesome Roads, is the Holleder Center that houses the Tate Ice (Hockey) Rink and the Crystal (Basketball) Arena. Unlike Michie Stadium, the architecture of the Holleder Center, is modern, with no architectural arches, or other specific architectural features, to enhance the structure and blend with the

football stadium. Once again, little is known about the environmental and cultural reviews associated with this facility.

Some positive undertakings took place during this period, most notably the restoration of Fort Putnam, a military garrison during the Revolutionary War. It was completed in 1778 with the purpose of supporting Fort Clinton which sat on the bluff on the edge of the Hudson River. It was rebuilt and enlarged in 1794, but soon fell into disrepair. During the 1970s and 80s it was restored, and is now a major attraction, as it is located at 500 feet above the Hudson River, and 350 above The Plain. It offers one of the best views of then U.S. Military Academy's Central Area.

Another action that took place during this period, though not directly affecting the Landmark District, was the designation of the Hudson River as an American Heritage River. The formal ceremony took place on Trophy Point, with dignitaries from the National Park Service, the State of New York, and the Superintendent of the U.S. Military Academy. Such a designation only enhances the U.S. Military Academy's National Historic Landmark District.

The Period from 1996 to Present

This relatively short period has experienced the greatest changes in the history of the Landmark District. Most of the changes have come in the area of athletic facilities: Arvin Gym Renovation; Caufield Crew and Sailing Center; Lichtenberg Tennis Center; Kimsey Athletic Center and Hoffman Press Box at Michie Stadium; Foley Athletic Center (indoor

football practice); the Anderson Rugby Center; and many others. All of these facilities were donated by graduates of the U.S. Military Academy.

During this period an Integrated Cultural Resources Management Plan was prepared. Army Regulation 200-4 requires its installations to develop such a plan to be used as an internal compliance and management tool that integrates the cultural resources program with the installation mission activities. It is designed to meet the legal compliance requirements of federal historic preservation laws and regulations in a way that is consistent with sound principles of cultural resources stewardship. The US Military Academy's Integrated Cultural Resources Management Plan allows for the identification of potential conflicts between its mission and the historic preservation responsibilities, and recommends compliance actions necessary to maintain the mission.

Several significant changes to the Landmark District took place during this period, one of which was the renovation of Arvin Gym. Arvin Gym is the center of cadet physical development. Constructed over a period of nearly 30 years, it was composed of six almost entirely separate gyms. In some areas, there was no physical connection between the gyms. In the late 1990s it was determined that the Arvin Gym was no longer safe and needed to be renovated. Most of the gym was torn down and rebuilt in a style that complements the original (Hayes) Gym, completed in 1910. The Hayes Gym was the only segment of the Arvin Gym that remained

intact. Not only is the new Arvin Physical Development Center 'state-of-the-art,' but its architecture compliments other structures that can be viewed from The Plain.

Another significant change to the Landmark District was the construction of the new Cadet (Jefferson Hall) Library. The Jefferson Hall was built on the southeast corner of The Plain, immediately across the street in front of the old library. It is a six-story building constructed of granite in a style similar to the old library and other surrounding buildings, but with more glass for better lighting. Jefferson Hall was the only undertaking, up to that time, for which an environmental impact statement was prepared. The library was completed in 2008. In some ways the structure enhances the character of the Landmark District because of its architectural style, which is visible from anywhere on The Plain, as well as from the east bank of the Hudson River, particularly at night when it is lighted. It also impacts The Plain, in that it significantly reduces the area of The Plain.

In addition to the renovation of the Arvin Gym, a number of other athletic facilities were constructed during this period. One of the first was a crew and sailing center that replaced the old Quonset structure used as a boathouse. The crew and sailing center, located on the Hudson River, about 150 feet below the level of The Plain on the south side of the South Athletic Field. The center, which opened in 2002 and named after Alex Caufield, was a vast (visual) improvement over the Quonset boathouse. In addition to enhancing the visual aspect of the Landmark District, it

provided indoor state-of-the-art rowing ranks for the crew team.

Several other facilities were constructed on Hudson River, in an area called the North Athletic Field. The most prominent facility was the Anderson Rugby Center, located on the north end of the field, immediately below the Lee Housing area. Unlike the Crew and Sailing Center, which had a positive impact on the Landmark District, the Rugby Center did not. The north end of the North Athletic Field was a grass area with tall trees on the hillside leading up to the Lee Housing

River and the east bank. With the construction of the Rugby Center, the grass was replaced with turf, a large portion of the treed slope was shielded by the grandstands, and tall towers for field lighting were installed. All this gave the impression of a stadium that belonged elsewhere, not in a pastoral setting.

Other athletic facilities that were constructed on the North Athletic Field were a new women's softball field and stadium, a new track and field facility and grandstands, and an equipment storage facility. The North Athletic Field extends for three-quarters of a mile



Michie Stadium

Area. The area was used for casual recreation, and was pleasing to look at from the Hudson

northward from the Gillis Field House to the north boundary of the U.S. Military Academy

boundary. The largest impact on the Landmark District from these three facilities is the field lighting. With timers placed on the light towers the impact was minimized. The storage facility, for the maintenance of the grounds, along with grandstands for the track and field facility, were constructed of brick with limestone accents, a vast improvement from the former facilities.

Other athletic facilities were constructed in the Central Area during this period that visually changed the Landmark District. These facilities were predominantly on, or near, Michie Stadium. The old football stadium underwent many changes, even since the addition of the east stands and upper deck to the west stands. These changes included the addition of an athletic center on the south stands and a large press box atop the west stands. As much as the architect for the athletic center attempted to match the architecture of the existing stadium, the result was a new feature that stood out in contrast to the existing structure. The athletic center is visible from both Stony Lonesome and Thayer Roads (historic corridors), as is the press box. The press box is even more imposing, primarily because of its height above the playing field. It changed the entire look of the football stadium, even more than the athletic center on the south stands.

Just to the south of Michie Stadium, what was formerly a practice field primarily for football, is now home to a full-sized indoor practice field, used by several sports, but mostly football. Its design is modern, and is more in alignment, architecturally, with the

Holleder Center than with Michie Stadium. Although it is a large facility, it is only visible close up, from Mills Road (vegetation and terrain shield it on three sides). It is visible, however, from the lower portion of Stony Lonesome Road and Michie Stadium. Despite its height, it is not visible from the east bank of the Hudson River.

A significant modification was made to Stony Lonesome Road around 2004. Instead of turning south and traveling on the west side of Michie Stadium after descending the hill from the Stony Lonesome Gate, a cutoff was constructed. This cutoff passed between the North end of Michie Stadium and Fort Putnam. This created a significant change in the scenic view of the area. Historically, since the construction of Michie Stadium in 1923, the land between Fort Putnam and Michie Stadium was heavily vegetated, rugged hillside. Except for the east side of the stadium, Lusk Reservoir was surrounded by trees and hillside. The cutoff, which ran from just above Michie Stadium, to Mills Road, a road that runs along the west side of Lusk Reservoir. The visual character was changed, irreparably, and now gives the area the look of a modern highway.

Just south of the Stony Lonesome Gate, on the top of a hill is the Stony Lonesome II housing area. To create the new development, the top of the hill had to be cleared of trees and leveled by blasting and ripping rock. About 20 vertical feet of hill, mostly hard rock, was removed to make room for additional family quarters. Unlike the Federal, Georgian or English Tudor style

of housing that help make the central area of the academy a National Historic Landmark District, Stony Lonesome II housing was built in a more modern style, using wood frame construction and vinyl siding. While being attractive, it does not have the quaint, old-fashioned appeal of the housing along Thayer and Washington Roads. It can be observed from the east bank of the Hudson River, but is far enough away so as not to detract from the visual quality of the Landmark District, and it is screened by trees and terrain from Stony Lonesome Road.

Two new sports facilities that detract from the visual character of the Landmark District are the indoor tennis center and the volleyball pavilion. Built off Stony Lonesome Road, just above, and to the west of, Fort Putnam, are these two large buildings with bright green metal roofs, that are visible from both the Hudson River, and its east bank. While needed for intercollegiate athletics, the architectural style of these structures dramatically changed the visual landscape of this portion of the Landmark District.

A major change to the academy grounds came about in 2005 when a number of military installations underwent Base Realignment and Closure. One of the facilities that closed was Fort Monmouth, New Jersey. Housed at Fort Monmouth was the US Military Academy Preparatory (Prep) School. In 1946, following the end of World War II, the Army Prep School was established at Stewart Army Air Field in Newburgh, New

York. In 1957, the school was moved to Fort Belvoir, Virginia, and in 1975, it moved, again, to Fort Monmouth, New Jersey. By the end of the 2000 decade, there would no longer be a place for the school.

Late in 2005, the US Military Academy began looking at options where to relocate the prep school. After analyzing a number of alternatives, it was decided that the best location for the school would be at the site of the current Motor Pool. The Motor Pool was an industrial area just inside the Washington Gate, off NY Route 218, a historic and Scenic Byway. The Motor Pool, in addition to containing buildings and parking areas, also contained several solid waste landfills used during the 1960s. To make room for the prep school, the Motor Pool would have to be relocated, off the main post to a location about five miles down the road on one of the practice ranges. In addition, the unlined solid waste landfills would have to be reclaimed, and all contaminated soil removed. Groundwater monitoring wells would need to be installed. The prep school, completed in 2011, is of modern institutional design, but not visible from most of the main post or from the Hudson River. The area was changed from an industrial area to a high school campus.

Conclusion

There have been many changes to the US Military Academy since 1960 when it was designated a National Historic Landmark District. Most of changes have been in the area of athletic venues, and many have had significant effects on the visual charac



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United States Military Academy at West Point

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United States Military Academy at West Point

ter of the historic landscape. Not only are these changes visible from the historic corridors of Thayer Stony Lonesome and Washington Roads, within the Main Post, but also from the Hudson River, and from the Hudson River's east bank, where there historic houses, buildings and landscapes.

It has been noted that cadets who graduated in the 1960s and 1970s, and some even later, would not recognize their alma mater, due to the numerous changes that have been made to the academy. As well as the many new athletic facilities, both new and updated housing units have been added. In addition, some of the other changes not previously described included: 1) a new post exchange; 2) lighting upgrades along Washington Road; 3) major addition to the Keller Army Community Hospital; 4) securi-

ty upgrades to Thayer, Stony Lonesome and Washington Gates; and 5) security upgrades to the West Point Elementary School (used by the children of academy personnel.)

The US Military Academy at West Point on the Hudson River still remains (as some have put it) the 'crown jewel' of Army posts. The National Historic Landmark District has changed since 1960. While there have been instances of adverse effects, for the most part, the changes implemented have complied with the guidelines of the Keeper, the State Historic Preservation Officer, and the Integrated Cultural Resources Management Plan.

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**The Application of a Land Use Census
for Monitoring Cumulative Impact on
Centrocercus urophasianus (Greater Sage
Grouse) and Habitat: An Adaptive
Management Approach to Compliance
with the National Environmental Policy
Act (NEPA)**

By
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United States Nuclear Regulatory Commission
June 2012

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Introduction

Uranium recovery is the method of recovering and processing uranium by either conventional milling, in-situ, or heap leach, The United States Nuclear Regulatory Commission (USNRC) licenses and regulates uranium recovery facilities in Wyoming, New Mexico, and Nebraska under 10 CFR Part 40. Other uranium recovery facilities are licensed and regulated by Agreement States, such as Colorado, Utah, and Texas. Prior to 2007, USNRC licensed four uranium recovery facilities. In the late 1990s and early 2000s, the nuclear industry and the USNRC began to herald in a new nuclear reconnaissance era with advance developments for nuclear power plants and a streamline application process for reviewing applications for commercial nuclear facilities. This resulted in a demand for nuclear fuel and the recovery of uranium.



Greater sage-grouse

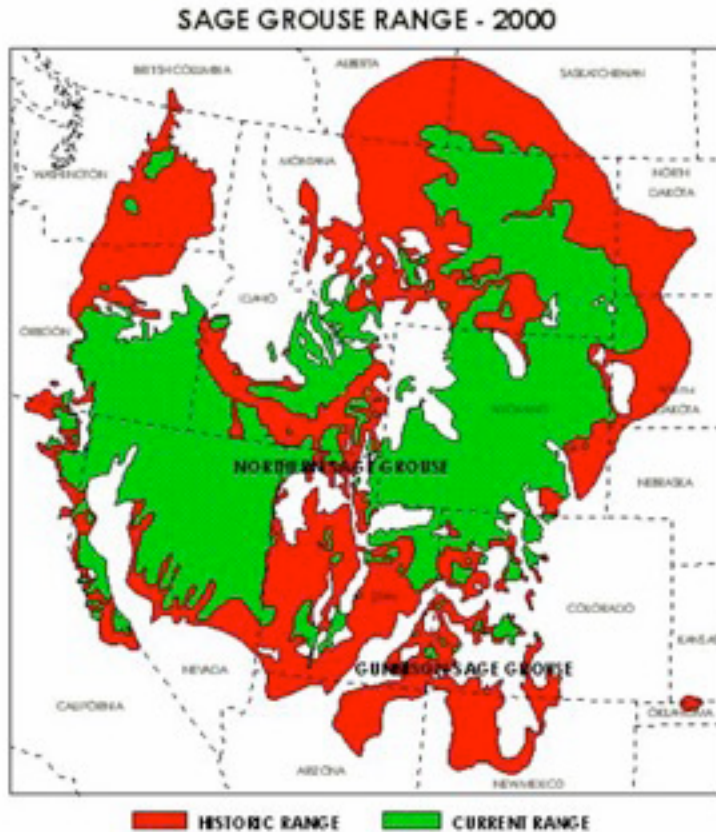
In 2007, USNRC began receiving applications for a source material license proposing

to recover uranium using the in-situ recovery process in the State of Wyoming.¹ Since 2007, USNRC received several other applications for a source material license proposing to recover uranium using the in-situ recovery process in Wyoming and South Dakota.² USNRC requires that each application undergoes both a safety and environmental review. Many of the properties or permit areas identified in these applications are within or near core areas of *Centrocercus urophasianus* (greater sage-grouse) habitats. One application was deferred, at the request of the applicant, because the proposed facility was located in a greater sage-grouse core area.

Schroeder indicated that the pre-settlement range (prior to 1800) was estimated at 120,048,300 hectares for the greater sage-grouse, but now the range is estimated at 66,841,200 hectares.³ Although the greater sage-grouse range has decreased by almost 50% since the pre-settlement period, greater sage grouse habitats can still be found in many western states. Below is a map showing the pre-settlement range and current range of the greater sage-grouse.

A review of the sage grouse range map show that the range of the greater sage-grouse no longer reaches Nebraska and New Mexico and the greater sage-grouse may have been extirpated in these states today.

Greater sage-grouse are strongly dependent on sagebrush as a habitat. This habitat is a critical nesting, breeding, and source of food for the greater sage-grouse. The seasonal habitats of the greater sage-grouse and guidelines for managing the greater



Courtesy:
Dr. M. Schroeder,
Washington Dept.
of Wildlife

sage-grouse population and habitat are discussed in further detail by Braun et al. and Connelly et al.⁴ Sagebrush ecosystems dominate approximately 480,000 km² throughout western North America and almost all (70%) of the existing sagebrush habitats are publicly owned and managed by a state or federal agency.⁵ Connelly et al. reported a 2% decline per year over a period from 1965 to 2003 and projects a long-term decline for the greater sage-grouse in western United States.⁶

On March 5, 2010, the Secretary of the Interior, Ken Salazar, announced that the greater sage-grouse “warrants the protection of the Endangered Species Act, but that listing the species at this time is precluded by the need to address higher priority species first.”⁷ This statement was immediately followed by

the United States Department of Interior, Fish and Wildlife Service (FWS) published findings on the *Centrocercus urophasianus* under the Proposed Rules in the Federal Register Notice.⁸ Although the greater sage-grouse did not receive the full protection by the Act, it is now a species that is on a “candidate list” for protection. The media, following the greater sage grouse issue, published several articles about the impact of the decision on energy-related industries, ranching, renewable energy (such as wind power), and local hunting in western states.⁹ The decision pushed the development of conservation management plans to protect the greater sage grouse down to state governments, as well as, the different federal agencies that have a federal jurisdiction in these western states.

In anticipation of the decision by the Secretary of Interior, many western states and federal agencies moved forward and prepared conservation management plans and strategies for the greater sage-grouse.¹⁰ These conservation plans identified major energy related industries (such as oil and gas), vegetation management, and invasive species as factors that might most likely influence sage-grouse populations. Other factors that were considered in these conservation plans were farming, hunting, livestock grazing, pesticides, predation, recreation, and local residential land use. Thus, as the number of applications requesting a license to operate uranium recovery facilities in or near greater sage-grouse sensitive core areas continues to grow, the applicants will be required to demonstrate compliance with NEPA, and more specifically demonstrate that there are no adverse impact on the greater sage-grouse and its habitats.

This paper examines the current NEPA review process and proposes an adaptive management approach with a land use census for monitoring and tracking cumulative impact on the greater sage-grouse populations and habitats near potential uranium recovery sites.

National Environmental Policy Act of 1969 (NEPA)

NEPA is a broad and far-reaching statute promulgated by Congress in 1969 to protect the environment. In Section 2 of the NEPA statutes¹¹, NEPA directs federal agencies to: 1) to encourage productive and enjoyable

harmony between man and his environment; 2) to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; 3) to enrich the understanding of the ecological systems and natural resources important to the Nation; and 4) to establish a Council on Environmental Quality

In Section 102 of the NEPA statutes¹², Congress authorizes and directs that, to the fullest extent possible: the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act (NEPA). And within these policies, Congress directs Federal agencies to initiate and utilize ecological, as well as socio-economic, environmental justice, and cumulative effects in the planning and development of resource-oriented projects.

NEPA is implemented by USNRC under the Code of Federal Regulations, Title 10, Part 51, herein referred to as 10 CFR Part 51. USNRC prepares environmental impact statements (EIS) or supplement to an EIS prior to issuing a license to possess and use source material for uranium recovery facilities. Under 10 CFR Part 51, the regulations require USNRC to consider reasonable alternatives before acting on a proposal.

More specifically, the criteria and type of facility requiring an EIS is found in 10 CFR Part 51.20(b)(8) which states, "Issuances of a license to possess and use source material for uranium milling or production of uranium hexafluoride pursuant to part 40 of this chapter". Uranium recovery facilities are

licensed and regulated by 10 CFR Part 40. Thus the EIS is prepared prior to the issuance of a license to possess and use source material for uranium recovery facilities.

Under 10 CFR Part 51, an environmental review is required to consider reasonable alternatives, including the “No Action” alternative, before acting on a proposal. The main point of the environmental review is to identify and consider each alternative, including the alternative for “No Action”, prior to issuance of the license which will permit the facility to possess and use source material. The NEPA approach is based on the review of historical and or current data available, identifying and developing alternative proposals, and selecting the “best” proposal as the final decision. Under this approach, one must attempt to identify and evaluate all of the adverse environmental impacts of each of the proposed action, including any adverse ecological effects, and cumulative impacts, prior to the approval of the license to operate the uranium recovery facility. This approach puts trust in the premise that all adverse environmental impacts and its uncertainties can be identified prior to operations. Walters and Hilborn recognized that uncertainty is a pervasive feature of ecological management problems.¹⁵ Thus, it would be difficult to identify all the uncertainties associated with ecological management, as well as, predict the ecological management issues in the future. The final decision made by a federal agency under NEPA does not address the uncertainties that may be encountered in the future after the proposed alternative has been implemented.

Thrower deems this approach as the “traditional front-end” regulation of NEPA.¹⁴

Back-end Regulations

Since the inception of NEPA, environmental impacts and the reasonable alternatives have been approached from the presumption that there can be a “productive and harmonious relationship between man and the environment”. The “productive and harmonious relationship between man and the environment” infers that the ecosystem is in equilibrium. The main premise of ecological equilibrium is that the ecosystem is in a steady-state condition and will return to its former functional and structural state after a disturbance.¹⁵ Ecologists, such as Eugene P. Odum, who is considered the “father of modern ecology”, suggested that there is a non-equilibrium concept and that the ecosystem is constantly changing.¹⁶ Odom later identified a list of 20 concepts in ecology where the first concept stated, “An ecosystem is a thermodynamically open, far from equilibrium, system”.¹⁷ Odom refers to the ecosystem, much like a city, in that both are not self-contained and the future depends on what comes in as much as what is going on within. Current research literature contends that ecosystems are slow- changing and are undergoing frequent disturbances such that the ecosystem never achieves a steady or equilibrium state.¹⁸ The non-equilibrium theory can be perceived as a threat to NEPA, and from the surface, appears to undermine Congress’s direction to federal agencies to “encourage productive and enjoyable harmo-

ny between man and the environment”.

But also under NEPA, Congress directs federal agencies to “enrich the understanding of the ecological systems and natural resources important to the Nation”. This direction can be inferred to as the “back-end regulation” where the approach allows performance results to be evaluated by the regulator after an activity has begun, and the information obtained is then cycled back into the regulatory process.¹⁹

Supplemental Environmental Impact Statements and Adaptive Management

The supplement environmental impact statement (SEIS) is a supporting document that augments the original environmental impact statement (EIS). The SEIS is the appropriate method for federal agencies to “cycle back” into the regulatory process after the selection of the “best” proposal. Congress amended NEPA in 1979 directing the Council of Environmental Quality (CEQ) under 1502.9(c) to permit federal agencies to perform the following:

1. Shall prepare supplements to either draft or final environmental impact statements if:
 - (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or
 - (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

2. May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so.
3. Shall adopt procedures for introducing a supplement into its formal administrative record, if such a record exists.
4. Shall prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council.

The 1979 amendment to NEPA allows federal agencies to identify significant new circumstances or information relevant to environmental concerns, prepare procedures for implementation, to make substantial changes to the proposed action, and consider the bearing on the proposed action or its impact. These four changes are an important foundation to adaptive management.

Adaptive management emerged around the 1970s and quickly became an important management tool for managing the ecological uncertainties, as well as other NEPA management problems.²⁰ This would include the pervasive features of ecological management as suggested by Walter and Hilborn. The Council on Environmental Quality recognized the need for “recycling back” and suggested a predict-mitigate-implement-monitor-adapt model.²¹ In general, the adaptive management can be divided into five major areas:

1. Identify the problem(s) or uncer-

tainties

2. Design a plan to address the problem(s) or uncertainties
3. Implement the plan that includes the collection of data or information
4. Monitor and evaluate the data or information
5. Adjust the plan, if necessary to achieve the data to address the problem or uncertainty.

Canter and Atkinson note that the traditional or “front-end” NEPA model does not account for unanticipated changes in environmental conditions, inaccurate predictions, responses to ecological valued components, or additional information that may affect the original decision.²² Allan and Stanley point out that adaptive management explicitly acknowledges that we often lack sufficient knowledge to act with a full understanding of consequences and implications, and it accepts that our knowledge of appropriate intervention is limited.²³ Allan and Stanley further added that adaptive management elevates the role of monitoring and evaluation beyond the cosmetic and superficial attention often given these activities to a level at which they become the mechanisms through which significant changes in policy and practice in light of outcomes can occur.²⁴ Alternative options that were selected and approved in the “front-end”, do not account for the uncertainties that may arise after the decision, and adaptive management is designed for protecting and improving the greater sage grouse populations and habitats at the “back-end”.

Adaptive management was implemented by some states prior to the decision by the Secretary of the Interior. The State of Nevada and Eastern California incorporated adaptive management into its conservation management plan. The conservation plan states, “We note here that if adaptive management is to be most effective in improving management of sage-grouse and habitats, the ability to learn from a treatment should influence the efficiency of future project planning and implementation and the effectiveness of these projects.”²⁵ Stiver et al. also included adaptive management into their comprehensive conservation strategy for western states.²⁶ Arguments can be made that NEPA does include provisions in the supplemental environmental impact statement to accommodate adaptive management and the “ability to learn from a treatment” is monitoring and research. Monitoring and research is the cornerstone of adaptive management. Without monitoring and research, the conservation plan and its objectives cannot be adjusted for improvements.

Monitoring and the Land Use Census

Monitoring provides important information or data that flows back to management so that management can evaluate its objectives and modify the plan. Monitoring can be considered the feedback loop to the plan. Many of the management conservation plans, as identified in this paper, included a strategy for monitoring and research. Each management conservation plan recognizes the role that monitoring plays in the feedback loop to

the plan. Monitoring is the “ability to learn from a treatment”.

Monitoring needs to include the goals and/or objectives as identified from the conservation management plan. These goals and/or objectives should be clear and concise. For example, the monitoring goal can be to identify greater sage-grouse population and habitat characteristics to determine current trends. Monitoring goals should not be designed to monitor a tangible parameter or “proxy” in lieu of the parameter itself. The United States Forest Service used a “proxy-on-proxy” approach in lieu of sage-grouse population monitoring: it analyzed sagebrush habitat as a proxy for the viability of sage-grouse, which in turn served as a proxy for the viability of sage-grouse, which in turn served as a proxy for the viability of sagebrush-obligate species more generally.²⁷ This approach was appealed by environmental intervenors and arguments were heard at the Ninth Circuit Court. The court found that the Forest Service’s method of measuring the sagebrush habitat is neither reasonably reliable nor accurate.²⁸

USNRC requires uranium recovery facilities to conduct environmental monitoring in compliance with 10 CFR Part 40, Appendix A, Criterion 7. Environmental monitoring must be conducted at least one year prior to major construction to establish baseline data, and continue during operations. USNRC further defines the purpose of environmental monitoring under the guidance of Regulatory Guide 4.14.²⁹ Regulatory Guide 4.14 establishes goals for ensuring compliance with radiation doses to members of the public, ensures

that effluent controls are effective and there is no impact to the environment. Regulatory Guide 4.14 provides specific directions for pre-operational and operational radiological environmental monitoring, and identifies the different types of environmental pathways, such as air, water, soils, sediment, vegetation, fish, food crop, livestock, and direction radiation. It attempts to measure the fate and transport of radionuclides that may be in the environment. Regulatory Guide 4.14 identifies the selection of site sampling locations, frequency of sampling, and type of analysis for each environmental pathway. However, it does not include ecological monitoring as a goal.

USNRC is currently revising Regulatory Guide 4.14 to include an annual land use census survey. The annual land use census survey is a systematic approach to identifying new residences, gardens, ranches, or developments (industrial, commercial, or recreational) that may be occurring within a 5 km area of the site after the startup of the uranium recovery facility. For uranium recovery facilities, USNRC will utilize the annual land use census to identify and assess new residences, gardens, or community developments to determine potential environmental and radiation dose pathways to members of the public consistent with the goals of Regulatory Guide 4.14. The annual land use census can be performed by aerial and/or ground visual inspections. As new receptor points are identified each year, they can be added to the environmental monitoring program. The new receptor points will enhance the probability that all environmental and radiation dose

pathways to members of the public are being identified and assessed. The annual land use census is a plan to be used as a “back-end” feedback loop for environmental monitoring at uranium recovery facilities. In an attempt to be transparent, the USNRC makes available many documents available to the public on ADAMS (Agencywide Documents Access and Management System). Documents that include proprietary or sensitive national security information are not made available to the public. The annual land use census report will be required to be submitted to the USNRC each year and will be available in ADAMS for the public.

As the USNRC continues to receive new applications requesting approval to construct and operate uranium recovery facilities in or near sensitive greater sage-grouse habitat core areas, the annual land use census may prove to be a valuable adaptive management tool for state governments and other important entities monitoring and assessing the cumulative impact, including new operating uranium recovery facilities in sensitive greater sage-grouse core areas. If the demand warrants, the annual land use census could be modified and designed above and beyond its proposed role to include the monitoring of the sagebrush cover, greater sage-grouse leks, greater sage-grouse nests, and greater sage-grouse populations, as well as potential biotic factors, such as, predators, livestock grazing, and invasive species that can have an adverse impact on the greater sage-grouse population and its habitat. It is important to note, that these biotic factors, as

well as abiotic factors (i.e., climate changes) may not necessarily be related to the operations of uranium recovery facilities within a sensitive greater sage-grouse habitat. The annual land use survey could be a valuable adaptive management method for monitoring and identifying environmental and/or anthropogenic changes, and providing timely feedback to the state conservation plans. Thus the publication of the annual land use census reports from each licensee in ADAMS, USNRC will be playing a supporting role for stakeholders and decision makers with respect to the ecological impact of the greater sage-grouse population and habitat near operating uranium recovery facilities.

Conclusion

The annual land use census as proposed for the revised Regulatory Guide 4.14 could provide an opportunity to identify important greater sage-grouse population and habitat monitoring and allow decision makers and stakeholders to examine ecological changes on a site-by-site basis as a function of time, as well as an opportunity to examine the cumulative effects of multiple uranium recovery facilities on the greater sage-grouse population and habitat in sensitive core areas. The information gained from the annual land use census for uranium recovery facilities, as well as other energy-related enterprises, can be used to strengthen state conservation plans.

It is the uncertainties that we should anticipate for the future and make an attempt to understand them, not rest on the certainties of the past. A well designed land use census may

provide valuable information that allows decision-makers to make critical decisions about the effectiveness of state conservation plans and help steer state conservation plans to a productive and harmonious relationship between man and the environment. From our past practices with NEPA, it is how we approach the future that can be summed up by this quote from Doremus, “The essence of science is not objective certainty. It is, instead, a process carefully designed to illuminate the extent and reliability of knowledge about studied systems, and to increase the reliability and extent of that knowledge over the course of time.”³⁰

The annual land use census, if used in a productive and constructive manner, can be an important integrated adaptive management tool that increases the reliability and extent of knowledge over the course of time about the greater sage-grouse population and habitat, and promote productive and enjoyable harmony between man and his environment.

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The Consideration of Impacts from Postulated Accidents in NEPA Reviews

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Summary

In accordance with the National Environmental Policy Act (NEPA), federal agencies completing an Environmental Impact Statement (EIS) for a major federal action will include in that document an evaluation of the potential environmental impacts of the federal action, a discussion of alternatives to the action, and a discussion of mitigating actions that could reduce the potential impacts that have been identified. In general, agencies are not required to include potential impacts that are remote and highly speculative; therefore, most EISs do not include detailed analyses of impacts from postulated severe accidents that could potentially occur as a result of the federal action, if such events are unlikely. However, the Council of Environmental Quality (CEQ) regulations for compliance with NEPA state that ‘reasonably foreseeable’ impacts include those which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason. (40 CFR 1502.22(b))

This capstone paper discusses how agencies have complied with 40 CFR 1502.22, concerning discussions of severe accidents and resulting consequences. This discussion will present some examples of well-known case law and some more recent examples of severe accident discussions in NEPA reviews in order to highlight the challenges that federal agencies and the courts have faced and continue to face as they attempt to

balance rule of reason and the original intent of NEPA with what may seem necessary in order to follow the ‘letter of the law’.

Introduction

From its inception, the goal of the National Environmental Policy Act (NEPA) was simple - to establish a national policy that the Federal Government would conduct its activities with consideration of the general welfare and the environment. However, its simplicity has at times been the source of frustration for many whose professional responsibilities and convictions involve ensuring that an agency's actions are in compliance with this national policy. Few laws have the legislative history as NEPA. From the earliest days of the law, litigation outcomes have been a key driver in shaping how federal agencies structure their regulations and processes for compliance with this policy. One heavily debated (and litigated) area of NEPA involves what was formerly known as "worst case analysis."

Parts 1500 to 1508 of Title 40 of the U.S. Code of Federal Regulations (40 CFR) contain the regulations laid out by the Council of Environmental Quality (CEQ) and are considered the fundamental requirements necessary for agencies to fulfill their NEPA responsibilities. In 40 CFR 1502.22 there is guidance for agencies in addressing adverse impacts when the relevant information is not available. Within that context, CEQ has stated *"For the purposes of this section, 'reasonably foreseeable' includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis*

*of the impacts is supported by credible scientific evidence, is not based on pure conjecture and is within the **rule of reason**.*" (emphasis added)

Regarding unavailable information, the agency is instructed to obtain it if the costs are not exorbitant. Otherwise, the agency must discuss the unavailability of the information, the relevance of the information to evaluating 'reasonably foreseeable' adverse impacts, the existing 'credible' scientific evidence, and then provide an evaluation of the relevant impacts based on generally accepted theoretical or research methods.

The above version of the CEQ regulations was adopted in 1986. The original version of CEQ's regulations (1978) had instructed agencies to "*weigh the need for the action against the risk and severity of possible adverse impacts... and ... if the agency proceeds, it shall include a **worst case analysis** and an indication of the probability or improbability of its occurrence.*" (emphasis added) This language had caused trouble for agencies attempting to proceed with decision making while facing the expectation of possibly limitless scenarios to determine the worst possible case. So while CEQ removed the term "worst case" from the regulations in its rule-making of 1986, agencies are still expected to discuss low probability, high consequence impacts, and that discussion is now governed by the 'rule of reason'.

The method by which agencies have chosen to address these low probability, high consequence events in NEPA has varied not only from agency to agency but also over time within the same agency. This has likely been

the result of a sensitivity to court interpretations of NEPA. It is also likely that external factors have played a role (e.g., events such as the 9/11 terrorist attack, the Deepwater Horizon blowout, and the 2011 nuclear disaster in Japan).

One particular type of low probability, high consequence event, a severe accident, is the primary focus of this paper. Herein, the discussion of severe accidents will include not only events resulting from natural causes, system failures or human error, but also events caused by willful acts that are intended to create a high consequence event (i.e., terrorist activity). It will be argued that while consideration of severe accidents in NEPA can lead to better decision making, this improved decision making can best occur when common sense prevails and the right questions are being posed to the right people in the right forum. It will be proposed that help from CEQ may be in order; clarifications or other improvements in the wording of their regulations could do a better job in guiding agencies, courts and stakeholders to focus on the intended purpose of the regulations and avoid misapplications of the letter of the law.

Warm Springs Dam - Common Sense Prevails

In the much referenced court case *Warm Springs Dam Task Force v. Gribble*, a lawsuit was brought against the US Army Corps of Engineers (Corps) in 1974 arguing that the Environmental Impact Statement (EIS) and its supplement (SEIS) for the Warm Springs Dam in Sonoma County, CA were deficient because they did not present the

“ecological impact that would result if the proposed dam failed.” The dam was located near three faults and the Corps had conducted seismic studies prior to its approval of the project. The plaintiffs presented testimony that the underlying seismic studies performed by the Corps were faulty and that the dam would not be able to withstand the largest potentially conceivable seismic event. The court rejected the plaintiff’s claim because the EIS/SEIS had included an extensive and detailed discussion of the seismic features of the dam and it disagreed with the plaintiff’s expert testimony.

The case later became further complicated by the discovery of new information that the dam would be more vulnerable from a different fault than the one considered in the Corps’ analysis. Further studies by the Corps showed that the new information was bounded by the original analysis. Although this case is often referenced for the court’s decision on the threshold of significance for new information that would trigger a supplement, the findings have further implications for the subject of this discussion.

The Warm Springs Task Force appealed their case to the Ninth Circuit Court of Appeals where they raised four issues to the court: 1) Did the Corps have a duty to obtain USGS written comments prior to filing its final SEIS (due to USGS special expertise on seismic issues of the area)?; 2) Must the SEIS be revised in light of new evidence developed by the USGS concerning the seismic safety of the dam?; 3) Does the SEIS adequately discuss the consequences of surface displacement on the

Dry Creek Fault?; and 4) Must the SEIS include a discussion of the consequences of catastrophic failure of the dam? The court affirmed the lower court’s decision. Although the court’s discussion in its decision concerning the first three issues raised by the plaintiff are of interest for the NEPA practitioner, it is the court’s decision to issue number 4 that is notable here. In 1980, the court found that a discussion of the consequences of dam failure (i.e., a postulated accident scenario) were unnecessary, stating “Everyone recognizes the catastrophic results of the failure of a dam; to detail these results would serve no useful purpose.”

Despite the Ninth Circuit’s common sense application of the rule of reason in the Warm Springs decision, agencies continue to struggle with this portion of the CEQ regulations. It is useful to revisit the struggles that CEQ appeared to have had prior to 1986 as they worked to construct regulations which provided for consideration of high consequence events (severe accidents) in agency decision making, without adding a useless burden to the NEPA analyses with academic ‘what if’ exercises.

Rule of Reason vs. Worst Case Analysis: Significant Improvement in the Regulations or Not?

As mentioned earlier, the 1978 regulatory language of 40 CFR 1502.22 was problematic for agencies and the courts in its tendency to promote endless hypothesis and speculation. In 1983 CEQ proposed guidance regarding the worst case analysis requirement. The draft guidance had suggested an initial

threshold of probability be required before agencies would be expected to analyze the impacts associated with the event in question. This proposal was likewise not well received and CEQ withdrew the proposed guidance. The council subsequently released an Advanced Notice of Proposed Rule-making and held a public meeting. There was strong interest and CEQ received much feedback. CEQ then proposed an amendment to the 1978 regulations and again received numerous comments and strong interest. The final regulations were noticed on April 25, 1986 and relied heavily upon the rule of reason.

The preamble to the 1986 rule-making stated the following: "The 'rule of reason' is basically a judicial device to ensure that common sense and reason are not lost in the rubric of regulation. The rule of reason has been cited in numerous NEPA cases for the proposition that an EIS need not discuss remote and highly speculative consequences. The evaluation of impacts under 1502.22 is an integral part of an EIS and should be treated in the same manner as those impacts normally analyzed in an EIS. The information included in the EIS to fulfill the requirements of 1502.22 is properly a part of the Environmental Consequences section of the EIS." From this discussion, it appears that one premise of the regulation is that a discussion of the impacts from low probability, high consequence events (severe accidents) would almost always improve decision making. The question now, almost thirty years later, is whether or not there is evidence that this is possibly an incorrect premise.

***IT APPEARS THAT ONE
PREMISE OF THE
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CONSEQUENCE EVENTS
(SEVERE ACCIDENTS) WOULD
ALMOST ALWAYS IMPROVE
DECISION MAKING.***

It is conceivable that NEPA practitioners in the late 1980s were hopeful that addressing uncertainty in NEPA would gain consistency in the years following the revision to the CEQ regulations and that a common understanding would emerge. However, a search of the literature from the past 20+ years related to uncertainty in NEPA (and similar search parameters) reveals articles containing a common lament. Federal agencies and the courts continue to address this issue inconsistently. Terms such as "erratic", "ad hoc", and "vexed", along with similar descriptors are common in the literature. Consider for instance the predicament currently faced by the US Nuclear Regulatory Commission (NRC) with regard to whether or not to include in its NEPA reviews an evaluation of the environmental effects from a terrorist attack.

Common Sense Lost?

In 2006 the Ninth Circuit court ruled for the plaintiffs, San Luis Obispo Mothers for

Peace, et al. in their petition for a review of the NRC's order granting a license to Pacific Gas and Electric Company to construct and operate an Independent Spent Fuel Storage Installation (ISFSI). An ISFSI is an installation where the spent fuel from a nuclear reactor is eventually stored, currently at the site of the nuclear facility. The fuel is stored in dry casks which are stainless steel cylinders that are welded shut after loaded with spent fuel rods and then fitted into concrete overpacks which are designed for natural circulation of air. The casks are positioned on a number of concrete pads. The petition claimed, in addition to other contentions, that the NRC violated NEPA by failing to include an evaluation of the environmental effects of a terrorist attack in its Environmental Assessment (EA) for the licensing action. The Ninth Circuit ruled in favor of the petitioners arguing that such an event was not remote and speculative and that NEPA did require such an evaluation be included in the agency's NEPA documentation for this action. In 2009 the Third Circuit Court of Appeals came to a different ruling on a similar petition for review of the NRC's approval to relicense the Oyster Creek Generating Station in New Jersey to allow an additional twenty years of operation. The New Jersey Department of Environmental Protection had requested the court to review the NRC's relicensing decision and presented similar contentions as had been argued on the San Luis Obispo Mothers for Peace v. NRC case. The Third Circuit denied the petition, stating that the NRC had correctly concluded the relicensing of the facility did not have a

'reasonably close causal relationship' with the environmental effects that would be caused in the event of a terrorist attack. The court admitted it was departing from the reasoning of the Ninth Circuit. The Third Circuit, citing example past rulings, argued that no other circuit other than the Ninth Circuit had ruled in favor of a NEPA analysis of the environmental impact of a hypothetical terrorist attack.

The issue certainly has notoriety in the NEPA literature, not simply for the circuit split, but for issues such as the sensitivity of the information that would likely be necessary to disclose potential impacts from a postulated accident caused from malicious intent. There is little that can be presented here that would add to the heavily debated issue of addressing terrorism in NEPA. The above court cases are being presented to further support an argument presented in more depth later in this paper concerning the appropriate considerations for CEQ in a revisit of the wording in 40 CFR 1502.22.

