[redacted] E+6

April 5, 1994

Dr. Ivan Selin, Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Chairman Selin:

In a memorandum dated Feb. 14, '94, to Asst. Gen. Counsel S. A. Treby of the NRC, Charles J. Haughney of the NRC Office of NMSS has requested a legal interpretation of the applicability of section 72.48 of the regulations to general licensees as licensed in section 72.210. As he notes in the memorandum, section 72.48 "clearly applies to specific licensees issued individual licenses under Part 72", i.e., to utilities. However, the VSC-24 SAR was developed by the cask vendor and, therefore, section 72.48 cannot apply here.

Mr. Haughney is attempting to resolve a problem he has in the use of the VSC-24 cask, which is the first so-called generic cask to be licensed under subpart K. His problem apparently stems from changes that must be made to this cask to permit them to be used at the Point Beach and Arkansas One reactor sites. I am presently aware that lifting lugs must be added at Point Beach and Arkansas One requires changes to accommodate longer fuel, to its transfer cask, and for adding non-fuel components. However,I would like an explanation of all the changes that must be made at those sites, and the accompanying documents.

To allow these changes now to apply to general licensees would annul all that the NRC has done to attempt to establish the generic cask (VSC-24) which the agency claims can be used anywhere and is not site specific. The changes in the design of the VSC-24 that must be made at both Point Beach and Arkansas One are site specific since the vendor is asking for a procedure for doing this. These changes would require development of new models with analyses for each part of the system that was affected.

We very strongly object to the NRC's giving general licensees permission to make changes as they please to their storage systems which have been certified as generic by the NRC. This interpretation would preclude any public oversight when a utility wants to have changes made to a general cask Safety Analysis Report (SAR) and also would allow a utility to conduct tests and experiments on-site without prior NRC approval. What is clear in this case is that neither of the utilities involved at Point Beach and at Arkansas One can use the VSC-24 cask as designed and approved by rule in the Certificate of Compliance given to this cask, as supposedly a generic cask, in the first application of the general ruling procedure. To change this certificate or the SAR supporting it is a rulemaking procedure. This requires public comment and proprietary release. If you are

in part F/2

interpreting it not to be so, then it is site specific and there should be a public hearing on the changes made for each individual site.

Before the cask was approved in April, '93, it was known that there were questions about the fuel length issue and transfer cask issue at Arkansas (Sept. 18, '92 meeting NRC, p. 2) and of the lifting lug issue at Point Beach (Aug. 31, 1992, technical comments from Sierra p. 2). However, because of the rush to load the casks at Palisades, the cask design was approved "as-is" at the vendor's request on the basis of his statement that he would make changes on safety issues in the future. (Aug. 31, 1992, Sierra Comments, p. 1).

Only a few weeks after final approval of the Certificate of Compliance, and after two casks at Palisades were loaded, Sierra wrote that they were now ready to take up the safety issues they asked to have postponed in their Aug. 31,'92 and also wanted to make other changes in the SAR (June 14, 1993, Sierra to NRC). However, there is apparently no procedure for doing this because the Certificate of Compliance approved for a generic cask was supposed to have covered all U.S. reactor sites, and was made available by the NRC for use anywhere on the basis of that Certificate. That was the whole purpose for approving the VSC-24 as a generic cask.

As a further observation here, I would like to add that at a meeting of the U.S. Radioactive Waste Technical Review Board in Dallas, TX in Nov., '93, I was asked to discuss the site specific problems and cask issues at Palisades. In a follow-up round table evaluation, Mr. Robert Bernero of the NRC was asked to comment on my presentation. His only comment was, "I guess we can't do generic licensing." This meeting was recorded. Just last week, Mr. John Zwolinski of the NRC wrote to inform me that the NRC has now decided to review the siting characteristic of Palisades--thus apparently reversing NRC's position that the VSC-24 can be placed anywhere without regard to the site.

I appreciate your attention to this urgent issue.