Approval of Natural Gas Pipelines – Common Sense Makes a Comeback

Let us shift gears to situations without the need to fathom events on the scale of a nuclear plant disaster or dam failure (or even the blowout of an offshore drilling operation), but one which has potential for just as much concern from the affected community. Consider the siting of a gas pipeline through a populated area.

The Federal Energy Regulatory Commission (FERC) regulates the interstate transmission of electricity, natural gas, and oil and

licenses hydro-power projects. It oversees environmental matters related to natural gas and hydroelectricity projects. An applicant for a natural gas pipeline project must receive a Certificate of Public Convenience and Need (CPCN) from FERC who balances the public benefits against adverse effects and only approves the project when the benefits outweigh the adverse impacts. However, it is the Department of Transportation (DOT) that is responsible for pipeline safety. The Pipeline Hazardous Materials Safety Administration (PHMSA) under DOT ensures that natural gas facilities are designed, constructed and operated in compliance with safety standards that the agency has established for natural gas pipelines. FERC prepares the NEPA document (EIS) for proposed natural gas pipeline projects and they include an assessment of the project's impact on public safety as part of their EISs.

FERC's guidance manual to sponsors of natural gas pipeline projects (to aid them in preparing the environmental portion of their applications of their environmental reports) includes the requirement of reliability and safety information. A "resource report" is required to address the potential hazard to the public from failure of project components resulting from accidents (e.g., risk of explosion from natural gas pipeline failures, risk of gas migration from storage reservoirs, etc.) The applicant must address natural catastrophes and acts of terrorism. The report is required to present how these events would affect reliability, what procedures and design features would be used to avoid undue hazards

or effects and what measures, including equipment, training and emergency notification procedures would be implemented to protect the public from failure of the project due to accidents or natural catastrophes.

In 2008 FERC issued an EIS for the Mid-continent Express Pipeline Project, a 500 mile gas pipeline (30 to 42 inch diameter) expansion from Texas to Alabama. The EIS presented a nine page discussion on reliability and safety as part of the considerations for the project approval. The section discussed specifics on the DOT safety standards, including discussion on integrity management plans and interactions with Homeland Security on its infrastructure security programs. There was discussion of historical pipeline accident data and the EIS concluded that, despite a slight increase in risk to the nearby public, the available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation.

A 2012 final EIS was issued by FERC for the New-Jersey-New York Expansion Project, an application to construct and operate 20 miles of 30 to 42 inch natural gas pipeline going through Jersey City, NJ and across the Hudson River to Manhattan. The structure of the safety and reliability discussion was similar to the 2008 EIS for the Mid-continent Express Pipeline; however, the depth of the discussion in the 2012 EIS was much greater. The discussion was 25 pages in length and discussed more details of the DOT safety standards, and included more discussion on the applicant's emergency response program and details con-

cerning their coordination with local first responders. The DOT was a cooperating agency on the NY-NJ Expansion Project EIS (they had not been on the Mid-continent EIS). A representative from DOT's PMHSA staff spoke at FERC's public meetings on the DEIS and explained that at the request of FERC, their office had reviewed the DEIS, but indicated it would not be until after the applicant received a CPCN from FERC that DOT would have a role in the project.

It is not certain whether the increase in the depth of the discussion in the 2012 EIS for the NY-NJ pipeline over that presented in the 2008 EIS can be attributed to the locale or to a more increased effort by FERC in general to include more rigor in their NEPA safety discussions. The important point to note in both of these documents is the absence of an inclusion of impacts from a postulated accident for those particular actions. As the Ninth Circuit ruled in its Warm Springs Dam decision back in 1980: "Everyone recognizes the catastrophic results of to detail these results would serve no useful purpose." The discussion in both FERC EISs included details of what was being done, and who was doing it, to prevent any reasonably foreseeable severe accident and what actions would be taken to minimize consequences if such an event occurred. The EIS laid out the critical details at hand, such as which agency was responsible to ensure the safety of the pipeline, where the public would need to go to review those guidelines and which forum to address

grievances if there was indication that the minimum required by DOT would not be enough. Indeed, the EIS stated that the project design would be beyond the DOT standards. The alternatives analysis included the numerous siting scenarios, many of which were considered (and some even adopted along the way) to minimize potential for and impacts from a pipeline accident. Of course, it is unknown whether the effort in siting to minimize potential impacts from an accident would have been done anyway based on usual practices for siting by such industries or siting requirements by DOT, so it cannot be said for certain that the NEPA alternatives analysis drove these early planning decisions. Sometimes NEPA expectations and safety requirements in certain industries overlap. It is also unknown if NEPA was the driving force for the project applicant to over-design in many areas of public concern. The point is that the potential for severe accidents was obviously a key consideration in the planning of this project. Would the effort required to disclose **in the EIS** the impacts from a postulated accident have added any value to this planning process?

What is "better decision making"?

It is generally accepted that the decision making aspect of federal projects go beyond the "go" or "no go" determination made at some critical juncture of project planning. Decisions are made continually through project planning, some of the most important to NEPA being the mitigations to

consider and adopt. The continual admonitions to agencies (and applicants for agency permits) to start NEPA early in the decision process is a demonstration of the spirit of NEPA's intent to avoid additional effort that does not improve the overall collection of decisions associated with that action ("improve" meaning ensuring the appropriate consideration of environmental impacts). In the cases of potential catastrophic consequences (severe accidents) that involve the potential for injury or loss of human life, the safety component of the agency action being contemplated is likely being addressed somewhere outside the NEPA process. In the case of NRC actions, the safety and security of a particular project or other action under contemplation is indeed the main focus of that agency and occurs in the safety review of the proposed action. In the case of FERC approval for a gas pipeline project, the safety aspect belongs to a different agency. The public has an expectation of good decision making for the overall project no matter what agency is responsible for any particular decision associated with an action. The NEPA review is the appropriate place to bring together the total picture of "who is on duty and how they are on duty". If this question is the focus of a potential severe accident discussion in a NEPA review, rather than "how bad can it really get", then perhaps potential gaps in administrative oversight for high risk actions are more readily identified.

Looking at NEPA through this lens, a NEPA practitioner would agree with the decision of the Third Circuit in the N.J. Dep't

of Env't'l Prot. v. NRC case (that NEPA does not dictate inclusion of impacts from a terrorist attack), but not with the argument on which the court based its decision. Rather than complex points of law such as 'reasonably close causal relationship', it can be more simply argued that NEPA would not be served by including the results of a postulated terrorist attack (or any severe accident) on a nuclear facility (or other federal projects or federally permitted projects), as long as the NEPA document included a thorough discussion of the actions being taken to prevent such occurrences, the responsible agency (office) for oversight of these actions and what measures the decision makers took (and what avenues are available to others) to investigate the adequacy of those preventive actions.

Conclusion

Although the simplicity of NEPA has been heralded, CEQ has the burden of taking into account changing attitudes and societal circumstances in the wording of its regulations. The courts have not been helpful in deciphering 40 CFR 1502.22. The "one size fits all" is clearly not working in this case. It is the hope of this author that the pendulum will begin swinging back to the common sense aspect of NEPA that its authors had intended.

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Addressing Greenhouse Gases and Climate Change in NEPA Reviews as a Regulatory Agency

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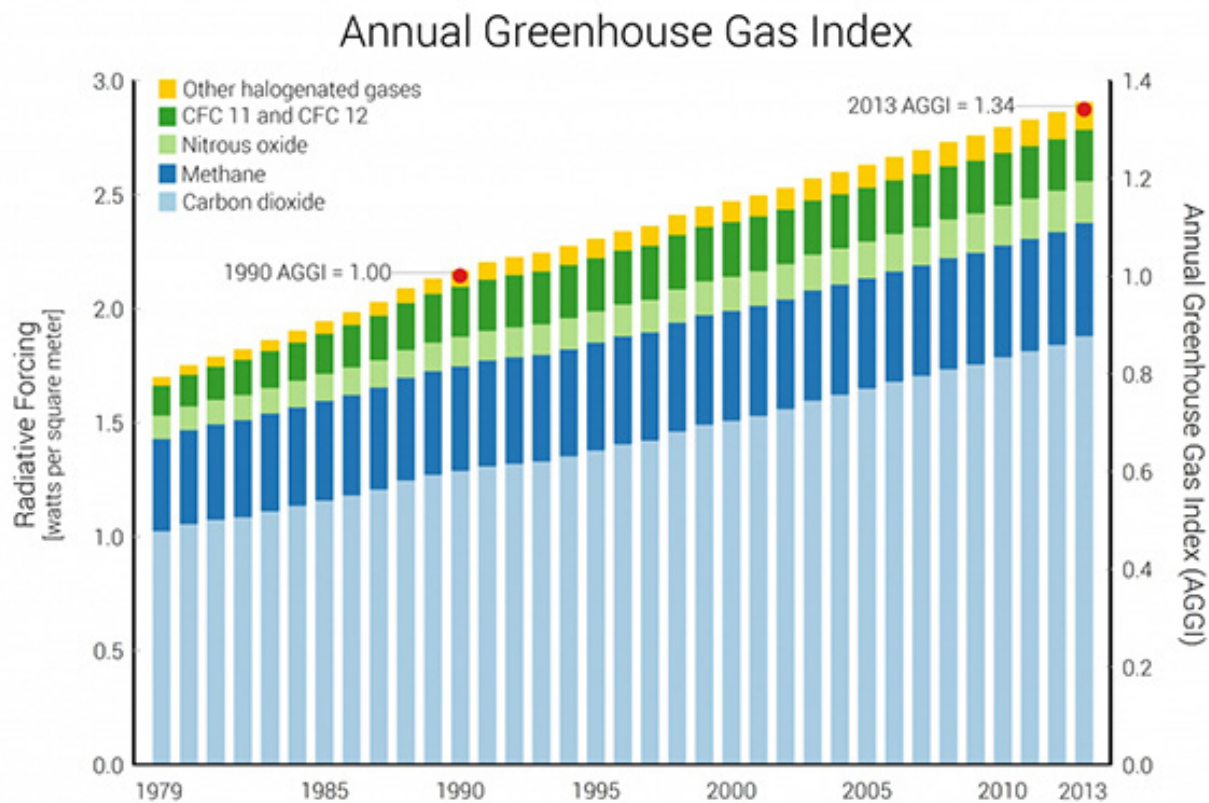
Introduction

The contemporary issues of greenhouse gas (GHG) emissions and climate change impacts have been receiving widespread attention over the last decade. For Federal agencies implementing the National Environmental Policy Act (NEPA)¹, these issues have caused consternation because there has been very little guidance as to how to address these issues within NEPA analyses. In the last few years, training courses have been established to assist agencies in addressing their GHG footprints and climate change impacts. However, there has been little opportunity for Federal agencies to learn from each other about this topic due to different regulatory authorities and the recent emergent nature of this issue in the NEPA landscape. Over the last few years, U.S. Nuclear Regulatory Commission (NRC) staff has worked to address the dual issues of accounting for GHG impacts from a proposed project and the impact of climate change on resources affected by the proposed project. This paper will discuss successes and difficulties encountered by the NRC staff when trying to address these topics in NEPA reviews, what has been gleaned from training courses, Council on Environmental Quality (CEQ) guidance, review of other Federal agency Environmental Impact Statements (EIS), and finally, the frameworks developed specifically to address these topics for new reactor construction and operational emissions.

The NRC conducts NEPA reviews for various actions, including licensing new

nuclear reactors (construction permits and operating licenses under 10 CFR Part 50²; combined licenses, early site permits, and limited work authorizations under 10 CFR Part 5²³), authorizing license renewals of existing reactors (10 CFR Part 54⁴), and licensing fuel cycle facilities (such as uranium enrichment facilities; 10 CFR Parts 30⁵, 40⁶, and 70⁷). In 2009, two NRC Atomic Safety Licensing Boards referred rulings on GHG emissions and climate change to the Commission^{viii}. The Atomic Safety Licensing Boards suggested that the Commission may want to consider the “... potential generic significance of the issue ...” of GHG emissions and climate change. The Commission provided guidance to the staff on addressing GHG issues in environmental reviews in CLI-09-21⁸. After this Commission direction, NRC staff began to formalize the approach to addressing these issues in environmental reviews under NEPA.

Guidance from CEQ^{ix} directs agencies to consider GHG and climate change impacts in their environmental reviews. With the purpose of informing decision-making, CEQ proposes in its 2010 draft NEPA guidance⁹ on “Consideration of the Effects of Climate Change and Greenhouse Gas Emissions” that the NEPA process should incorporate consideration of both the impact of an agency action on the environment through the mechanism of GHG emissions and the impact of changing climate on that agency action. CEQ recommends that GHG emissions can be used as a “proxy” for assessing climate change impact⁶. After this guidance was issued, agencies began incorporating GHG emissions into their NEPA



reviews but continue to struggle with addressing climate change impacts on a project's resources.

GHG Impacts from The Proposed Project

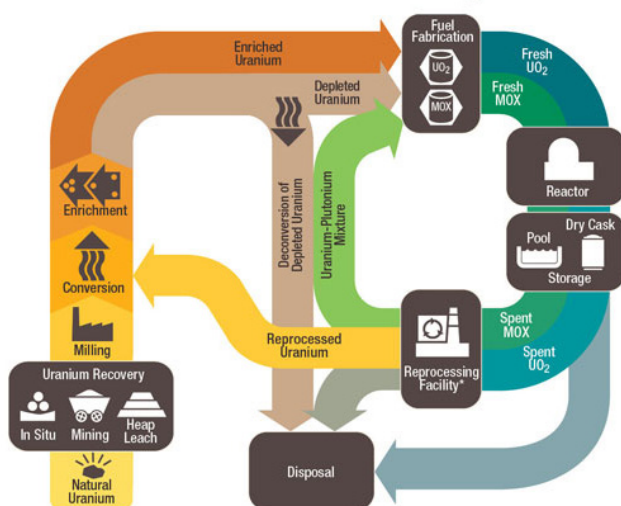
The Duke University course, Climate Change Under NEPA, and The Shipley Group course, NEPA Climate Change Analysis and Documentation, both discussed ways to address GHG emissions from a proposed project. Several methods were presented between the two courses. This material was used to inform the framework that NRC staff decided to develop to address the issue for construction and operation of new nuclear power plants. The NRC staff approach was also informed by the CEQ guidance⁹.

The NRC Staff considers the emission

of CO₂ and other GHGs as an important air quality issue consistent with CEQ's guidance; i.e., "[T]his is not intended as a 'new' component of NEPA analysis, but rather as a potentially important factor to be considered within the existing NEPA framework." Consequently, discussions related to the consequences of CO₂ and other GHG emissions are included within the context of air quality issues in the EISs rather than in a separate section.

The NRC staff saw the need to address GHG emissions and decided to do so generically in such a way that the emissions could be scaled to the number of nuclear power plants being built. Efficiency is gained by creating the generic GHG footprint because it is created one time and then applied to all EIS for new reactor construction and operation. GHG emissions from various phases of construction

The Nuclear Fuel Cycle



and operation of a nuclear power plant should not differ significantly from site to site. This generic approach is similar to the approach the staff currently takes in addressing uranium fuel cycle impacts for each new nuclear power plant. As part of the NRC's regulations in 10 CFR 51.51¹⁰, Table S-3, Table of Uranium Fuel Cycle Environmental Data, provides the NRC a framework for assessing the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low-level wastes and high-level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power plant. This table is used to address impacts from the uranium fuel cycle as part of the proposed action in the EIS. The impacts in Table S-3¹⁰ are for a generic 1000-MW(e) reactor and can be scaled to reactor size and number of units being built. The staff took a similar approach in creating

the GHG footprint; the footprint was created for a generic 1000-MW(e) nuclear power plant and its resultant emissions could be scaled to reactor size.

Uranium Fuel Cycle

Table S-3 in 10 CFR 51.51¹⁰ did not consider GHG emissions explicitly. However, the staff used the annual electrical energy and process heat needs and the amount of fossil fuels consumed to generate the necessary electrical power and process heat to estimate the annual GHG emissions associated with the uranium fuel cycle. According to Table S-3¹⁰, the annual fossil fuel use required to support the uranium fuel cycle for a reference 1000 MW(e) reactor includes 118,000 metric tons (MT) of coal to generate 323,000 MWh of electrical energy and 135,000,000 standard cubic feet (scf) of natural gas to generate process heat. The staff estimated the GHG emissions from these two fossil fuel sources to comprise the total GHG emission from the uranium fuel cycle for a nuclear power plant, 10,500,000 MT CO₂ equivalent.

Construction

The construction emissions were estimated based on estimates submitted by an applicant. Federal actions in non-attainment or maintenance areas designated under 40 CFR Part 81¹¹ require a general conformity applicability analysis to determine whether emissions from the proposed action would conform to an applicable implementation plan. The General Conformity Rule (40 CFR Part 93, Subpart B¹²) ensures that Federal

Table A11.4 | Aggregated results of literature review of LCAs of GHG emissions from electricity generation technologies as displayed in Figure 9.8 (g CO₂eq/kWh)

Values	Biopower	Solar		Geothermal Energy	Hydropower	Ocean Energy	Wind Energy	Nuclear Energy	Natural Gas	Oil	Coal
		PV	CSP								
Minimum	-633	5	7	6	0	2	2	1	290	510	675
25th percentile	18	29	14	20	3	6	8	8	422	722	877
50th percentile	37	46	22	45	4	8	12	16	469	840	1001
75th percentile	75	80	32	57	7	9	20	45	548	907	1130
Maximum	360	217	89	79	43	23	81	220	930	1170	1689
CCS min	-1368								65		98
CCS max	-594								245		396

Note: CCS = Carbon dioxide capture and storage, PV = Photovoltaic, CSP = Concentrating solar power.

actions do not interfere with a state's plans to bring an area into attainment with National Ambient Air Quality Standards or any applicable State Implementation Plan or Tribal Implementation Plan. As part of a general air conformity review, an applicant submitted estimates of construction and operation emissions. After review and comparison with other submittals for similar projects, the estimate was found to be appropriately conservative and representative of building activities.

Operations

The main source of GHG emissions during operations are the diesel generators used for backup power at an operating nuclear power plant. The NRC staff estimated GHG emissions related to plant operations from typical usage of various diesel generators on-site, as obtained from several applicants for new nuclear power plants. The estimate included emissions from four emergency diesel generators and two station blackout diesel generators, both operating intermittently throughout the year^{xiv}.

Decommissioning

The estimate of decommissioning emissions posed a challenge for staff. A nuclear power plant decommissioning EIS hasn't been issued in over a decade, and at that time, GHG emissions weren't being addressed in EIS or reported by nuclear power plant licensees. The NRC staff developed a generic EIS for decommissioning, *Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Supplement 1 (NUREG-0586)*¹³ in 2002, but that generic EIS doesn't quantitatively address air quality or GHG emissions. There is a lack of recent data for decommissioning U.S. nuclear power plants. Therefore, an estimate of decommissioning emissions of one half those of construction was used¹⁴. This value may be large for decommissioning however, the entire lifecycle footprint is dominated by uranium fuel cycle emissions and as such a change in decommissioning emissions would not greatly impact the overall lifecycle GHG emissions estimate.

The result of these four phases of a nuclear power plant lifecycle was a total GHG emission footprint of approximately

10,500,000 MT CO₂ equivalent for the reference 1000-MW(e) nuclear plant. This value can then be scaled to larger reactor sizes to come up with an appropriate GHG footprint for each proposed nuclear power plant EIS.

The GHG emissions footprint developed is considered by NRC staff as a conservative estimate of emissions for several reasons. As discussed in NRC's staff guidance to support *Interim Staff Guidance-026 (ISG-026), Staff Guidance for Greenhouse Gas and Climate Change Impacts for New Reactor Environmental Impact Statements*¹⁴, the largest use of electricity in the fuel cycle comes from the enrichment process. The development of Table S-3¹⁰ assumed that the gaseous diffusion process is used to enrich uranium. Recent applications for new uranium enrichment facilities indicate that gas centrifuge and laser separation technologies are likely to eventually replace gaseous diffusion technology for uranium enrichment in the United States. The same amount of enrichment from gas centrifuge and laser separation facilities is likely to use significantly less electricity and therefore result in lower amounts of air emissions such as CO₂ than a gaseous diffusion facility. In addition, U.S. electric utilities have begun to switch from coal to cheaper, cleaner-burning natural gas, therefore the Table S-3 assumption that a 45-MW(e) coal-fired plant is used to generate the 323,000 MW-hour of annual electric energy for the uranium fuel cycle also results in conservative air emission estimates. Therefore, the values for electricity use and air emissions in Table S-3¹⁰ continue to be appropriately bounding values for a new nuclear

power plant.

As a way to benchmark the GHG footprint, the lifecycle value was compared to other available GHG footprints for nuclear power plants. The Intergovernmental Panel on Climate Change (IPCC) released a special report on renewable energy sources and climate change mitigation in 2012¹⁴. The IPCC report includes an assessment of previously published works on lifecycle GHG emissions from various electric generation technologies, including nuclear energy. The IPCC-screened estimates of the lifecycle GHG emissions associated with nuclear energy, as shown in Table A.II.4 of the report^{xv}, ranged more than two orders of magnitude, from 1 to 220 grams (g) of CO₂ equivalent per kWh, with 25 percentile, 50 percentile, and 75 percentile values of 8 g CO₂eq/kWh, 16 g CO₂eq/kWh, and 45 g CO₂eq/kWh, respectively. The range of the IPCC estimates is due, in part, to assumptions regarding the type of enrichment technology employed, how the electricity used for enrichment is generated, the grade of mined uranium ore, the degree of processing and enrichment required, and the assumed operating lifetime of a nuclear power plant. The NRC staff's lifecycle GHG estimate of approximately 10,500,000 MT CO₂ eq for a 1000 MWe nuclear plant is equal to about 37.5 g CO₂eq/kWh, which falls between the 50 and 75 percentile values of the IPCC-screened estimates. The NRC staff found this reasonable.

The complete GHG lifecycle footprint was finalized and made public in September 2013. The NRC staff issued the ISG-026, *Staff Guidance for Greenhouse Gas and Climate*

*Change Impacts for New Reactor Environmental Impact Statements*¹⁴, which contains the GHG footprint. The draft ISG-026 was released for public comment in September 2013 and will be finalized in 2014.

Because GHG emissions are not particularly sensitive to the location of the release point and are long lived and travel long distances, the impact from GHG emissions is global rather than local and should be viewed in a global context. From the CEQ guidance, “Because climate change is a global problem that results from global GHG emissions, there are more sources and actions emitting GHGs (in terms of both absolute numbers and types) than are typically encountered when evaluating the emissions of other pollutants...The global climate change problem is much more the result of numerous and varied sources, each of which might seem to make a relatively small addition to global atmospheric GHG concentrations. CEQ proposes to recommend that environmental documents reflect this global context...”. However, it is difficult to put emissions into context when comparing a project’s emissions to the global or even U.S. annual emissions because invariably a single project’s emissions would be small. The Duke University Environmental Leadership course, *Climate Change Under NEPA*, suggests different ways to put emissions into context. The course material suggests comparing a project’s emissions to those of the state where the action is proposed, or comparing emissions to the region. The NRC staff has considered these approaches and used them in recent EIS, and where data is available, staff has even com-

pared project emissions to the subset of GHG emissions from energy production in the state where the proposed action is located. By putting these emissions into context, the public and decision makers can view the emissions from the proposed project alongside emissions for the area surrounding the project in order to determine the real impacts from the proposed project. Additionally, based on the information from the Duke University Environmental Leadership course, NRC new reactor EIS include a table of GHG emissions from various sources, including the proposed nuclear power plant, in order to put emissions into context for the reviewer. The following table is an example from a recent NRC EIS:

Source	Metric Tons per Year ^(a)
Global Emissions from Fossil Fuel Combustion (2010)	32,000,000,000
U.S. Emissions from Fossil Fuel Combustion (2011)	5,300,000,000
Pennsylvania Emissions from Power Production (2012)	107,000,000
1,000-MW(e) Nuclear Power Plant (including fuel cycle, 80percent capacity factor)	260,000
1,000-MW(e) Nuclear Power Plant (operations only)	4,500
Average U.S. Home	19
Average U.S. Passenger Vehicle	5

Note: 1 metric ton (MT) = 1.1 U.S. tons (at 2,000 lb per U.S. ton)

(a) Emission estimates from U.S. fossil fuel combustion, Pennsylvania power production, and nuclear power are in units of MT per year of CO₂ equivalent (eq) whereas the other energy emissions estimates are in units of MT per year of CO₂. If the emissions in units of MT per year of CO₂(eq) were represented in MT per year of CO₂, the value would be slightly less, as other GHG emissions would not be included.

After receiving public comments on several EIS regarding GHG emissions from various energy sources, the NRC staff has considered further approaches to putting emissions into context for the public. Recent NRC EIS for new reactor construction and operation now compare emissions from the proposed project (nuclear power plant) to those from competitive energy alternatives

(coal and natural gas). Those competitive energy alternatives would be capable of providing baseload power, which is typically the purpose and need for the proposed project. An example of this comparison from a recent EIS is below:

Table 9-5. Comparison of Carbon Dioxide Emissions for Energy Alternatives

Generation Type	Years	CO ₂ Emissions (metric tons) ^(a)
Nuclear Power ^(b)	40	362,000
Coal-Fired Generation ^(c)	40	556,000,000
Natural-Gas-Fired Generation ^(d)	40	255,000,000
Combination of Alternatives ^(e)	40	282,000,000

(a) Nuclear power emissions are in units of metric tons of CO₂ equivalent, whereas the other energy alternatives emissions estimates are in units of metric tons of CO₂. If nuclear power emissions were represented in metric tons of CO₂, the value would be slightly less, because the other greenhouse gas emissions would not be included.

(b) From Section 5.7.1.2 for two units operational emissions, not including CO₂ emissions for workforce transportation.

(c) From Section 9.2.3.1.

(d) From Section 9.2.3.2.

(e) From Section 9.2.4.

This table has proven useful in answering many questions from the public. The information from the Duke University Environmental Leadership course has proven helpful in shaping these methods of conveying GHG impacts from construction and operation of a nuclear power plant.

Climate Change Impacts on The Proposed Project Resources

It has been particularly difficult to address the second aspect of climate change in the CEQix memo, the impact of climate change on the project resources. There are very few examples of this in Federal agency EIS, and there is little guidance as to how to implement this. After considering information discussed in the Duke Environmental Leadership course and The Shipley Group course, the

NRC staff has decided to address the impacts of climate change on the project by addressing the climate change impact on a particular resource and overlay those impacts with the project's impact on that resource. In this way, the dual impacts of the project and climate change on a resource are addressed. There has been much internal discussion as to how to portray climate change's impacts with the proposed project's impacts. For example, what if sea level will be rising at a project location, and therefore increasing the water availability in an area such that the impact of water withdrawal for power plant operation is actually less than it would have been without climate change-induced sea level rise? Does the environmental impact on water availability actually decrease due to climate change? How would we accurately represent these two dynamics in the EIS?

To develop an approach to address climate change impacts on a project's resources, the NRC staff began to look for examples of how climate change was addressed by other federal agencies. The EPA's EIS database allows review of Federal agency EIS that have been submitted to EPA in accordance with Section 309 of the Clean Air Act. Several examples from the U.S. Army Corps of Engineers (Corps) proved useful in shaping NRC staff guidance.

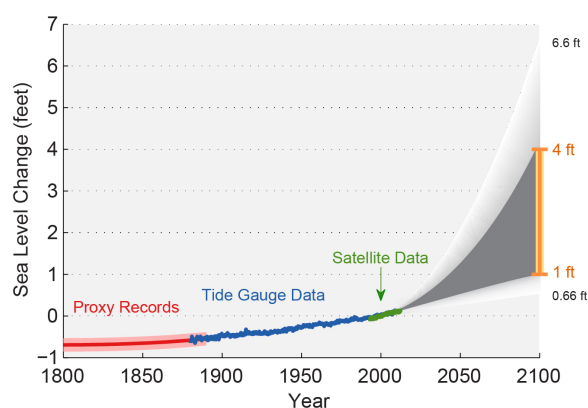
In the Central Everglades Planning Project (CEPP) EIS¹⁶, the Corps addressed sea level rise (SLR) in an Appendix to the EIS. The Corps has separate guidance for 'evaluating the effects of sea level rise under multiple scenarios'¹⁷. The Corps planning guidance (EC

1165-2-211)¹⁸ recommended an analysis of SLR at low, intermediate and high levels at 20, 50, and 100 years following the completion of project construction. In this CEPP EIS¹⁸, the Corps discussed the historic SLR and then calculated future SLR for the low, intermediate and high scenarios at 5 year intervals per EC 1165-2-212 guidance¹⁷. Consistent with the CEQ guidance⁹, the EIS appendix contained an uncertainty discussion. The CEPP EIS says *“Scientific unknowns also present a significant source of uncertainty in the effects and timing of impacts from SLR. It is unclear how quickly and successfully natural area habitat and species can transition or adapt to the range of potential future conditions anticipated due to ongoing and accelerating global climate change. This analysis assumed that estuarine habitat quantity remained unchanged as sea level increases.”* In this way, the Corps acknowledges the uncertainty of SLR projections and acknowledges that it is unknown how resources could be affected due to this uncertainty.

The Corps then makes an assumption regarding a particular resource for purposes of analysis in order to reveal the impacts of the proposed project along with SLR. The EIS appendix contains a conclusion that recaps the three SLR scenarios but does not choose a particular SLR scenario for the future. The Corps discusses the biggest uncertainties with the various projections. This EIS proved valuable in that it provided an example of the extent to which an agency must address the changing climate in an EIS. Agencies find it difficult to definitely state the likely outcome of climate change on a resource; this EIS

avoids that issue by revealing several possible outcomes and addressing uncertainties of each outcome, consistent with CEQ guidance. From the CEQ guidance^{ix}, “Where agencies consider climate change modeling to be applicable to their NEPA analysis, agencies should consider the uncertainties associated with long-term projections from global and regional climate change models. There are limitations and variability in the capacity of climate models to reliably project potential changes at the regional, local, or project level, so agencies should disclose these limitations in explaining the extent to which they rely on particular studies or projections.”

Past and Projected Changes in Global Sea Level



Changes in Global Sea Level

In the Corps’ Tarmac King Road Limestone Mine Final EIS¹⁸, the Corps discussed SLR in the affected environment section, as was suggested in the Duke Environmental Leadership course, Climate Change Under NEPA, and in the article *“NEPA and Climate Change, Part 2: Ten Steps to Taking a Hard Look”*¹⁹ under Step 3, “Describe the existing global, regional, and applicable local context in which climate change impacts are occurring

and are expected to continue. This discussion could occur in a separate climate change section of the document but would likely be more effective woven into the description of each resource being analyzed in detail in the NEPA document.” In this EIS¹⁸, the Corps continues to rely on its guidance⁹, and interestingly, suggests an adaptive management approach. An excerpt from the affected environment section of the EIS¹⁸ states:

“The high degree of uncertainty in the sea-level change predictions is evident in the differences in projected shorelines for the low, intermediate, and high scenarios. This makes it problematic to incorporate the predictions into planning and/or configuration of the mitigation areas for the project. Relying on the worst-case predictions could be overly conservative and eliminate viable, valuable, and potentially long-lasting habitat improvements in the proposed mitigation area. Overlap of the predicted shoreline with the westernmost edge of the mitigation area is not predicted to occur under any of the sea level change scenarios until the 50-year project timeframe (for the high or worst-case scenario only in this timeframe). Additionally, the predicted shoreline would not overlap with the mitigation area boundary at all for the low sea-level rise scenario for any timeframe up to and including 100 years, and for the intermediate sea-level rise scenario would only result in slight overlap with

the western boundary of the mitigation area in the 100-year timeframe. This means that it would be suitable to consider an adaptive management approach to sequential implementation of the mitigation plan. Such an approach would consist of adjusting sea-level rise predictions through time based on the most current data and reevaluating the potential for impacts on the mitigation area.”[emphasis added]

The mitigation chapter of the EIS¹⁸ says

*“The predicted sea-level rise would begin to encroach on the western part of the mitigation site in 25 to 50 years for the worst-case scenario. For the medium-case scenario, encroachment would not begin until sometime after 50 years but before 75 years. The predicted sea-level rise is an event influenced by factors unrelated to the proposed mining. In addition, the methodology for calculating the potential sea level rise is still in debate within the scientific community and published results vary widely. However, depending on the alternative selected and the length of any mining permit, if issued, **areas within the mitigation parcel that are expected to become inundated during the period evaluated for a permit would either be assessed for removal from the mitigation plan, have reduced***

mitigative value if included, or be otherwise addressed through special permit provisions imposed by the USACE.” [emphasis added]

The Corps’ approach to adaptive management and mitigation are very different than those at NRC based on the different level of authority granted to each Agency per each Agency’s implementing regulations.

This mitigation and adaptive management approach for impacts of climate change raised the question as to how NRC could implement adaptive management, NRC being an agency with limited regulatory authority regarding mitigation. These different levels of authority between agencies can be confusing to the public. In fact, as discussed in *Climate Change Under NEPA: Avoiding Cursory Consideration of Greenhouse Gases*²⁰, it appears to the public that many agencies are doing the minimum work to meet NEPA obligations, and therefore are not discussing project alternatives to reduce GHG emissions or mitigation. Even though it may appear this way to the public, this is not always the case. As a regulatory agency, the issue of imposing mitigation on an applicant for environmental impacts has proved challenging for NRC.

The NRC is a regulatory agency with oversight and licensing authority under the Atomic Energy Act of 1954²¹. The NRC does not have regulatory authority under the Atomic Energy Act²¹ to determine where a facility should be built, but rather makes a determination on whether the proposed site is safe for construction and operation of a facility. Unlike other Federal agencies, the

NRC cannot point an applicant to an alternative site and provide a license for that alternative location but can only approve or disapprove the applicant’s request to build at the proposed site. In many cases, mitigation for environmental impacts cannot be imposed by NRC on an applicant unless the mitigation is required by another regulation that the NRC must follow, such as the Clean Air Act or the Endangered Species Act of 1973. Due to this limitation, NRC staff has ended the EIS discussion at revealing the impacts of the action, rather than requiring mitigation to reduce the impacts as other agencies may do, or for the case of SLR due to climate change, requiring an applicant to build a facility in a location less susceptible to SLR.

However, NRC does have authority to address issues for operating nuclear power plants through ongoing licensing design basis reviews under 10 CFR Part 50². As part of its oversight authority, the NRC can issue orders to licensees or develop new or amended regulations to address emerging issues that could impact the safety of a nuclear power plant. For instance, orders²² were issued in response to the March 2011 earthquake and tsunami at the Fukushima Dai-ichi nuclear power plant. In March 2012, the NRC issued a request for information²² to all U.S. nuclear power plants asking licensees to (1) conduct visual inspections to identify and address plant-specific vulnerabilities and verify the adequacies of monitoring and maintenance procedures; and (2) reevaluate the flooding hazards at the plants against present-day NRC requirements and guidance

to ensure that the plants are designed, operated, and maintained in such a manner that safety-significant structures, systems, and components are able to withstand the effects of floods. In addition to requiring licensees to reevaluate and upgrade as necessary the design basis flooding protection of systems, structures, and components important to safety, the NRC will use the information collected to determine whether further regulatory action is needed (e.g., confirm flooding hazards every 10 years; address any new and significant information; and, if necessary, update the design basis for systems, structures, and components important to safety).

Weighing information from the two Corps' EISs discussed above, the CEQ guidance, and the training courses, the NRC staff began to develop an approach to addressing impacts of climate change on project resources. In order to systematically address the impacts of climate change on a particular resource, the NRC staff has taken a more structured approach rather than simply directing authors to reference the latest U.S. Global Change Research Program (GCRP) report²³. The latter approach led to varying levels of discussion of climate change impacts depending on a section author. The structured approach the staff is currently developing allows authors to systematically review climate change indicators in the GCRP report²³ to make sure climate change indicators on a resource were considered at a particular site. There is great uncertainty associated with climate change impacts, as discussed in the CEQ guidance; it is difficult to emphatically

say that a certain changed climate scenario will be realized in the future. Because of this, staff thought it better to be broad in coverage but limited in depth. The structured approach involves regional impacts from the GCRP report^{xxiii} overlaid with aspects of environmental review. The NRC's Environmental Standard Review Plan (ESRP)²⁴, NUREG-1555, that directs the staff's assessment of potential impacts of the proposed action on the environment. Each area of the environmental review is evaluated to determine if climate change indicators from the 2014 GCRP regional assessment would change the environmental impact on the resource from the proposed project. The areas of greatest concern for the proposed project would be the areas receiving the most attention from the structured approach analysis. This is consistent with CEQ guidance⁹, "The focus of this analysis should be on the aspects of the environment that are affected by the proposed action and the significance of climate change for those aspects of the affected environment. Agencies should consider the specific effects of the proposed action (including the proposed action's effect on the vulnerability of affected ecosystems), the nexus of those effects with projected climate change effects on the same aspects of our environment, and the implications for the environment to adapt to the projected effects of climate change."

The staff created a large two-dimensional table by identifying plausible nexus among nuclear power station resource area issues relating to construction and operation as identified in NRC's ESRP (NUREG-1555)¹⁴

and likely climate change impacts as identified in the most recent impact report issued by the GCRP²³. For example, one climate change indicator in GCRP's 2014²³ report is declining Arctic sea ice. Based on the location of proposed new nuclear power plants and operating nuclear power plants, declining Arctic sea ice should not definitively be linked to a change in the climate near a nuclear power plant. Therefore, that nexus point was removed from the overall table. Another climate change indicator, changing precipitation patterns, may have an impact on various resources affected by a new nuclear power plant, such as water availability or effluent releases to receiving bodies of water. This would be one nexus area that staff would then evaluate as part of the climate change analysis.

The comprehensive table was used to develop a list of questions for each resource area (land use, ecology, hydrology) to assist staff in addressing whether GCRP-identified climate change impacts were likely to increase, decrease, or leave unchanged the assessed impact of a proposed facility on the environment, or to identify areas where scientific uncertainty precludes a definitive assessment. If, at a particular site, the EIS reveals that water availability is being decreased by plant operation and causing a moderate impact, the staff then needs to ask how would a change in precipitation alter that finding? The GCRP report²³ regional subsections are taken into account here for the area where the proposed project is located. Perhaps the projected climate change impact is that precipitation may be decreasing in the region

where the proposed project is located causing periods of drought. How does the expected decrease in precipitation due to climate change alter the impact on water availability, as water availability is expected to decrease due to plant operation? Would the moderate impact become more significant once the climate change impact (decreased precipitation) is accounted for?

These nexus points and resultant questions would be answered by NRC staff in several sentences. The reasoning developed by the staff would then feed into a climate change appendix, organized by resource area (land use, ecology, hydrology), and each resource area would contain a summary conclusion at the end. The concluding statement would answer the question, "Does an altered baseline due to climate change affect the assessed impact of the plant on the environment?"

This approach will first be applied for a proposed nuclear power plant that is highly susceptible to the impacts of climate change due to its location in southeast Florida, in Miami-Dade County. According to GCRP²³, global sea level is projected to rise 1 to 4 feet this century, and major cities like Miami are among those most at risk of flooding due to sea level rise.

Additionally, due to the different nature of licensing activities performed by NRC and the evolving topic of climate change, the staff has formed a GHG and climate change working group, thus allowing different offices within NRC to coordinate and maintain awareness of addressing these issues in

environmental reviews.

The information gleaned from training courses through Duke University's Environmental Leadership program and from other agency EIS, along with the draft CEQ guidance⁹, has proven invaluable in shaping NRC's current approach to addressing GHG and climate change for new reactor NEPA reviews. With the changing environment and expected revelation of new information in the future, the NRC staff is better prepared to adjust to changing guidance and regulations and new scientific developments due to the efforts undertaken to create this structured approach over the last several years. Collaboration with other Federal agencies would further enhance these efforts and optimally lead to a culture of information sharing on these evolving topics for those tasked with conducting NEPA reviews.

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Section THREE

Public and Tribal Consultation

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Facilitation of Stakeholder Input in the National Environmental Policy Act Process

By
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Rockville MD
October 2014

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Introduction

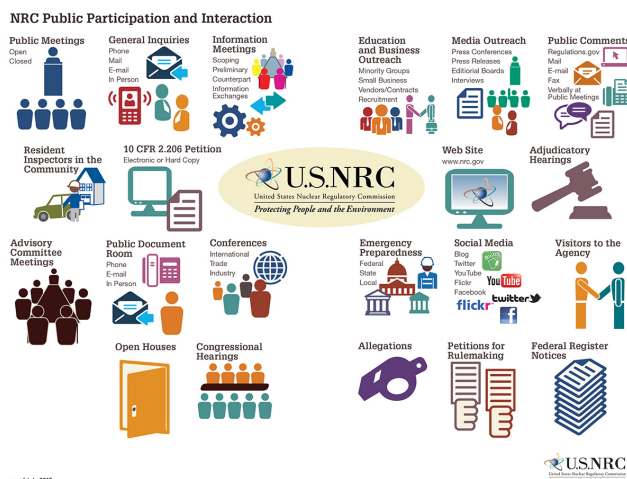
When the Federal government undertakes an action they are required by law to comply with the National Environmental Policy Act of 1969, as amended, (NEPA). Actions include new and continuing activities that tend to fall into one of the following categories: 1. Adoption of official policy, 2. Adoption of formal plans, 3. Adoption of programs, 4. Approval of specific projects.¹ Prior to approving an action and to comply with NEPA the government must complete an assessment of the actions environmental impacts. Regulation for implementing NEPA is provided in the Council on Environmental Quality's (CEQ's) regulations in the Code of Federal Regulations (CFR), Title 40, Part 1500. There are two major purposes for completing a NEPA review; those are to make better informed decisions, and to involve the potentially affected parties, or Stakeholders:

40CFR1500.1(c) states that "The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment."

40 CFR 1500.2(d) states that Federal agencies shall to the fullest extent possible "Encourage and facilitate public involvement in decisions which affect the quality of the human environment."

The Federal agency principally responsible for approving the action (lead agency) must evaluate the action or project

and determine the most appropriate method to document their assessment. Commonly written documents are Categorical Exclusions (CATX), Environmental Assessments (EA), Environmental Impact Statements (EIS), and Generic Environmental Impact Statements (GEIS). Table 1 provides a brief definition of each of these documents. The choice of documentation depends on many project factors including; scope of the project, complexity, potential impacts, and public interest.



If an action does not fit into a CATX than an EA can help determine if the subject action can reach a Finding of No Significant Action (FONSI) or if there is a significant impact that an EIS or GEIS will need to be written. Not all actions will require scoping, public outreach or consultation with other Federal agencies, tribes, or other stakeholders. That is not to say that the decision making would not benefit from this input but that the law does not require this outreach and communication with the various stakeholders.

Stakeholders often have a better understanding of the expected impacts to the

surrounding area, particularly if they live near the project or have ancestors who had lived in the area. In most cases the lead agency is physically and emotionally removed from the area, lacking any connection to the site other than the action before them and therefore may not be fully aware of its impact. The proposed project may change the local population's traditionally or culturally significant activities or have unwelcome visual and physical impacts to the area. Therefore this local knowledge can help the lead agency make a better decision.

As part of the NEPA process the lead agency needs to identify interested stakeholders and communicate with them regarding the action. This can be accomplished by reaching out to individuals and groups in the project region and by contacting parties identified during other undertakings similar in scope and/or geography. The lead agency's understanding of the project impacts will greatly benefit from performing a full and thorough outreach. Stakeholders who are located in the project's region of influence will have a personal stake in the outcome of the action before the federal agency. The stakeholders will also have intimate knowledge of the community and have useful input to the decision making process. Thus it is critical that the lead agency communicate effectively. Effective communication occurs through both speaking and listening. Often we are so worried about what we have to say that we forget to listen! An Irish proverb said "God gave us two ears and one mouth, so we ought to listen twice as much as we speak." This back and

forth, speak and listen, is a vital part of effective communication. Equally important is the ability to connect with the stakeholders. You may be an expert in your field but if you do not know how to connect with your audience, little will be communicated. There are many techniques that can be employed to facilitate more effective communication. This paper will examine some methods and techniques that can enhance the effectiveness of your communication, specifically during the NEPA process.

Discussion

Stakeholders take many forms including; members of the public (both individuals and groups), business owners, Non-Governmental Organizations (NGO's), and/or local, state and federal governments. Throughout this document they will generally be referred to as stakeholders. Communication with stakeholders during the NEPA process is critical to fulfilling the intent of NEPA and for gaining sufficient knowledge to make the best decision regarding the action. Outreach to stakeholders can be accomplished in many ways, for instance; letters, phone calls, face to face meetings, and teleconferences. Each of these methods offers both benefits and challenges to accomplish the goals of NEPA

Often a letter is the first communication from the lead agency. This letter will briefly explain the project and request the recipient provide any information they have regarding the project area. This initial letter may also offer an opportunity to consult on the project. Some stakeholders will be known to you from other similar or related projects

and you may therefore have their contact information. For government or other stakeholders whose contact information is unknown the internet is a great resource for finding names and addresses. When sending a letter it is often hard to determine if your letter made it to the intended recipient. To help verify that the intended recipient is still located at the address one can use a certified letter. If the letter cannot be signed for it is returned to the sender. The returned letter serves as an alert to the sender that the stakeholder will need to be reached by another means. Some recipients may not respond to this letter, due to lack of interest or lack of time to work on the project. For those who indicate a desire for further project details or with a desire to consult, additional communication should occur.

Although additional letters can be sent at this point, a phone call can be a more effective means to begin the relationship building, which is important for clear and effective communications. During the call it is important to listen to the interests and concerns of the individual and their organization. Determine their level of understanding and familiarity with any of the technical aspects of the proposed project. Take notes that you can refer to later or use to develop information slides for a future webinar or face to face meeting. In some instances it may take many phone calls to answer questions and concerns and create the necessary rapport to foster an effective working relationship.

If there are a large number of stakeholders wanting to participate and individual

calls are not possible hosting a conference call/webinar type meeting can be useful.

During this type of meeting, details of the project can be shared with many individuals, limiting travel expense for the participants. Some individuals will gather enough information during these sessions to satisfy their interest. These types of time and financial efficiencies should be promoted as long as they do not sacrifice quality and effectiveness of communication. So while webinars can be a very useful tool if the number of participants is too great to provide more individual interactions, they will not be the best tool for developing relationships. Multiple public meetings, both webinar and face to face, can provide an opportunity for more participants to express their concerns. These meetings will also provide more opportunity to meet individual stakeholders and hear their concerns. The stakeholder will also have an opportunity to learn more about their role in the NEPA process.

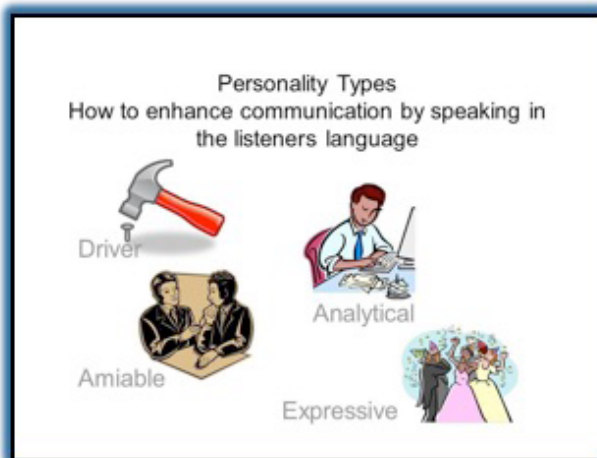
These meetings can become emotionally charged, as many participants will be passionate about the project. A good rule of thumb to consider during emotional situations is that *when emotions go up intelligence goes down*. People may behave in unpredictable ways that are counterproductive to the process. It is also hard to learn and communicate effectively when you are upset or excited about something. When people trust one another and have developed a relationship of trust and respect, they are more likely to listen to one another. This was seen recently in a highly contentious EIS process, the initial

public meetings were very emotional. Stakeholders were sharing their views but their attitude was very argumentative, the facilitator spent a good deal of time redirecting and calming the participants. During subsequent meetings the interactions were calmer, a more open dialog was possible and ultimately a better understanding was reached by the participants. While the stakeholders were still passionate and many of their concerns had not changed they had more confidence and trust that the lead agency was hearing their concerns. A better exchange leads to better understanding which in turn leads to better decision making. Rewording the rule of thumb above, when *emotions are low intelligence and understanding goes up*.

Another key component of effective meetings is to be sure that all participants have access to the presenter's slides or the technology to view them. This is particularly true for a webinar where participants may not be in the same room. For this type of meeting it is useful to post slides on a project-specific web page or email the presentation slides ahead of time so that all participants can view them, even if the technology fails. Backup communications will help insure that you have the greatest number of satisfied participants.

The development of slides, for any type of meeting or training, is critical to communicating your message. One effective style taught by Penn State staff is the "Assertion- Evidence" (AE) method. This presentation style was developed especially for technical discussions, and works quite well for

presenting complex ideas to stakeholders. The AE approach structures each slide around a key message, stated in two sentences or less, and supported by graphics rather than bullet based text. The graphics are not designed to provide talking points for the speaker but are designed to help the audience understand and remember the content of the speaker's presentation. If there are specifics or technical graphics that would be beneficial for the audience, a single page of information can be provided after the presentation. This method has proven more effective, more focused and better remembered than bullet based slides.³ A sample slide is provided below and additional information can be found on this website; <http://www.writing.engr.psu.edu/slides.html>.



This slide represents a discussion on personality styles as described by Peter Urs Bender. Each of these images represents a particular characteristic of the personality type. A discussion for this slide would cover the four styles and a detailed description of how each personality type has a preferred style of communication and how to speak

effectively to each type. Very briefly:

Driver	Talk about results, be brief and to the point, they are in a hurry
Amiable	Don't push or rush, speak calmly to them, listen well
Expressive	Be enthusiastic and relational, have fun, talk about them
Analytical	Provide all of the details, be systematic and deliberate

As you can see in a large audience it would be very hard to present to all of the personality styles at one time, but by being aware you can cover each style during a presentation. The audience may not remember all of the details of each communication style but they will surely remember that the driver sees the world as a “nail” and they are the “hammer” that gets the job done! These interesting graphics are retained differently than bullets followed by text on a slide. This method is also used by the Rosetta Stone language program. A picture of an object is projected on the screen and then the name of that object is provided in a written and oral form of the language that is being studied. The visual cue helps the listener to recall more of the language than just studying a list of vocabulary words.

Another technique to enhance communication is to make use of small face to face meetings geared toward specific groups, to include local governments and organizations. A small group meeting creates a great environment for a more open dialog. Individuals are often more

willing to ask questions and participate in one-on-one or small group discussions. It is also a great opportunity to connect, build relationships and hear concerns regarding the project. These meetings can be time consuming and costly and that may be why they are held sparingly. A good way to create cost savings and time efficiencies is to combine these smaller public meetings or government to government meetings with a site visit trip or a large public meeting. These face-to-face meetings allow both parties to connect with the ever important human element rather than just the project at hand.

One commonality for all federal actions is that they involve people, and people require you to connect to have a successful exchange. This connection can be easy or challenging depending on a multitude of factors but all projects will benefit from developing relationships between people. Some projects will be challenging no matter how relational you are due to the subject of your exchange and the many differing opinions on the impacts and benefits. This is a key reason why the people involved need to connect, not just communicate.

In John Maxwell's book *Everyone Communicates, Few Connect* he makes a great observation that not all communications guarantees connection. It is this connection that will help projects to progress more smoothly. This is true even for those highly contentious and frustrating projects. When individuals or groups develop a connection, or rapport, it is much easier to communicate,

to express one's ideas and to be understood. He uses the example of having a dropped phone call, to illustrate the concept of knowing when you have lost the "connection" during a conversation. I am sure that all have seen this happen to someone, maybe even to ourselves, that moment when you can feel the listener has tuned out. It is an almost palpable feeling in the room, when information is no longer being conveyed even though lips are still moving! He provides lists of the many signs that show you have made a connection. Following are a few that are particularly useful when coordinating a group effort, like the NEPA process; Extra Effort—people go the extra mile, Unguarded Openness—they demonstrate trust, Increased Communication—they express themselves more readily.

These three are particularly interesting to note because they are so helpful when working through a lengthy process with diverse groups of individuals. When all participants are putting forth the extra effort, more can be accomplished in less time. A trusting relationship is critical to moving forward with any project, as without trust few are willing to step out and share what they want or to demonstrate patience with the ongoing process. If all involved are openly sharing their needs and concerns the NEPA process can more easily move forward. New concerns may come to light during the NEPA process but they should not go unspoken due to lack of connection. During a recent project, where the stakeholders and lead agency had developed trust and connection, the benefits of this relationship were seen. Late in the NEPA

process a stakeholder raised a new concern. Because of their relationship, the issue was quickly and effectively addressed, causing little delay to the NEPA process. Their connection allowed for many informal conversations, facilitating swift identification of the issue and a mutually acceptable resolution. Although the stakeholder's opinion of the overall project had not changed, their understanding of the process and their role in that process had, allowing for better decision making during the NEPA process. Having a trusting relationship will often allow for more involved discussions and potentially greater compromise and change in the planned action. I have seen this willingness to compromise numerous times, particularly if the change has no commercial impact on the project but might save a significant NEPA resource area.

Listening, and then demonstrating that you were listening, is an important first step to developing relationships. Resist deciding what someone is asking before they are finished speaking. You will be less likely to interrupt them and you will hear their entire thought. Allow your focus to remain with the person speaking and on what they are saying. This can be very challenging, because as the individual shares their thoughts, your mind is going to struggle to capture the information and fit it into your own familiar mental categories. This mental cataloging can sometimes lead to misinterpretation of what is being asked, leaving the stakeholder feeling unheard. Thank the participant for their question, then summarize your understanding of

what they said and then provide them your response. It is okay to stop and think before you answer, this can indicate a thoughtful examination of their question, rather than providing a canned response to what you thought they were trying to communicate. Address the issue to the best of your ability or find someone who can, hopefully someone present. If no one present can help, be sure to follow up at a later date with someone who can provide an answer. Another effective way to develop your relationship is to ask questions and then thoughtfully listen to the answers. While you may know many of the concerns that will be raised, soliciting and then listening to their concerns continues to build trust between the stakeholder and the lead agency. The gathering of these details will ultimately provide the best information for your draft environmental document.

The draft environmental document takes into consideration all information the lead agency has gathered during the scoping and review process. Many documents are studied, comments from meetings compiled, surveys and site visits of the affected area may also be completed. Much of the information and data gathered is highly technical or complex in nature. These complexities make it challenging to convey information in clear, concise, plain language that will continue to facilitate the NEPA process. It is, however, a very an important piece in the process of engaging the stakeholder. The decision maker uses this draft document as the basis for their final decision regarding the project. This draft document is also provided to the public for

their comments. Comments on the draft document are often the last opportunity for the stakeholders to weigh in on the project, so it is very important that they understand the written document. The comments provided are reviewed and addressed by the lead agency in the final environmental document. Although the issuance of the final assessment brings the NEPA process to an end, the building of relationship between the agency and the stakeholder should not.

Conclusion

Many strategies can be used successfully to enhance the process of stakeholder outreach. The process of decision making is certainly made more complicated by the many various ideas and opinions, emotions, beliefs and practices brought to light by the numerous stakeholders. But this examination, and struggle in the process, can facilitate better decision making. Meaningful public involvement is central to good decision making. It can inform the decision maker of unforeseen consequences and provide local knowledge that can only be given by those stakeholders who are intimately involved. A fundamental objective of public involvement is to ensure that the concerns and issues of everyone with a “stake in the game” are identified and their concerns heard. Not all concerns that are heard can be accommodated but they should still be evaluated and recorded.

There are many techniques one can use to enhance communication during the NEPA process. On a most basic level, one should keep an open mind, proceed without

an agenda, listen more talk less, develop relationships and trust early in the process. One should become familiar with stakeholder concerns and make an effort to understand their particular culture. Take an interest in those with whom you are working. Be more interested in their story than yours, be engaged, ask questions and then be quiet and listen. This interest will provide a foundation for the trust and relationship necessary to have a positive and productive NEPA process

When meeting with stakeholders, select presenters carefully, some individuals are more effective communicators than others. This may be a good time to employ a facilitator to assist with running the meeting. A facilitator can remove much of the emotion that exists between the stakeholder and the lead agency. You have only one chance to make a first impression, be sure it is a good one. This first impression can lay a foundation for a great working relationship –or not! Playing catch up during the process of building trust and relationship almost certainly guarantees a longer NEPA process. More time will be spent learning stakeholders concerns and their desired outcome. When people trust each another they will more openly discuss their concerns and believe that their interests are being looked after. Trust also provides an environment where misunderstandings are less likely to happen and when they do can be more quickly resolved.

The lead agency completing a NEPA process needs to understand people, not just the mechanics of NEPA and the specifics of a proposed project. To gain this understanding

the lead agency needs to foster relationships with their stakeholders. These relationships can continue to grow and develop even when there is not a specific action being taken. Making yourself available to stakeholders and doing your best to answer their questions will continue to encourage and facilitate their positive involvement in the NEPA process.

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Federal Tribal Consultation and Coordination: Where Does it Stand?

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March 2013

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Executive Order (E.O.)

On November 5, 2009, President Obama signed a Presidential Memorandum for the Heads of Executive Departments and Agencies on Tribal Consultation. In this Memorandum, the President emphasized his commitment to “regular and meaningful consultation and collaboration with tribal officials in policy decisions that have tribal implications including, as an initial step, through complete and consistent implementation of E.O. 13175.”¹ Pursuant to E.O. 13175, executive departments and agencies are charged with engaging in consultation and collaboration with Indian tribal governments; strengthening the government-to-government relationship between the United States and Indian tribes; and reducing the imposition of unfunded mandates upon Indian tribes.²

To ensure compliance with E.O. 13175 (issued by President Bill Clinton in November 2000 and superseded a May 1998 E.O. of the same title), President Obama instructed “each agency head to submit . . . a detailed plan of actions the agency will take to implement the policies and directives of [that] E.O.” The President also instructed “each agency head to submit to the Director of the OMB, within 270 days after the date of this memorandum, and annually thereafter, a progress report on the status of each action included in its plan together with any proposed updates to its plan.”³

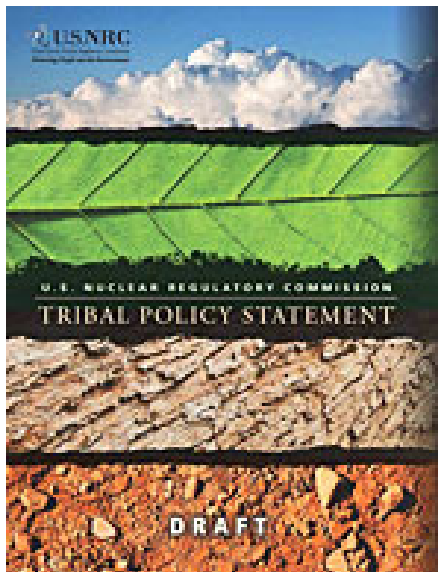
E.O. 13175 binds all Federal agencies, except for independent regulatory agencies. It, however, encourages independent regulatory agencies to comply voluntarily with its provi-

sions. NRC has demonstrated a commitment to achieving the orders objectives by implementing a case-by-case approach to interacting with Native American Tribes.⁴

NRC and Tribal Consultation

In January 2009, following a December 11, 2008, “Briefing on Uranium Recovery,” the Commission issued an SRM directing the staff to develop and implement an internal protocol for interactions with Native American Tribal governments that allows for customized approaches to address the interests of both NRC and Tribal governments on a case-by-case basis. In addition, the Commission directed the staff to assess the policies used by other Federal agencies for interactions with Tribal governments and report those findings, which could inform the potential efficacy of an NRC policy statement, to the Commission. In SECY-09-0180, “U.S. Nuclear Regulatory Commission Interaction with Native American Tribes,” staff observed that the “Commission’s current interaction with tribes encompasses a relatively small number of tribes with interest in a limited number of nuclear regulatory issues.” Therefore, the staff concludes that NRC’s, “case-by-case interactions with Native American tribes have proven effective and allow for custom-tailored approaches that meet the Commission’s needs and those of the tribes.”⁵

On May 22, 2012, the NRC Commission sent the EDO a staff request memo (SRM-COMWDM-12-0001) requesting that staff provide to the Commission “for review and approval a proposed policy statement and



protocol on consultation with Native American Tribal governments. This Commission paper should include an implementation plan and the proposed resources needed to implement such a policy.”⁶

Since August 2010, nearly all Federal departments and agencies have complied with the spirit of the 2009 Presidential memo and have sent versions of their policy plans and annual progress reports to OMB. Subsequently, NRC staff decided to revisit its earlier assessment of other Federal Tribal consultation policies found in SECY-09-0180.

Other Federal Departments and Agencies

Federal Tribal policies and plans vary in style and detail⁷, but are common in theme. Common themes among departments and agencies are: (1) enhancing government-to-government relations; (2) meeting trust responsibilities with tribes; (3) recognizing and respecting both tribes’ resources/properties of traditional/customary religious/

cultural importance and rights of self-governance and determination; (4) and fully integrating the principle and practice of meaningful consultation and communication with tribes to which these themes are fleshed out vary. Some agencies’ policy statements only state these broad themes and do not provide any programmatic details, while others flesh out programmatic details⁸ (such as agency consultation steps, training provided staff, and Agency offices that serve as consultation caretakers and the responsibilities bestowed upon them).

Some Departments subordinate agencies have their own distinct tribal policies, separate from their Departments’. Nevertheless, their policies mirror the core principles of the Departmental tribal policies. For example, the Department of Health and Human Services (HHS) has a Department wide policy that all of its subordinate programmatic offices/agencies (i.e., Administration for Children and Families, Agency for Healthcare Research and Technology, Administration on Aging, Agency for Toxic Substances and Disease, Center for Disease Control, Centers for Medicare and Medicaid Services, Health Resources and Services Administration, Indian Health Services, National Institute for Health, and Substance Abuse and Mental Health Administration) must follow.⁹ HHS’s agencies policies also reflect their core missions and objectives. The same can be said about the Department of Defense (DoD) and its agencies (e.g., U.S. Army and Army Corp of Engineers), who have their own tribal consultation policies that

encapsulate DoD's overarching Tribal policy principles.¹⁰

Agencies of Similar Function, Mission or Independent Nature to NRC

Staff closely examined the Tribal consultation policy statements at the following agencies because of their regulatory function, mission, independent nature, and/or memoranda of understanding with NRC: Department of Energy (DOE), Federal Energy Regulatory Commission (FERC), Federal Communications Commission (FCC), Environmental Protection Agency (EPA), Department of Interior/Bureau of Land Management (DOI/BLM), and Department of Defense/Army Corp of Engineers (DoD/ACE).

DOE: In 1992, DOE issued its first American Indian Policy along with an order that established the responsibilities and roles of DOE management in carrying out its policy. In 1998, at the request of Indian nations, the Policy was revised. In 2006, the American Indian Policy was replaced with and superseded by the DOE American Indian and Alaska Natives Tribal Government Policy. The 2006 policy is intended to ensure an effective implementation of a government-to-government relationship with American Indian and Alaska Native tribal governments. It recognizes the Federal trust relationship and responsibilities of the Federal government. The policy also demonstrates a commitment to the following: government-to-government relations with tribes, ensuring an integration of Indian nations into the decision making process and

compliance with Federal laws and Executive Orders that assist in the preservation and protection of historic and cultural sites and religious practices.¹¹

FERC: The Federal Energy Regulatory Commission issued its Policy Statement on Consultation with Indian Tribes in Commission Proceedings in 2003, in order to facilitate tribal involvement in areas that fall within FERC's regulatory jurisdiction. The Statement stemmed from tribal issues related to hydroelectric licensing, recognizing the sovereignty of tribal nations and reinforcing the agency's trust responsibility to Indian tribes. The policy also established a Tribal Liaison position along with certain required actions for the hydroelectric licensing program. Like NRC, FERC, follows a case-by-case approach in interacting with Tribes.

FCC: In June of 2000, the FCC adopted the Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes. The policy reaffirms the principles of tribal sovereignty and the Federal trust responsibility. Additionally, the FCC identified several goals and principles which would promote a regulatory process that include, but are not limited to: (1) working on a government-to-government basis to ensure adequate access to communications services; (2) consulting with tribal Governments prior to regulatory action or policy implementation affecting tribal land and resources; (3) establishing a working relationship with tribal governments, coordinating with tribal governments; and (4)

establishing procedures to educate agency staff about tribal governments and culture.¹² The FCC has taken several steps to address the lack of telecommunications deployment throughout Indian Country.

EPA: Since establishing its Indian policy in 1984, the EPA has reaffirmed its commitment to tribes on a regular basis and has developed a comprehensive tribal program that is present in program offices throughout the agency and has designated staff at both headquarters and regional offices.

A 2002 Memorandum of Understanding (MOU) exists between the EPA and NRC.¹³ The MOU identifies the interactions of the two agencies for only the decommissioning and decontamination of NRC-licensed sites and the ways in which those responsibilities will be exercised. Except for Section VI, which addresses corrective action under the Resource Conservation and Recovery Act (RCRA), this MOU is limited to the coordination between EPA, when acting under its Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) authority, and NRC, when a facility licensed by the NRC is undergoing decommissioning, or when a facility has completed decommissioning, and the NRC has terminated its license.

On May 4th 2011, EPA released its Final Policy for Consultation and Coordination with Tribes.¹⁴ The agency's policy recognizes the Federal Trust responsibility and commits to protecting the environmental interests of Indian tribes. The policy underscores the importance of working with tribes on a gov-

ernment-to-government basis and making policy and managing programs for reservations consistent with EPA standards.

DOI/BLM: BLM has a tribal consultation website and tribal vision statement. Its vision statement is akin to a policy statement. Nevertheless, it is short in details.¹⁵ BLM defers to DOI's Policy on Consultation with Indian Tribes; BLM does not have its own consultation policy.

BLM operates and provides guidance to its employees under a system of instructions in the form of BLM manuals. Generally, laws specify what must be done; whereas, the 8100 manual section and H-8120-1 handbook provide the guidance as to how it should be done.

In 2012, the BLM Director, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers signed a national Programmatic Agreement (PA) explicitly framed "to emphasize the common goal of planning for and managing historic properties under the BLM's jurisdiction or control in the public interest." The PA (Section 5. b.) calls for cooperation and enhanced communication among SHPOs and BLM States as well as "a protocol specifying how they will operate and interact under this agreement." Each BLM State that operates under the PA (Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming) has a "Protocol" agreement.

A MOU exists between NRC and BLM.¹⁶ It provides for a cooperative working relationship between the two parties. It forms a

cooperative framework that supports common goals in furthering each agency's mission involving the development of uranium or thorium resources on public lands, including Federal mineral estates, under the administration of the BLM. The cooperating agency relationship established through this Memorandum of Understanding (MOU) will be governed by all applicable statutes, regulations, and policy, including the NRC's regulations in 10 CFR Part 51 and BLM's regulations in 43 CFR Parts 1600, 3500, and 3800.

The MOU is intended to improve inter-agency communication, facilitate the sharing of special expertise and information, and coordinate the preparation of studies, reports, and environmental documents associated with NRC licensing actions and BLM regulation of public lands, including Federal mineral estates.

DoD/USACE: USACE submitted its implementation plan to OMB through DoD on January 7, 2010 and is working on a second draft of its consultation policy. USACE's program incorporates DoD and Department of the Army policies, as well as developing its own guidance documents. The primary goals of USACE's tribal program are to consult with Tribes that may be affected by USACE projects or policies and to reach out and partner with Tribes on water resources projects. It has 17 MOUs, MOAs, and PAs with Tribal nations.

USACE and NRC have a standing MOU on environmental reviews related to the issuance of authorizations to construct and operate nuclear power plants. USACE and NRC developed the MOU to streamline the respec-

tive regulatory processes associated with the authorizations required to construct and operate nuclear power plants. Cooperation amongst USACE and NRC ensures each agency's review responsibilities under the National Environmental Policy Act (NEPA) and other related statutes are met in connection with the authorizations required to construct and operate nuclear power plants licensed by the NRC. The NRC licenses nuclear power plants in accordance with its regulations such that the utilization of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public, whereas, USACE administers a regulatory program to protect the Nation's aquatic resources, including wetlands, under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA.¹⁷

Department Tribal Policies?

AGENCY ¹⁸	IMPLEMENTATION PLAN	POLICY IN PLACE	UPDATED POLICY
USDA	YES	YES (updating)	09/11/2008
DOC	YES	DRAFT	07/03/2012
DOD	YES	YES	1998
ED	YES	NO	N/A
HHS	YES	YES	12/24/2010
DHS	YES	YES	05/11/2011
HUD	YES (final release soon)	YES (updating)	06/28/2012
DOI	YES	YES	12/01/2011
DOJ	YES	FINAL DRAFT	10/01/2012
DOL	YES	FINAL DRAFT	12/03/2012
DOS	YES	YES	02/04/2011
DOT	YES (plan also policy)	YES	03/2010
TREAS	NO	INTERNAL DRAFT	07/23/2010
VA	YES	YES	02/04/2011
SBA	DRAFT	INTERNAL DRAFT	N/A
ACHP	YES	YES	05/04/2011
DOE	DRAFT	YES	01/2012
EPA	YES	YES	11/17/2000
FERC	NO	YES	07/23/2003
FCC	NO	YES	6/23/2000
USACE	YES (submitted through DoD)	DRAFT	01/2012

Section 106 Process

It was observed that most departments and agencies policies and plans' discussion of the National Historic Preservation Act's Section 106 process was limited, if existent at all.¹⁹ Perhaps the 106 process was laid out in detail in departments' supporting programmatic documents, such as in the case of the Department of Housing and Urban Development (http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/environment/section106), or other Federal guidance documents, such as the March 2013 NEPA and NHPA: Handbook for Integrating NEPA and Section 106 published jointly by the Council on Environmental Quality and the Advisory Council on Historic Preservation. Nevertheless, the reference to the 106 process in departments' policy statement was scant.²⁰

Tools of Implementation - Tribal Consultation Responsibilities and Resources

Office of Intergovernmental Affairs

More often than not, tribal consultation responsibilities were found in Departments' Office of Intergovernmental Affairs (which is a Secretarial level office, akin to a Commission office at NRC). The number of tribal staff within OIA varied among Federal Departments. In many instances, the responsibility of consultation caretaker lied with a few individuals, who liaised with Tribal representatives in its subordinate agencies, such as

found at the Departments of Energy, Interior, Labor²¹, Homeland Security, and Transportation.

Some agencies designated tribal official, within OIA, reported to the Assistant Secretary for Congressional Affairs and/or treated all tribal correspondences as it would Congressional correspondences (Departments of Energy, Labor and Transportation).²²

In other cases, a tribal office was developed within OIA. At the Department of Health and Human Service (HHS), tribal consultation authority lies in HHS's OIA/Office of Tribal Affairs (OTA). OIA/OTA works with its tribal representatives at the National Institute for Health, Food and Drug Administration, Indian Health Services, and it's other principal agencies; OIA/OTA has the final say over Departmental Tribal consultation policies, but may seek feedback from its agency tribal liaisons. In addition, HHS has established the Intradepartmental Council on Native American Affairs, which meets no less than twice a year, to provide advice on all HHS policies that relates to Indian Tribes, as well as instances where HHS activities relate to Native Americans.

At Veterans Affairs (VA), tribal consultation authority lies in VA's OIA/Office of Tribal Government Affairs (OTGA).

Separate Tribal Offices

Notable exceptions to the dominant role of OIA in tribal consultations can be found at the Departments of Agriculture and Housing and Urban Development. Agriculture's tribal policy/plan developed an Office of

Tribal Relations to which is added as a concurrence step in all clearance processes, reviews all regulations and provides guidance on Tribal Impact Statements (which are included in all regulations, like a Civil Rights Statement). OTR coordinates tribal consultation with the six agencies that make up the Department of Agriculture.

At Housing and Urban Development, the Office of Native American Programs (ONAP) serves as the lead departmental office for tribal consultation implementation. ONAP has staff at headquarters and six regional offices – ONAP has 182 staff members.

Agencies of Similar Function, Mission or Independent Nature to NRC

DOE: The Department of Energy, found it appropriate to establish a Tribal Steering Committee to analyze the agencies' consultation practices. This committee supplements the OIA-centric leaning of the Department's tribal coordination and consultation.²³ The Committee (1) coordinates on tribal energy issues across affected DOE programmatic offices; (2) provides a formal mechanism to help DOE tribal liaisons deal promptly with cross-cutting tribal energy concerns and to identify opportunities for synergy across various sectors within DOE, to ensure that tribal rights, including concerns regarding cultural resources management are considered; (3) shares information among members and solves problems affecting members; (4) make recommendations directly to the Deputy Secretary on implementing tribal energy policies, procedures, or requirements; (5)

conducts regular conference calls or meetings with Headquarters and field American Indian Government points of contact; and (6) eliminates regulatory, statutory, and/or procedural impediments to the Department working directly with tribes.

Additionally, the Department offers a variety of resources for both tribes and staff, including web-based materials, publications, training and outreach. Nuclear waste is just one example of issues that fall within DOE's jurisdiction that requires government-to-government interaction with tribes. The Office of Environmental Management (EM) is involved in the cleanup of nuclear wastes at sites and facilities throughout the country. As a result, EM frequently interacts with tribal communities located near nuclear weapons production sites. The EM program includes tribes in pertinent cleanup decisions through cooperative agreements, agreements-in-principle and memorandum-of-understanding. EM engages in several cooperative agreements and special initiatives with tribes.²⁴

The DOE Office of Indian Energy Policy and Programs, or Office of Indian Energy²⁵, is charged by Congress to direct, foster, coordinate, and implement energy planning, education, management, and programs that assist Tribes with energy development, capacity building, energy infrastructure, energy costs, and electrification of Indian lands and homes. The Energy Policy Act of 2005 (Public Law 109-58, Title V) authorized DOE to establish the Office of Indian Energy.

The Office is directed and authorized to implement a variety of programmatic

activities, including provisions that the Office of Indian Energy Director duties shall provide, direct, foster, coordinate, and implement energy planning, education, management, conservation, and delivery programs of the Department that: (1) promote Indian tribal energy development, efficiency, and use; (2) Reduce or stabilize energy costs; (3) enhance and strengthen Indian tribal energy and economic infrastructure relating to natural resource development and electrification; (4) bring electrical power and service to Indian land and the homes of tribal members located on Indian lands or acquired, constructed, or improved (in whole or in part) with Federal funds. Sections 217(b); (5) establish programs to assist consenting Indian Tribes in meeting energy education, research and development, planning, and management needs. Section 2602(b)(1); (6) develop a program to support and implement research projects that provide Indian Tribes with opportunities to participate in carbon sequestration practices on Indian land. Section 2602(b)(3)(A) and; (7) encourage cooperative arrangements between Indian Tribes and utilities that provide service to Indian Tribes, as the Director determines to be appropriate Section 2602(b)(4)(C).

The Office of Indian Energy Director is also authorized to and may provide grants, including formula grants or grants on a competitive basis to eligible tribal entities, which has to date been implemented by DOE's Office of Energy Efficiency & Renewable Energy's Tribal Energy Program. These grants by the Director may be made for use in carrying out: (1) energy, energy efficiency, and energy

conservation programs; (2) studies and other activities supporting tribal acquisitions of energy supplies, services, and facilities, including the creation of tribal utilities to assist in securing electricity to promote electrification of homes and businesses on Indian land; (3) planning, construction, development, operation, maintenance, and improvement of tribal electrical generation, transmission, and distribution facilities located on Indian land; and (4) Development, construction, and interconnection of electric power transmission facilities located on Indian land with other electric transmission facilities.

FERC: The Federal Energy and Regulatory Commissions' (FERC) policy statement establishes a tribal liaison; FERC has one liaison. The liaison is responsible for educating Commission staff about tribal governments and cultures and educating tribes about the Commission's various statutory functions and programs, working with tribes during Commission proceedings, ensuring that tribes' views are appropriately considered at every step of the process, acting as a guide for the tribes to Commission processes, and striving to ensure that consultation requirements are met.²⁶

FCC: As an independent agency of the federal government, the FCC developed its own policy statement on tribal consultation in July 2000. In August 2010 (the date that the 2009 Presidential memorandum required agencies to report to OMB) FCC developed an Office of Native Affairs and Policy (ONAP). ONAP was created to promote the deployment and adoption of communications services and

technology throughout Tribal Lands and Native Communities as well as to ensure robust government-to-government consultation with Federally-recognized Tribal Governments and increased coordination with Native Organizations. The creation of ONAP was one of the recommendations of the National Broadband Plan. ONAP is responsible for handling ongoing consultation and coordination with American Indian Tribes, Alaska Native Villages, Native Hawaiian Organizations, and other Native and Tribal entities, and is the official Commission contact point for these activities. It engages in work with Commissioners, bureaus, and offices, as well as with other government agencies, private organizations, and the communications industries, to develop and implement FCC policies regarding Tribal Nations and Native communities. The importance of this was first officially recognized by the FCC in 2000 when it issued its five page Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes. The agency has a tribal page on the FCC website dedicated to tribal initiatives.²⁷

In addition, the FCC-Native Nations Broadband Task Force, which is, in part, charged with guiding the FCC in the development of a consultation policy, has continued to meet to discuss the growth of broadband in Indian Country. The FCC-Native Nations Broadband Task Force is comprised of elected and appointed tribal leaders from across the nation, as well as senior managers and decision makers from across the Commission's

many bureaus and offices.

In 2012, ONAP launched its Tribal Leader Training Program and held six training programs across Indian Country. These sessions consisted of panels led by ONAP with representatives from other Bureaus within the Commission to discuss FCC policy initiatives, including: transformation of the High-Cost component of the Universal Service Fund to the Connect America Fund; the eligible telecommunications carrier designation process; the Mobility and Tribal Mobility Funds; spectrum as an essential resource for tribes; reform of the Tribal Lands Lifeline and Link Up programs; and tribal priority regulations that make starting a tribal radio station easier. Training sessions also included "Listening and Dialogue Sessions" in which tribal leaders had the opportunity to discuss and share their perspectives on these issues. During this training cycle, ONAP also introduced its Native Learning Lab, featuring FCC computers set up for individual assistance and instruction. FCC staff introduced and demonstrated FCC online tools through hands-on instruction, with an emphasis on how those tools can benefit tribes.

EPA: The Environmental Policy Agency established the American Indian Environmental Office (AIEO) to manage the EPA National Indian Program. The agency's tribal program offers resources to both EPA employees and tribal governments. The office oversees grant funding for tribal environmental programs, provides policy guidance and provides training to employees regarding tribal-related issues. The EPA also established the National

Tribal Operations Committee (NTOC) whereby the EPA administrator and senior-level management represent the EPA while 19 elected tribal leaders represent tribal interests. The committee helps shape policy and budget to meet the needs of Indian Country. Each of the 10 EPA regions has a designated Tribal Office, addressing tribal issues within the region. Additionally, many of the regions have published practices and protocols specific to the region that govern interaction with tribal governments. Regional Tribal Operations Committees also exist that serve as the regional equivalent of the NTOC.

The EPA offers a wide array of resources related to tribal-issues. The agency developed the American Indian Tribal Portal, offering information to tribes regarding EPA contacts, environmental laws and regulations, tribal organizations, maps, grants and training opportunities.²⁸ Training opportunities are not only available to tribal members, but to EPA employees. The agency offers tribal-related classroom training for employees along with online training that is easily accessible.

In 2012, EPA launched the Tribal ecoAmbassadors program to support the development of locally-relevant environmental solutions and the expanded research capacity of Tribal Colleges and Universities. Professors selected at Tribal Colleges and Universities work with students, tribal governments, and EPA scientists to solve environmental and public health issues.

^{DOI/BLM}: The primary DOI point of contact for tribal consultations lies within the Secretary of Interior's Office of Intergov-

ernmental Affairs (OIA). OIA liaises with tribal representatives at each of its dependent agencies; BLM being one of those dependent agencies. BLM has entered MOUs and PAs with its Federal and state partners.

DoD/USACE: USACE has a senior tribal liaison stationed at its headquarters (est. in 2003) with over 70 division and regional liaisons stationed throughout the country.

Department Tribal Offices?

AGENCY	TRIBAL POC	TRIBAL OFFICE ²⁹
USDA	YES	YES
DOC	YES	NO
DOD	YES	NO
ED	YES	YES
HHS	YES	YES
DHS	YES	YES
HUD	YES	YES
DOI	YES	YES
DOJ	YES	YES
DOL	YES	YES
DOS	YES	YES
DOT	YES	NO
TREAS	YES	NO
VA	YES	YES
SBA	YES	YES
ACHP	YES	YES
DOE	YES	YES
EPA	YES	YES
FERC	YES	NO
FCC	YES	YES
USACE	YES	YES

Public Outreach and Listening Sessions

All Departments and agencies (even those whose policies/plans are in the draft stage³⁰) have undertaken public outreach with tribes; this has often included listening sessions. Some agencies have experimented with—webinars and other online technology to permit tribal leaders to participate in consultations without incurring the costs and time commitments of in-person sessions.

Agencies of Similar Function, Mission or Independent Nature to NRC

DOE: The Department of Energy's Office of Indian Energy Policy and Programs held eight Tribal Roundtables from March 16, 2011, to April 14, 2011. Roundtables were facilitated by the Udall Foundation's U.S. Institute for Environmental Conflict Resolution.

FERC: No data could be found for FERC

FCC: The Federal Communications Commission holds consultations, meetings, and listening sessions with tribes on an ongoing basis in a variety of forms, locations, and on multiple subjects and matters, all related to increasing the levels of communications services for tribal nations. Since October 1, 2011, the Office of Native American Programs had held consultation and listening sessions with representatives from approximately 250 tribes either in session with leaders of individual tribes or regionally with leaders from a number of tribes at meetings of national and regional tribal organizations.