Sincerely,

Mary P. Sinclair

Mary P. Sinclair, PhD

cc. Robert Bernero NRC
Frederic Sturz NRC
Charles Haughney NRC
Hazel O'Leary DOE
Attorney General Frank Kelley
Senator Carl Levin--Senator Don Reigle--Congressman Dave Camp

MDN 4/21/94

NRC to inspect nuke waste site

By LISA PERLMAN
GRAND RAPIDS (AP) — Nearly a year after the Palisades nuclear power plant began transferring high-level nuclear waste to concrete casks along the Lake Michigan shoreline, federal investigators say they will inspect the site to see if it's safe.

Palisades had received permission from the U.S. Nuclear Regulatory Commission to build the casks and load them with radioactive waste last year after it ran out of room in its spent fuel pool at the plant, near South Haven.

Under NRC rules, once the design of the above-ground casks was approved, they could be placed anywhere.

But the federal agency is reconsidering and will inspect the storage site located between sand dunes, 150 yards from Lake Michigan, on which a concrete slab supports eight 100-ton casks, said John A. Zwolinski, NRC assistant director for Region III Reactors.

"The NRC has been looking at the behavior of the pad under normal conditions, at the long-term effects of erosion, and at the possible consequences of an earthquake that might cause motion of the sand below or around the pad," Zwolinski said in a letter to Mary Sinclair of Midland, co-chair of Don't Waste Michigan and released by the NRC.

The NRC inspection, which will coincide with another inspection by Consumers Power Co., will begin Tuesday and is expected to take 30 to 60 days, said Jan Strasma, NRC spokesman. A public hearing will follow.

"While we don't have any evidence that the site is unsuitable, there are issues there that need to be looked at further," Strasma said.

Consumers Power, which owns Palisades, has said it investigated the stability of the site before the casks were built but welcomed the additional tests. The utility eventually plans to build 25 casks there, each of which will weigh 130 tons when loaded.

"Consumers Power Co. is confident of the structural integrity and sound design of the storage pad supporting the Ventilated Storage Cask system at its Palisades nuclear plant," the utility said in a statement.

(See "Palisades," page A2)

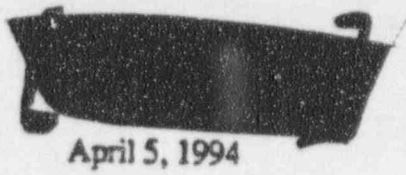
Palisades ...

(Continued from page A1)

But Sinclair says the NRC's acknowledgement that the site needs to be examined is a major boost to environmentalists who have been fighting the cask storage for more than a year, contending the casks have not been adequately tested and are potentially unsafe. She said the Michigan Department of Natural Resources classifies the site as a "high-risk erosion area."

"With this major reversal in policy, the NRC is saying there are site-specific issues that need to be examined and that the public has a right to a hearing," Sinclair said Friday. "The Great Lakes basin is at stake here."

Sinclair's group and the Lake Michigan Federation joined in a lawsuit last May with state Attorney General Frank Kelley to try to force the NRC to submit to a public hearing on the cask storage issue as well as an environmental impact statement for the site. The lawsuit is now pending in the U.S. 6th Circuit Court of Appeals. The NRC investigation likely will delay oral arguments in the case, which had been expected this spring.



Ex 6

April 5, 1994

Congressman John Dingell
2145 Rayburn Bldg.
Washington, D. C. 20015

Dear Congressman John Dingell:

The enclosed letter will show you that the Nuclear Regulatory Commission is unable to fulfill the impossible task that Congress set for the agency in the 1987 amendment to the NWPA of 1982. That Act required the agency to devise a containment system for high level nuclear waste that was generic and would not require going through a public hearing.

The fact that Congress would pass such an Act--to shut out the public from any input into the policy for disposing of the most lethal toxic wastes, not only in the nation but in the world,-- is one of the most egregious, undemocratic and disgraceful acts that a so-called representative governing body could do to its citizens.

Fortunately, there are enough people with the intelligence and determination to see that this course of action could only lead to a surreptious way to establish a method of permanent disposal of high level nuclear waste if this course of action was not challenged by citizens every step of the way.