EPA: According to staff data, the most prolific agency reaching out to tribes is the Environmental Protection Agency, which has done so 121 times from August 2011-2012 (including teleconference and in-person consultation)³¹. EPA solicits feedback from tribes during consultations and through tribal partnership groups.³²

DOI/BLM: The Bureau of Land Management held 100 consultation sessions in 2011 and 2012 collectively.

DoD/USACE: Since 2009, the U.S. Army

Corp of Engineers has held regular ongoing consultation meetings with the Columbia River Tribes and Columbia River Inter-Tribal Fish Commission. USACE has held national consultations on reissuance of nationwide permits in 2006 and 2011. USACE's largest regional consultations routinely take place along the Missouri River with all Lakota, Dakota and Nakota Nations, as well as TAT and upriver tribes. It has held regional consultations on Missouri River flooding in Montana, North Dakota, South Dakota, Nebraska, and Kansas and on fires and flooding in New Mexico (Las Conchas fire/flood), Missouri, Kentucky and Tennessee (New Madrid levee blow).

Reducing Regulatory Burden and Increasing Federal Partnerships

- Along with requiring agencies to develop a Tribal policy/plan, Obama's 2009 Presidential memo, encouraged departments and agencies to reduce regulatory overlap—overlap which causes undue burden on tribes. Subsequently, departments and agencies have sought to work more closely together with their Federal family on the behalf of tribes. This has included:
- Establishing joint Federal tribal teams and utilizing other departments and agencies informational resources (Department of Interior);
- Entering into cooperative agree-

ments to utilize Six Sigma and general process improvements to identify ways to steam line applications between overlapping agencies (Departments of Agriculture and Interior);

- Cooperating with Federal and state agencies that have related American Indian Government responsibilities and establishing a Tribal steering committee to eliminate regulatory, statutory, and/or procedural impediments to the Department working directly with tribes (Department of Energy) and;
- Working with other Federal departments and agencies to enlist their interest and support in cooperative efforts to assist tribes to accomplish their goals within the context of all [departmental] programs (Department of Housing and Urban Development).

The Obama Administration is continuing its multi-agency collaborations with tribal governments to develop comprehensive policy for Indian Country. Several agencies are working together on policy priorities and are coordinating on consultation sessions. For example, the Departments of Interior and Education have been working closely to combine and coordinate their resources, and to maximize their efforts to impact Indian education. And the Department of Agriculture/Rural Development, Environmental

Protection Agency, Department of Health and Human Services/Indian Health Service, and Department of Housing and Urban Development have been working collaboratively to address long standing disparity of safe water and sanitation services for tribes.³³

As part of the U.S. review of its position on the UN Declaration on the Rights of Indigenous People, fourteen federal agencies participated in tribal consultations, which included sessions held in Indian Country and at the U.S. State Department. Subsequent to the review, President Obama announced that the United States has changed its position on the Declaration. The U.S now supports the Declaration.³⁴

The White House's 2012 Tribal Communities Accomplishments report outlines seven areas of Federal success (protecting the environment, investing in tribal education, contributing to public safety, combatting violence against women, promoting health-care and economic development, and strengthening government-to-government relations). In all these areas, Federal cooperation and synergy on the behalf of tribal welfare are outlined. Cooperation among departments/agencies is sometimes due to a deliberate partnership. And other times departments and agencies fill regulatory gaps left vacant by another agencies lack of regulatory oversight.

In December 2012, the Departments of Defense, Interior, Agriculture and Energy and the Advisory Council on Historic Preservation entered into a five year Memorandum of Understanding regarding inter-agency coordi-

nation and collaboration for the protection of Indian Sacred sites. According to the MOU's Administrative Provisions, "Other Federal agencies may participate in the MOU at any time while the MOU is in effect [until December 2017]. Participation will be evidenced by an agency official signature on the MOU."

Participating agencies agree to work together to:

- Create a training program to educate Federal staff on sacred sites legal protections and limitations and on effective consultation and collaboration with Indian tribes, tribal leaders, and tribal spiritual leaders on sacred sites.

- Develop guidance (including best practices) for the management and treatment of sacred sites.
- Create a website linking to Federal agency's sacred site responsibilities, participating agencies websites and liaisons and project manager (for project and sacred site consultation) contact information.
- Develop and implement a public outreach plan, focusing on maintaining sacred site integrity and the need for public stewardship to protect and preserve such sites.
- Establish management practices, such as mechanisms for collaborative stewardship of sacred sites that could be adopted by Participating Agencies.
- Identify impediments to protecting sacred sites and recommenda-

tions to address the impediments

- Develop mechanisms to exchange and share subject matter experts among Federal agencies and identify contract mechanisms for obtaining tribal expertise.
- Explore mechanisms for building tribal capacity to participate fully in consultation with Federal agencies.
- Establish a working group of appropriate staff from each of the Participating Agencies to facilitate the implementation of the MOU and issues as they arise.

Varied Federal Department Geographical Regions

Staff observed that some Federal departments/agencies involved with tribal issues of interest to NRC (i.e., Department of Interior's Bureau of Indian Affairs and the Environmental Protection Agency) have regional offices. However, the number and geographical makeup of BIA and EPA's regions vary. For example, BIA has eight regional offices and EPA has ten regional offices. And the geographical construct for BIA and EPA's regions are different, that is, BIA's Eastern Region does not correspond exactly with EPA's "Region 1" and so on. In fact, BIA's Eastern Region consists of five EPA regions. What's more neither BIA nor EPA's regional geographical configurations match up with NRC's four regions. BIA and EPA's regions bisect NRC's regions. In the end, one is left with a Federal tribal jurisdictional mess.³⁵

Policy Statements' Uniqueness

Staff noted the varied and unique characteristics of Department and agencies' tribal policy/plans.

Some agencies tribal policy statements were deplete in programmatic details (e.g., Department of Defense), relying instead on supplemental consultation guidance documents to outline program goals. Other agencies tribal consultation policies were more detailed. Some unique aspects of these policies are:

- Establish an Indian Policy training program for personnel working with tribes (Department of Energy);
- Incorporate tribal consultation and coordination requirements into SES training (Department of Agriculture);
- Foster contract and hiring preferences for tribal members (Department of Transportation)³⁶;
- Provide Tribes with information to bid on agency contracts and share information on agency programs, policies and procedures law (U.S. Army Corp of Engineers);
- Outline duties of Departmental designated officials (Department of Labor);
- Outline the steps that staff should take when consulting with tribes (Departments of Health and Human Service, Housing and Urban Development, Labor, and the Environmental Protection Agency)³⁷;
- Work with tribal governments to develop case studies and best practices in transportation planning and highway safety (Department of Transportation);
- Partner with Tribes on studies, projects, programs and permitting procedures will be supported and promoted where permissible under the law (U.S. Army Corp of Engineers);
- Consult with Indian tribes throughout the development of the [department] budget formulation process to the greatest extent practicable and permitted by law, require all agencies to identify a process within their tribal consultation policy/plans that assures tribal priorities and needs are identified in the formulation of the [department] budget, and hold an annual budget policy and consultation session to give tribes the opportunity to present their budget recommendations and requests (Department of Health and Human Services); and
- Work towards developing departmental metrics to measure performance and accountability of tribal interactions (Department of Health and Human Services).

Agency	Unique Characteristics Found in Policy/Plans
DOE	Establish Indian Policy Training for Personnel
USDA	Develop SES Training on Tribal Consultation
DOT	Foster Contract Preferences to Tribes
USACE	Information Sharing with Tribes for Contracts and Programs
DOL	Delineate Duties of DO for Tribal Affairs
HHS, HUD, DOL, EPA	Outline Consultation Process and Staff Role and Responsibilities
DOT	Work with Tribes to Develop Case Studies
USACE	Partner with Tribes on studies, projects, programs and permitting procedures
HHS	Consult Tribes Throughout Department Budget Development

Closing Remarks

This white paper provides NRC management important insight on other Federal departments/agencies/commissions tribal resource management and policy/program structure, instrumental to guiding NRC's tribal policy statement and subsequent tribal program development (i.e., as requested in SRM-COMWDM-12-0001).

The analysis provides management details which will assist it in determining such things as whether an agency reorganization is needed to more closely align NRC's tribal functions to the Commission Office or whether a larger tribal office presence needs to be developed in the Office of Federal, State, Materials, and Environmental Programs (FSME) with liaisons in program offices reporting back to FSME's tribal office.

The paper also provides management insight on how other Federal agencies are cooperating to end regulatory overlap, but at the same time fill regulatory gaps—gaps that negatively impact tribes. Such perspective allows NRC management to examine new

methods of and avenues for cooperation amongst its “Federal family” to shore up any gaps that may exist in its regulations.

With increasingly tight future budgets forecasted for NRC and potential budgetary skirmishes on the “Hill,” the analysis also provides management a tool to better gauge the number of FTEs (i.e., full time equivalents) needed for tribal consultation based on similarly missioned and structured organizations. Such data provides management a fuller financial picture to justify their future budgetary requests to Congress.

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Endnotes

1. See 2009 Presidential Memorandum to Department Heads on Tribal Consultation.
2. See Executive Order 13175.
3. See 2009 Presidential Memorandum.
4. The Federal Energy and Regulatory Commission also adopted a case-by-case approach in interacting with Tribes.
5. See SECY-09-0180: NRC Interaction with Native American Tribes.
6. See Staff Request Memorandum (SRM-COMWDM-12-0001) from Commission to the EDO.
7. Fifteen Departments (which included many subordinate agencies) and three independent agencies tribal consultation policies were examined. (These Departments and independent agencies included: Departments of Agriculture, Commerce, Defense, Education, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Justice, Labor, State, Transportation, Veterans Affairs, the Federal Communications and Federal Energy Regulatory Commissions, the Environmental Protection Agency, the Small Business Administration, and the Advisory Council on Historic Preservation.) Staff examined their consultation and implementation plans, if available. Some departments/agencies' policies/plans are only in draft form or on restricted government websites. The White House's 2012 Tribal Communities Accomplishments Report (because OMB's raw data on Departments Tribal policies/programs is not otherwise available, it is assumed that OMB's data is reflected in the White House's report). NCAI's December 2012 update on Implementation of E.O. 13175, and NCAI's 2012 Paper entitled "Consultation and High Energy Level Engagement: Strengthening our Nation-to-Nation Relationship".
8. An example of a policy statement with little to no specific programmatic details is the Department of Defense's. Although DoD's policy statement is limited in details and is 6 pages long, the Department developed a number of consultation guidance documents that outline tribal consultation protocol, process, and ground rules. Another example of a policy statement lacking specificity is the Department of Interior's, which can be found in Order No. 3317. It is a 2 ½ page statement made by Secretary Salazar in 2011.
9. For those Department's with policy statements that lacked program specifics, they may implement them through staff protocols and tribal programs. In these instances, the tools of implementation would be equally, if not, more important than the policy statements themselves. Agencies have developed tribal-related websites, publications, directories and training while designating tribal contacts in program offices. The tools vary per agency depending on its mission and budgetary limitations.
10. See Health and Human Service Tribal Consultation Policy.
11. See US Army and Army Corp of Engineers Policy Statements.
12. The U.S. Department of Energy American Indian and Alaska Native Tribal Policy can be found online at: http://apps1.eere.energy.gov/tribalenergy/pdfs/doe_indian_policy2006.pdf
13. See FCC Tribal Policy Statement.
14. "Memorandum of Understanding Between the Environmental Protection Agency and the Nuclear Regulatory Commission: Consultation and Finality on Decommissioning and Decontamination of Contaminated" <http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/mou2fin.pdf>.
15. The final policy on consultation and coordination with tribes can be found at <http://www.epa.gov/indian/pdf/cons-and-coord-with-indian-tribes-policy.pdf>.
16. BLM's Tribal consultation page can be found at <http://www.blm.gov/mt/st/en/prog/tribal.html> and vision statement page can be found at http://www.blm.gov/pgdata/etc/medialib/blm/mt/blm_programs/tribal_consultation.Par.63063.File.dat/MT-DK%20Tribal%20Vision%20Statement.pdf.
17. "Memorandum of Understanding between the Bureau of Land Management, Department of the

Interior and the Nuclear Regulatory Commission, an Independent Agency” <http://pbadupws.nrc.gov/docs/ML0926/ML092660176.pdf>.

18. Sections 10 and 404 may in certain instances require proposed nuclear power plants to submit more than one USACE permit.
19. USDA=US Department of Agriculture; DOC=Department of Commerce; ED=Department of Education; HHS=Department of Health and Human Services; DHS=Department of Homeland Security; HUD=Housing and Urban Development; DOI=Department of Interior; DOJ=Department of Justice; DOL=Department of Labor; DOS=Department of State; DOT=Department of Transportation; TREAS=Treasury Department; VA=Veterans Affairs; SBA=Small Business Administration; DOE=Department of Energy; EPA=Environmental Protection Agency; FERC=Federal Energy Regulatory Commission; FCC=Federal Communications Commission; USACE=U.S. Army Corp of Engineers.
20. NRC’s current case-by-case Tribal consultation process is largely fulfilled through its 106 consultations.
21. The one notable exception is the Advisory Council on Historic Preservation (ACHP). ACHP’s policy statement integrates the 106 process. The 106 process is discussed in detail. Also worth noting is the fact that although the Bureau of Land Management does not have a Tribal policy statement per say, its tribal interactions for staff are laid out in its 8100 manual section “the Foundations for Managing Cultural Resources”. Section 106 is discussed in great detail within BLM’s 8100 manual section. U.S. Army Corp of Engineers does not mention Section 106 within its tribal consultation policy, but it references the Native American Graves Protection and Repatriation Act (NAGPRA) and the National Historic Preservation Act (NHPA) concerning cultural and natural resources.
22. The Department of Labor official designated to implement DOL’s plan is the Director for Public Engagement working in conjunction with OIA.
23. This distinct avenue of Federal department tribal communications should be noted in NRC future organizational planning. That is, tribes are considered as separate nations and should be held equal to another nation or Congress, not states. Currently, tribal communications and consultation with Tribes at NRC is handled through program offices, whereas, communications with Congress and foreign governments communication and consultation is handled through Commission level offices.
24. The Deputy Assistant Secretary (DAS) for the Office of Intergovernmental Affairs is the designated tribal officer for DOE. The DAS executes the responsibilities of the Tribal Steering Committee. Programmatic liaisons (each program office has a tribal liaison) coordinate with the DAS regarding tribal consultation. Additionally, the DAS is charged with submitting annual report to the Assistant Secretary for Congressional Affairs outlining the programs interactions with Native American governments.
25. Additional information regarding the DOE’s Office of Environmental Management’s tribal programs can be found online at: <http://www.em.doe.gov/tribalpages/initiatives.aspx>.
26. Additional information regarding DOE’s Office of Indian Energy Policy and Programs can be found at <http://energy.gov/indianenergy/office-indian-energy-policy-and-programs>
27. See FERC Policy Statement.
28. The FCC’s Tribal Homepage can be viewed at: <http://www.fcc.gov/indians/>.
29. The EPA American Indian Tribal Portal is located at <http://www.epa.gov/tribal/>.
30. It is worth noting that what Departments consider as sufficing for a tribal office varies. Some Departments believe a sole representative in the Secretary’s OIGA is a tribal office, whereas other Departments believe a tribal office is represented by a separate office devoted to Tribal consultation with a director and staff. This column does not attempt to denote the difference between the two, but only reports information that Departments provided NCAI, as outlined in NCAI’s December 2012 Consultation Report.
31. Even though the Department of Commerce does not have a formalized tribal policy/plan, it has

conducted 31 listening and outreach meetings since December 2009. Also it should be noted that its subordinate agencies, such as the Minority Business Development Agency and the National Telecommunications and Information Agency, have played instrumental Federal programmatic tribal roles. MBDA provides grants to Tribal colleges and NTIA provided monies, as part of the Financial Recovery Act, to underserved tribal areas to establish Internet connectivity.

32. It should be noted that the number of times an agency indicates it has participated in consultation efforts is a “self-reported” number and, thus, left up to self-interpretation and may be under- or over-reported depending on how an agency defines consultations.
33. EPA’s consultation website can be found at www.epa.gov/indian/consultation.
34. See White House: 2012 Tribal Accomplishments Report.
35. The Declaration, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of States in seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States. Aspirations that this country seeks to achieve within the structure of the U.S. Constitution, laws, and international obligations, while also seeking, where appropriate, to improve our laws and policies.
36. It should be noted that DOE and USACE were two of the agencies examined as similar by function; DOE has ten regions and USACE has 7 regions. FCC and FERC were examined as similar by independent nature; FCC has three regions and FERC five regions.
37. This function NRC has traditionally reserved for its Small Business and Civil Rights Office. DoD lays out consultation guidelines in “DoD American Indian and Alaskan Native Policy: Alaska Implementation Guidelines.

The U.S. Nuclear Regulatory Commission's (NRC's) Develop- ment and Implementation of an Internal Tribal Policy and Protocol for The Interaction with Native American Tribal Governments

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Introduction

The U.S. Nuclear Regulatory Commission (NRC) is an independent agency created by Congress to license and regulate America's civilian use of byproduct, source and special nuclear materials. The NRC's mission is to protect public health and safety, promote the Country's common defense and security and to protect the environment. Numerous Federally Recognized Native American Tribes have interest in nuclear related regulatory issues, including, but not limited to, uranium recovery licensing and long-term strategies for treating mill tailings, reactor licensing, reactor inspection activities, reactor license renewal, nuclear waste transportation and nuclear waste disposal.

This paper summarizes NRC's outreach and communication practices and qualitative data derived from NRC staff, other Federal agencies and Tribal organizations which factored into the development of NRC internal Tribal Protocol practices for interacting with Tribes and the birth of an NRC Tribal Policy Statement.

Background

Despite ever increasing Tribal interactions, the NRC had no formal Tribal Policy Statement or any formal Tribal communication or outreach training for NRC staff. Beginning in 2007-2008, the uranium recovery industry expressed heightened interest in uranium recovery operations due in part to the rise in the spot price of uranium. During a December 11, 2008, briefing of the NRC Com

Native American Reservations and Trust Lands within a 50-Mile Radius of a Nuclear Power Plant



* Tribe is located within the 10-mile emergency preparedness zone.

San Onofre and Kewaunee ceased operations.

Note: This table uses NRC-abbreviated reactor names and Native American Reservation and Trust Land names. There are no reservations or Trust Lands within 50-miles of a reactor in Alaska or Hawaii. For more information on other Tribal concerns, go to the NRC Web site at: www.nrc.gov.

NRC-abbreviated reactor names listed



as of July 2015

mission on uranium recovery, staff discussed the status of uranium recovery license applications, including the environmental reviews affiliated with those applications. Furthermore, the staff addressed the status of both the NRC Generic Environmental Impact Statement for in-situ uranium recovery (GEIS) and rule-making on ground water protection at in-situ recovery facilities. Both of these activities were being performed in accordance with the National Environmental Policy Act (NEPA) and NRC's implementing regulations contained in 10 CFR Part 51. Since some current and future uranium recovery facilities

are located, or likely will be located, in or near Indian country¹, staff discussed NRC's Tribal outreach efforts, including opportunities for communicating regulatory notifications and other items of information pertaining to NRC activities, with interested Native American Tribes.² Tribal representatives participated in the briefing by providing their views on uranium mining and recovery operations in Indian country.

In June, 2009, in response to the above described briefing and the apparent need for improved Tribal communications, the Commission tasked NRC staff with the development and implementation of internal NRC Native American protocol practices for staff to utilize for interaction with Tribal governments. The NRC staff conducted research and interviews regarding the Federal government's relationships with Native American Tribes and examined recent Executive Orders governing interaction between Federal agencies and Tribal governments. The Commission's tasking, coupled with recent interest and involvement by Native American Tribes in NRC activities associated with the Advisory Council on Historic Preservation (ACHP), the National Environmental Protection Act (NEPA) and Section 106 requirements, have been influential in shaping NRC Tribal outreach protocol practices.

Federal and Tribal History - Policy & Relationships

The Federal government has a unique legal relationship with, and trust responsibilities for, Native American Indian Tribes, as

defined by and reflected in the United States Constitution, U.S. treaties, Federal Statutes, Executive Orders and numerous Federal Court decisions. Spanning hundreds of years, these historical documents and records define Federally- recognized Native American Tribes as sovereign "nations within a nation," or domestic, dependent nations or governments. As such, Tribal governments hold sovereign powers over their people and territories, and maintain that Federal and State governments relate to them as sovereign governments. Tribal government representatives expect to interact as sovereign nation representatives with official representatives of other governments. Such relationships are referred to as "government-to-government" relations. Moreover, the Federal government's trust responsibility for Native American Tribes serves to ensure the U.S. Government acts as trustee of Tribal interests and seeks to protect those interests. The various agencies of the Federal government must also consider the role they have in addressing those trustee responsibilities as well as the related implications of their actions.

The twentieth century brought about ideological changes to, and sparked the elevation of, the Federal government's trust responsibilities to Native American Tribes. On March 6, 1968, facing the dual challenges of nationwide poverty and civil rights unrest, President Lyndon Johnson addressed the U.S. Congress with a speech entitled "*The Forgotten American*"³. This speech outlined the plight of the American Indian and the direct steps needed to address some of the most egregious

THE FEDERAL GOVERNMENT HAS A UNIQUE LEGAL RELATIONSHIP WITH, AND TRUST RESPONSIBILITIES FOR, NATIVE AMERICAN INDIAN TRIBES.

problems facing Tribal governments such as health, education, economic development, civil rights, self-determination and the end of the termination policy. President Johnson's 1968 speech was the impetus that stirred the movement for self-determination for Native Americans, and was further advocated several years later by President Richard Nixon.

Executive Orders and Presidential Memoranda, dating back to Richard Nixon's 1970 "*Special Message on Indian Affairs*" addressed legislative and policy-making implications with regard to the American Indian community.⁴ President Nixon endorsed an enlightened self-determination policy for Native American Indians that changed the direction of national policy. After appointing Louis R. Bruce, a member of the Mohawk National Tribe in favor of self-determination, as Commissioner of Indian Affairs, President Nixon quickly moved to change federal policy impacting Indian Tribes. In a special message to Congress on July 8, 1970, President Nixon declared that the Federal government would assist Indians in pursuing "Self-Determination...without the threat of eventual termination." In this address, President Nixon further assured the nation that "the Indian could assume control over his own life without being separated involuntarily from

the tribal group." Congress subsequently passed the "*Indian Self-Determination and Education Assistance Act of 1975*".⁵ The passage of this Act allowed Native American Tribes the power to contract with the government on their own and it also allowed Tribes to determine how Federal monies were to be spent on Indian matters. By admitting, rejecting and countering then current Federal paternalistic policies, the Act had a strengthening effect upon Tribal rejuvenation.

NRC as an Independent Federal Agency-Executive Order 13175

By Executive Order, the White House urged, if not required, the departments and agencies of the Executive Branch, to consult with Federally-recognized Tribes in a manner that recognizes the government-to-government relationship between Federal agencies and Federally-recognized Indian Tribes. Executive Order 13175⁶ (November 2000), "*Consultation and Coordination with Indian Tribal Governments*," superseded a May 1998 Executive Order of the same title and established policymaking criteria and consultation provisions by which Federal departments and agencies were and are expected to comply.

As an independent Federal agency, NRC is not required to implement the provisions, policies and procedures established by the Order. Notwithstanding, ("Independent regulatory agencies are encouraged to comply with the provisions of this order."), the agency has relied on the definition of its' branding and the "official" proclamation of NRC as an "independent" regulatory Federal agency

exempted from all compliance with implications of the Order. Despite its decision at the time to not adopt a formal Tribal Policy, NRC stated its' adherence to the principles in the Order and to achieving its objectives through implementation of a "case-by- case" approach to interactions with Native American Tribes. However, the question remained: would the NRC adopt a formal Tribal Policy Statement and if so, when?

The Path Forward: NRC's Case-By-Case Approach to Tribal Outreach

Additional momentum prompting the adoption of NRC's internal Tribal Protocol occurred November 5, 2009, during the first White House Tribal Nations Conference. President Obama spoke to the largest assemblage of Native American Tribes in U.S. history and delivered his November 5, 2009 Memorandum.⁷ The President stated his administration's commitment to regular and meaningful consultation and collaboration with Tribal officials in policy decisions that have Tribal implications, including as an initial step, thorough, complete and consistent implementation of President Clinton's November 11, 2000 Executive Order 13175. During the second White House Tribal Nations Conference, President Obama further reiterated his administration's commitment to promote more governmental consultation with Tribal Nations in a speech delivered on December 16, 2010⁸:

"The United States has a unique legal and political relationship with Indian tribal governments, established

through and confirmed by the Constitution of the United States, treaties, statutes, executive orders, and judicial decisions. In recognition of that special relationship, pursuant to Executive Order 13175 of November 6, 2000, executive departments and agencies (agencies) are charged with engaging in regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, and are responsible for strengthening the government-to-government relationship between the United States and Indian tribes. History has shown that failure to include the voices of tribal officials in formulating policy affecting their communities has all too often led to undesirable and, at times, devastating and tragic results. By contrast, meaningful dialogue between Federal officials and tribal officials has greatly improved Federal policy toward Indian tribes. Consultation is a critical ingredient of a sound and productive Federal-tribal relationship."

-President Barack Obama, November 5, 2009

Prior to 2009, the NRC's case-by-case approach successfully allowed both NRC and the Tribes to initiate outreach and communication with one another. Staff routinely identified and initiated dialogue with Federally Recognized Native American Tribal Governments during NRC regulatory processes and

activities. Staff focused their outreach efforts on Native American Tribes that may be affected by, or have interest in, activities regulated by NRC or that could potentially be licensed by NRC. The NRC staff also engaged Tribes to provide information related to the Commission's policy and regulatory authority, highlighting opportunities for Tribal involvement and consultation during the regulatory process to involve them in the decision making process. NRC staff also maintained regular channels of communication with relevant Tribes and Tribal organizational entities and provided interested Tribes with general information upon request. During this period, Native American Tribal officials often initiated interactions with staff based on Tribal interest in particular NRC-regulated activities. Tribal concerns often reflected issues associated with NRC licensed (or proposed) activities located on or near, official reservation lands, in the vicinity of places of historical or cultural Tribal importance located off reservation lands, and involved with NRC-regulated activities for which the Tribe had developed a policy statement or position.

This two-way, case-by-case approach sought to establish a foundation of government-to-government working relationships that respects the right of self-government and self-determination by Native American Tribes. This approach appeared to be successful, having contributed to productive, government-to-government relationships in support of NRC staff's limited, but significant interaction with Tribes.

Topics in which NRC staff and the

Tribes engaged in informal government-to-government consultation included uranium recovery activities, reactor operations and license renewal, high-level and low-level radioactive waste storage and disposal concerns, and spent fuel transportation and disposal. The following are a few examples of interactions in which NRC staff made extensive efforts to meet the underlying goals and objectives of Executive Order 13175.

1. Power Reactor Inspections\ License Renewal—Prairie Island Indian Community (PIIC)

Located within the 10-mile Emergency Planning Zone of the Prairie Island Nuclear Generating Plant (PINGP) in Welsh, Minnesota, the Prairie Island Indian Community is the Tribal community most closely located in the vicinity of an operating nuclear power reactor. In 1997, after the Prairie Island Indian Community expressed interest in accompanying NRC inspectors during PINGP inspections, the Commission determined that tribal representatives could observe NRC inspections at the plant on the same basis as an adjacent State if the Tribe met the same requirements that an adjacent State would have to meet in similar circumstances. The Prairie Island Indian Community was authorized to observe NRC radiation protection inspections later that year. In 2008, NRC and the PIIC signed a Memorandum of Understanding (MOU) (to become a cooperating agency for preparing the Environmental Impact Statement (EIS) for the proposed license renewal of the PINGP)

for working together to review potential environmental impacts of the proposed license renewal of the PINGP. This was the first MOU with a Federally Recognized Native American Tribe dealing with a reactor license renewal environmental review.

2. Proposed Waste Repository – Timbisha Shoshone Nation

From 2001–2008, the NRC conducted Tribal outreach related to the proposed Yucca Mountain high-level waste disposal site in Nevada. In 2001 and 2003, the Commission hosted workshops for Native American Tribes with ties to Yucca Mountain. During that time, NRC staff learned of the Timbisha Shoshone Nation’s pursuit of “affected status,” under the Nuclear Waste Policy Act (NWPA), from the Department of the Interior (DOI) with regard to proceedings associated with the proposed waste repository. Under NWPA, “affected Tribes” are afforded special rights of notice, participation, consultation and financial assistance. NRC later met with DOI representatives, providing information on NRC regulations and hearing procedures and conveying the NRC’s interest in a timely decision on the Tribe’s request. In 2006, NRC staff visited the Timbisha Shoshone in Death Valley, California. In 2007, NRC staff met separately with DOI representatives at DOI headquarters in the District of Columbia regarding the Tribe’s renewed efforts to petition to DOI for “affected status.” The Tribe had applied for “affected status” in 2001, and absent any official reply from DOI, applied again in 2006. In 2008, after DOI granted their petition, NRC staff again

visited the Timbisha Shoshone to provide them with detailed information on the NRC’s licensing and hearing process, and how the tribe could participate. In 2009, the Timbisha Shoshone was admitted as a party to the Yucca Mountain hearings.

3. Potential Reactor Proposed for Galena, Alaska

Various Alaskan Tribes as represented by the Yukon River Inter-Tribal Watershed Council (YRITWC). In February 2005, NRC staff met with representatives of the YRITWC, an organization that currently represents 53 Federally recognized Tribes in Alaska and 17 First Nations (Native Tribes in Canada) located in the Yukon River Watershed. Staff met to discuss and answer questions on opportunities for communication with Tribal Governments with concerns about the potential citing of a nuclear reactor in Galena, Alaska, as initiated in 2003 by the City of Galena in talks with Toshiba Corporation. Since its first meeting, NRC established a Tribal Consultative Team (TCT) to address issues arising from YRITWC concerns about the possible citing of a reactor at Galena. The TCT maintained regular communications with the YRITWC. In August 2009, NRC staff participated in the YRITWC Bi-Annual Summit. The YRITWC Executive Directors and Tribal leaders spoke about the development of NRC Tribal protocols including the current status of the potential nuclear power reactor proposal.

NRC’s Proposed Tribal Policy Statement

As a direct result of all of the above catalysts and the recognition and realization that a formal Tribal Policy Statement was the right thing to do, the NRC has developed a draft Tribal Policy Statement. Currently, the NRC is asking for public comments on the proposed Tribal Policy Statement, as well as a revised Tribal Protocol Manual intended to encourage and facilitate involvement by Tribal governments in areas of NRC jurisdiction. The proposed Tribal Policy Statement and draft guidance to the staff on interacting with Federally recognized Tribes are the next steps in the agency's effort to formalize the process for engaging in consultation and coordination with Federally recognized Tribes. The NRC published a *Federal Register* notice outlining the documents on December 1, 2014 and asking for comments by June 1, 2014.⁹

The drafts are based on input the NRC received in 2012 after publishing the existing draft of a Tribal Protocol Manual outlining agency guidelines for consulting with Tribal governments. At that time, the NRC also asked for suggestions on how to strengthen government-to-government relationships and make them most effective. The NRC is producing the Tribal Policy Statement and updating the Tribal Protocol Manual in response to direction from the Commission in 2012 following an increase in the number and complexity of consultations between the NRC and Native American Tribes. The following six policy principles are proposed to establish effective government-to-government interactions with Indian Tribes, and to encourage Tribal involvement in the areas over which the Com-

mission has jurisdiction:

1. The NRC Recognizes the Federal Trust Relationship and Will Uphold its Trust Relationship with Indian Tribes.
2. The NRC Recognizes and Is Committed to a Government-to-Government Relationship with Indian Tribes.
3. The NRC Will Conduct Outreach to Indian Tribes.
4. The NRC Will Engage in Timely Consultation.
5. The NRC Will Coordinate with Other Federal Agencies.
6. The NRC Will Encourage Participation by State-Recognized Tribes.

Development of NRC Internal Tribal Protocol and Tools for Implementation

The U.S. Nuclear Regulatory Commission's (NRC's) decision to develop and implement internal Tribal protocol was fueled by many factors. As reflected in the previously cited examples, NRC staff committed themselves to addressing the concerns of Native American Tribes with interest in, or who may be affected by, NRC regulatory activities. Development and implementation of an NRC internal Tribal protocol, as requested by the Commission, was seen as a way to help foster and promote more effective interaction between NRC staff and Native American Tribal Governments in future interactions.

The development of an internal Tribal protocol was intended to enhance the NRC's

existing approach to Tribal interaction, not supplant it or establish a formal policy. Accordingly, NRC staff developed an internal Tribal protocol that educated staff on a provided set of practices, communication skills, cultural sensitivities and historical awareness that further fostered and promoted effective interactions between NRC staff and Native American Tribal Governments.

NRC had extensive experience working with Tribes through implementation of a case-by-case approach. However, few guiding principles, tenets, or practices for successful interaction with Tribes had been enumerated and made available to NRC staff. In order to develop and adopt an internal Tribal protocol that addressed the needs of the agency and the Tribes with which it interacts, NRC staff set out to examine Tribal outreach and communication practices at the NRC and to learn from external sources best practices for establishing and maintaining government-to-government relationships.

Beginning in 2009, the NRC's Federal, State and Tribal Liaison Branch (FSTLB) staff initiated a series of interviews with NRC personnel having experience working in government-to-government relationships, and included individuals in Federal, State, and Tribal organizations. Staff held interviews with personnel from various NRC Offices, including Office of Nuclear Materials Safety and Safeguards, Office of the General Council, Office of New Reactors, Office of Reactor Regulation, Office of Federal and State Materials and Environmental Management Programs, Office of Nuclear Security and Incident

Response, Office of Small Business and Civil Rights, Office of Public Affairs, and NRC Regions II, III, and IV.

NRC staff interviewed Tribal program coordinators in the States of Oklahoma, New Mexico, and Minnesota, with Tribal spokespersons from the Prairie Island Indian Community in Minnesota, with the Yukon River Inter-Tribal Watershed Council in Alaska, and with the National Congress of American Indians in Washington, D.C. Staff interviewed Federal agency personnel from eight agencies including the U.S. Environmental Protection Agency (EPA), the Department of Health and Human Services (HHS), the Department of Transportation (DOT), the U.S. Bureau of Indian Affairs (BIA), and independent agencies such as the U.S. Federal Communications Commission (FCC) and the U.S. Federal Energy Regulatory Commission (FERC), to gather information on best practices. The NRC staff also considered information gathered from literature and internet searches, and included information garnered during staff's review and assessment of other Federal agencies' Native American Tribal policies.

The Definition of "Protocol"

The NRC's internal Tribal protocol is a set of practices, communication skills, cultural sensitivities and historical awareness, intended to foster and promote effective interaction between NRC staff and Native American Tribal Governments. NRC's internal Tribal protocol includes, but is not limited to:

- Historical perspective illustrating the evolution of U.S. and Tribal

- relationships;
- Description of NRC's current case-by-case approach to Tribal interactions;
- Explanation of "government-to-government" relationships with, and federal trust responsibility to, Native American Tribes;
- Recognition of Tribes as sovereign governments, expectations of Tribal leaders when communicating with Federal representatives, and the role of and meaning behind "consultation;"
- Planning and communication skills and tools that will assist staff in establishing initial communications with Tribes, arranging meetings with Tribal leaders and Tribal technical staff, communicating NRC processes and opportunities for Tribal involvement.

The Development of Tribal Protocol Tools Tribal Protocol Manual

Staff also considered and developed tools that would promote NRC's internal Tribal protocol policy. Two of those tools, each considered a cornerstone of staff's implementation plan, are the NRC Tribal Protocol Manual (TPM) and assignment of an NRC Tribal Liaison (TL) point of contact, located in a NRC staff level organization, for Tribal affairs and Tribal program coordination. Currently that position is ascribed to the

Federal, State and Tribal Liaison Branch (FSTLB) staff in the Division of Materials Safety, States, Tribal and Rule-making (DMS-STR), Office of Nuclear Material Safety and Safeguards (NMSS). That staff level organization serves to coordinate and help address the NRC's Tribal issues at the programmatic and staff level.

The NRC Tribal Protocol Manual (TPM) -The NRC TPM is a reference tool intended to provide NRC staff with information that will allow them to develop and maintain government-to-government relationships with Tribes in preparation for, and throughout, NRC's regulatory processes. It is organized around three major subject areas considered essential to gain a greater understanding of Native American Tribes and issues of concern to them. Subject areas include an historical overview of U.S. and Tribal relations, a protocol for Tribal interaction, and Tribal reference tools. Information provided by NRC staff, other Federal and State agencies, and Tribal representatives was taken into consideration during the development of the TPM along with a compilation of qualitative interview data from internal and external sources.

Chapter 1 of the TPM sets forth historical information, providing a foundation for understanding the history behind the current relationships between the Federal government and the greater Tribal community. Chapter 2 highlights Tribal cultural differences and beliefs and provides detailed information for those staff that are engaged in government-to-government interaction with Tribes. Guidance ranges from basic tips for arranging

meetings to behavioral standards on Tribal reservations. Chapter 3 provides Tribal reference tools, including: NRC Tribal contacts, a map of Federally-recognized Tribes located within 50 miles of nuclear plants and links to other Federal agencies that have interaction with Tribes. The manual concludes with current statistics about U.S. Tribes. At the present time, an updated revision of the TPM is out for public comment (see footnote 9).

In addition to the March 2010 rollout of the TPM to NRC staff, on September 27, 2010, NRC hosted a workshop entitled "*Tribal Participation in NRC's Regulatory Process-NRC's Tribal Protocol*." This workshop, which was made available to all NRC personnel, both locally and regionally, addressed the rollout of the NRC Internal Tribal Protocol Manual. Workshop speakers included diverse presenters such as Jeff Besougloff, Associate Director, U.S. EPA American Indian Environmental Office (AIEO), discussing the U.S. Environmental Protection Agency Prospective: "*Tribal Outreach and Consultation*;" Elizabeth Homer, Homer Law, Chartered, a frequent instructor of Tribal outreach and consultation courses; and various NRC Program Directors. The workshop highlighted NRC's Tribal Protocol Manual and Tribal Coordination resources. The workshop also emphasized NRC's commitment to informing

Native American Tribes and Alaskan Natives in NRC's regulatory processes. Workshop panel discussion topics included Native American Outreach and NRC's Uranium Recovery Program, NRC's relationships with the Prairie Island Indian Community (in nuclear

power plant and license renewal), the Timbisha Shoshone (in Yucca Mountain activities), and establishing effective partnerships with Tribal communities. The workshop provided NRC staff with a solid foundation of reference tools and contacts to better perform their Tribal consultation duties and responsibilities.

Tribal Liaison

The NRC Tribal Liaison (TL) - The TL seeks to educate NRC staff about NRC's Tribal protocol. The TL also develops and implements additional protocol education tools, as necessary, and acts as a central point of contact for inquiries, both from staff and the Tribes, pertaining to issues of importance to Tribal governments. Upon request, the TL helps NRC staff identify and contact appropriate Tribal representatives and assists in facilitating government-to-government communication, as necessary, in support of NRC programmatic activities. The TL also acts as a central repository for collecting news and information about NRC actions involving Native American Tribes. Finally, establishment of the TL is communicated to Tribal communities, providing them with an agency liaison and resource dedicated to assisting their efforts to access appropriate NRC staff in order that they may identify and communicate at the appropriate programmatic level about regulatory activities of importance to them.

Beginning with its' Tribal liaison mission statement, "The NRC Tribal Liaison Team will advance the NRC's mission by fostering effective consultation, cooperation, and communication between the NRC and

Tribal government”, the FSTLB staff fulfills much of the liaison role with regard to broad, agency-wide Native American Tribal outreach and communication issues. Currently, FSTLB assists NRC staff across the agency in identifying Tribes having potential interest in specific programmatic areas and licensing activities. In addition, Tribes often contact FSTLB in an effort to learn about specific nuclear regulatory issues. FSTLB staff also provides appropriate programmatic staff with preliminary information about the request, and ensures communication between Tribes and technical staff is initiated. In summary, NMSS’s FSTLB has the experience and knowledge management necessary to perform this task. NMSS continues to work in close coordination with the NRC’s Deputy Executive Director for Materials, Waste, Research, State, Tribal and Compliance Programs, as staff adopts this expanded function.

Other Activities

On April 30, 2010, a letter of introduction from NRC Office of Federal and State Materials and Environmental Management (FSME) Office Director Charles L. Miller, Ph.D., was dispatched to all 565 federally recognized Native American Tribes and the National Congress of American Indians (NCAI)¹⁰. The letter reinforced NRC’s commitment to government-to-government communication. It also communicated NRC’s mission and requested current contact information for individuals with whom NRC would communicate regarding nuclear and radiological issues. The mailing contained several enclosures and

brochures that provided information about NRC and its mission, public involvement process and NRC power plant licensing.

In late 2010, work began on the creation of a NRC internal web-based Tribal Protocol Toolbox (Toolbox). The Toolbox, which is currently in its final stages of development and testing, will contain multiple Tribal reference guides, including a listing of all 565 Federally recognized Tribes and their Tribal leaders, maps showing all Federally recognized Tribal reservations in the United States, links to other Federal and State Tribal programs, links to the Department of the Interior, National Park Service, Native American Graves Protection Act (NAGPRA), State Historic Preservation Officers (SHPOs), Tribal Historic Preservation Officers (THPOs), the National Congress of American Indians (NCAI), Executive Orders, Memorandums and Initiatives pertaining to Tribes, Tribal media contacts and NRC Tribal contacts. After the completion of the NRC internal web-based Toolbox, development and implementation of an external, publically accessible Tribal Protocol Toolbox is envisioned as the next step in the evolution of a viable Tribal consultation communication tool.

Another aspect of Tribal outreach was the realization that educating NRC staff on compliance with NRC Regulations in 10 CFR Part 51 which implemented the Agency’s NEPA Regulations pertaining to environmental review documentation was a priority. The EIS process was examined with special attention to "Notice of Intent" and "Scoping" activities. Tribal outreach is paramount in realizing

the goals and tenets prescribed in the NEPA\ EIS process, particularly as it pertains to NRC's approval or disapproval of an application for a license, a license amendment or license renewal.

Additionally, Section 106 of the NHPA directs all Federal agencies to consider the effects of their "undertakings" on historic properties. The term "undertaking" denotes a broad range of Federal activities that are defined in NHPA implementing regulations. In the case of the NRC, an undertaking typically involves the approval or disapproval of an application for a license, license amendment or license renewal.

NRC staff requested ILB staff to develop comprehensive guidance in order to be in compliance with the National Historic Preservation Act (NHPA) Section 106 process, with special emphasis on Tribal outreach. The NHPA promotes historic preservation by ensuring that potentially adverse effects upon historic properties are considered part of NRC's decision-making process. The NHPA is a procedural statute; it mandates that agencies follow a process, but it does not mandate a particular substantive agency action. Section 106 establishes a consultation process that Federal agencies must follow before taking or approving actions that have the potential to affect historic properties.

In order to develop Section 106 guidance, 36 CFR Part 800 "*Protection of Historic Properties*," FSTLB staff familiarized themselves with NEPA and Section 106 processes by completing extensive NEPA training sponsored by the Nichols School of the Environ-

ment, Duke University, and the Advisory Council on Historic Preservation (ACHP). Armed with NEPA and Section 106 training and, under the umbrella of the Tribal Protocol initiative, FSTLB staff developed NEPA and Section 106 Guidance document which explained those processes in detail. The Guidance document provided background on regulations, NRC practical applications, step-by-step instructional guidance, regulatory adherence references and examples and links of previous NEPA and Section 106 work products. All of the NEPA and Section 106 guidance developed appears in a separate section of the Tribal Protocol Toolbox.

On May 17, 2011, NRC's FSTLB hosted a "*NRC Customized Tribal Consultation & Section 106 Workshop*." The purpose of the workshop was to instruct NRC staff on the NEPA and Section 106 process, with specific focus on Tribal outreach and interaction. After consulting with the Advisory Council on Historic Preservation (ACHP), a suggestion was made to employ Georgeie Reynolds, Ph.D., instructor from the U.S. Army Corps of Engineers, to conduct the workshop.

Dr. Reynolds had extensive field experience and agreed to participate in the workshop. The Section 106 workshop was broken up into three areas of focus: (1) "*A Brief Federal History of Indian Policy*" (2) "*Consultation in the Context of Section 106 Review*" and (3) "*Consultation Strategies*." Attendance at the workshop was extended to NRC Headquarters and all NRC Regional offices. Audience participation was encouraged and staff peppered the presenter with

practical questions from beginning to end. Workshop attendees were given a workbook containing all of Dr. Reynolds slides and a copy of the TPM. NRC staff was also supplied with a DVD copy of the workshop.

As a direct result of new NRC regulations enacted in 2013 regarding the advance notification to Tribes of the transportation of nuclear materials and waste, mass mailings were dispatched to all 566 Federally recognized Tribes soliciting their possible interest in such notification. Upon receipt of responses from interested Tribes, safeguard training was offered. Additionally, a new Google Earth mapping tool was developed to enable Tribes to locate transportation routes within their reservation boundaries.

In the spring of 2014, NRC launched a pilot Tribal training initiative based in response to requests made in recent NRC hosted public meetings. The requests proffered were to better explain some of the “science” behind the NRC decision making processes. The NRC began conducting a series of educational seminars to provide Tribes with information on issues that may have direct effects on Tribal health and safety. Some of the topical questions addressed in the training include “What is radiation and what is contamination?”, “What are the effects of radiation exposure?” and “What is uranium recovery?” The training seminars were held at Tribal colleges, including the Salish Kootenai College, the Wind River Tribal College, the Dine College, the United Tribal Technical College and the Navaho Technical College. The free training sessions were open to the

general public and were conducted in concert with Tribal and NRC instructors. Based on the feedback questionnaires and comments from students, the NRC plans to expand this Tribal training nationwide and to customize the subject matter based on local Tribal interests. In addition, Tribal training webinars are under development to include a more widespread distribution of the Tribal training session materials to a broader audience.

Finally, a promising new initiative is being developed in conjunction with multiple Federal agencies, including the NRC, and spearheaded by the Department of Homeland Security. This new joint effort is an attempt to develop a Tribal certification program whereby, through a series of instruction and training, Federal employees can receive a Tribal certification to work and communicate with Tribes, with a consistent, balanced and collegial message.

Summary

There will never be a time when Native American Tribes will have a say in the rules and regulations governing the operations of nuclear power plants, nuclear power reactors or the nuclear program that is run in the United States of America. Those governing tenets are under the purview of the U.S. Nuclear Regulatory Commission and, as prescribed by law, shall not be shared with any governing body or sovereignty, as prescribed by the United States Congress. This basic approach will not change. This does not mean, however, that the past, current or future performances of the NRC cannot be approved

upon or altered to accommodate the views and opinions of Native American Tribes. Tribes should be able to share their views pertaining to the business of running the nuclear power plants, disposal and storage of nuclear waste and uranium recovery. Finally, with the adoption of an official Tribal Policy Statement in place, the NRC can begin to move forward with a prescribed course of action. In conjunction with the Tribal Policy Statement, the path forward is for NRC to take the pulse of the Tribes on all issues surrounding public health and safety. Armed with this mandate, the agency must continue to teach NRC employees how to reach out and listen. The NRC's internal Tribal Protocol guidance promotes NRC goals and objectives that support effective outreach, communication, and consultation, on a government-to-government basis, with the Native American Tribes.

NRC's internal Tribal Protocol practices echo the language and spirit of key Presidential initiatives and Executive Orders aimed at supporting the past and the current era embracing Native American self-determination. At a minimum, such tools and their implementation by NRC staff communicate to Native American Tribes and others, that NRC is cognizant of its' trust responsibilities to the Tribes. NRC's tailored approach to government-to-government outreach and communication with Tribes also reflects the spirit of Presidential policy and intent. NRC is committed to maintaining and improving staff awareness and responsiveness to Native American Tribal communities who have an interest in

NRC regulatory activities.

The NRC staff believes enhancements to its current methodology, through Internal Tribal Protocols, as originally requested by the Commission and coupled with the newly adopted Tribal Policy Statement, will improve staff's outreach and communication skills with Native American Tribes. These and other tools provide internal guidance to NRC staff's interaction with Tribal governments. This guidance seeks to enhance interaction by providing staff with information regarding historical relations between the Federal government and Tribes, Tribal culture, and behavioral guidance for Tribal interaction. The implementation and development of an NRC internal Tribal Protocol is an ongoing, evolutionary process that is just beginning to come to fruition. The development and utilization by NRC staff of the protocol will result in greater recognition by Native American Tribes of NRC's commitment to the goals of recent Presidential directives.

The most exciting result of the above consultation tools and initiatives however, is the prospect of a successful commitment to the promises made by the recent Presidential Orders and directives for the commitment to, and completion of, an NRC formal Tribal Policy, demonstrating that the NRC is committed to embracing its regulatory consultation obligations with Native American Tribes and proudly standing behind that commitment.

"But there can be no question that the government and the people of the United States have a responsibility to

the Indians. We must affirm their right to freedom of choice and self-determination. We must seek new ways to provide Federal assistance to Indians-- with new emphasis on Indian self-help and with respect for Indian culture. And we must assure the Indian people that it is our desire and intention that the special relationship between the Indian and his government grow and flourish. For, the first among us must not be last."

-Lyndon Johnson, March 6, 1968

"It does not require many words to speak the truth."

-Chief Joseph, Nez Perce, 1879

Endnotes

1. 1 United States Code: Title 18 § 1151, Except as otherwise provided in sections 1154 and 1156 of this title, the term “Indian country”, as used in this chapter, means: (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.
2. Additional information regarding Tribal outreach related to uranium recovery is available in “U.S. Nuclear Regulatory Commission Strategy for Outreach and Communication with Indian Tribes Potentially Affected by Uranium Recovery Sites.” This document is available online at <http://www.nrc.gov/materials/uranium-recovery/public-meetings/ind-tribe-strat.pdf>.
3. President Johnson’s March 28, 1968 speech “The Forgotten American” can be found online at <http://www.presidency.ucsb.edu/ws/index.php?pid=28709&st=&st1=#axzz1UjOSUIS>
4. On July 8, 1970, President Nixon issued a “Special Message on Indian Affairs.” <http://www.presidency.ucsb.edu/ws/index.php?pid=2573#axzz1TUrsjfcR>. President Nixon formally brought the termination policy to an end, announcing a new Federal policy of Indian Self-Determination. Subsequently, Presidents Ronald Reagan, George H.W. Bush, William J. Clinton, George W. Bush and Barrack H. Obama issued policy statements regarding the Federal government’s relationship with Native American Tribes.
5. “The Indian Self-Determination and Education Assistance Act of 1975” is available online at http://law.cornell.edu/uscode/25/usc_sup_01_25_10_14_20_II.html
6. Executive Order 13175 November 6, 2000 65 FR 67249. It is available online at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2000_register&docid=fr09no00-167.pdf
7. On November 5, 2009, President Obama issued a “Tribal Consultation” Memorandum detailing plans and actions to implement the policies and directives of Executive 13175. This Memorandum may be found at : <http://edocket.access.gpo.gov/2009/pdf/e9-27142.pdf>
8. On December 16, 2010, President Obama addressed the second White House Tribal Nations Conference and his speech can be found at: <http://www.whitehouse.gov/blog/2010/12/16/kicking-white-house-tribal-nations-conference>
9. Tribal Policy Statement: <http://www.gpo.gov/fdsys/pkg/FR-2014-12-01/pdf/2014-27325.pdf> Tribal Protocol Manual: <http://www.gpo.gov/fdsys/pkg/FR-2014-12-01/pdf/2014-27324.pdf>
10. April 30, 2010 letter from Dr. Charles L. Miller, Director, Office of Federal and State Materials and Environmental Management Programs to National Congress of American Indians President Robert Holden and all 565 federally recognized Native American Tribes. <http://adamswebsearch2.nrc.gov/IDMWS/ViewDocByAccession.asp?AccessionNumber=ML100840056>

**The Nuclear Regulatory
Commission Generic
Environmental Impact
Statement for In-situ Uranium
Recovery: Discussion of the
Need and Process, Emphasizing
Stakeholder Interactions**

By
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2010

The Nuclear Regulatory Commission (NRC) has undertaken the development of a Generic Environmental Impact Statement (GEIS) as a programmatic assessment of the potential environmental impacts associated with uranium recovery at milling facilities employing the in-situ leach (ISL) or in-situ recovery (ISR) process, principally in the Western United States. The GEIS will be conducted in accordance with the National Environmental Policy Act of 1969 (NEPA) and NRC's implementing regulations contained in 10 Code of Federal Regulations (CFR) Part 51. Site-specific Environmental Assessments (EA) will be tiered from the GEIS to the maximum extent practical with site-specific Environmental Impact Statements (EIS) prepared in cases where the range of environmental impacts of the evaluated alternatives at a specific site may not be within the bounds of those considered in the GEIS.

The decision to undertake the development of the GEIS was driven by the increasing interest in uranium recovery within the United States as part of the larger nuclear renaissance taking place here and abroad. The nuclear renaissance is driven in large part by concerns about global warming given that nuclear power produces a minimal carbon footprint and is an extremely efficient means to provide a reliable baseload source of electricity. This renaissance is also driven by the markedly increasing need for reliable energy within both developed countries and the growing economies in countries such as China and India. Currently, there are more than 300 new nuclear power plants planned or under construction around the world¹. The demand for uranium is expected to

grow considerably over the next several years given that multiple countries around the world are currently operating nuclear reactors and are seeking to expand that capacity while many other countries are seeking to develop new nuclear power generating capacity.

Nuclear power currently produces 16 percent of the world's electricity and approximately 20 percent of the electricity generated in the United States². The percentage of electricity supplied by nuclear power has remained steady over several decades, due in large part to power upgrades and through increased efficiency in operations, rather than new power plants coming on line. The US currently has 104 nuclear power reactors and the prevailing mindset amongst utility companies is that such capacity should be expanded considerably. The NRC Public Web Page indicates that the NRC currently has 17 Construction and Operating License (COL) applications for 26 new reactors to review and may receive as many as 21 COLs for 33 new reactors over the next few years.

Nuclear power plants are fueled by uranium hexafluoride UF₆, converted into UO₂ powder, which is processed into ceramic pellets, placed into fuel rods which are part of a larger fuel assembly. Fuel assemblies contain up to 264 fuel rods and are approximately 12 feet long. Such fuel assemblies are used to power both Boiling Water Reactors (BWR) and Pressurized Water Reactor (PWR) in the United States and around the world. The average 1,000 Megawatt (MW) nuclear reactor uses approximately 500,000 pounds of uranium per year and requires approximately 2 million pounds for initial full core loading startup.³

In terms of uranium supply to meet the growing demand, in 2006, all uranium producing countries produced an estimated 103 million pounds of uranium (58 percent from primary production and 42 percent from secondary production; in terms of process, 9 percent using byproduct recovery, 25 percent using in-situ recovery, and 66 percent using conventional mining).⁴ On an international basis, this level of production would result in a future shortfall of uranium supply of approximately 74 million pounds annually.⁵ The US produced 4 million pounds of uranium in 2006 and therefore, domestic nuclear reactors have been forced to obtain uranium from foreign producers, resulting in a significant US dependence on foreign energy sources in a tighter international market.⁶ The current market conditions, coupled with a rising demand for more uranium in view of the growth of nuclear power around the world, has caused a dramatic increase in the price of uranium from \$7-8 per pound in 2002 to \$80-\$130 per pound in 2007. The US imports the majority of its uranium from Canada and Australia with a smaller amount coming from Asian countries such as Kazakastan.

The current international market, the need to counter dependence on foreign energy sources, and the high prices paid for uranium are driving a rapidly expanding industry in the United States. As a result, the NRC estimates as many as 29 applications for new, expanded or restart uranium recovery operations over a four year period which commenced in 2007. The NRC is responsible for regulating uranium milling, to include heap-leach, conventional

and in-situ recovery of uranium. Specifically, under the Atomic Energy Act of 1954, as amended, (AEA), the NRC has statutory responsibility for protection of public health and safety and the environment related to source materials (defined as uranium and thorium). One significant NRC responsibility as set forth in 10 CFR Parts 40.1 and 40.3 is to issue source material licenses to “receive title to, receive, possess, use, transfer, or deliver any source material after removal from its place of deposit in nature”. The regulatory criteria to be satisfied in obtaining a license from the NRC for these purposes is contained in 10 CFR Part 40, Appendix A. The licensing process includes both an extensive documented safety analysis and a comprehensive environmental review.

The industry prefers to utilize in-situ recovery whenever possible because it is less costly, more efficient and considerably more environmentally friendly provided the necessary conditions such as ground-water hydraulic barriers, permeability and leachability are present. The major downside of in-situ recovery is that it takes place within a ground-water aquifer which must be restored to either baseline conditions (pre- operational), Environmental Protection Agency (EPA) drinking water standards, or to an approved alternate concentration limit. However, the in-situ recovery can only take place within an exempted aquifer or that portion of the aquifer that has been exempted by the EPA. The criteria for aquifer exemption is set forth in 40 CFR 146.4, which in essence requires that the aquifer may not serve as an underground

source of drinking water.

NEPA requires all Federal agencies, including the NRC, to assess the potential environmental, social and economic impacts resulting from various alternative courses of action during the planning stages of projects, plans, policies, and programs.⁷ The analysis helps inform Federal decision-makers of the impacts that could result from the selection of one of the various alternatives under consideration. The NRC decided to develop a GEIS or Programmatic Environmental Impact Statement (PEIS) following NEPA requirements and Council on Environmental Quality (CEQ) Implementing Regulations in 10 CFR 40 Parts 1500 to 1508 to address general impacts on human health and the environment resulting from ISR uranium recovery licensing and operations. The GEIS will serve as a programmatic document on which site-specific assessments and related compliance documentation will be based. The GEIS will serve as a bounding document upon which site-specific EAs will be tiered and will serve as the major baseline analysis for any site specific EISs if a Finding of No Significant Impact (FONSI) cannot be reached in completing the site-specific EA.

The NRC requirements in 10 CFR Part 51.20 (b)(8) specify that issuance of a license to possess and use source material for uranium milling or production of uranium hexafluoride pursuant to Part 40 requires the development of an EIS to support the licensing action. The decision by the NRC to conduct the GEIS was driven to a large degree by resource limitations while striving to fulfill

the requirements for conducting an EIS.

Putting this concern in context, the NRC staff estimated that it would take approximately 2 Full Time Equivalents (FTE) and \$1.5 Million to conduct an EIS for each of the new ISR applications and minimally an EA for each expansion or restart. Thus, it became readily apparent that such resources would not be obtainable in a timely manner given overall competing agency needs for resources, especially in view of agency growth to support all of the COLs in house or expected near term.

Given this situation, the most efficient and cost effective way to fulfill all environmental review requirements was to use the PEIS allowed by CEQ regulations through development of the GEIS. The NRC staff estimated that this approach would result in saving an estimated 7 FTE and \$6.2 Million over the planning and review period, assuming all ISR applications are received as indicated in Credible Letters of Intent submitted by the companies planning to pursue ISR of uranium. In addition, the decision to conduct the GEIS will reduce duplicative findings given the large number of sites expected to be licensed and will allow a better focus at each of the sites relative to any site-specific conditions such as ground water hydrology or cultural history issues.

It is also worth noting the staff initially considered having the GEIS address both ISR facilities and conventional mills. However a decision was made to limit the GEIS to ISR facilities because the impacts associated with a conventional mill, such as mill tailings impoundment etc., would make reaching a

FONSI conclusion extremely unlikely. Moreover, the expectation was that only a limited number of applications for conventional mills was expected and the economy of scale did not warrant modifying the planned GEIS to include these facilities. However, the NRC did develop a GEIS in 1980, NUREG-0706 to address conventional milling for uranium recovery and very little has changed since that time regarding this uranium recovery technique.



*Smith Ranch Site,
Douglas, Wyoming*

The NRC staff decided to utilize the services of the Center for Nuclear Waste Regulatory Analyses (CNWRA) to develop the GEIS given the ongoing contractual arrangements with the CNWRA to provide support for review of the Yucca Mountain application for a high level waste repository coupled with their expertise in the earth sciences and environmental reviews. The contract with CNWRA required that they prepare a Purpose and Need Statement; develop the proposed action and alternative; conduct site visits; develop a description of the affected environment;

develop a description of environmental impacts as part of the GEIS; prepare a Scoping Summary Report and provide technical assistance to the NRC staff during a series of public meetings as part of the scoping process as well during review of the Draft GEIS.

In developing the description of environmental impacts, the CNWRA was directed to utilize previous applicable NEPA reviews as appropriate; NUREG-1569: Standard Review Plan for In-Situ Leach Uranium Extraction License Applications; NUREG-1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs and Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills. These documents served as the baseline for identifying cumulative impacts, potential impacts, postulated accident scenarios and typical historic or planned mitigation measures. All of the areas of potential environmental impacts set forth in NUREG-1748, Section 5.4 were to be evaluated including: Land use; Transportation; Geology and soils; Water resources; Ecology; Meteorology, Climatology and air quality; Noise; Historic and cultural resources; Visual/scenic resources; Socioeconomic; Environmental justice; Public and occupational health and Waste management.⁸

The GEIS was structured in a manner that will provide maximum utility for future site-specific reviews and that may alleviate some of the public concerns that have been expressed regarding legacy issues from previous uranium recovery activities or as expressed during the scoping process. The GEIS does not consider specific locations or facili-

ties, rather it provides an assessment of potential environmental impacts associated with the construction, operation, decommissioning and aquifer restoration for ISR facilities which might be built in four regions of the Western United States. The four regions were used as a framework for discussion within the GEIS and were identified based upon several considerations including: Past and existing uranium milling sites located within States where NRC has regulatory authority over uranium recovery; Potential new sites are identified based on NRC's understanding of industry interest in pursuing uranium recovery through use of the ISR technology and Locations of historical uranium deposits within portions of Wyoming, Nebraska, South Dakota and New Mexico.⁹



*Crow Butte Site,
Chadron, Nebraska*

Using these criteria, four geographic regions were identified as follows: Wyoming West Uranium Milling Region; Wyoming East Uranium Milling Region; Nebraska-South Dakota-Wyoming Uranium Milling Region and

Northwestern New Mexico Uranium Milling Region.¹⁰ The foundation of the environmental assessment in the Draft GEIS is based on the historical operations of the NRC licensed ISR facilities and the affected environment in each of the four regions. The GEIS categorizes the potential environmental impacts using significance levels. According to the CEQ, the significance of impacts is determined by examining both context and intensity (40 CFR 1508.27). Context is related to the affected region, the affected interests, and the locality, while intensity refers to the severity of the impact, which is based on a number of considerations.¹¹ In developing the GEIS, the NRC used the significance levels identified in NUREG-1748 as follows¹²:

- **Small Impact:** The environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource considered.
- **Moderate Impact:** The environmental effects are sufficient to alter noticeably, but not destabilize important attributes of the resource considered.
- **Large Impact:** The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource considered.

The GEIS provides NRC's evaluation of the potential environmental impacts utilizing this significance model for each of the criteria set forth in Section 5.4 of NUREG-1748, as

cited earlier, relative to the construction, operation, decommissioning and aquifer restoration at an ISR facility in each of the four uranium milling regions.¹³ As might be expected, the impacts range from Small to Large depending upon the activity evaluated, (transportation impacts or groundwater impacts etc.).¹⁴

NEPA, CEQ implementing regulations and the corresponding NRC requirements in 10 CFR Part 51 are designed to provide an explanation of major Federal actions impacting the environment and to allow the public to participate in the decision making process.¹⁵ Certainly these objective were paramount when the NRC staff was planning the Scoping Process and the overall stakeholder outreach associated with the development of the GEIS. These objectives were especially important in this instance, given the legacy issues associated with uranium recovery during the 1940s and 1950s in the Western United States, and the various strongly held views by some stakeholders as to whether uranium recovery should take place again, given that some of the earlier uranium mines have not been completely remediated. Such concerns have been expressed very strongly by the Navajo Nation in a resolution which forbids uranium recovery on Navajo land until such time as adverse economic, environmental and human health effects from past uranium mining and process have been eliminated or substantially reduced to the satisfaction of the Navajo Nation Council.¹⁶

The NRC published a Notice of Intent to prepare the GEIS in the Federal Register on

July 24, 2007.¹⁷ The notice indicated the purpose of the GEIS and pointed out that the NRC would continue with the scoping process until September 4, 2007. In addition, the notice indicated that the NRC planned to conduct two public meetings as part of the scoping process to be held in Casper, Wyoming and Albuquerque, New Mexico. The two facilitated public meetings were well attended and the NRC staff received a request to add another public meeting to be held near the Navajo Nation and to extend the public comment period. As a result of these requests, the NRC decided to respond positively and in another revised notice¹⁸, added a facilitated public meeting to be held in Gallup, New Mexico and extended the public comment period until October 8, 2007.

The public meeting held in Gallup, New Mexico very close to the Navajo Nation, included the use of a Navajo college professor to serve as an interpreter and provide an explanation of the GEIS and the scoping process to Navajo attendees to enhance their overall understanding of the issue. On September 27, 2007, the NRC published a second Federal Notice¹⁹ indicating that the public comment period was extended until October 31, 2007, as the result of several requests both in writing and as expressed during the public meetings to extend the public comment period. Subsequently on November 1, 2007, the NRC published a third revised notice²⁰ extending the public comment period until November 30, 2007. This extension was granted at the request of the National Mining Association who wanted to provide a compre-

hensive Generic Environmental Report as part of the public comment gathering process. The NRC decided to respond favorably to this request, given that the association represents the uranium recovery industry and had realized a great deal of effort and expense to prepare the report. Furthermore, the NRC staff thought that the report would contain much historical environmental and technical information useful to the preparation of the GEIS. The notice pointed out that this was the third extension of the comment period resulting in approximately 130 days of public comment gathering which greatly exceeded the typical length of NRC scoping periods.

The GEIS Scoping Report summarizing the determinations and conclusions reached in the scoping process was prepared by the CNWRA for the NRC in June 2008. The report indicated that 79 individuals offered comments during the three public scoping meetings and that many of the commenters chose to make comments well beyond the GEIS scope, preferring instead to comment on the more general topic of uranium mining or milling.²¹ The report did note that the commenters expressed an opinion, either favorable or unfavorable, on either the GEIS or uranium mining or milling.

Approximately one half of the commenters expressed support for either the GEIS or for uranium mining while the other half neither supported the GEIS nor uranium mining or milling.²² Additionally, nearly 1400 individuals sent in written comments by electronic mail with approximately 90 percent of these comments being provided as identical

“form letters” opposing the GEIS.²³ About 2 percent of the electronic messages were modified versions of the form letter (mostly opposing) and the remaining comments were unique individual letter addressing a variety of topics. Approximately 5 percent of the electronic submittals were from locations outside the United States.²⁴

The Draft GEIS was then published for public comment in July 2008 as NUREG- 1910, Vol. 1 and Vol. 2.²⁵ The notice of availability for public comment was published on July 28, 2008.²⁶ The notice announced that the Draft GEIS would be available for public comment for a period of 90 days and that the NRC staff would hold as many as eight public meetings in Wyoming, South Dakota and New Mexico as part of the public comment gathering process on the draft document.

The public meetings were well attended with stakeholders providing a broad spectrum of comments on the GEIS and on the general topic of uranium mining and milling. The views of the commenters were both favorable and unfavorable to the contents of the Draft GEIS and the technical approach utilized, i.e. the four regions, as well as to the approach of utilizing a programmatic analysis including the use of tiering versus preparation of a site-specific EIS for each ISR facility.

During the public meetings the NRC received several requests to extend the public comment period for an additional 180 days. On October 3, 2008, the NRC announced²⁷ an extension of the comment period for an additional 30 days which would allow additional comment gathering while working to

stay on schedule to complete the Final GEIS in June 2009.

The NRC staff received 2,200 comments focusing on 40 areas of the draft document. Sixty five of the comments received were supportive of the GEIS, while approximately 35 of the unique letters expressed opposition to the GEIS.²⁸ In addition, approximately 1,500 identical letters expressed opposition to the document. A significant number of the comments addressed cumulative effects; Native American issues; ecology; federal and state interactions; groundwater; cultural resources; legacy sites; and public interaction. Ground-water issues received the most attention primarily focusing on the risk of excursions and leaks to water supplies and the ability to restore the groundwater to baseline conditions.²⁹ Legacy comments focused on historical excursions and resultant impacts to health and the environment as well as the legacy of conventional mining and milling.³⁰

Several commenters expressed the view that the GEIS should include a more comprehensive treatment of cumulative effects and specifically noted the need to consider historic mining activities and reasonably foreseeable activities that may contribute to environmental impacts.³¹ Native American concerns focused on environmental justice, impacts to cultural resources and jurisdictional issues. Ecology comments were generally related to concerns about habitat disruption due to land disturbance and hazards posed by waste streams. Comments regarding federal and state interactions primarily related

to the impact on federal lands and consideration of state requirements and actions.

Several commenters expressed concern that the GEIS would limit public involvement and was “fast tracking” a thorough review and many commenters requested that site specific EIS’s should be conducted for each site.³² All of these comments will be considered and evaluated as the NRC staff finalizes the GEIS which is currently scheduled to be completed in June 2009.

The NRC made a concerted and successful effort to fulfill all of its obligations to the NEPA process in developing the GEIS both in terms of intent and to the letter of the law. In addition to the various public notices and public comment gathering meetings discussed earlier, the agency communicated with the Governor of the State of New Mexico and met with public health officials of that state to explain the use of the GEIS; entered into a Memorandum of Understanding with the State of Wyoming as a Cooperating Agency for the development of the GEIS and met with the Navajo Nation to better understand their concerns and to clarify the role of the GEIS.

Throughout the overall process of developing the GEIS a number of key issues and lessons learned were revealed including the following: 1) The role of the Programmatic EIS (GEIS in the NRC approach) was misunderstood and questioned; 2) The degree of public participation markedly impacts the overall project timeline for completion; 3) Industry needed an explanation of the timing of the GEIS as compared to conducting site-specific EIS’s for each facility; 4) Certain sites

may require conducting a site-specific EIS regardless of the thoroughness of the GEIS; 5) Uranium recovery generates strong views amongst the public both for and against it; 6) Contractors assisting Federal agencies in developing programmatic environmental impact statements must have expertise in the NEPA process; 7) There is an overall mistrust of the environmental review process and 8) The public and stakeholders must be involved early and effectively in the process. In the final analysis, the NRC believes that the GEIS will be thorough and effective in evaluating the environmental impacts of ISR, provides efficiency in the environmental review process, avoids redundancy, utilizes the tiering process as envisioned by CEQ regulations and was absolutely necessary in order for the NRC to fulfill its NEPA obligations relative to ISR in view of resource constraints. Furthermore, the development of the GEIS placed a great deal of emphasis on stakeholder outreach: not only within the scoping process and public comment gathering efforts; but also through enhanced public meetings; extended comment collection and meetings with Native Americans; as well as with the states in which in-situ uranium recovery will take place. In the final analysis, while this was an expensive and labor intensive process, it was the appropriate course of action, especially in view of the legacy issues associated with uranium recovery and the potential importance of this technology in addressing our future energy needs.

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Section FOUR

Case Studies

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**Lessons Learned from the
Development of the First Three
Supplemental Environmental
Impact Statements Tiered from the
Nuclear Regulatory Commission's
Generic Environmental Impact
Statement for In-situ
Uranium Recovery Facilities**

By
Kevin Hsueh
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Rockville, Maryland
2014

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Introduction

The *In-Situ* Recovery (ISR), also known as *in-situ* leach milling, is used to recover uranium from low-grade ores or deeper deposits that are not economically recoverable by conventional mining and milling techniques. In this process, a leaching agent, such as oxygen with sodium carbonate, is injected through wells into the underground ore body to dissolve the uranium. The uranium solution is then pumped out of ground and taken by pipes to the surface and passed through ion exchange columns. The uranium adheres to resin beads in the columns. The resin beads are then transported to a processing plant where the uranium is washed off the beads and dried. The resultant product, a mixture of uranium oxides also known as “yellowcake,” is placed in drums prior to shipment offsite for further processing. Eventually, the yellowcake can be used to make fuel for nuclear power plants and other products.

The Atomic Energy Act of 1954 and the Uranium Mill Tailings Radiation Control Act of 1978 authorize the NRC to issue licenses for the possession and use of source material and byproduct material. The statutes require NRC to license facilities that meet NRC regulatory requirements that were developed to protect public health and safety from radiological hazards. ISR facilities must meet NRC regulatory requirements in order to obtain a license to operate.

NRC designed the licensing process to assure the safe operation of ISR facilities. In addition to information contained in a technical report for a safety evaluation review,

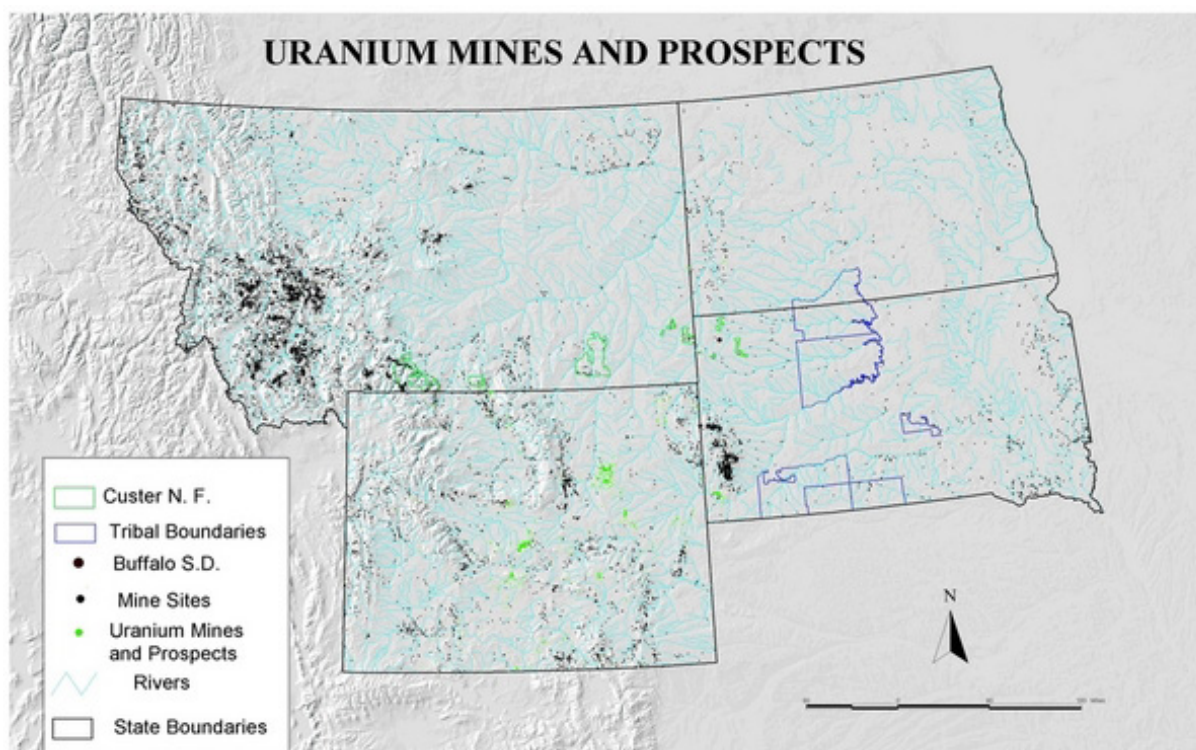
license applicants must submit an environmental report as part of their license application. The NRC’s detailed technical review of a license application is comprised of a safety review and an environmental review. These two reviews are conducted in parallel. The focus of the safety review is to assess compliance with the applicable regulatory requirements in the *Code of Federal Regulations* (CFR), Title 10, Part 20, Part 40, and Part 40, Appendix A. The environmental review is conducted in accordance with the regulations in 10 CFR Part 51, which implement the National Environmental Policy Act of 1969 (NEPA). In addition, the NRC has been performing its National Historic Preservation Act (NHPA) Section 106 consultation in coordination with NEPA for uranium recovery projects in recent years so that the required environmental and historic preservation review and documentation efforts can be accomplished in a single process¹. Issuance of a materials license to possess and use source and by-product materials for new ISR facilities requires an environmental impact statement (EIS) or a supplement to an EIS², and the completion of the NHPA Section 106 process.

The NRC prepared the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities (GEIS)³ to help fulfill its regulatory requirements. The GEIS was prepared to assess the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISR facility. NRC developed the GEIS based on its experience in licensing and regulating ISR facilities gained

during the past 30 years. In the GEIS, the NRC did not consider specific facilities, but rather provided an assessment of potential environmental impacts associated with ISR facilities that might be located in four regions of the western United States. As such, the GEIS provides a starting point for NRC's NEPA analyses on site-specific license applications for new ISR facilities, as well as for applications to amend or renew existing ISR licenses.

ter County, Wyoming.

Originally, NRC staff planned to develop site-specific Environmental Assessments (EAs) for the three ISR applications. However, during the public comment period for the GEIS in summer and fall of 2008, many of the public comments received expressed concerns that the impacts considered in the GEIS were not based on enough site-specific information. In addition, the public expressed concerns



http://firstvoices.typepad.com/my_weblog/files/uranium-map-small.jpg

The NRC accepted three new ISR license applications between December 2007 and June 2008. The three ISR projects are: (1) the Moore Ranch Project, proposed by Uranium One in Campbell County, Wyoming; (2) the Nichols Ranch Project, proposed by Uranerz Energy Corp. in Campbell and Johnson Counties, Wyoming; and (3) the Lost Creek Project, proposed by Lost Creek ISR, LLC, in Sweetwa-

that the GEIS would limit opportunities for public involvement, because development of site-specific EAs tiered off of the GEIS would not allow the same opportunities for public comment as a site-specific EIS. As a result of the review and analysis of the public comments for the GEIS, in summer 2009, NRC staff decided to prepare an SEIS tiered from the GEIS, rather than an EA, for each new ISR

application. The three draft SEISs were mostly developed and finalized in-house by NRC staff after they discontinued the use of contractor support for the draft EAs in late summer 2009. The three draft SEISs were issued simultaneously in December 2009.

In addition to the notice and comment process for the draft SEISs, potential parties can seek admission of environmental contentions into the NRC's hearing process. The NRC hearing process (10 CFR Part 2) applies to proposed licensing actions and offers stakeholders a separate opportunity to raise concerns associated with the proposed action. These are adjudicatory hearings held before independent Boards within the NRC with appeal opportunities for decisions to the full Commission in its adjudicatory capacity. This provides additional public disclosure and opportunity for involvement of the public in NRC's licensing process. NRC published a Notice of Opportunity for Hearing in the *Federal Register* related to each of the three ISR license applications⁴. No requests for a hearing were received on any of the license applications. The following sections discuss key activities and the lessons learned from the development of the three SEISs.

Key Activities

Since March 2010, there were two key environmental review activities for the three ISR applications: (1) addressing comments received during the public comment period on the three draft SEISs, and (2) completing the NHPA Section 106 consultation process.

1. Addressing comments on the draft SEISs

In December 2009, the NRC issued draft SEISs for the three new ISR applications for public comment and requested that comments be submitted by February 1, 2010⁵. The draft SEIS for each facility examined site-specific impacts unique to that proposed facility and its location, incorporating relevant discussion and conclusions from the GEIS. In February 2010, the NRC extended the public comment period to March 3, 2010⁶, in response to public requests for an extension. At the end of public comment period, the NRC received approximately 60 documents (i.e., email, mail, and facsimiles) including a March 3, 2010 comment letter⁷ from EPA Region 8 and a subsequent letter⁸ transmitting detailed technical comments. After review of these documents, NRC staff identified a total of approximately 1,800 individual comments. The major issues and topics raised included a variety of concerns regarding the purpose, need, and scope of the SEISs; regulatory issues and process; the description of ISR process; land use; transportation; groundwater; surface water; waste management; ecology; climate and air quality; historical and cultural resources; socioeconomics; public and occupational health; and cumulative effects. Comment summaries and NRC responses are documented in the Appendix B of each of the final SEISs.

EPA's review and comments were provided in accordance with their responsibilities under Section 102(2)(C) of NEPA, and Section 309 of the Clean Air Act. Based on EPA's review of the draft SEISs, they rated each of

the draft SEISs as “Inadequate.” The EPA believed that these draft SEISs did not meet the purpose of NEPA and should be formally revised and made available for public comment in a supplemental or revised SEIS. If their concerns were not resolved, this matter would be a candidate for referral to the Council on Environmental Quality (CEQ) for resolution. The EPA expressed two primary concerns with the draft SEISs in its comment letter⁷: (1) the narrow range of the wastewater disposal alternatives considered in the SEISs along with the limited discussion regarding waste management impacts; and (2) the lack of information regarding potential air emissions. In addition, the EPA also raised concerns regarding the potential establishment of alternative concentration limits (ACLs) as groundwater restoration targets prior to completion of groundwater restoration, and the consideration of climate change and greenhouse gas emissions in the draft SEISs.