Licensing the VSC-24 casks to store the high level nuclear waste from the Palisades plant on the shore of Lake Michigan was to be the tour de force to implement this infamous policy. As you can see from the enclosed letter to NRC Chairman Ivan Selin, the staff of the NRC is having difficulties implementing the generic ruling on the VSC-24 with even its first applications. That is because there are so many reactor types and modes of construction at every site that changes in cask construction and handling have to be made to accommodate them. The Certificate of Compliance for the VSC-24 cask states that these casks can be used at any reactor site under the general license, i.e. without any public input. But the NRC now finds it has no procedural method of accommodating changes that have to be made to be able to use this cask--or any other cask as a "generic" cask, as a matter of fact--because there are these many differences among reactors and their sites. Congress should get the message from this experience--this country is not "generic"--it is widely diverse in its natural resources,-- and this has to be respected.

As you can see from the news story, the NRC has had to reverse its policy of not considering site specific characteristics at Palisades itself--where it was supposed to work as the first example of a generic cask storage area. They now find that there are site specific characteristics that they must study at that location. We had been telling you and our other Congressional leaders that from the start. It was one of our key contentions in the law suit we were forced to file, at great cost in time and money to citizens with few resources, just to try to get a public hearing on these issues.

The approach of Congress to the whole nuclear waste issue from the 1980 "Low-Level" Nuclear Waste Policy Act through the 1987 amendments to the 1982 NWPA has been a dismal failure. You have to accept a good share of responsibility for this legislation. This approach has been to appease the nuclear industry leaders--always hefty PAC contributors-- and their clamor for speedy and expedient solutions that could get them on line for ever more billions of our tax dollars to launch their "new" reactors--that would produce even more nuclear waste.

In light of this, there is another important reality to face, and that is that the entire nuclear power program, in the end, will not produce any net energy for the nation or the world. Instead it will be a huge consumer of fossil fuel energy and other resources as we finally face the fact of isolating these wastes literally forever.

As a part of my doctoral dissertation, I interviewed Walter J. McCarthy who was then CEO of Detroit Edison and Chairman of the Electric Power Research Institute, and incidentally, one of your more important constituents. He told me that we should stop looking for a hole in the ground where we can place this waste and forget it (such as the Yucca Mt. effort), because that is not the responsible thing to do. He said this waste must be kept in above ground retrievable storage in an arid location, and that it must be monitored and watched constantly. "We must never lose track of this stuff," were his words. And it may have to be constantly relocated in future centuries as the geography and climate of the world may change.

For some time many concerned citizens, environmental groups and political leaders such as our Attorney General Frank Kelley have been asking the Administration to appoint a Commission that will include all stakeholders to study the entire issue of radioactive waste disposal as the national issue that it is. I hope that you will convey the sense of the urgency of this issue to our President.

We will appreciate your attention to this issue.

Yours sincerely,

Mary P. Sinclair

Mary P. Sinclair, PhD
Co-chair, Don't Waste Michigan

cc. President Bill Clinton
Senator Carl Levin, Senator Don Riegle
Congressman Floyd Upton, Congressman Dave Camp
NRC Chairman Ivan Selin

8711 Summerset
Midland, MI 48640
April 14, 1994

50-255

Dr. John Zwolinski, Assistant Director
for Region III Reactors
U.S. Nuclear Regulatory Commission
Washington, D.C., 20555

Dear Mr. Zwolinski:

When the news accounts were published that the NRC was going to inspect the site at Palisades where the casks are located, a man called to inform me that some significant studies on the consequences of fluctuating water levels in the Great Lakes had been published last year. The International Joint Commission requested the U.S. Army Corps of Engineers to perform these studies.

These studies include:

(1) Methods of Alleviating the Adverse Consequences of Fluctuating Water Levels in the Great Lakes St. Lawrence River Basin, A Report to the Governments of Canada and the United States, International Joint Commission, Dec., 1993. (Several pages are enclosed that indicate the type of information covered in this report).