From March through August 2010, NRC staff met with EPA staff, and participated in multiple teleconferences with EPA to better understand their concerns and to share NRC’s approach to address issues identified in the EPA comment letter⁷. Specifically, with respect to EPA’s concern regarding the wastewater disposal alternatives, NRC staff believed that a range of wastewater disposal alternatives were discussed in the GEIS. Wastewater disposal practices that the NRC has previously licensed at specific sites include evaporation ponds, land application, deep well injection and surface water discharge. The GEIS concluded that the combination of State permitting

actions, NRC license conditions and NRC inspections ensure that proper practices would be used to comply with safety requirements to protect workers and the public. To be responsive to EPA’s comments, NRC provided additional information on wastewater disposal options (e.g. evaporation ponds, land application, surface water discharge and Class V injection wells) in the final SEISs. In response to EPA’s concern regarding air emissions, NRC staff developed a site-specific emissions inventory to assess potential impacts on air quality. This analysis considered fugitive dust emissions and estimated emissions from diesel-powered drilling and construction equipment. The results of the site-specific emission analyses support the GEIS conclusion that ISR facilities are not major sources of airborne emissions and were provided in the final SEISs. EPA’s concerns regarding the ACLs, and the climate change and greenhouse gas emissions were also addressed in the final SEISs. In August 2010, the NRC issued a letter⁹ addressing EPA’s comments on the three draft SEISs indicating that issues raised by the EPA have been adequately addressed in all three final SEISs and that the revised draft SEISs need not be made available for public comment.

NRC staff originally planned to finalize the three SEISs in summer 2010. In May 2010, NRC staff recognized that the level of effort necessary to address EPA’s concerns and their extensive number of comments^{7,8} was significantly beyond its original expectation. NRC staff decided to focus on the Moore Ranch final SEIS with additional

resources so that it could be completed with only a minimal delay, since the Moore Ranch application was the first of the three ISR applications received. Subsequently, the Moore Ranch final SEIS was issued in August 2010¹⁰.

In September 2010, the NRC received a comment letter¹¹ from EPA on their review of the Moore Ranch final SEIS. The EPA acknowledged NRC's attempt to be responsive to EPA's comments and that the final SEIS provided a more detailed analysis than the draft SEIS. However, while EPA found the final SEIS to be adequate (i.e., did not result in an inadequate finding or a candidate for referral to CEQ), EPA continued to have concerns that the discussion regarding potential environmental impacts associated with waste management in the final SEIS remains very general and offers mostly presumptive reliance upon State-permitting programs for environmental impact assessment and mitigation. EPA was aware of NRC's position that it has no authority or regulatory control over an applicant's selection of any particular technology to be used at a site and that if the NRC decides to grant the license request, an applicant must comply with the license and other relevant requirements. However, EPA believed that an agency's regulatory authority, or lack of such authority, should not preclude full disclosure, under NEPA, of potential constraints and environmental impacts associated with all reasonable alternatives to a proposed action.

Since the Moore Ranch final SEIS was published, NRC staff worked to revise the Nichols Ranch and Lost Creek SEISs in order to

more closely align those SEISs with the Moore Ranch final SEIS. NRC staff believed that the Moore Ranch final SEIS was an acceptable starting point for the pending SEISs because it was found to be acceptable to the EPA. NRC staff assured that successful resolutions to EPA comments developed in discussions with EPA during the finalization of the Moore Ranch SEIS were similarly reflected in the final Nichols Ranch and Lost Creek SEISs. The Nichols Ranch and Lost Creek final SEISs were issued in January and June 2011, respectively¹⁰. The NRC received similar comment letters^{12,13} as that of the Moore Ranch from EPA on their review of the Nichols Ranch and Lost Creek final SEISs, and both final SEISs were found to be adequate. NRC staff continues to communicate with EPA staff on their approach to address the remaining issues identified in the final SEIS comment letters by periodic face-to-face meetings and teleconferences for the on-going ISR projects.

2. Completing the NHPA Section 106 consultation process

Section 106 of the NHPA requires Federal agencies to take into account of the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process (NHPA Section 106) is outlined in regulations in 36 CFR Part 800 issued by ACHP. A historic property is a prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). The term also includes properties of

religious and cultural significance to an Indian tribe, such as Traditional Cultural Properties (TCPs), so long as that property is eligible for inclusion in the NRHP

The criteria for eligibility are listed in 36 CFR Part 60.4. Those criteria state that eligible resources comprise districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and at least one of the following conditions exist for the resource: A. that are associated with events that have made a significant contribution to the broad patterns of our history; or B. that are associated with the lives of persons significant in our past; or C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or D. that have yielded, or may be likely to yield, information important in prehistory and history.

The NRC expects the applicant to conduct the appropriate historic and cultural resource surveys as part of pre-application activities. The eligibility evaluation of historic properties including TCPs for listing in the NRHP would be conducted as part of the environmental review after the NRC accepts a license application. Most TCPs are identified through the Section 106 consultation. To determine whether significant historic and cultural resources would be avoided or mitigated, consultations involving NRC, Tribes, the applicant, the State Historic Preservation Office (SHPO), and other

government agencies (e.g., U.S. Fish and Wildlife Service, BLM, and State environmental departments) would occur as part of the environmental review.

The issuance of an NRC materials license is a federal action (undertaking) that could possibly affect either known or undiscovered historic properties located on or near the proposed project area. In accordance with the provisions of the NHPA, the NRC is required to make a reasonable and good faith effort to identify historic properties in the area of potential effect (APE). The APE for the ISR review is area that may be impacted by construction, operation, aquifer restoration, and decommissioning activities associated with the proposed action. If no historic properties are present or affected, the NRC is required to notify the SHPO before proceeding. If it is determined that historic properties are present, the NRC is required to assess and resolve possible adverse effects of the undertaking.

For each of the three ISR applications, NRC staff consulted with potentially affected Tribes as part of the Section 106 consultation process per 36 CFR 800.2(c). The NRC sent letters to the Tribes to solicit their comments or concerns regarding historic and cultural resources, and the proposed project. In addition, follow-on contacts were made with the Tribes as appropriate. For the Moore Ranch project, no responses were received from the Tribes, and no archeological sites or TCPs potentially eligible for listing on the NRHP were identified. For the Lost Creek project, three archaeological sites were found eligible to the NRHP and no TCPs were identified. One

of the archaeological sites is located within a proposed ISR wellfield, cannot be avoided and would be adversely affected by the project. The other two sites are located near the project area and will be avoided. To mitigate the wellfield's impact on the eligible site, a Memorandum of Agreement (MOA) was developed and executed among the NRC, BLM, WY SHPO, the applicant, and two Tribes in October 2010¹⁴.

For the Nichols Ranch project, eight archaeological sites eligible to the NRHP were identified. Among the eight archaeological sites, five of them were also identified as TCPs including the Pumpkin Buttes site. No sites will be directly affected by the project, because the sites located within or near the project area will be avoided. However, there will be an adverse effect to the visual setting of the five TCPs. In April 2010, NRC staff started developing an MOA to mitigate adverse effects to the Pumpkin Buttes TCP identified at that time. After further consultation with two Tribes and with the WY SHPO, NRC staff determined four additional TCPs eligible to the NRHP in October 2010. Soon after the WY SHPO concurred with NRC's determination, NRC staff attempted to schedule the first webinar (webinar/teleconference) with consulting parties and the applicant to negotiate the MOA. In December 2010, Tribal representatives requested a face-to-face meeting with all consulting parties to negotiate the MOA instead of participating in a webinar. In response, NRC staff offered to meet with each of eight interested Tribes individually for a face-to-face meeting to

discuss the project. The NRC issued the final SEIS for the Nichols Ranch project in January 2011 while it recognized that the license cannot be issued until the Section 106 consultation process is complete.

In February 2011, NRC staff visited four Tribes and met with representatives from each of the four Tribes, who accepted NRC's offer for a face-to-face meeting. After the face-to-face meetings, NRC staff conducted the first webinar with consulting parties to negotiate the MOA to address adverse visual impacts to the five TCPs in March 2011. To continue the MOA negotiation, NRC staff held the second webinar with consulting parties in April 2011. During the second webinar, Tribal representatives requested additional site visits and Tribal monitors be present during construction of the project, and participating parties agreed to invite the ACHP to participate in the Section 106 consultation process. After the second webinar, the WY SHPO sent a letter¹⁵ to ACHP requesting its participation in the resolution of adverse effects to the TCPs for the Nichols Ranch project. In the letter, WY SHPO raised several concerns including adequacy of NRC's government-to-government consultation with the Tribes. In response, the NRC sent a letter¹⁶ to ACHP stating that the NRC believes its Section 106 process for consultation with the interested Tribes and the WY SHPO, has offered adequate opportunities for consultation within the licensing process, and requesting for a meeting to discuss the resolution of adverse effects to the Nichols Ranch project. In May 2011, NRC staff met with ACHP staff to understand its expectation on how the NRC

can complete the Section 106 process. The ACHP had also agreed to the WY SHPO's request for their participation to facilitate completion of the Section 106 process.

In addition, after the second webinar, the applicant offered to fund one additional site visit for the discussion of mitigation measures and fund one qualified tribal monitor to observe construction at the part of the site containing the identified TCPs. In June 2011, the NRC held the third webinar after representatives from three Tribes, and NRC staff participated in a site visit with the applicant to discuss mitigation measures to resolve adverse visual impacts to the five identified TCPs. The webinar participants included Tribal officials and representatives from the NRC, ACHP, WY SHPO and the applicant. During the MOA negotiation, the issue of whether the NRC has made a reasonable and good faith effort in identifying TCPs for the Nichols Ranch project was raised by Tribal representatives. The ACHP and WY SHPO agreed that the NRC has made a reasonable and good faith effort. After the third webinar, the MOA was finalized and became effective in July 2011¹⁷. During the course of the Section 106 consultation process for the Nichols Ranch project, the applicant paid for the Tribal representatives' expenses for site visits.

Key Lessons Learned

NRC staff continues to streamline its review process and share lessons learned with the uranium recovery industry, and apply the lessons learned to the ongoing Powertech (USA) Inc. Dewey-Burdock and the Strata

Energy Inc. Ross SEIS projects¹⁸ to the extent applicable. Key lessons learned from the three SEISs are summarized as follows:

1. Staff Resources, Contractor Support, and Operational Efficiency

A. The draft SEISs are the first three tiered from the GEIS and were published at the same time for public comment. Originally, NRC staff planned to finalize all three of the SEISs at or around the same time. NRC staff later decided to finalize them in sequence due to the fact that NRC staff received many comments and it required significant amount of resources including contractor support to address those comments and finalize the SEISs. The average between the time when the application was accepted for detailed technical review and when the final SEIS was issued for the three SEISs was about 34 months. NRC staff has streamlined its review process and worked toward a 28 month review period for future SEISs if they receive adequate responses to Requests for Additional Information (RAIs) from applicants in a timely manner and no significant delays due to factors such as supplements to original applications requiring significant amount of time to complete the staff evaluations.

NRC staff continues to emphasize that safety review informs environmental review. RAIs relating to the safety review are relevant to the environmental review, especially with respect to the ISR groundwater analysis. Also, applicants have been informed that inadequate or partial responses to RAIs will result in schedule delays and additional project costs.

Based on the revised review schedule, NRC staff has worked toward issuing a draft SEIS 8 months after they accept RAI responses and issuing the final SEIS 8 months after the end of the public comment period for the draft SEIS. The key activities during the first 8 months include (1) developing the draft SEIS; (2) conducting required consultation activities including the NHPA Section 106 and Section 7 of the Endangered Species Act consultations; and (3) coordinating with NRC's safety review team, EPA, and cooperating agencies (such as BLM field offices for one Section 106 process and one NEPA review), as appropriate. After the end of the public comment period, the goal is to finalize the SEIS by addressing all the comments and completing the Section 106 process within 8 months.

B. NRC staff learned that the amount of resources needed to complete an SEIS was much more than originally anticipated. Specifically, the average number of 600 individual comments identified for each draft SEIS was several times more than NRC staff's original estimates. In addition, more resources were needed to complete the NHPA Section 106 process due to increased Tribal consultation activities. Based on the experience learned from the three SEISs, both NRC staff and contractor resources needed to complete each on-going SEIS project have been increased to meet these needs.

C. To streamline the review process and enhance operational efficiency, an SEIS review team consisting of environmental, safety, and contractor project managers (PMs), and legal staff has been established for each ongoing

SEIS project. Each team has worked together toward the 28 month review goal and met periodically to address issues and concerns as they arise since the beginning of the acceptance review. In addition to the lead PMs, backup PMs and additional technical and legal support have also been assigned for each team to ensure adequate surge capacity to address unexpected emerging issues, and a smooth transition in case there are staff turnovers during the course of developing the SEIS.

D. To allow applicants the opportunity to improve the quality of their applications and share experience from past reviews, NRC staff has started conducting pre-submission site audits. Both safety and environmental PMs participated in the audit. The audit was open to the public and provided an opportunity for NRC staff to provide early feedback on the application to be submitted. In addition, soon after accepting an ISR application, NRC staff held a post-acceptance review meeting with the applicant to discuss their preliminary findings from the acceptance review so that the applicant could start working on areas where additional information may be requested at a later time. NRC staff plans to continue to hold pre-submission audits and post-acceptance review meetings.

2. Coordination with the EPA, BLM, and other Federal, State and Local Agencies

A. Since the three draft SEISs were found inadequate by the EPA Region 8, NRC staff made significant amount of effort to address EPA's comments. Subsequently, the three SEISs were finalized much longer than origi-

nally planned. NRC staff continues to hold periodic face-to-face meetings/teleconferences with EPA staff to discuss ongoing ISR projects and remaining issues from the three SEISs. NRC staff also plans to share certain draft documents with EPA to receive their feedback before the draft SEIS and/or EIS is issued for public comment so that NRC staff can identify and address EPA's issues and concerns earlier.

B. When a project contains BLM surface-administered lands, operators of mining claims, including ISR operations, must submit a Plan of Operations (POO) and obtain BLM approval before beginning operations beyond those for casual use as defined in 43 CFR Subpart 3809 on Surface Management. For the Lost Creek project, the license application was submitted to the NRC in March 2008 and the POO was submitted to BLM in November 2009. Due to the time difference, both agencies developed their own NEPA documents. Nevertheless, the NRC shared the draft final SEIS before it was issued with BLM so that they could start incorporating by reference to the extent possible in preparing the NEPA document for the POO. While the NRC license was issued in August 2011, the BLM approval of the Lost Creek POO is expected in summer 2012. Both the NRC license and BLM approval of the POO are required before the applicant can begin construction of the Lost Creek ISR facility. Currently, BLM is the cooperating agency for Powertech Dewey-Burdock and Strata Energy Ross projects under the NRC-BLM Memorandum of Agreement¹⁹, and the NRC is the lead agency for conducting both

NEPA and Section 106 reviews. In order for BLM and NRC to cooperate on one NEPA review, it is very important for applicants to submit the POO applications to BLM and license applications to NRC at approximately the same time. If there is a significant time difference between submitting these two applications, and each agency has already moved forward to process the application, it is not likely that both agencies can cooperate on developing one NEPA document.

C. During the preparation of the SEISs, NRC staff held scoping meetings with Federal, State, and local agencies and/or entities in Wyoming to gather information on potential issues, concerns, and environmental impacts related to the three ISR projects. NRC staff continued to interact with these agencies/or entities after the initial scoping meetings, as needed. Many of them also provided comments during the public comment period for the draft SEISs, and these comments were considered and reflected before the final SEISs were issued. The interactions have proved to be effective and productive, and NRC staff continues to use this approach as one of the mechanisms to gather information from these agencies and/or entities.

3. Implementation of the National Historic Preservation Act Section 106 process

A. Since 2010, there has been growing Tribal interest in NRC's Section 106 process on the ISR projects. As a result, there are currently approximately 30 Tribes that NRC staff has been interacting with on four ongoing ISR projects and more than 10 of them are

common to each of the projects. NRC staff has been encountering many emerging Section 106 issues and continues to interact with staff from the ACHP, SHPO, BLM, EPA, and U.S. Army Corps Engineers to seek guidance and/or learn from their experience and expertise to address these issues. NRC management and staff attended the ACHP Section 106 training and they also invited staff from the ACHP and Army Corps Engineers to NRC to make presentations/hold panel discussions to guide them address certain emerging Section 106 issues.

B. NRC staff encourages applicants to interact with staffs from the SHPO, potentially affected Tribes, and BLM as appropriate to gather information to be included in the environmental reports. After contacting the Tribes, applicants may not receive responses from them since the NRC is responsible for consulting with the Tribes when the Section 106 consultation process begins. But for those who respond, applicants are encouraged to engage them, understand their concerns and issues, and address them to the extent they can prior to submitting license applications. NRC staff continues to work with Tribes, SHPO, BLM, ACHP, and applicants to address TCP identification issues which vary from project to project.

C. Based on lessons learned from the Section 106 process for the three SEISs, NRC staff has started early Section 106 coordination by identifying potentially affected Tribes around the time when a pre-submission audit was held and notifying the Tribes of the forthcoming applications. NRC staff also

notified the Tribes soon after the NRC received the application. Once an application was accepted for detailed technical review, NRC staff sent a letter to each potentially affected Tribe that included invitation for government to government consultation to initiate the formal Section 106 process and actively followed up with them to set up the consultation meetings and site visits. NRC staff has been actively followed through each Section 106 step for the ongoing ISR projects and moved the process forward in parallel with the development of the NEPA documents. Additional NRC staff has been assigned to support each ISR project in conducting the Section 106 process. The additional Section 106 support for each project would allow NRC staff to participate when Tribal representatives are invited for site visits or request face-to-face meetings, and environmental PMs are not available due to the need in keeping the preparation of the NEPA documents on schedule.

D. NRC staff plans to initiate periodic correspondence to enhance its communication with approximately 30 Tribes that have expressed interest in the uranium recovery projects. The correspondence is expected to be tailored to each Tribe for certain projects that are of interest to them. The correspondence would include status of each uranium recovery project; target dates to hold Tribal consultation meetings and site visits, and to issue draft and final NEPA documents; the step (36 CFR 800.3 through 800.6) that the Section 106 process is currently being taken; and the NRC government-to-government meeting contacts.

4. Communication, Information Management, and Environmental Review Guidance

A. NRC staff recognized that their communication on the schedule delays for the three SEISs with applicants could have been better and has implemented regularly scheduled periodic teleconferences between NRC and applicant senior management to discuss the status of projects and any issues or concerns that could affect the completion of NRC's safety and environmental reviews.

B. There are about 3,000 comments on the GEIS and 1,800 comments on the 3 SEISs that NRC staff received during the public comment periods. There are also many past RAIs and responses to RAIs for the three ISR projects. These are all publicly available documents. NRC staff encouraged applicants to review these documents and reflect what they have learned from these documents in their license applications. NRC staff also encouraged applicants to be familiar with comment resolution sections in the GEIS and the three SEISs. Specifically, applicants should be familiar with Appendix G for GEIS and Appendix B for the three SEISs where NRC responses to public comments are documented.

C. NRC staff plans to update its environmental review guidance NUREG-1748²⁰ to incorporate lessons learned from the three SEISs and other projects, and address emerging programmatic and technical issues. The updated NUREG-1748 would provide more specific guidance for applicants in preparing Environmental Reports. For example, guidance on the climate change and greenhouse

gas emissions, and the Section 106 process. In addition, NRC staff plans to update its internal environmental review procedure to reflect what they have learned after completion of several EAs, EISs and SEISs in the past few years, and develop a new internal step-by-step procedure to guide staff in conducting the Section 106 process.

Closing Remarks

The Moore Ranch application was the first one for a uranium recovery license accepted by the NRC in about two decades. The last license that was issued by the NRC prior to the Moore Ranch application for a uranium recovery facility was in 1998 and the final EIS supporting that licensing decision was issued in 1997²¹. It was a very challenging time in the uranium recovery environmental review area during the period of March 2010 when the NRC received a comment letter from EPA indicating that the three draft ISR SEISs were "inadequate" and June 2011 when the last of the three final SEISs was published. Nevertheless, NRC staff has overcome many challenges and issued licenses for the Moore Ranch project, Nichols Ranch project and Lost Creek project in September 2010, July and August 2011, respectively²², after completion of both environmental and safety reviews for each project. The NHPA Section 106 consultation process was completed as part of the environmental review prior to the issuance of each license. During this period of time, NRC staff has learned many valuable lessons in both NEPA and NHPA Section 106 reviews and

continues to streamline its review process. In September 2011, NRC staff held a lessons learned workshop with the industry to (1) share what they have learned to streamline its environmental review process; (2) encourage applicants to take certain actions to facilitate its review; and (3) inform the industry of revised milestones in issuing draft and final SEIs, and guidance update activities²³. The three final SEISs were of high quality and served as templates for the ongoing and future ISR SEIS projects. The next two draft SEISs scheduled to be published for public comment in late 2012 are for the Powertech (USA) Inc. Dewey-Burdock and the Strata Energy Inc. Ross projects. The NRC has applied many lessons learned from the three SEISs to these two projects. In addition, the NRC, as the lead agency, has been cooperating with the BLM in conducting the NEPA and Section 106 reviews for each of the two ongoing projects. NRC staff continues to enhance its communication with Federal, Tribal, State, local agencies and/or entities, and applicants/licensees in conducting its environmental reviews, and has positioned themselves better than before in review of the ongoing uranium recovery projects and more than 20 expected applications²⁴ within the next few years.

Endnotes

1. In accordance with 36 CFR Part 800.8, the NEPA document will also include analyses of impacts to historic properties. NRC staff has been using this process to comply with its obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, in lieu of the procedures set forth in 36 CFR 800.3 through 800.6.
2. 10 CFR Part 51.20 (b)(8).
3. Generic Environmental Impact Statement for *In-Situ* leach Uranium Milling Facilities, NUREG-1910, May 2009, USNRC.
4. Opportunity to request a hearing was published in the *Federal Register* on January 25, 2008 (73 FR 4642) for the Moore Ranch project, on June 16, 2008 (73 FR 34052) for the Nichols Ranch project, and on July 10, 2008 (73 FR 39728) for the Lost Creek project.
5. Opportunity to comment on the draft SEISs was published in the *Federal Register* on December 11, 2009 for the Moore Ranch project (74 FR 65806), the Nichols Ranch project (74 FR 65808), and the Lost Creek project (74 FR 65804).
6. Extension of public comment period was published in the *Federal Register* on February 5, 2010 for the Moore Ranch project (75 FR 6065), the Nichols Ranch project (75 FR 6066), and the Lost Creek project (74 FR 6068).
7. USEPA Region 8, March 3, 2010, "Subject: NUREG-1910, Supplements 1, 2, and 3 Draft SEIS for three Wyoming Uranium ISR Projects. Lost Creek ISR Project CEQ# 20090425; Moore Ranch ISR Project CEQ# 20090421; Nichols Ranch ISR Project CEQ# 20090423."
8. USEPA Region 8, March 22, 2010, "Subject: NUREG 1910, Supplements 1, 2, and 3 Transmittal of Technical Comments for Draft SEISs for Wyoming uranium ISR facilities."
9. USNRC, August 18, 2010, "Subject: Response to Environmental Protection Agency, Region 8, March 3, 2010, Comment Letter Regarding *In-Situ* Uranium Recovery Supplemental Environmental Impact Statements."
10. Notice of availability of the final SEIS was published in the *Federal Register* on August 27, 2010 (75 FR 52780) for the Moore Ranch project, on January 28, 2011 (76 FR 5216) for Nichols Ranch project, and on June 24, 2011 (76 FR 37160) for the Lost Creek project.
11. USEPA Region 8, September 27, 2010. "Subject: NUREG-1910, Supplement 1 Environmental Impact Statement, Final Report Moore Ranch ISR Project, Campbell County, Wyoming, CEQ#20100337."
12. USEPA Region 8, March 7, 2010. "Subject: NUREG-1910, Supplement 2 Environmental Impact Statement, Final Report Nichols Ranch and Hank Unit ISR Project, Campbell and Johnson Counties, Wyoming, CEQ#20110023."
13. USEPA Region 8, July 25, 2011. "Subject: NUREG-1910, Supplement 3 Final Supplemental Impact Statement for the Lost Creek ISR Project, CEQ#20110197."
14. Memorandum of Agreement Among United States Nuclear Regulatory Commission, Wyoming State Historic Preservation Officer, Bureau of Land Management Rawlins Field Office, Northern Arapaho Tribe, Eastern Shoshone Tribe, and Lost Creek ISR, LLC Regarding Archeological Data Recovery at 48SW16604, Sweetwater County, Wyoming.
15. WY SHPO, April 5, 2011. "Subject: Request for Council Participation in the Resolution of Adverse Effects to the Pumpkin Buttes and Four Other Traditional Cultural Properties From the Nichols Ranch In-Situ

Recovery Project in Campbell and Johnson Counties, Wyoming, (SHPO File# 0708 RLC009).”

16. USNRC, April 29, 2011. “Subject: Nichols Ranch In-Situ Uranium Recovery Project in Campbell and Johnson Counties, Wyoming, and Request for Meeting to Discuss the Resolution of Adverse Effects.”
17. July 2011, Memorandum of Agreement Among US NRC, BLM Buffalo Field Office, the Wyoming State Historic Preservation Officer, Cheyenne River Sioux Tribe, Crow Tribe, Eastern Shoshone Tribe, Fort Peck Assiniboiné/Sioux Tribe, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, and Uranerz Energy Corporation Regarding Mitigation of Adverse Effects to Historic Properties from the Nichols Ranch ISR Project in Campbell and Johnson Counties, Wyoming.
18. Notice of Intent to Prepare a Supplemental Environmental Impact Statement was published in the *Federal Register* on January 20, 2010 for the Dewey-Burdock project (75 FR 3261), and on November 16, 2011 for the Ross project (76 FR 71082).
19. Notice of Availability of a Memorandum of Understanding Between the Nuclear Regulatory Commission and the Bureau of Land Management was published in the *Federal Register* on January, 2010 (75 FR 1088).
20. USNRC, 2003, NUREG-1748, “Environmental Review Guidance for Licensing Actions Associated with NMSS Programs.”
21. USNRC, February 1997, NUREG-1508, “Final Environmental Impact Statement To Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, NM.”
22. Notice of Issuance of Materials License and Record of Decision was published in the *Federal Register* on October 7, 2010 for the Moore Ranch project (75 FR 62153), on July 28, 2011 for the Nichols Ranch project (76 FR 45300), and on August 26, 2011 for the Lost Creek project (76 FR 53500).
23. USNRC, October 2011, “Subject: Meeting Summary RE: Uranium Recovery Supplemental Environmental Impact Statement Lessons Learned Workshop.”
24. USNRC. Time Line to Major Uranium License Applications, <http://www.nrc.gov/materials/uranium-recovery/license-apps/ur-projects-list-public.pdf>.

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A Case Study of the Direction of a Federal Action Affecting the NEPA Assessment

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Introduction

Major Federal actions require National Environmental Policy Act (NEPA) assessments of the environmental impacts as documented in an environmental impact statement (EIS). New electrical generation units typically need one or more Federal approvals (i.e., permits or licenses) for various reasons. Federal approval may be necessary in order to satisfy a particular Federal environmental law (e.g., Clean Air Act, Clean Water Act, etc.), grant access to a proposed site, approve the proposed power plant design or technology, combinations of the above, or other reasons. This is true for new coal technologies, namely “Clean Coal” and advanced nuclear reactors, both designed to generate baseload electricity. This paper will examine two cases with a recent final EIS for a new generation of coal and nuclear power plants. The coal case will be the proposed FutureGen 2.0 Project (FutureGen), a clean-coal power plant, where the U.S. Department of Energy (DOE) proposes to fund the final design, construction, and initial operation of the project to implement the 2003 FutureGen Initiative¹ (DOE/EIS-0460). The nuclear power plant case will be the proposed William States Lee III (Lee) nuclear station combined license (COL) with the purpose of providing additional baseload electrical generating capacity as evaluated by the U.S. Nuclear Regulatory Commission² (NUREG-2111). This paper will examine the similarities and the differences between the two final EISs to assess how they were influenced in part by the nature of the Federal action and by the nature

of the technology.

As a starting point for this paper, it must be made clear that Federal agencies have enabling legislation to carry out their respective legal obligations such as NEPA. Both the NRC and DOE provide in their EISs the legal basis for developing an EIS in support of a major Federal action. The NRC’s major Federal action justification is found in Chapter 1 of the Lee final EIS as follows³:

Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 et seq.) directs that an EIS be prepared for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of NEPA in 10 CFR Part 51. Further, in 10 CFR 51.20, the NRC has determined that the issuance of a COL under 10 CFR Part 52 is an action that requires an EIS.

DOE’s major Federal action justification is also in Chapter 1 of the FutureGen final EIS but as follows⁴:

DOE determined that providing financial assistance to FutureGen 2.0 would constitute a major federal action that may significantly affect the quality of the human environment. Therefore, DOE has prepared this EIS to assess the potential impacts on the human environment of the proposed project and reasonable alternatives. DOE has used information provided by the Alli-

ance and Ameren, as well as information provided by state and federal agencies, subject matter experts, and others. This EIS has been prepared in accordance with Section 102(2)(C) of NEPA, as implemented under regulations promulgated by CEQ (40 CFR 1500 through 1508) and as provided in DOE regulations for compliance with NEPA (10 CFR 1021).

Thus, while both Federal agencies ultimately rely upon the same CEQ regulations, there could be differences between each agency's implementation regulations, especially since the NRC as an independent Federal agency implemented the CEQ regulations voluntarily.

For example, a key difference between the two agencies' NEPA processes is what initiated the agency's major Federal action. The NRC does not initiate a COL action by itself, there must be an applicant that wants to build and operate a nuclear power plant who then submits the COL application in accordance with 10 CFR Part 52⁵ to the NRC that must include an Environmental Report in accordance with 10 CFR Part 51⁶. In the case of the Lee final EIS, the Duke Energy Corporation submitted a complete COL application for the Lee site with an Environmental Report to the NRC on December 12, 2007⁷. In contrast, the DOE is principally a "program" agency who manages projects and associated funding based on appropriations legislation from the U.S. Congress; as sometimes proposed, lobbied for, and ultimately signed into law by the U.S. President. This was the case for Future-

Gen which started as an energy initiative in February 2003 under the administration of President George W. Bush and subsequently given annual funding by Congress even into the administration of President Barack H. Obama⁸.

It is also important to note that a comparison of the environmental impacts of generating baseload electricity between coal and nuclear energy as the heating source is not a new topic. In fact, for every U.S. Nuclear Regulatory Commission EIS for new reactor early site permit applications and combined license applications, presenting the environmental impacts from using coal as the fuel is a given energy alternative to nuclear energy. A number of impact subjects are also address in both EISs, such as land use, ecology (both aquatic and terrestrial), socioeconomics, air quality, water quality, etc.

This paper will be organized into four sections with the first briefly describing each project, their purpose and need, and the alternatives selected. The second section will compare the environmental impacts of each project with more emphasis on human health. A discussion of how the nature of the Federal action affected the NEPA analysis of the human health environmental impacts will follow in the third section. Finally, the paper will close with the overall conclusions.

The Case Studies, Their Purpose and Need, and the Choice of Alternatives

A key factor for the economic strength in the U.S. over the last century has been the availability of relatively affordable, plentiful,

and diverse sources of electricity. As of 2013, coal generated approximately 39 percent of electricity generated in the U.S., followed by natural gas at approximately 27 percent, nuclear energy with about 19 percent, and renewables at just above 13 percent⁹ (EIA

and the Federal government sees value in each form of electrical generation. Industry and the Federal government have and should continue to make significant investments to reduce each fuel's principal environmental hazard, namely the generation of GHGs (i.e, CO₂)



FutureGen Rendering

2014). With the growing concerns over the rising levels of CO₂ and other greenhouse gases leading to consequential effects on the oceans and global climate change, there has been increasing political and societal pressure to reduce the use of fossil fuels, especially coal. While one could logically argue that increasing the contribution of nuclear energy for electrical generation to supplant coal would be appropriate to address GHGs and global climate change, the reactor accidents at Three Mile Island, Chernobyl, and Fukushima Dai-ichi in combination with fears of radiation and highly radioactive nuclear wastes still hinders the expansion of nuclear energy in the U.S. However, both of the respective industries

from the burning of coal¹⁰ and for a nuclear power plant to be able to withstand kind of severe nuclear accidents that have occurred in the past and could be expected in the future¹¹. The culmination of these efforts to date are demonstrated in the FutureGen project and the combined license application for two standardized AP1000 advanced nuclear reactors for the proposed Williams State Lee III site in the state of South Carolina.

The purpose of the FutureGen project is to advance and demonstrate carbon capture and storage technology. Because this is a first-of-a-kind project, Federal financial support is viewed as necessary to help reduce the risks to make the project viable. Therefore,

DOE's proposed action is to make available approximately \$1 billion in financial assistance to the industry alliance for the Future-Gen project. By demonstrating the commercial feasibility of an effective approach to carbon capture and storage in a deep geologic formation as made possible by the Federal financial support, this action would support a key strategic DOE goal (i.e., need) of protecting the national and economic security by "demonstrate a viable path forward for the ongoing and future use of the nation's abundant coal reserves in a manner that addresses both aging infrastructure and environmental challenges."¹²

As a regulated utility in the states of North and South Carolina, Duke Energy Carolinas, LLC (Duke) needs to analysis and submit for approval to the respective state's public utility service commission the utility's future plans for generating electricity and in particular the retiring of old facilities and the construction of new facilities¹³. Duke had previously specified to the NRC as part of a combined license application a need for approximately 4440 MW(e) of additional baseload generation capacity by 2027,¹⁴ of which about 2140 MW(e) would be associated with two new AP1000 nuclear reactors¹⁵. To provide this additional baseload generation capacity, Duke would need the NRC Federal action of issuing, under the provisions of 10 Code of Federal Regulation (CFR) Part 52, two combined licenses authorizing the construction and operation of two new AP1000 nuclear reactors at the proposed Lee site. Therefore, the purpose and need for the proposed NRC

action (i.e., issuance of two COLs to Duke), as stated in the Lee FEIS, is to provide additional baseload electrical generating capacity in 2024 (Unit 1) and 2026 (Unit 2).¹⁶

It is important to note that the proposed Federal action in combination with the purpose and need set the bounds of the alternatives that should be presented to the Federal agency's decision-maker so they could make an informed decision on the Federal action. For the two case studies, there are striking differences between each Federal agency's action and corresponding purpose and need. In the DOE case, a decision is solely being made to provide Federal funding to support a very specific one-of-a-kind demonstration or pilot project. Several key decisions that would normally be part of alternatives evaluation have been eliminated either by DOE or by the organization receiving the funding (e.g., site location, technologies that could perform the same function, etc.)¹⁷. For the NRC, if Duke's COL application clearly demonstrates meeting the regulatory requirements of 10 CFR Part 52 (and other NRC regulations cited in Part 52), then the NRC is obligated to issue the licenses unless there is a clear environmental impact that would preclude issuance of the licenses for the proposed site (e.g., obviously superior alternative site or violation of another Federal law). Based on these two significant differences between the case studies (a limited scope versus a greater scope in the Federal actions), the next section will examine their effect on the respective assessments of the environmental impacts.

Comparison of the Environmental Impacts

In order to assess how well an EIS discloses the relevant impacts, an important starting point is a clear understanding of the NEPA law and implementing regulations as to the assessment of impacts. Information required by Sec. 102(2)(C) of NEPA environmental impact statements (Sec. 1508.11) to be included in every recommendation or report on proposals for legislation and *other major Federal actions significantly affecting the quality of the human environment* are¹⁸:

- i. the environmental impact of the proposed action,
- ii. any adverse environmental effects which cannot be avoided should the proposal be implemented,
- iii. alternatives to the proposed action,
- iv. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- v. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Additionally, the Council for Environmental Quality (CEQ) regulations under Part 1502 provides the purpose of an environmental impact statement.¹⁹ Namely:

Sec. 1502.1 Purpose.

The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing

programs and actions of the Federal Government. *It shall provide full and fair discussion of significant environmental impacts* and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment. *Agencies shall focus on significant environmental issues and alternatives* and shall reduce paperwork and the accumulation of extraneous background data. Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. An environmental impact statement is more than a disclosure document. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions. [Italics added by author]

To accomplish the above, Federal agencies need to establish a standard of significance for environmental impacts. This is guided by the CEQ regulations under 40 CFR 1508.27, "Significantly" which "requires considerations of both context and intensity" of the environmental impacts.²⁰ The standards of significance presented by the DOE and the NRC in their respective EISs are provided in Table 1. While they are not the same, they can be binned or grouped into common categories as shown in Table 1. Based on this grouping, this paper will compare related environmental

impacts based on the NRC standard of significance, not because they are preferred but rather it is more convenient to translate the DOE's into the framework that the NRC applies.

Level	DOE ²¹	NRC ²²
1a	Beneficial – Impacts would improve or enhance the resource.	SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
1b	Negligible – No apparent or measurable impacts would be expected; may also be described as “none” if appropriate.	
1c	Minor – The action would have a barely noticeable or measurable adverse impact on the resource.	
2	Moderate – The action would have a noticeable or measurable adverse impact on the resource. This category could include potentially significant impacts that would be reduced to a lesser degree by the implementation of mitigation measures.	MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
3	Substantial – The action would have obvious and extensive adverse effects that could result in potentially significant impacts on a resource despite mitigation measures.	LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Table 1: DOE's and NRC's Standard of Significance Applied in the Agency's EISs

Based on these standard of significance, or impact criteria, the proposed action and alternative(s) environmental impacts are evaluated in terms of designated resource areas within a region of interest (ROI) of concern to the agency and the project. Each agency must identify these environmental resource areas and issues for consideration in the EIS early in the NEPA process (generally under 40 CFR 1501.7, Scoping,²³ or equivalent agency's NEPA implementation regulations such as 10 CFR 51.29 for the NRC²⁴). For the FutureGen EIS, DOE identified 19 resource areas and issues and the NRC has 16 resource areas for the Lee EIS. Table 2 provides the list of resource areas for each agency's EIS.

It should be apparent that there are a number of common resource areas that are shared in both EISs. While there are other

resource areas that do not directly match, they are included as a subcategory in the other agency's EIS. However, this paper will focus on a smaller subset of resource areas that are both common to each EIS and generally have greater significance to the decisionmaker and to members of the public, those with a direct impact on overall public health and safety. These common resource areas between the two EISs, as highlighted in bold and italics within Table 2, are:

- Air quality,
- Human health and safety issues (NRC's equivalent resource areas to are radiological and nonradiological human health along with postulated accidents), and
- Waste Management (NRC's equivalent resource area is nonradioactive wastes, radioactive waste is addressed generically within Table S-3, Table of Uranium Fuel Cycle Environmental Data, of 10 CFR 51.51)

DOE Resource Areas for the FutureGen EIS ²⁵	NRC Resource Areas for the Lee EIS ²⁶
Air quality	Air quality
Climate change	Land use
Geology	Aquatic ecology
Water resources	Terrestrial ecology
Floodplains and wetlands	Surface water
Biological resources	Groundwater
Historic and cultural resources	Radiological human health
Infrastructure and land use	Nonradiological human health
Visual resources	Radiological waste
Waste management	Nonradiological waste
Traffic	Socioeconomics
Noise and light	Environmental justice
Health and safety issues	Cultural resources
Socioeconomics	Postulated accidents
Environmental justice	Fuel Cycle
Connected actions	Transportation of radioactive material
Cumulative effects	Decommissioning
Regulatory and environmental permitting requirements and environmental monitoring plans	

Both EISs address the environmental impacts due to construction of the facilities and from the operational impacts. However, the more significant environmental impacts occur

during the operational phase for each project. This is when coal and uranium create heat for conversion into electricity, when there are direct public health impacts from the release of effluents, and that generates the largest volume of wastes that must be ultimately disposed or kept on site for interim storage. Thus, an evaluation of the operational impacts should be of more importance to the decision-maker and will be the project phase discussed in this paper for the selected resource areas. The overall environmental assessment for each of the selected resource area is provided in Table 3 along with their significance level.

Air Quality

The FutureGen impacts on air quality are presented in Section 3.1 of the EIS and discuss various aspects of emissions granted under a Clean Air Act.²⁷ Under State and Federal Clean Air Act Permit Program Title V regulations, a Title V Significant Permit Modification is required for facilities whose increase in emissions exceeds specific thresholds and to demonstrate complying with all National Ambient Air Quality Standards (NAAQS).²⁸ This leads to a specific level of detail in the analysis by DOE to show compliance with the Clean Air Act. Once this is accomplished, DOE ultimately focused on the reduction in emissions from FutureGen to the past operations at the Meredosia Energy Center with six coal units. Therefore, the final conclusion is the new technology DOE is considering to fund results in a significant reduction for all NAAQS criteria pollutants.²⁹

By applying nuclear energy, the princi-

pal air quality impact would be from releases to the environment of heat and moisture from the mechanical draft cooling towers proposed to be employed by the two AP1000 reactors.³⁰ There would be some NAAQA criteria pollutants from the occasional operation of four standby diesel generators, four ancillary diesel generators, and two secondary diesel-driven fire pumps.³¹ As discussed in Section 5.7, the amount of emissions is low enough that the Lee EIS presents a qualitative-type analysis to demonstrate a finding of SMALL for the environmental impacts.³²

For this resource area, due to the specific nature of the State and Federal law, regulations, and permit requirements, the analysis that must be performed is well understood. For the Lee EIS, the results are clearly low and not significant. However, with the FutureGen emissions coming from the burning of large amounts of coal, DOE packages the overall impacts not only as meeting the permit requirements but that the emissions are not as bad as the prior facility operating with old coal technology (See Table 3).

Waste Management

As the FutureGen EIS readily recognizes, “[c]oal combustion residuals are among the largest waste streams generated in the United States.”³³ [Section 3.12 page 3.12-2] This is of concern to the public not only due to the volume of material (136 million tons of this waste were generated in 2008) but also because coal combustion residuals (i.e., fly ash) typically contain toxic metals, including arsenic, selenium, and cadmium. While the

levels of the toxic metals may be low enough not to be considered a hazardous material, if fly ash cannot be used in asphalt, cement, or concrete, is considered as special waste for the disposal in certain landfills.³⁴ To assess the impacts, DOE evaluates the type of landfills within the region of interest that could accept fly ash, their capacity, and availability over the time of FutureGen operation. However, disposal is the only consideration given to other than beneficially reused, even though there is the past use of ash ponds at the Meredosia Energy Center. Due to the available disposal capacity and the generation of waste is along historical rates, DOE concludes that the impact of disposal of generated waste would be negligible.³⁵

For the case of the nonradioactive waste being generated by two AP1000 reactors, it is expected that less than 220 lb of hazardous waste in any calendar month, thus classifying Lee Nuclear Station as a Conditional Exempt Small Quantity Generator under the Resource Conservation and Recovery Act (RCRA).³⁶ Due to the low volume of this type of waste, the analysis in the Lee EIS is of the form of a qualitative analysis. The environmental impacts from the radioactive waste generated by the operation of two AP1000 were addressed in Sections 6.1.5 and 6.1.6 of the Lee EIS based on prior rule-making.³⁷ Low level radioactive waste can be appropriately stored on site then packaged and shipped to a licensed near surface disposal facility once contractual arrangements can be made. For the high level radioactive waste (i.e., spent nuclear fuel), while there is not an

available disposal facility, DOE is legally required to eventually take control and properly dispose in a geologic repository. While DOE has yet to meet this legal requirement, because of the NRC's regulatory authority to ensure the safety of public from this type of waste, the overall environmental impacts are minor for at least the first 120 years after a nuclear power plant has been licensed and begins operation.³⁸

With a quantity of material (200,000 tons per year) which would require numerous truck and/or rail shipments to move the material from the Meredosia Energy Center to an available landfill, DOE recognized that disposal of the "bottom ash and fly ash at a commercial landfill could potentially shorten the lifespan of landfills selected for the project, due to the large quantity of ash that would be disposed" resulting with minor to moderate negative impact on the availability of disposal options for businesses and communities.³⁹ However, DOE makes the assumption there is enough available landfill capacity that other than reuse of some of the material and this waste can be managed so. Thus, no other alternative is evaluated. In contrast, the amount of nonradioactive waste from a nuclear power plant is trivial and the radioactive waste must be managed in a very specific manner by rule and the necessary NEPA evaluation was address in support of the regulations when first approved.

Human Health and Safety Issues

Both Federal agencies have regulatory requirements to protect human health and

safety and the guidance for performing these kinds of environmental assessments are contained in each agency NEPA guidance documents.^{40, 41, 42} But in assessing the impact to human health, the two agencies have differences between the EISs analyzed in this paper on conducting the analysis. In the FutureGen EIS, DOE concentrates on the industrial accidents that can be related to the occupational safety and to members of the public only due to accidents related to the CO₂ pipeline and injection site.⁴³ The DOE analysis does not address the human health impacts from the normal operation of the FutureGen facility, rather the analysis for the air quality impacts indirectly address this by implying that the NAAQS of 40 CFR 50 provide this protection.⁴⁴ For the NRC, there are set regulations for the protection from normal radioactive effluent releases and to ensure the nuclear power plant can withstand accidents, both internal events (e.g., equipment malfunction or failure) and external events from man-made (e.g., aircraft impacts) and extreme natural events (i.e., flooding, earthquakes, etc.)⁴⁵. In each case, detailed atmospheric dispersion modelling is performed to determine the maximum hazard each project's unique material could pose. Both describe the impacts in terms of an annual risk of harm to a member of the public.^{46, 47}

For this resource area, the given nature of the specific projects being evaluated by DOE and NRC and their internal guidance documents for the type of risks that could occur set the analysis performed in each EIS. This analysis of the environmental impacts is

clearly set either by the overall mission of the agency, such as for the NRC for the safe use of radioactive material, or by the by a narrow setting of the proposed action as in the case of DOE's evaluation of FutureGen.

Effect of the Federal Action on the NEPA Assessment

The agency's purpose and need helps to set the principal alternatives that are to be analyzed in the NEPA assessment. However, the scope and breathe of the individual resource area analysis may also need to support a connected action of obtaining a specific licensing permit. Therefore, when examining the effect of the Federal action on the NEPA assessment, this parallel need also needs to be taken into account. The best example of this in the two case studies for the resource areas presented is DOE's NEPA assessment for the air quality impacts. In this case, there is also a need to obtain a Title V Significant Permit Modification permit under the Clean Air Act and this drives what must be addressed in the analysis. For the NRC case study, a similar situation exists for the NEPA assessment of the human health impact from the use of radioactive materials. Along with the NEPA review, there is also the safety review which forms the principal basis for deciding whether to grant an applicant a license. The analysis for the environmental radiological health impacts must be consistent with the related safety review. Thus, this type of analysis is truly set by the nature of the Federal action when it involves a licensing or permitting action.

What clearly sets the bound of the NEPA assessment in these two case studies is the agency's purpose and need.⁴⁸ DOE's purpose and need of being consistent with the President's FutureGen Initiative limited the NEPA assessment to whether the proposed project could fulfill the goal of this initiative. This was the basic response by DOE to the Sierra Club's comment that the DEIS does not reasonably define the purpose and need. However, given this restriction, DOE did not other subcomponent alternatives that were not limited by their purpose and need. For the management of the fly ash and bottom ash, the only alternative evaluated in any detail was the off-site disposal in a commercial landfill facility. Even though DOE discusses that the Meredosia Energy Center does have an existing ash pond⁴⁹, this waste management alternative was ruled out without any supporting statement of the potential impacts, only a qualitative discussion of the range of detrimental impact that have occurred at other ash ponds is presented. Similar public comments were made on the FutureGen DEIS for other topics and DOE's response was similar at to the purpose and need comment⁵⁰. Since the NRC's purpose and need was tied to the application of a new nuclear power plant to provide baseload electrical generation at a specific proposed site, its EIS has a lengthy chapter on the assessment of alternative energy sources, alternative sites and system design alternatives.⁵¹

Conclusions

As the two case studies demonstrate, the Federal action establishes the overall bounds for the NEPA assessment. A funding action, such as DOE's action regarding FutureGen, could significantly restrict the alternatives considered to just a no-action alternative, much to the dismay of members of the public. For a regulatory action typified by the NRC's action to consider a combined license for a new reactor, there are expected to be a greater array of alternatives to be assessed. However, it appears that unless there is compelling additional rationale to meet the requirements of another regulation, a restrictive set of alternatives could also lead to further restricting the environmental impact assessment to those technologies and process options proposed by the proponents of the action.

Table 3: Environmental Impacts from Normal Operations

Resource Area	FutureGen Impact(a)	Lee Impact(b)
Air quality	<p>Minor Adverse Impacts [SMALL]</p> <p>Operations of the oxy-combustion facility would cause increases in air emissions over current conditions. Air emissions generated by operations of the project would not exceed relevant air quality standards when analyzed as an isolated project or when cumulatively combined with applicable regional sources. During normal operations of the oxy-combustion facility, the gas quality control system would incorporate state-of-the-art flue gas scrubbing technology to minimize criteria pollutant emissions from the stack. Beneficial impacts could result from overall lower emissions, as electricity generated by this project may displace electricity generated by traditional coal-fired power plants that emit significantly higher levels of pollutants.</p>	<p>SMALL</p> <p>Potential impacts from operation of proposed Lee Nuclear Station Units 1 and 2 on air quality from emissions of criteria pollutants, CO2 emissions, cooling-system emissions, and transmission lines would be minimal.</p>
Waste Management	<p>Minor to Moderate Adverse Impacts [SMALL to MODERATE]</p> <p>[...] The largest waste streams from operation of the project would consist of fly ash (approximately 200,000 tons per year) and bottom ash (approximately 14,000 tons per year, compared to 12,000 in the Draft EIS). The Meredosia Energy Center would attempt to sell fly ash by-product to local and regional businesses. Bottom ash, and any fly ash that is not beneficially reused, would be disposed of in permitted landfills. Disposal of these waste streams could have minor to moderate impact on local and regional disposal capacity.</p>	<p>SMALL</p> <p>Based on the effective practices for recycling, minimizing, managing, and waste disposal planned to be used at the Lee Nuclear Station site, and the expectation that regulatory approvals will be obtained to regulate the additional waste that would be generated from proposed Units 1 and 2, potential impacts would be minimal.</p>

Resource Area	FutureGen Impact(a)	Lee Impact(b)
Human health and safety issues	<p>Minor Adverse Impacts [SMALL]</p> <p>Accidents and lost work days during operation of the oxy-combustion facility could occur. The two liquid oxygen tanks at the facility pose the highest potential consequences if an accident were to occur, which could affect workers but not the general public. However, such accidents are extremely unlikely to occur (i.e., the potential for an accident to occur is between once in 10,000 years and once in a million years). The potential for accidents involving the CO₂ pipeline are considered to be unlikely (i.e., the potential to occur between once in 100 years and once in 10,000 years). Workers in the vicinity of a pipeline puncture or rupture would be most susceptible to harm due largely to potential physical effects related to high-pressure and the velocity of the release, as well as from exposure to extreme temperature drops which could cause frostbite. In addition, high concentrations of CO₂ would be present in the narrow band of CO₂ escaping from the leak site. Immediate life threatening effects related to asphyxiation from short-term exposure to these high concentrations (i.e., exposure to CO₂ at concentrations that exceed 100,000 ppmv) could occur; however, workers would likely be able to flee the areas with high concentration due to the visual, physical, and audible signs associated with the event.</p> <p>A pipeline rupture or puncture would potentially cause exposure and risk to the public as the CO₂ expands and disperses creating a vapor plume. The potential maximum reasonably foreseeable accident scenario or exposure distances would occur with a pipeline rupture under calm meteorological conditions. There would be no effects to the general public from this type of rupture beyond a distance where CO₂ concentrations would exceed 5,000 parts per million, which over a 60-minute time period, could extend to a distance of up to 1,769 feet. Transient effects, which include temporary symptoms such as headache, dizziness, sweating, or vague feelings of discomfort, could occur within these distances. Exposure distances would be much shorter under meteorological conditions with wind levels greater than calm, when more air movement and subsequent chemical dissipation would occur.</p>	<p>Radiological Health – SMALL</p> <p>Members of the public: Doses to members of the public would be below NRC and EPA standards and there would be no observable health impacts (10 CFR Part 20, Appendix I to 10 CFR Part 50, 40 CFR Part 190).</p> <p>Plant workers: Occupational doses to plant workers would be below NRC standards (10 CFR 20.1201) and a program to maintain doses ALARA would be implemented.</p> <p>Biota other than humans: Doses to biota other than humans would be well below NCRP and IAEA guidelines.</p>
		<p>Nonradiological Health – SMALL</p> <p>Health risks to workers would be dominated by occupational injuries at rates below the average U.S. industrial rate. Health effects to the public and workers from thermophilic microorganisms, noise generated by unit operations, and acute impacts of EMFs would be minimal. The chronic effects of ELF-EMF on human health does not conclusively link ELF-EMF to adverse health impacts. Traffic accident impacts during operations would increase the rate of local traffic impacts marginally.</p>
		<p>Accidents – SMALL</p> <p>Impacts of Design Basis Accidents would be well below regulatory limits. The environmental risks of severe accidents are well below the NRC safety criteria.</p>

Endnotes

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20. 40 CFR 1508.27
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23. 40 CFR 1501.7
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26. NUREG-2111, Vol. 1, Executive Summary, page xxxiii
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28. DOE/EIS-046, Vol. I, Section 3.1.1.4, page 3.1-8
29. DOE/EIS-0460, Vol. I, Section 3.1.3.2, page 3.1-23
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- 46. DOE/EIS-0460, Vol. I, Section 3.17.3.2, pages 3.17-14 to 3.17-29
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- 49. DOE/EIS-0460, Vol. I, Section 3.12.2.1, page 3.12-6
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- 51. NUREG-2111, Chapter 9: Section 9.1 No-Action Alternative, Section 9.2 Energy Alternatives, Section 9.3 Alternative Sites, Section 9.4 System Design Alternatives, and Section 9.5 U.S. Army Corps of Engineers Alternatives Evaluation, pages 9-1 to 250.

Independent Agencies in Compliance with NEPA: U.S. Nuclear Regulatory Commission Case Study

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Introduction

This paper examines the U.S. Nuclear Regulatory Commission (NRC) as a case study of an independent Federal regulatory agency to determine if the NRC has found that the National Environmental Policy Act (NEPA)¹ requirements interfered with the agency's mission to protect "people and the environment." The paper also examines another independent regulatory agency, the Federal Energy Regulatory Commission (FERC), to determine how FERC compares with the NRC in complying with NEPA.

Congress established independent agencies of the Federal government as part of the executive branch. They are independent of presidential control. The intent of independent regulatory agencies is to create and enforce regulations free of political influence. The President appoints with the consent of Congress the heads of independent agencies. Whereas the heads of most agencies within the executive branch serve at the pleasure of the President, the President cannot remove the heads of independent agencies without just cause.² Consequently, agency leadership is non-partisan and independent from election turnover. These regulatory agencies resemble the tripartite Federal government structure by creating regulations, enforcing penalties for regulatory violations, and adjudicating conflicts similarly as the legislative, executive, and judicial branches of the government.³ The President exercises his authority by issuing executive orders that direct Federal agencies to implement programs.

Executive orders are legally binding when these directives are based on the President's authority from the U.S. Constitution or by statute.^{4,5} Head of the Executive Branch and Chief Law Enforcement Officer are Presidential roles that are clearly stated in the U.S. Constitution under which the President may issue executive orders in carrying out constitutional delegated powers. Statutes are laws enacted by Congress, thus Congress may amend or cancel the President's authority granted by statute.⁶ Because independent agencies are not under Presidential control, the President may not direct, but only request that independent agencies comply with the provisions of executive orders.

NEPA mandates that all Federal agencies consider the environmental impacts of their actions and decisions. Title I declares a national policy that encourage constructive and agreeable balance between man and his environment and promotes efforts to prevent or eliminate detrimental effects to the environment; and Title II establishes the Council on Environmental Quality (CEQ) to advise the President and assist with the preparation of the annual Environmental Quality Report presented to Congress. Congress in Section 102 of Title I directs all Federal agencies to systematically assess the environmental impacts of their proposed actions and consider alternative means of accomplishing their missions that are less damaging to the environment. Federal agencies are required to develop procedures in consultation with the CEQ. Section 103 of Title I directs all Federal agencies to review their regulations and

implement changes to ensure their regulations and policies conform with the intent, purposes, and procedures set forth in NEPA.

Section 203 of Title II directs the CEQ to track trends in environmental quality, to review and assess Federal agencies' programs and activities to ensure compliance with NEPA, and conduct research relating to ecosystems and environmental quality. Title 40 Code of Federal Regulations (CFR) Chapter V, Parts 1500 through 1508⁷ bind Federal agencies for implementing NEPA to ensure that Federal agencies "act according to the letter and spirit of the Act"⁸ "except where compliance would be inconsistent with other statutory requirements."⁹ Chapter V requires Federal agencies to prepare environmental assessments (EAs) and environmental impact statements (EISs), which describe the environmental effects of proposed Federal agency actions. Parts 1501.4(e) and 1508.13 direct Federal agencies to prepare a finding of no significant impact if the Federal agency's EA has determined that an EIS is not required.

Executive orders direct Federal agencies to comply with various environmental issues, such as environmental justice¹⁰ and climate change.¹¹ Questions concerning the applicability of executive orders and statutes that may compromise independent agencies' statutory requirements have required the courts to determine if independent Federal agencies complied with NEPA to address environmental issues.¹²

Regulating Nuclear Power and Safety

Congress created the Atomic Energy

Commission (AEC) in the Atomic Energy Act of 1946 and transferred the control of atomic energy that was developed during World War II under the Manhattan Project from military to civilian management.¹³ The act established the Commission, which consisted of five members appointed by the President and approved by the Senate, with one member designated as the Chairman by the President. The act empowered the AEC to both regulate the use of radioactive sources and conduct research and development of military use of atomic energy. The act also established the national laboratories and restricted production facilities and nuclear reactors to government owned.

Congress amended the act in 1954¹⁴ to allow the AEC to continue to regulate civilian use and conduct research, development, and production of atomic energy. The amended act also directed the AEC to encourage the use of atomic energy and enabled commercial nuclear power. The AEC found it a challenge to meet its obligations to both ensure public health and safety from the hazards of nuclear energy and conduct research and development of nuclear technology and applications. Public and Congressional criticism increased throughout the 1960s and early 1970s that the AEC was lax in meeting its obligations to ensure public health and safety from nuclear effects, perform effective reactor safety oversight and site planning, and protect the environment.¹⁵

Congress separated the government's roles as safety regulator and promoter of nuclear energy in the Energy Reorganization Act of

1974. Title II of the Energy Reorganization Act of 1974 established the NRC as an independent regulatory commission and transferred all of the regulatory functions from the AEC to the NRC.¹⁶ The NRC began operations on January 19, 1975.¹⁷ The act created the Energy Research and Development Agency (ERDA) to promote nuclear power and other sources of energy, and manage the development and production of nuclear weapons.¹⁸ Congress abolished ERDA and transferred its responsibilities to the Department of Energy (DOE) when Congress passed the Department of Energy Organization Act in 1977.¹⁹

Regulating Nuclear Power and NEPA

The AEC promulgated regulations describing procedures to comply with NEPA after President Nixon signed it into law on January 1, 1970. However, these regulations were limited to only some of the AEC's licensing responsibilities in 10 CFR Parts 2 and 50. The first notice in early 1970 appended a statement of general policy to Part 50 (Appendix D) describing the AEC's intent to comply with NEPA pending the development of more detailed procedures.²⁰ The AEC later published a notice and comment rule-making that described how the AEC would comply with NEPA in licensing power reactors and fuel reprocessing facilities.²¹ By the end of 1970, the AEC published the amended Appendix D, which required all construction permit applicants to submit an environmental report with construction permit applications and a second report with the operating license application. The second report only had to cite any chang-

es to the original construction permit environmental report.²² Licensees with construction permits were only required to submit an environmental report with the first licensing action that would authorize full-power operation. The AEC required licensees to include a reference to the certification issued pursuant to section 21(b) of the Federal Water Pollution Control Act (FWPCA).²³ Otherwise, the licensee was to provide the basis that such certification was not required in the environmental reports. The AEC did not require other licensees, such as byproduct or source material licensees, to submit environmental reports.

The AEC staff would prepare a detailed statement of the environmental costs and benefits from information in the applicant's environmental report to satisfy NEPA's environmental assessment. According to Appendix D, the AEC would rely on Federal and State agencies that have legal jurisdiction or special environmental expertise to review the nonradiological environmental effects of the proposed actions and provide comments "with respect to matters within their jurisdiction," which the AEC would later incorporate into the AEC's evaluation. Additionally, the AEC committed to incorporating a condition requiring the licensee to observe Federal and State standards and requirements for the protection of the environment, excluding radiological effects or water quality addressed in section 21(b) of the FWPCA. However, the requirement to observe such standards was subject to the AEC's determination that compliance was "applicable to the facility that is subject to the licensing action involved."²⁴

The AEC had successfully argued in previous litigation that Congress, in the Atomic Energy Acts of 1946 and 1954, considered AEC's responsibility to be limited to the analysis of and protection against hazards from radiation. The First Circuit Court of Appeals in *New Hampshire vs. the AEC*²⁵ found that the AEC and Atomic Safety and Licensing Board (ASLB) had correctly refused to consider thermal effects in granting a construction permit to the Vermont Yankee Nuclear Power Corporation.

Appendix D did not require the ASLB to review environmental issues presented by this process unless an outside party or AEC staff raised an environmental issue. Congress established an adjudicatory process in sections 189 and 191 of the Atomic Energy Act that supports public involvement in hearings for construction permits and operating licenses. Judges on the ASLB perform the adjudicatory functions in proceedings involving concerns of parties affected by licensing actions. The ASLB also conduct public hearings regarding the construction of power reactors even if there is not a challenge by any affected parties. The AEC intended to meet its NEPA responsibilities "outside the hearing process."²⁶ Moreover, Appendix D stated that interested parties might raise environmental issues only in proceedings in which published notices of hearings occurred on or after March 4, 1971. The AEC provided rationale for this restriction: plants were urgently needed to meet the national requirements for electric power and to avoid unreasonable delays in the construction and opera-

tion of nuclear power plants.²⁷

In July 1971, Calvert Cliffs Coordinating Committee (CCCC) filed a suit against the AEC.²⁸ The CCCC was a special interest group that formed in response to a group of local scientists that reported radiological and thermal pollution from the proposed power plant at Calvert Cliffs would adversely impact fragile Bay ecosystems.²⁹ Plaintiffs cited four NEPA violations in the AEC regulations:

1. The first violation the plaintiffs cited was not allowing the ASLB to review environmental affects discussed in the applicant's environmental report, the AEC staff's detailed environmental analysis, and other agencies' comments unless outside parties or staff members raised environmental issues.
2. The second violation cited was not allowing outside parties or AEC staff to raise environmental issues at hearings noticed before March 4, 1971.
3. The third violation cited exempting the ASLB from considering environmental issues if other agencies had certified that their environmental standards were satisfied.
4. The fourth violation was that the AEC excluded consideration of environmental affects for plants that had a construction permit before NEPA compliance was required. AEC regulations did not

require an environmental assessment until issuance of the operating license.

THE COURT CONCLUDED THAT NEPA'S PROCEDURAL OBLIGATIONS REQUIRED FULL COMPLIANCE UNLESS THERE IS A DISTINCT CONFLICT WITH THE AGENCY'S OTHER STATUTORY AUTHORITY.

The AEC argued in its response to the petitioners that the AEC's discretionary functions required a balance of environmental impacts against the Nation's need for more electrical energy. The AEC justified the assumption that certification by the appropriate State or Federal agency would be considered demonstration that the applicant had met the regional environmental agencies' quality standards, and therefore that the proposed action would not have a significant adverse effect on the environment in accordance with NEPA section 104. Section 104 states that Sections 102 and 103 shall not affect the specific statutory obligations of any Federal agency to comply with environmental quality criteria, to consult with any other Federal or State agency, or to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency. The AEC concluded that each federal agency is to balance only those aspects of

environmental quality for which it has special responsibility and it is required to defer to other responsible agencies' judgment as to harm caused within those agencies' area of environmental expertise and authority.³⁰

The court of appeals sustained all the petitioner's challenges to the AEC's regulations. The court found that NEPA charges every Federal agency to consider the environmental effects of each decision and to use all practical means to avoid degrading the environment. This finding countered the AEC's established argument that the AEC had no authority to consider environmental effects other than radiological hazards, in its licensing actions. The court concluded that NEPA's procedural obligations required full compliance unless there is a distinct conflict with the agency's other statutory authority. The court stated that administrative difficulties and economic costs were not justification to support non-compliance with NEPA's procedural requirements. This opinion countered the AEC's explanation of expediency required to meet National energy needs as the justification to avoid having the ASLB review environmental issues and requiring full compliance for all licensing actions.

The AEC revised Appendix D and cited the Calvert Cliffs' ruling as the reason for the execution of the revision.³¹ In the notice, the AEC stated the Commission intended to be responsive to the conservation and environmental concerns of the public while meeting the growing need for electric power in a timely manner. The AEC restructured Appendix D into five sections.

1. Section A described procedures for implementing NEPA.
2. Sections B and C addressed procedures applicable to affected licenses and construction permits, respectively, that the AEC issued between January 1, 1970, the date of enactment of NEPA, to the effective date of the revision, the publication date of September 9, 1971. Section B included certain licenses for byproduct, source, and special nuclear materials in addition to the power reactor and fuel fabrication facilities that Appendix D covered previously.
3. Section D defined procedures applicable to pending and future hearings and described environmental reviews and authorizations for limited operations with the appropriate consideration for environmental values during the environmental review.
4. Section E addressed factors that would be considered by the Commission in determining whether to suspend permits or licenses pending the required NEPA environmental review, that were issued between January 1, 1970, and the effective date of the Appendix D revision.

Calvert Cliffs was a historic NEPA ruling³² that stressed the importance of NEPA twofold; it successfully challenged a formidable independent agency, and it demonstrated that

NEPA compliance was consistent with the AEC's statutory requirements as defined in the Atomic Energy Act. The following year, the AEC noticed that the AEC removed the license conditions requiring licensees to comply with Federal, State, and local requirements, as described in the former paragraph 11 of Appendix D.³³ The AEC committed to conduct independent reviews of environmental effects relating to these standards and incorporate conditions that were specific for the affected facility in each license. The amendment did not relieve licensees of any requirements with regard to the applicable Federal, State, and local standards and regulations. The condition no longer served the purpose for which the AEC originally intended, which was to rely on the other agencies to conduct the environmental assessment for hazards other than radiation.

The AEC and its successor, the NRC, have demonstrated the Commissions' intent to comply with the mandate of the Court of Appeals by revising its regulations to comply with NEPA and follow the CEQ's published guidance. The AEC revised 10 CFR Parts 2, 30, 40, 50, and 70 and added Part 51 to replace Appendix D of Part 50 to implement the revised CEQ NEPA guidelines³⁴ published in August 1973.³⁵ The NRC has subsequently updated and revised Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as the CEQ has updated 40 CFR 1500. However, the NRC's policy for revising its regulations later changed from "intent to implement" to "voluntarily" incorporating the CEQ's guidance.³⁶

The AEC's purpose and scope stated in § 51.1³⁷ that NEPA and the CEQ's guidelines published in 1973 "require" all Federal agencies to prepare detailed environmental documents. However, the NRC's purpose and scope published in § 51.10 in 1984 stated that NEPA directs all Federal agencies to "comply with the procedures in section 102(2) of NEPA except where compliance would be inconsistent with other statutory requirements... and which reflects the Commission's announced policy to take account of the regulations of the Council on Environmental Quality...voluntarily..."³⁸ This policy statement remains in the current Part 51.

The NRC explained the change in policy in the proposed rules published in 1984.³⁹ According to these proposed rules, the Commission prepared a letter based on the NRC staff's analysis of the CEQ's regulations published in 1978⁴⁰ and the staff's request for guidance from the Commission.⁴¹ On May 31, 1979, the NRC Chairman signed a letter to the CEQ Chairman that stated "the Commission would...develop regulations to take account of CEQ's NEPA regulations voluntarily," subject to several conditions. The Commission reserved "the right to examine future Interpretations or changes to the regulations on a case-by-case basis." The Commission would need to "devote additional study" on the effect of some of the CEQ's provisions that were unclear "before developing implementing regulations." The NRC reserved "the right to prepare an independent EIS" as a lead agency "whenever it has jurisdiction over a particular activity even though it has not been designat-

ed as lead agency..."The NRC reserved "the right to make a final decision on all matters within its regulatory authority despite the provisions of 40 CFR Part 1504..." The Commission stated that it opined that "the proposed...10 CFR Part 51...provides a reasonable and sound accommodation between the NRC's independent regulatory responsibilities and the CEQ's objective of establishing uniform NEPA procedures."⁴²

The staff's understanding of the NRC's role as an independent agency and its responsibility to comply with NEPA seemed to be at odds several years ago when the Environmental Protection Agency (EPA) rated several of the NRC's published draft Supplemental EISs (SEIS) as "inadequate."⁴³ The EPA assessed three draft SEISs the NRC staff published for public comment in December 2009 for three new source material licenses for proposed uranium in-situ recovery (ISR) facilities in Wyoming.^{44, 45, 46} The EPA found the draft SEISs did not provide sufficient detail in four critical areas.⁴⁷ The first deficiency concerned the NRC'S limited discussion of the wastewater disposal alternatives analysis and waste management impacts. The EPA found that the NRC analyzed deep Class I injection well disposal as the only wastewater disposal method for each of the ISR uranium projects. The EPA stated that the NRC should have discussed other methods, such as treatment and disposal via a Class V injection well, treatment and discharge to surface waters under a National Pollutant Discharge Elimination System (NPDES) permit, land disposal, and evaporation ponds.

The second deficiency concerned the NRC's failure to provide sufficient information regarding air pollutants and the impacts of those emissions. The EPA found that the NRC failed to discuss possible air quality degradation resulting from emissions from drill rig engines, fugitive emissions, and emissions from processing operations. Nor did the NRC address the emission inventories for construction and operational sources to determine compliance with the Clean Air Act (CAA). The EPA cited the NRC's failure to address adequately climate change and greenhouse gas emissions as the third deficiency. The EPA identified insufficient discussion regarding the establishment of alternative concentration limits (ACLs) as groundwater restoration targets as the fourth deficiency. The EPA recommended formal revisions for public comment and referral to the CEQ for possible resolution.

In preparation for the onslaught of licenses applications resulting from a resurgence of interest in the nuclear power industry, the NRC decided to prepare a generic EIS (GEIS) to identify and assess generic environmental impacts common to uranium ISR facilities. The NRC staff would use the GEIS as a basic document that the staff would reference and supplement with site-specific environmental review documents. The NRC published NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities," in May 2009, as it was reviewing and preparing site specific supplemental EISs (SEISs) for three license applicants.⁴⁸

The NRC staff seemed challenged to prepare "concise" documents that contained site-specific information required by NEPA and the CEQ in addition to the information already addressed in the GEIS. The staff completed major revisions of the three SEISs and incorporated information addressing concerns presented by the EPA, as well as comments from the public and other Federal and State agencies. However, the NRC did not publish draft documents for further review and comment as suggested by the EPA. The NRC published the final SEISs for Moore Ranch, Nichol's Ranch, and the Lost Creek ISRs in August 2010, January and June 2011, respectively.^{49, 50, 51}

NEPA and Energy

The Federal Energy Regulatory Commission (FERC) is an independent agency that Congress created from the Federal Power Commission (FPC) in the Department of Energy Organization Act in 1977.⁵² Congress created the FPC in the Federal Water Power Act (FPA) of 1920⁵³ that consolidated regulatory authority over hydroelectric licensing under the combined control of the secretaries of War, Agriculture, and the Interior.⁵⁵ The Public Utilities Act of 1935⁵⁴ transformed the FPC into an independent regulatory agency regulating hydropower and interstate electricity. Like the NRC, the FPC consisted of a Commission of five members nominated by the President and confirmed by the Senate, with no more than three members from one party affiliation. The President appointed the Chairman from the five members. The Natural

Gas Act of 1938⁵⁶ added the regulation of interstate natural gas pipelines to the FPC's responsibilities. Congress consolidated various energy-related agencies into the DOE in the Department of Energy Organization Act in 1977 and created FERC as an independent regulatory agency within the DOE. FERC regulates the interstate transmission of electricity, oil, and natural gas.⁵⁷ In its regulatory capacity, FERC licenses all nonfederal hydroelectric projects, such as dams, and oversees environmental matters related to natural gas and hydroelectricity projects. However, FERC does not oversee construction of oil pipelines or electric generation facilities nor is FERC responsible for pipeline safety.⁵⁸

In the first twenty years after the enactment of NEPA, many of the NEPA court cases involved energy law.⁵⁹ Energy law involved litigation, such as NEPA compliance during the NRC and FERC licensing construction of nuclear power plants and hydroelectric dams, respectively; or the Departments of Interior and Agriculture issuing leases for gas, oil, or coal exploration and development. NEPA noncompliance petitions against the Departments of Interior and Agriculture for issuing permits to commodity developers during the first twenty years were for the most part unsuccessful. Courts agreed with the government agencies' argument that no significant environmental impacts "affecting the quality of the human environment" as defined in NEPA Section 102(2)(c), occur when focused solely on the leases rather than the development of resources under these leases.⁶⁰ The courts cited the agencies' lease stipulations

requiring mitigation in support of the agencies' Finding of No Significant Impact (FONSI).⁶¹

However, in *Conner v. Burford*⁶² the court determined that the Bureau of Land Management (BLM) and the Forest Service violated NEPA by failing to evaluate fully the gas and oil leasing effects before issuing more than 700 lease effects before issuing more than 700 leases on 1,350,000 acres within the Flathead and Gallatin National Forests.⁶³ The petitioners challenged the federal agencies' leasing programs that did not perform an EIS, but relied on EAs and Findings of No Significant Impacts (FONSIs) prepared by the Forest Service. The leasing programs involved a number of no surface occupancy (NSO) leases, which prohibited developers from utilizing the surface of the leased sites without additional approval. The petitioners argued that industry and the BLM could amend the NSO leases to allow surface occupancy without preparation of an EIS. Leases that allowed surface use contained standard stipulations requiring mitigation activities for environmental protection, but these stipulations did not preclude exploration and drilling activities. Plaintiffs argued that these actions irretrievably committed resources and that an EIS was required.⁶⁴ The court found that the BLM and Forest Service violated the Endangered Species Act⁶⁵(ESA) by failing to obtain a comprehensive biological opinion from the Fish and Wildlife Service evaluating later stages of the oil and gas exploration and development. The court ruled that the agencies could not use a piecemeal approach unless the project was

segmented and enjoined further leasing pending compliance with NEPA and ESA.⁶⁶ The court stated that it found support in its conclusion in *Sierra Club v. FERC*, where FERC⁶⁷ issued a “preliminary permit” for the construction and maintenance of hydroelectric facilities without preparing an EIS. The court rejected the petitioner’s argument because FERC did not authorize the applicant in the permit to conduct any studies on federal land. The court cited FERC’s explanation that its intent of the preliminary permit was to “to maintain the applicant’s priority of application for a license,” because applicants may only enter federal land after receiving BLM and Forest Service special use permits.⁶⁸ Thus, the process was segmented by agency and therefore, FERC only needed to assess the environmental impact of the issuing a preliminary permit, which was met with an EA and FONSI. However, *Conner v. Burford* would affect court rulings involving FERC license issuance for hydroelectric dams on nonfederal land.

FERC Compliance with NEPA

Like the NRC, FERC was a powerful independent agency issuing licenses for construction and operation of non-federal hydroelectric projects.⁶⁹ FERC sustained control of the contents of licenses issued under the FPA and its licensing process was the “comprehensive plan”⁷⁰ required by the FPA. The Supreme Court supported FERC’s interpretation of the FPA, which supported FERC’s authority.⁷¹ Several court rulings have

since weakened FERC’s position as an unchallenged independent regulatory agency. This change is significant because dams can be the greatest influence on streamflows in watersheds.⁷² Special interest groups have criticized FERC for not being perceptive to the harm to fish populations and habitats and for resisting environmental legislation protecting fish and wildlife.⁷³

One of the first 2014 cases that challenged FERC’s authority and compliance with NEPA was *LaFlamme v. FERC*.⁷⁴ The plaintiff, a concerned citizen, filed for a rehearing with FERC because FERC had not considered the impact on scenic and aesthetic resources when the agency chose not to perform an EIS and issued a license for the Sayles Flat Project on the South Fork of the American River in California in 1983.⁷⁵ The plaintiff sued when FERC denied the rehearing request. The court vacated FERC’s order issuing the license and set aside the order denying the plaintiff’s request for a rehearing. Additionally, the court ruled that FERC had violated both the FPA and NEPA by not completing a comprehensive plan⁷⁶ and adequately evaluating the project’s impact on recreational use, aesthetics, and cumulative impacts. The licensee petitioned the court to amend its ruling and not to vacate the license while FERC completed its assessment because the project completed to the point that vacating the license would cause irreversible damage.⁷⁷ The court amended its order to suspend the license, sustained FERC’s denial of the plaintiff’s request for a rehearing.⁷⁸ The licensee was unable to obtain a power purchase agreement and surrendered

its license in 1995. The licensee dismantled and restored the site to the greatest extent that the licensee could afford.⁷⁹

Several court cases lessened FERC's absolute authority in licensing hydroelectric licensing. *Udall v. FPC*⁸⁰ was the first case that affected FERC's authority. The Supreme Court upheld the Secretary of Interior's argument that he had the authority to protect the Northwest anadromous fisheries, which migrate from the ocean to spawn in freshwater rivers. The Court cited section 10(a) of the FPA that requires hydroelectric projects be "best adapted" to waterway as well as recreational and beneficial public uses. The court required the FPC to consider the alternative of the proposed hydroelectric project if it threatens a recreational resource, such as anadromous fisheries, which migrate from the ocean to spawn in freshwater rivers. The Court cited section 10(a) of the FPA that requires hydroelectric projects be "best adapted" to waterway as well as recreational and beneficial public uses. The court required the FPC to consider the alternative of the proposed hydroelectric project if it threatens a recreational resource, such as anadromous fish.⁸¹

Conclusion

The AEC intended to comply with NEPA by updating Part 51 in synchrony with the CEQ guidelines after the *Calvert Cliffs* court ruling. However, the NRC clearly views its role as an independent regulatory agency outside the CEQ's authority. This appears to almost create a "fourth" branch of the government. *Calvert Cliffs* established NEPA compliance

within the Federal bureaucracy, but just as the court's ruling stated, the courts must ensure that Federal agencies comply with NEPA's environmental impact assessment responsibilities. FERC viewed its absolute authority in issuing hydroelectric projects on non-federal lands as mandated by the FPC in very much the same way as the NRC views its independent authority and responsibilities as mandated in the AEA. Both agencies misinterpreted its role and requirements with respect to NEPA, which had to be determined in court rulings.

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Environmental Review Case Study for the Sequoya Fuels Corporation Uranium Conversion Site in Gore, Oklahoma

By
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U.S. Nuclear Regulatory Commission
Rockville, Maryland
September 2014

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Executive Summary

This environmental review case study reviews the historical information regarding the Sequoyah Fuels Corporation's (SFCs) uranium conversion site (U.S. Nuclear Regulatory Commission (NRC) Materials License No. SUB-1010, Docket No. 04008027) in Gore, Oklahoma as well as the activities undertaken by the NRC to meet The National Environmental Policy Act (NEPA) of 1969, as amendedⁱ and the NRC regulations implementing NEPA, found in Title 10, "Energy," of the Code of Federal Regulations (CFR), Part 51 (10 CFR Part 51)ⁱⁱ.

This case study specifically addresses the following three questions:

- How did groundwater contamination affect the NEPA environmental impact statement (EIS) required issues?
- How did the NEPA process help or hinder the NRC?
- How did the NRC decisionmakers use or not use the information in the NRC Final EIS?

The SFC operated a uranium conversion facility at the site in Gore, Oklahoma; however, it stopped operating in 1993 following a release of nitrous oxide in November 1992. The SFC submitted Decommissioning Plans to the NRC for the site in 1998 and March 1999ⁱⁱⁱ, which requested to consolidate contaminated sludges and soils, demolish existing structures (with the exception of the administration building and the electrical substation), and construct an above-grade, on-site disposal cell for the permanent disposal of all contami-

nated materials. Issues were raised regarding restricted-release of the site and classification of waste as byproduct material, as defined in Section 11e.(2) of the Atomic Energy Act of 1954 (as amended), which led the SFC to submit to the NRC the following: (1) a Reclamation Plan in 2003 that was revised in December 2006^{iv}; (2) a groundwater monitoring plan in 2003 that was revised in February 2005^v and approved by the NRC in August 2005; and (3) a groundwater corrective action plan in June 2003^{vi} that was revised in June 2010 and approved by the NRC in September 2010.

A major technical issue is significant groundwater contamination at the site. The SFC submitted an Environmental Report to the NRC in October 2006^{vii}. The NRC published the draft EIS for public comment in September 2007, held a public meeting in Gore, Oklahoma in October 2007, and published the Final EIS in May 2008^{viii}. In 2013, the NRC conducted in-process inspections of the SFC decommissioning activities. It is expected that closure of the SFC site will occur in 2018.

Background

The Sequoyah Fuels Corporation (SFC) uranium conversion facility in Gore, Oklahoma is located in Sequoyah County about 150 miles east of Oklahoma City, Oklahoma; 40 miles west of Fort Smith, Arkansas; 25 miles southeast of Muskogee, Oklahoma; and 2.5 miles southeast of Gore, Oklahoma (see Figure 1).