(2) Detailed Site Study of Berrien County, Michigan, International Joint Commission Final Report, July, 1993. (The U.S. Army Corps of Engineers was assigned responsibilities for conducting detailed studies at seven locations on the U.S. shoreline of the Great Lakes to determine potential for damages caused by fluctuating Great Lakes water levels. The Palisades dry cask storage site is just 3 to 4 miles north of the Berrien County line. Therefore, the findings in this study would apply to that whole general area. Several pages of pertinent information from that study are enclosed).

You have already received the Michigan study on our operating nuclear plants entitled: An Evaluation of the Four Licensed and Operating Nuclear Power Plant Sites in Michigan for Co-Location of a Low-Level Radioactive Waste Isolation Facility. Prepared for the Michigan Low-Level Radioactive Waste Authority by Environmental Resources Management, Ann Arbor, MI. May 24, 1988.

Would you please make sure that the consultants you have retained to study the Palisades sites receive this information on those studies?

Many thanks for your cooperation on this matter.

Mary P. Sinclair

Mary P. Sinclair, PhD.

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Add: Tony Hsia

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Methods of Alleviating the Adverse Consequences of Fluctuating Water Levels in the Great Lakes – St. Lawrence River Basin

A Report to
the Governments of
Canada and the United States

December 1993

International Joint Commission
Commission mixte internationale

Accordingly, the Study Board chose to update the existing database and damage estimating method and to conduct a limited number of site-specific studies.

However, in spite of concerted effort, the Study Board was not able to significantly improve the database and estimating methodology as required to produce a more definitive analysis of shore damages. It was determined that significant additional time and money would likely be required to reach more definitive conclusions on measures having basinwide effects. The Commission concluded that such an effort was not practical for the studies under the Reference. However, it is the Commission's view that a long-term effort to gather shore-property damage data is required to provide an appropriate context for future analyses of lake levels issues.

The International Joint Commission recommends that governments undertake a sample potential-damage survey to improve flood damage estimates.

The International Joint Commission further recommends that the first priority for the sample potential-damage survey be Lake Ontario and the St. Lawrence River.

The International Joint Commission recommends that governments undertake storm and flood damage assessments during or immediately following such events.

The International Joint Commission recommends that governments undertake long-term monitoring of shoreline erosion and bluff recession and that the information and methodologies developed under this study be used to improve erosion damage assessment capabilities.

The International Joint Commission recommends that governments undertake without delay programs to build improved information bases in the following additional areas:

a. comprehensive land use inventory;

b. identification of shoreline areas that are particularly vulnerable to storm surge activity;

c. inventory of shore and near-shore installations at risk, particularly high risk installations.

The International Joint Commission recommends that governments undertake studies to improve forecasts of the frequency of extreme water level events, including the joint probability of combined static and storm induced water levels.

Structural Measures to Reduce Erosion and Flooding Damage

New Water Levels Regulation Works

A large portion of the study effort was devoted to trying to find technically feasible plans to regulate all five of the Great Lakes (five-lake regulation) or, alternatively, Lakes Superior, Erie and Ontario (three-lake regulation).

From the results of its studies, the Study Board concluded that, although it may be technically possible to build the additional engineering works required to regulate

all five of the Great Lakes, it would not be economically or environmentally feasible to do so. To accomplish five-lake regulation, massive concrete dams and control gates would need to be built in the St. Clair and Detroit Rivers downstream from Lakes Michigan and Huron, and in the Niagara River at the outlet of Lake Erie. Major deepening of portions of the St. Clair, Detroit and Niagara Rivers, as well as further major enlargements of the channels in the St. Lawrence River, would also be required to compensate for the additional flows these rivers would have to pass during periods of high water. In addition, downstream interests would need to be protected against damage and loss from higher and lower levels and flows resulting from regulation of the upstream lakes.

All of these regulation and protection works would cost billions of dollars to install and hundreds of millions of dollars annually to operate and maintain. Yet for all their cost, these works would not permit full control of lake levels. The best that could be expected is to reduce the range of levels fluctuation by moderately reducing the peak levels and raising the low levels. Compressing the range of levels on one lake, however, tends to increase the range of fluctuations of levels and flows on downstream lakes and rivers, often in an exaggerated fashion.