Figure 2 shows the Industrial Area of the

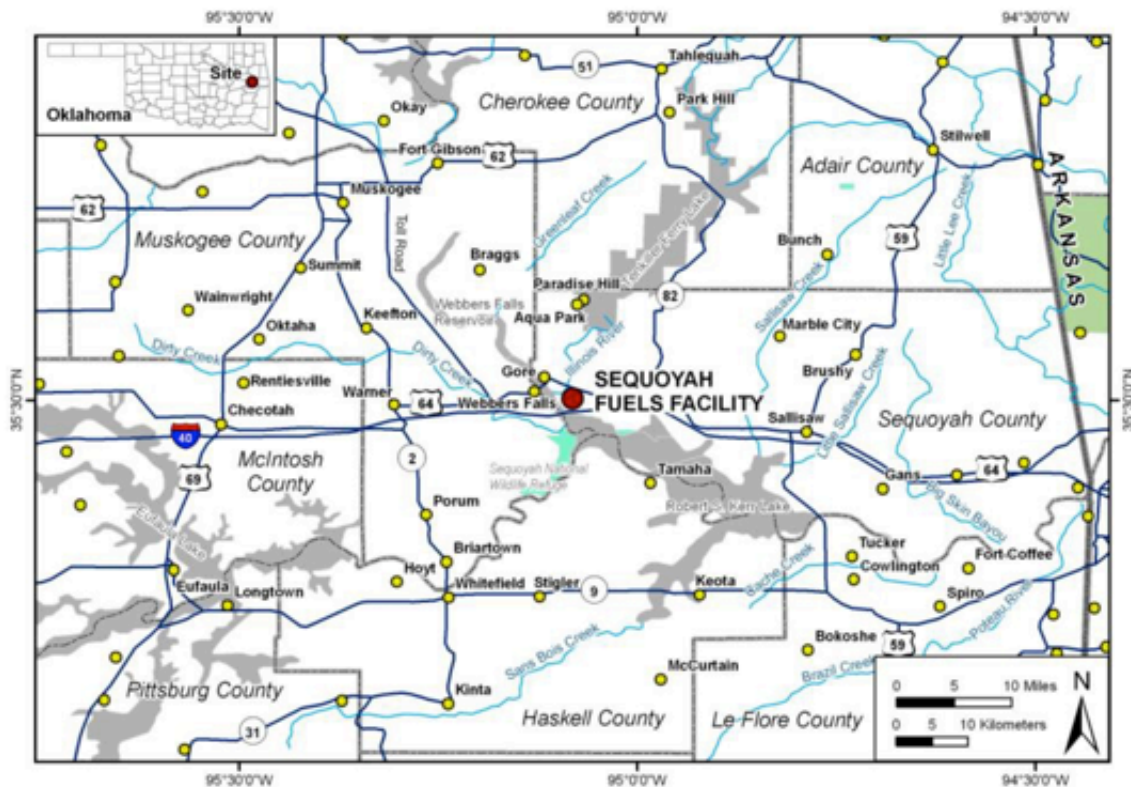


Figure 1: SFC location

site, which includes the disposal cell, institutional control boundary, and the agricultural lands. Most of the land outside of the institutional control boundary is used either for grazing cattle or producing forage.

In November 2009, SFC began construction of the 8.3-million-cubic-foot on-site disposal cell in which most of the residual waste material will be placed for permanent disposal (see Figure).

The NRC performed a review under The National Environmental Policy Act (NEPA) of 1969, as amended, for the SFC uranium conversion facility in Gore, Oklahoma. The NRC Final Environmental Impact Statement (EIS) evaluated the 2006 SFC proposed Reclamation Plan, (i.e., determination of potential environmental impacts of the site reclamation activi-

ties). From 1970 until 1993, the SFC operated a uranium conversion facility under the authority of the NRC Materials License SUB-1010, issued pursuant to Title 10, "Energy," of the Code of Federal Regulations (CFR), Part 40 (Domestic Licensing of Source Material) (10 CFR Part 40). During that time, two major operations were conducted at the facility: (1) conversion of uranium oxide (yellowcake) to uranium hexafluoride (UF_6); and (2) conversion of depleted uranium hexafluoride (DUF_6) to depleted uranium tetrafluoride (DUF_4). More details on those processes, including the resultant raffinate sludge, are in Section 2.1 of the NRC Final EIS. The SFC proposed Reclamation Plan focused on the Industrial Area [81-hectare (200-acre)] and Process Area [34-hectare (85-acre)] within

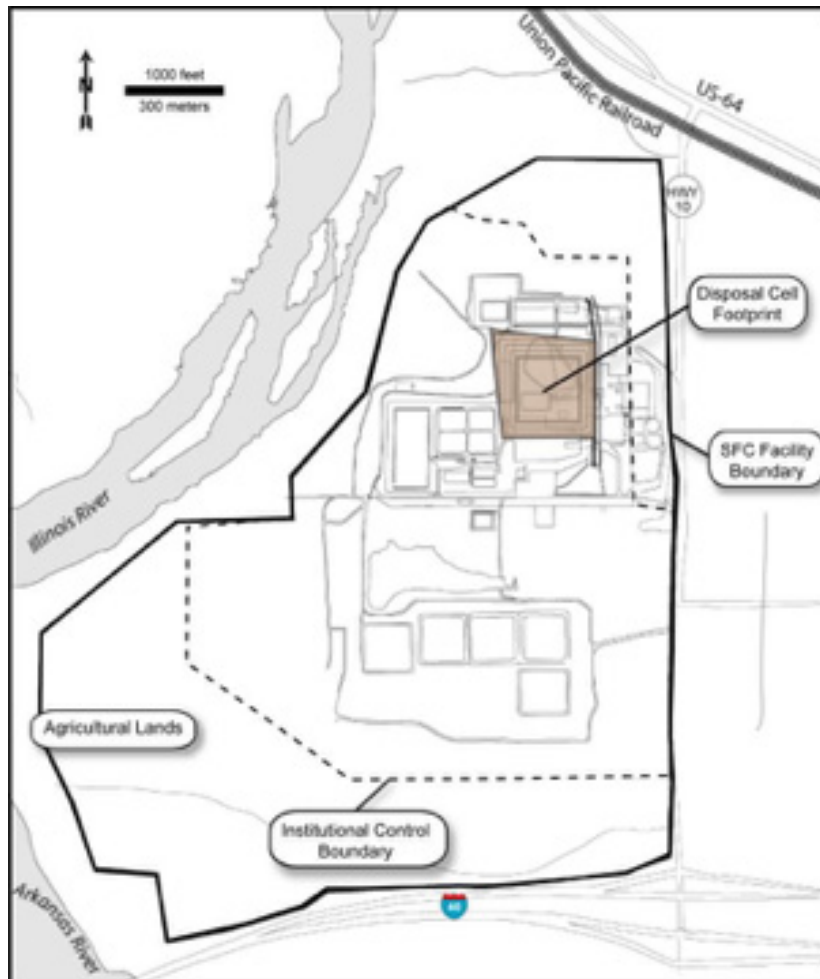


Figure 2: SFC Industrial Area

the Industrial Area of the site.

Contaminated materials are present throughout the Process Area of the SFC site, including scrap materials/debris, soils, and groundwater; buried wastes; ponds containing sludges; surfaces of equipment; and some surfaces/interiors of process buildings. Uranium was detected at concentrations above 35 picocuries per gram (pCi/g) in soil below the Process Area to a maximum depth of about 9 meters (31 feet). The dewatered raffinate sludge from the conversion process (i.e., Section 11e.(2)) material totaling approximately 6,995 cubic meters (9,150 cubic

yards)) is stored on a concrete pad in the central portion of the site in covered “super sacks” containing a significant fraction of the radionuclides present on site (34% of the uranium (41.5 curies), 76% of the thorium-230 (156 curies), and 38% of the radium-226 (1.1 curies) as well as other metals). Low-level radioactive waste (LLW) (e.g., contaminated drums, equipment) was buried by the SFC in the 1970s and 1980s within the Process Area.

There was some State of Oklahoma and NRC approved injection well work done 1982; but, due to public opposition, the injection well was abandoned and plugged in 1985. The

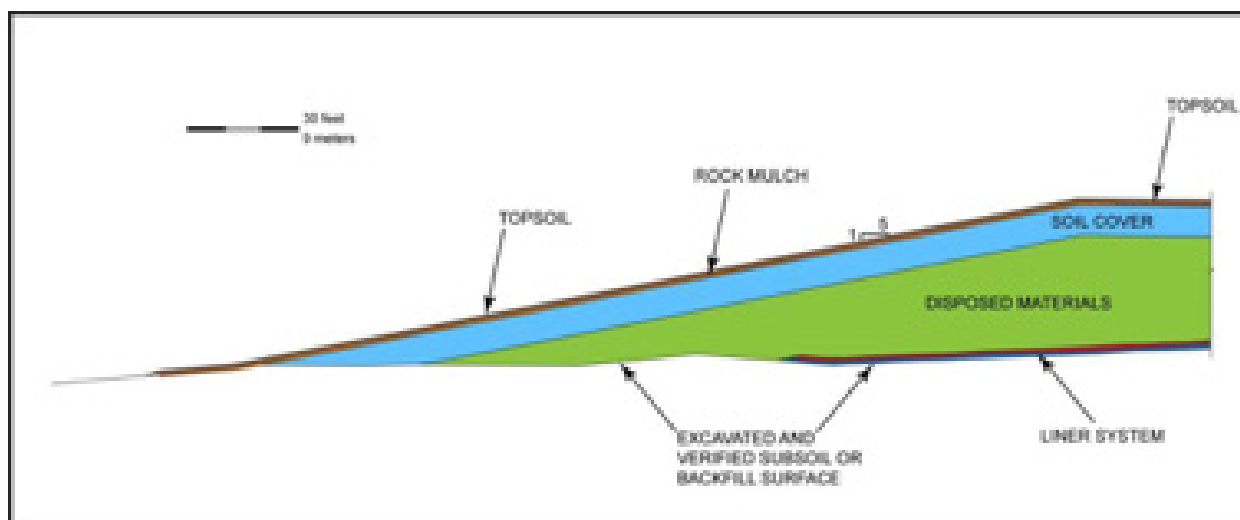


Figure 3: On-site SFC Disposal Cell

history of the deep injection well at the site is included in Appendix G of the NRC Final EIS. Uranium and thorium contamination of the soils and subsoils was identified in the Process Area. The groundwater is contaminated with uranium, thorium, and metals. Chemical contaminants on the site include fluoride, arsenic, lead, antimony, and other metals.

Outside the NEPA process, there were other issues being discussed through the justice system.

A hearing was granted to the State of Oklahoma and the Cherokee Nation on issues related to the SFC proposed Reclamation Plan. Additionally, Oklahoma appealed the Commission's decision regarding classification of some wastes as Section 11e.(2) byproduct material to the U.S. Tenth Circuit Court of Appeals. Oklahoma also petitioned for a hearing on the SFC proposed plan to dewater raffinate sludges that were in settlement ponds. Negotiations between Oklahoma, the Cherokee Nation, and the SFC were successful in resolving the plans for dealing with the issues. As a result, the lawsuit

was withdrawn and the hearings were terminated.

Activities to meet NEPA and 10 CFR Part 51

The SFC submitted Decommissioning Plans for the site to the NRC in 1998 and 1999 and proposed utilizing an on-site, above-grade disposal cell for the permanent disposal of LLW and restricted-release of the site, in accordance with 10 CFR 20.1403 (License Termination Rule). However, that regulation requires the commitment of a responsible party to act as a custodian of the site and the SFC was unable to obtain such a commitment.

In January 2001, the SFC requested the NRC to determine that waste from the solvent extraction portion of the UF_6 conversion process could be classified as byproduct material, as defined in Section 11e.(2) of the Atomic Energy Act of 1954, as amended (AEA) (i.e., wastes from extraction or concentration of uranium or thorium from any ore processed for source material). A Section 11e.(2) byproduct material site must be remediated in accor-

dance with Appendix A of 10 CFR Part 40. A site remediated in accordance with Appendix A that contains Section 11e.(2) byproduct material above specified concentrations must be transferred to a government custodian for perpetual custodial care. The custodian can be the State where the Section 11e.(2) site is located; but, if the State declines, then the U.S. Department of Energy (DOE) must become the custodian.

In the July 25, 2002, NRC Staff Requirements Memorandum for SECY-02-0095, the Commission concluded that the SFC front-end waste can be classified as Section 11e.(2) byproduct material and can be disposed of in accordance with the uranium mill tailings impoundment regulations in Appendix A of 10 CFR Part 40. The Commission based its decision on the pros and cons, including that the re-classification was legal, DOE had agreed to become the custodian, and the Cherokee Indian Nation preferred it if offsite disposal of all of the waste was not possible. On September 30, 2002, the SFC submitted a License Amendment to the NRC to allow possession of the Section 11e.(2) byproduct material. On December 11, 2002, the NRC approved the amendment with several License Conditions, including that the SFC submit a site Reclamation Plan to the NRC by March 15, 2003. The SFC submitted the proposed Reclamation Plan to the NRC by the deadline and submitted a revision to the NRC many times since then.

NRC approved the SFC Reclamation Plan in April 2009, including using the Final EIS as a basis for approval.

In June 2003, the SFC submitted a

groundwater monitoring plan (GWMP) and a groundwater corrective action plan (GWCAP) to the NRC. The SFC revised the GWMP in February 2005 and the NRC approved it in August 2005. After the NRC issued the Final EIS in May 2008, the SFC revised the GWCAP in June 2010 and the NRC approved it in September 2010.

The SFC submitted an Environmental Report (ER) to the NRC in October 2006. The NRC published the draft EIS for public comment in September 2007, held a public meeting in Gore, Oklahoma in October 2007, and published the Final EIS in May 2008. In 2013, the NRC conducted in-process inspections of the SFC decommissioning activities. It is expected that closure of the SFC site will occur in 2018. See Table I below for a summary of the SFC and the NRC actions with dates:

Summary of the Recommendation in the NRC Final EIS

For NEPA reviews, the NRC follows the 10 CFR Part 51 NRC NEPA regulation, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." For this SFC NEPA review, the NRC used the August 2003 guidance document NUREG-1748^{ix} "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." The NEPA requires issues or areas of the NRC SFC NEPA review were: (1) land use, (2) surface water resources, (3) groundwater resources, (4) public and occupational health, (5) transportation, (6) cultural resources, (7) visual and scenic resources, (8) geology and soils, climate, meteorology, and air quality, (10) ecological

Table 1: Summary of NRC Actions with Dates

Action	Date
SFC submitted the initial Reclamation Plan	January 2003 (revised many times)
SFC submitted the initial GWMP	June 2003 (revised later)
SFC submitted the initial GWCAP	June 2003 (revised later)
SFC submitted the GWMP (used for Final EIS)	February 2005
NRC approved the GWMP (used for Final EIS)	August 2005
SFC submitted the ER	October 2006
SFC submitted the Reclamation Plan (used for Final EIS)	December 2006
NRC Draft EIS - Federal Register Notice availability	September 17, 2007
NRC Draft EIS - Public Meeting held	October 16, 2007
NRC Draft EIS - Public Comment Period ended	November 5, 2007
NRC provided the Final EIS to the U.S. Environmental Protection Agency	April 2008
NRC issued the Final EIS	May 2008
NRC approved the Reclamation Plan	April 2009
SFC submitted the most recent GWCAP	June 2010
NRC approved the GWCAP	September 2010

resources, (11) socioeconomic conditions, (12) environmental justice, and (13) noise.

As a result, in accordance with 10 CFR 51.9(d):

- The NRC weighed the impacts of the SFC proposed action and compared the alternatives, including the No Action Alternative.
- The NRC recommended approval of the SFC proposed action.
- The NRC concluded that the applicable environmental monitoring program and the proposed mitigation measures would
- eliminate or substantially lessen any potential adverse environmental impacts associated with the SFC proposed action.

Three Questions

This environmental review case study specifically addresses the following three questions:

- How did groundwater contamination affect the NEPA EIS required issues?
- How did the NEPA process help or hinder the NRC?
- How did the NRC decisionmakers use or not use the information in the NRC Final EIS?

How did groundwater contamination affect the NEPA EIS required issues?

One of the NEPA EIS required issues/

areas is called “groundwater resources.” Groundwater contamination was specifically addressed in the NRC Final EIS. There is significant groundwater contamination at the SFC site, which the GWMP and GWCAP are intended to address by cleaning up existing groundwater contamination that resulted from previous SFC operations. The goal of the cleanup is to reduce the concentrations of the identified hazardous constituents in the groundwater to the approved concentration limits for each constituent, which are protective of public health and safety and the environment.

From the NRC Final EIS:

During operations, SFC inadvertently released radioactive materials into the ground, contaminating the surrounding soil and groundwater. Elevated concentrations of uranium have been identified in the upper levels of groundwater in the vicinity of the main process building. There also are groundwater plumes from the storage ponds with uranium concentrations exceeding the drinking water standard contained in 40 CFR 141.66 (30 milligrams per liter [mg/L]).

The public is concerned that contaminated groundwater plumes could reach underlying aquifers and believes the groundwater should be cleaned up before such plumes reach local rivers or the Robert S. Kerr Reservoir. The public also is concerned that, even after the

completion of surface reclamation, seepage from the on-site disposal cell could still be directed downward to the groundwater and ultimately reach surface water resources. Under [the SFC] proposed action, approximately 112 hectares (276 acres) would be made available to the public for unrestricted use. An alternative to [the SFC] proposed action would make the entire site (243 hectares [600 acres]) available for unrestricted use.

How did the NEPA process help or hinder the NRC?

The NEPA process helped NRC by focusing the environmental review on what the important areas of concern were, what the impacts associated with those areas of concern were, and what the magnitude of those impacts were.

The SFC proposed action was to conduct reclamation activities in accordance with 10 CFR Part 40, Appendix A. The NRC evaluated the implementation of the SFC proposed action for reclamation of the site (and the reasonable alternatives) as well as the No Action Alternative.

The NRC determined that there would be unavoidable adverse environmental impacts. Those unavoidable adverse environmental impacts associated with each alternative are generally SMALL, although they could be as high as MODERATE in the area of land use and LARGE for the No Action Alternative. For further information, see Chapter 8 (Summary of Environmental Consequences) of the NRC Final EIS (see summary in Table 2 below).

How did the NRC decision makers use or not use the information in the NRC Final EIS?

The NRC decisionmakers used the information in the NRC Final EIS information as part of making a licensing decision of whether or not to approve the SFC Reclamation Plan. Based on details and the NRC recommendation in the NRC Final EIS, the NRC decisionmakers made a licensing decision, including approving the SFC proposed Reclamation Plan, in Amendment #33 to NRC Materials License SUB-1010*.

From the NRC letter that approved the SFC Reclamation Plan:

The NRC previously issued a Final [EIS that] discusses the purpose and need for [the SFC] proposed surface reclamation activities and groundwater corrective actions, and reasonable alternatives to the proposed action, including the no-action alternative. The Final EIS also discusses the environment potentially affected by [the SFC] proposal, presents and compares the potential environmental impacts resulting from the proposed action and its alternatives, and identifies mitigation measures that could eliminate or lessen the potential environmental impacts. In the Final EIS, [the NRC] concluded that the proposed action is protective of human health, safety, and the environment with small effects on the physical environment

and human communities with the exception of land use, for which the impact would be moderate.

Conclusion

Following NEPA and 10 CFR Part 51, the NRC determined the environmental impacts of the proposed SFC Reclamation Plan (as well as alternatives) in the Final NRC EIS and the NRC decisionmakers made a licensing decision by approving the SFC Reclamation Plan. The SFC decommissioning process is ongoing, the NRC will continue to inspect the decommissioning of the SFC site, and the NRC expects that decommissioning of the SFC site will be completed in 2018.

Table 2: Summary of Unavoidable Adverse Impacts

1 – Proposal: On-site disposal of contaminated materials	Impact of land use: MODERATE	Impact of construction- related resources: SMALL	Impact of non-radiological waste streams: SMALL
2 – 1st Alternative: Off-site disposal of all contaminated materials		Impact of buildings and materials disposal: SMALL	Impact on topsoil: SMALL
3 – 2nd Alternative: Some off-site disposal of contaminated materials	Impact of land use: MODERATE	Impact of construction-related resources: SMALL	
4 – 3rd Alternative: No action	Impact of land use: LARGE		

Definitions

Derived Concentration Guideline Levels (DCGLs): Derived, radionuclide-specific, activity concentrations that correspond to the release criterion. DCGLs are derived from activity-to-dose relationships as determined through modeling of radiation exposure pathway scenarios.

Determination of the Significance of Potential Environmental Impacts: Standard of significance established by the NRC for assessing environmental impacts. With standards based on the White House Council on Environmental Quality regulations, each impact should be assigned one of the following three significance levels:

SMALL: The environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE: The environmental effects are sufficient to alter noticeably but not to destabilize important attributes of the resource.

LARGE: The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Dewatered raffinate sludge: Sludge from the bottom of SFC ponds that has gone through a dewatering process, such that the sludge volume has been reduced to approximately one-third of the original volume. The sludge is currently stored on-site in covered, 1-cubicyard-capacity packages known as “super sacks.”

Raffinate: A liquid acid solution resulting from the solvent extraction process and containing impurities such as nitric acid, metallic salts, and small quantities of uranium, thorium-230, and radium-226.

Source Material: (1) uranium, thorium, or any other material which is determined by the NRC pursuant to the provisions of section 61 of the Atomic Energy Act of 1954, as amended, to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the NRC may by regulation determine from time to time.

Uranium and Depleted Uranium: Naturally occurring uranium consists of uranium-238 (99.27%), uranium-235 (0.72%), and uranium-234 (0.01%), which are called isotopes of uranium. Depleted uranium results from processes that separate the isotopes of uranium, such that the remaining

residue contains a lower percentage of U-235 than shown above.

Yellowcake: The powder-like substance product from a uranium mill (chemical plant) that extracts uranium from mined ore. The substance is a mixture of uranium oxides. It is called yellowcake due to its color.

Endnotes

1. The National Environmental Policy Act of 1969, as amended (Public Law 91-190, 42 United States Code 4321-4347, January 1, 1970, as amended by Public Law 94-52, July 3, 1975; Public Law 94-83, August 9, 1975; and Public Law 97-258, Section 4(b), September 13, 1982)
2. 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions
3. Sequoya Fuels Corporation (SFC), Decommissioning Plan, March 26, 1999
4. SFC, Reclamation Plan, Rev. 2, December 2006
5. SFC, Groundwater Monitoring Plan, February 25, 2005
6. SFC, (Groundwater) Corrective Action Plan, June 2003
7. SFC, Environmental Report [for the] Reclamation Plan, October 13, 2006
8. U.S. Nuclear Regulatory Commission (NRC), Environmental Impact Statement for the Reclamation of the Sequoyah Fuels Corporation Site in Gore, Oklahoma – Final Report, NUREG-1888, May 2008
9. NRC, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, NUREG-1748, August 2003
10. NRC, Amendment 33 – Sequoya Fuels Corporation – Materials License No. SUB-1010 – Approval of Reclamation Plan for Sequoyah Fuels Corporation Facility, April 20, 2009

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Appendix I: Course Instructors

Ray Clark

Mr. Clark was the Senior Partner in The Clark Group, a Washington based consortium of senior level science and policy professionals specializing in environmental and energy matters. He was formerly the Assistant Secretary of the Army (acting) and the Principal Deputy Assistant Secretary of the Army (Installations and Environment) where he was responsible for all the US Army facilities worldwide and steward of more than 14 million acres. He was responsible for military construction, family housing, all real estate transactions and the environmental and natural resource management program. Mr. Clark was also responsible for base closure and transitioning excess military property to economic development. Prior to his appointment to this position, Mr. Clark was Associate Director at the White House Council of Environmental Quality where he acted as advisor to the President, the Chairman of CEQ and Senior White House Staff.

Mr. Clark is a past recipient of the prestigious National Environmental Quality Award. He is co-editor of two books on environmental policy. He holds a Master of Environmental Management degree from Duke University, where he has been a lead NEPA instructor since 1989.

Mr. Clark is the Chair of the DEL NEPA Certificate Program.

Francis (Chip) X. Cameron

Mr. Cameron is a principal with the Zero Gravity Group LLC, a consulting firm specializing in providing conflict management assistance on energy and environmental issues. He was formerly an Assistant General Counsel at the United States Nuclear Regulatory Commission, where he supervised a division of attorneys providing counsel to the NRC staff and the Commission on a wide range of rule-making and licensing issues, including matters relating to the National Environmental Policy Act. He was also the agency's Conflict Resolution Specialist. In this role, he has designed and facilitated hundreds of public outreach meetings and collaborative processes for the NRC. Mr. Cameron has also provided facilitation services for other federal agencies, including the Department of Education and the Department of Interior, and for numerous private sector and nonprofit clients. Before joining the Commission, Mr. Cameron was a tenured Associate Professor at the University of Rhode Island in the area of environmental law and policy.

Horst Greczmiel

Mr. Greczmiel joined the Council on Environmental Quality (CEQ) in November 1999 as the Associate Director for National Environmental Policy Act (NEPA) Oversight. He is responsible

for overseeing and implementing the NEPA and CEQ mandates to ensure that federal agencies integrate environmental values into decision-making and served as the Director of the NEPA Task Force.

Prior to joining CEQ, Mr. Greczmiel worked in the Office of Environmental Law at Coast Guard Headquarters in Washington, DC, responsible for policy development and litigation involving environmental planning compliance responsibilities under NEPA, the Endangered Species Act, and the National Historic Preservation Act. Mr. Greczmiel served in the U.S. Army for 15 years, including tours with the Office of The Judge Advocate General's Environmental Law Division and a detail as environmental advisor to the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health.

Mr. Greczmiel received his B.A. from Lafayette College, Easton, PA; J.D. from Rutgers – Camden School of Law, Camden, NJ; and LL.M. in environmental law from George Washington University, Washington, DC.

Tim Profeta

Mr. Profeta is the founding director of the Nicholas Institute for Environmental Policy Solutions. Since 2005, the Institute has grown into a major non-partisan player in key environmental debates, serving both the public and private sectors with sound understanding of complex environmental issues.

In addition to his role at the Institute, Profeta serves as Chairman of the Board for 8 Rivers Capital, is a member of the Climate Action Reserve Board of Directors, and is a member of The American Law Institute. Effective July 1, Profeta will also be an Associate Professor of the Practice at Duke University's Sanford School of Public Policy.

Prior to his arrival at Duke, Profeta served as counsel for the environment to Sen. Joseph Lieberman. As Lieberman's counsel, he was a principal architect of the Lieberman-McCain Climate Stewardship Act of 2003. He also represented Lieberman in legislative negotiations pertaining to environmental and energy issues, as well as coordinating the senator's energy and environmental portfolio during his runs for national office. Profeta has continued to build on his Washington experience to engage in the most pertinent debates surrounding climate change and energy.

Profeta earned a J.D., magna cum laude, and M.E.M. in Resource Ecology from Duke in 1997 and a B.A. in Political Science from Yale University in 1992.

Edward (Ted) Boling

Ted is Counselor to the Assistant Secretary for Land and Minerals Management at the Department of the Interior. Ted served as CEQ General Counsel beginning in January of 2008 and assumed the position of Senior Counsel in September of 2009 after the Senate confirmation of CEQ's Deputy Director and General Counsel. He went to CEQ as Deputy General Counsel in August of 2000 from the Environment and Natural Resources Division of the U.S. Department of Justice, where he was a senior trial attorney. Ted joined the Department of Justice in 1990 through the Attorney General's Honor Program. At the Department of Justice he was a trial attorney in three Sections of the Division: Natural Resources, Wildlife and Marine Resources, and Policy, Legislation and Special Litigation. He also served as a Special Assistant U.S. Attorney in a criminal prosecution program of the Eastern District of Virginia. His trial and appellate litigation experience concentrated on cases involving the National Environmental Policy Act, Endangered Species Act, Clean Water Act, and Federal land management statutes. From the Fall of 1996 through the Spring of 1998, Ted worked for the Department of the Interior as Counselor to the Assistant Secretary for Fish and Wildlife and Parks.

Ted is a member of the bar of the U.S. Supreme Court, the U.S. Court of Appeals for the Sixth, Ninth and Tenth Circuits, and the Virginia State Bar. He has served on the Board of the Virginia State Bar Association's Environmental Law Section, which he chaired in 2000-01. He is also a member of the American Bar Association's Section on Environment, Energy, and Resources.

Ted graduated from Washington University School of Law in 1990, where he was Editor-in-Chief of the Journal of Urban and Contemporary Law (now the Journal of Law & Policy) and represented his law school in national moot court competition. He received his B.A. in 1986 from Mary Washington College, where he majored in political science.

Robert W. Hargrove

Mr. Hargrove is a graduate of the State University of New York – College of Environmental Sciences and Forestry with a B.S. degree in Resources Management (Forestry).

Mr. Hargrove began his career with the Environmental Protection Agency's (EPA's) Region 2 Office (in New York) in 1979 as an environmental reviewer and EIS project manager for the Wastewater Treatment Construction Grants Program in the Environmental Impacts Branch (EIB). In 1985, he was promoted to Chief, Federal Activities Section in EIB. In this capacity, he was responsible for coordinating the Region's review of other agencies' NEPA documents, and managing the Region's federal facilities compliance, and Indian coordination programs. In 1988, he was promoted to the position of Chief of EIB. Under a 1996 regional reorganization,

Mr. Hargrove assumed responsibility for the Region's strategic planning, risk assessment, and pollution prevention efforts.

In 2004, Mr. Hargrove accepted the position of Director, NEPA Compliance Division in EPA Headquarters. In this capacity, he is responsible for overseeing the implementation of EPA's NEPA Compliance Program and the review of other agencies' EISs pursuant to NEPA and Section 309 of the Clean Air Act.

Throughout this time, Mr. Hargrove served on several national work groups tasked with developing policy and guidance for a variety of EPA program areas, including the development of a comprehensive analysis of the Agency's NEPA compliance program, and guidance to ensure that the Agencies hazardous waste remediation activities comply with environmental cross-cutters (e.g., the Endangered Species Act and the National Historic Preservation Act). Most recently, he chaired the Agency's workgroup that revised EPA's NEPA implementing regulations (40 CFR Part 6). Moreover, Mr. Hargrove has developed and continues to present numerous training courses on NEPA and environmental impact assessment techniques.

During his tenure with EPA, Mr. Hargrove has received several awards for his performance, including the Administrator's Award for Excellence in Management, two Gold Medal (for implementing the Administration's Plan for the environmentally sound dredging of New York/New Jersey Harbor and for developing and implementing NEPAassist), three Silver Medals (for the Superfund removal action at the Radium Chemical Co. Site [NY], the mitigation of adverse air quality impacts associated with the Jonah Infill Project [WY], and the successful negotiation of innovative water treatment approaches for the Red River Valley Water Supply Project [ND]), and 11 Bronze Medals.

In June 2011, Bob retired from EPA after 32+ years of service – all of it in the NEPA Program. Prior to his retirement, EPA presented Bob with its Distinguished Career Service Award for "pioneering leadership in the field of NEPA and environmental impact assessment". He now resides in Vermont's Northeast Kingdom about 4 miles from the Canadian Border.

David Mattern

Mr. Mattern is a senior planner with over 25 years experience in environmental studies and NEPA documentation. He has directed the environmental process for major transportation facilities such as the Alaskan Way Viaduct through downtown Seattle; and Cross-Base Highway, a new six-mile four lane limited access roadway. For the Alaskan Way Viaduct project Mr. Mattern managed Washington State's first reader-friendly EIS, using innovative graphic design

and clear writing to produce an easy-to-understand and engaging document. The document has won awards from the Federal Highway Administration, Society for Technical Communications, National Association of Environmental Professionals, and the American Council of Engineering Companies. Other major projects include siting studies and environmental documentation for airports, landfills and light rail systems. Mr. Mattern was a member of working groups sponsored by FHWA, AASHTO, and ACEC developing guidance on legal sufficiency and alternative formats for environmental documents.

Mr. Mattern received a Masters Degree in Geography from the University of Colorado in 1983 and B.A. in Geography from the University of Washington in 1978.

Michael D. Smith, Ph.D

Mr. Smith is a Senior Manager with ICF International, a global professional services firm headquartered in the Washington, DC metropolitan area. He has managed and worked on National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) analyses for dozens of projects for a variety of public and private clients. Mr. Smith specializes in providing overall NEPA compliance, cumulative impacts, and climate change analysis and project management for large, complex, and often highly-controversial projects. His current and recently-completed projects include managing the preparation of an Environmental Impact Statement (EIS) for the Department of Transportation – National Highway Traffic Safety Administration (NHTSA) for the Mileage Year 2012-2016 Corporate Average Fuel Economy (CAFE) Standards Rule-making for all passenger vehicles sold in the U.S., which is part of a Joint Rule-making announced by President Obama in May, 2009 with the Environmental Protection Agency (EPA) to regulate Greenhouse Gas Emissions from passenger vehicles under the Clean Air Act. He also managed an EIS for DOT-NHTSA in 2008 for the MY 2011-2015 CAFE Standards Rule-making, which was the first EIS ever prepared under NEPA to model the incremental effect of a proposed action on climate change-related factors including global mean temperature increase, changes in precipitation patterns, and sea level rise. The EIS won the NHTSA Administrator's Superior Accomplishment Award for 2008. He also serves as Project Manager for a long-term mission support contract with the Federal Aviation Administration (FAA) Office of Commercial Space Transportation to provide a range of NEPA compliance services, and recently managed the preparation of an EIS for the USDA – Animal Plant and Health Inspection Service (APHIS) on a proposal to deregulate genetically-modified alfalfa. His other recent projects include a U.S. Department of Energy (DOE) EIS and Supplemental EIS for the proposed Yucca Mountain rail alignment; a Federal Energy Regulatory Commission (FERC) EIS for a multi-state natural gas pipeline; and two Surface Transportation Board (STB) EISs for railroad expansions in Alaska.

Mr. Smith is a frequent speaker and trainer on NEPA compliance issues, and has served on a

White House Council on Environmental Quality (CEQ) Task Force on NEPA training. He is a past recipient of a Science & Technology Policy Fellowship with the American Association for the Advancement of Science, which he served in the EPA's Office of Water and Office of Federal Activities in Washington, DC. His prior employment experience includes positions with the U.S. Department of Interior – National Park Service in California, Montana, and Florida. He also served as a tenured professor of environmental and natural resources sciences at Humboldt State University in northern California, where he taught courses in environmental impact assessment and environmental planning.

Mr. Smith is a member of the Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, a group of academic and federal-agency specialists that produced the most widely used guidance document for NEPA social impact assessment procedures. He also served as the elected Chair of the NEPA Working Group, and is currently serving as an elected Board of Directors member of the National Association of Environmental Professionals (NAEP). He is a past Associate Editor of the professional journal *Society and Natural Resources*, and has authored more than a dozen peer-reviewed articles on environmental impact assessment and environmental planning in professional journals such as *Environmental Impact Assessment Review*, *Environmental Practice*, *Society and Natural Resources*, and *Water Resources Bulletin*, and has presented the results of his work at numerous national and international conferences.

Mr. Smith holds a Ph.D. in Sociology from Utah State University, an M.A. in Geography from the University of Wyoming, and a B.A. in Environmental Studies from the University of California, Santa Cruz.

Barry Steinberg

Mr. Steinberg is a partner in the Washington, D.C. office of Kutak Rock, is a retired Army colonel with more than 26 years of active duty military legal experience in the Judge Advocate General's Corps and more than 20 years of legal experience in the private sector. He focuses his practice on military installation and private sector environmental issues, including base reuse, base closure, contractor indemnification, environmental compliance and enforcement, environmental due diligence and risk allocation, environmental insurance and the National Environmental Policy Act.

Mr. Steinberg earned his law degree from The T.C. Williams School of Law at the University of Richmond in 1966. He is admitted to practice in Virginia, the District of Columbia, the United States Supreme Court, the United States Court of Appeals for the Armed Forces, the United

States Courts of Appeals for the Third and Federal Circuits, the United States Court of Federal Claims and various United States District Courts. He is a guest lecturer at Duke University's Nicholas School of the Environment concerning the development of and litigation challenges to environmental impact statements and environmental assessments prepared pursuant to the National Environmental Policy Act. In addition, he is a guest lecturer on environmental matters at the University of Richmond Law School.

Mr. Steinberg was the senior uniformed lawyer responsible for environmental litigation involving Rocky Mountain Arsenal, Twin Cities Army Ammunition Plant and other civil and criminal litigation challenges of the United States Army, including toxic torts, environmental liability of government contractors and state environmental enforcement authority concerning federal facilities. Since retirement from active duty, he has represented a number of municipal governments and private entities regarding compliance with federal and state environmental regulatory and procedural matters. His clients include private sector developers and lenders throughout the United States concerning environmental risk associated with the acquisition of contaminated real property and environmental regulatory compliance. He served as outside counsel to the federal Surface Transportation Board's Section on Environmental Analysis with respect to the NEPA assessments prepared to evaluate the environmental impacts of the mergers or acquisitions of various national railroads, including Union Pacific, Canadian National, Conrail, Norfolk Southern and CSX. While on active duty, he was the senior uniformed lawyer providing advice, counsel and litigation strategy on programmatic and project specific environmental impact statements associated with various national security programs, including classified activities involving chemical warfare agent. He represents municipal governments in obtaining cooperating agency status in the preparation of NEPA evaluations by federal agencies and NEPA challenges to proposed federal activities. He has successfully negotiated agreements with military departments, environmental insurance carriers and state and federal regulators concerning risk allocation, remediation standards and long term stewardship obligations related to hazardous substances, including munitions and explosives of concern.

Mr. Steinberg's experience includes evaluation of jurisdictional bars to litigation based on the sovereign immunity of the United States, the waiver of sovereign immunity contained in the Federal

Elizabeth Homer

Prior to establishing Homer Law, Elizabeth worked closely with tribal governments and federal policy makers to advance issues and policies of concern to American Indian and Alaska Native tribal governments as well as Native Hawaiians. As the Director of the Office, she supervised

the implementation of a number of Administration policy priorities in the areas of tribal natural and cultural resources, consultation, and negotiated rule-making, including President Clinton's Executive Orders regarding Sacred Sites and Tribal Consultation. A recognized authority on federal Indian law and policy, she also served on several U.S. diplomatic delegations to the United Nations and the Organization of American States on matters concerning the civil and political rights of indigenous peoples.

She began her legal career with the Office of the District Attorney for the Second Judicial District of New Mexico where she prosecuted violent felony offenses before joining the Criminal Division of the U.S. Department of Justice. While at the Justice Department, her work to increase the investigation and prosecution of crimes against children in Indian Country earned her one of the Division's highest awards for special initiative. She also served on the Attorney General's Task Force on Violent Crime and as the Criminal Division's representative to the Indian Affairs Subcommittee of the Attorney General's Advisory Committee of United States Attorneys.

Upon completion of a Bachelor of Arts degree in Political Science at the University of Colorado Boulder, Ms. Homer joined the Osage Nation staff. Later, she accepted a position with the policy arm of the Council of Energy Resource Tribes, a consortium of energy producing tribes, where her work was primarily focused on environmental issues related to nonrenewable energy resource development. She went on to serve as Deputy Director of Americans for Indian Opportunity, a national organization addressing emerging issues of relevance to tribal governments. Ms. Homer earned her Juris Doctorate degree from the University of New Mexico School of Law. She is a member of the State Bar of New Mexico and the Bar of the District of Columbia as well as the American Bar Association, Federal Bar Association, and Native American Bar Association.

Cathy S. Wright

Cathy S. Wright, J.D., LEED AP, has over thirty years of experience in the business world. As a founding partner of the law firm of Maynard, Cooper & Gale, Ms. Wright represented corporations in commercial, business and antitrust litigation. As a litigator, she conceived and implemented innovative methods for dispute resolution and created and taught seminars for industries seeking improved practices to avoid costly litigation.

For the past decade, Ms. Wright has worked with organizations from large corporations to government agencies and nonprofits to achieve internal sustainability and effective public/private partnerships. She works with clients to enhance their management and communication skills in order to sustain internal and external relationships. She has led successful consulting

projects with organizations under fire from regulatory, civil, criminal, and media scrutiny to support them in becoming models of high performance in their fields. Her work in helping to improve organizations' reputations for environmental responsibility includes clients ranging from manufacturers and utilities to environmental organizations.

Ms. Wright is a certified mediator. She has taught dispute resolution, mediation and negotiation in numerous continuing legal education courses and as an adjunct professor of law.

Ms. Wright is a Fellow of the American Bar Association and an accredited LEED professional with the U.S. Green Building Council. In 2008, she received the Birmingham Bar Association's Burton L. Barnes Award for Public Service. She is the creator of Strong Girls, a highly effective program for reducing recidivism among teenage girls in the juvenile justice system.

Acknowledgments

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