An example of the limited ability of humans to control water levels occurred on Lake Ontario in the Spring of 1993 when the level of this "regulated" lake began to rise dramatically. This occurred because so much snow and rainfall was received in the lake basin in a short period of time that it was impossible to drain the water from the lake fast enough without flooding and eroding interests downstream in the St. Lawrence River. In response to the emergency situation, the Commission acted to ensure that the interests of riparians were given priority consideration as regulatory decisions were made. As a result, severe flooding on the lake was avoided by obtaining the cooperation of the downstream interests to maintain extraordinarily high flows in the river and the decision of the shipping authorities to temporarily reschedule navigation in the seaway.

All of this was necessary because the control structures in the St. Lawrence River at Cornwall, Ontario and Massena, New York are not capable of full control of the levels and flows in the system. They are capable only of moderating the fluctuations in the levels and flows and keeping them within certain bounds when water supplies to the lake are within the range for which the project was designed. Further, there is no effective control of levels and flows in the river below Cornwall and Massena. Riparian communities and other interests in that part of the river are completely vulnerable to level and flow variations from upstream regulation as well as to inflows from the Ottawa River.

The futility of human aspirations to control levels and flows in a major watercourse was also demonstrated tragically by events on the Mississippi River in summer 1993. The flood that occurred on that system breached hundreds of levees, flooded thousands of acres of farmland, demolished countless homes and devastated whole towns, some of which may never be rebuilt. The extensive channeling, diking and control structures throughout that system could not stop the extraordinary damage that occurred. The Commission encourages all governments to review recent events in the Mississippi River basin to see whether there are useful lessons that can be learned about how to deal with the effects of fluctuating water levels.

The Study Board determined that the five-lake regulation plan that would provide the greatest compression in the levels of Lakes Michigan, Huron and Erie would

DETAILED SITE STUDY

BERRIEN COUNTY, MICHIGAN

FINAL REPORT

July 1993

International Joint Commission
Great Lakes Levels Reference Study Board

Working Committee 2
Potential Damages Task Group

DETAILED SITE STUDY

BERRIEN COUNTY, MICHIGAN

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE) has been assigned responsibilities for conducting detailed site studies at seven locations on the U.S. shoreline of the Great Lakes. The site studies have been conducted in detail to determine the potential for damages caused by fluctuating Great Lakes water levels. One of the seven sites is Berrien County, Michigan, selected to focus on residential riparian damages caused by erosion.

Berrien County, Michigan is comprised of seven townships, located along the eastern shore of Lake Michigan and is the southern-most county in the state. It is bordered on the north by Van Buren County, Michigan, and on the south by LaPorte County, Indiana. The principal problem along the Berrien County shoreline is bluff recession which translates into economic loss of property value in the coastal zone. Erosion of beaches and bluffs generally occurs throughout the county's shoreline, particularly during periods of high water.

Land use in Berrien County is primarily residential riparian (71.2%), with small percentages of commercial (2.1%), public (2.7%), and agricultural (0.4%). The remaining 23.6% falls into an other/undeveloped category, being predominately sand dunes, woodlands, and outdoor recreation facilities. Continued land use development is expected as long as any undeveloped property remains available.

Berrien County's shore type is predominantly high till bluff with beach (55.9%), followed by high till bluff (>15 meters) (31.0%). The majority of the shoreline has minor protection (69.3%) and the subaqueous nearshore composition is 78.8% sand/gravel lag over clay.

Long-term (>30-year) mean recession rates in Berrien County vary from recession of 1.1 meters per year to accretion of 2.2 meters per year. Mean recession rates are greater than 0.3 meters per year for 70% of the shoreline, while very few kilometers experience accretion at all. An erosion sensitivity model was applied to evaluate the impact of water level changes on shore types. Results of the erosion sensitivity analysis showed that as an effect of a 50% reduction in the range of water levels through control of Lakes Michigan-Huron outflows, approximately 60% of the shoreline would have a moderate (5-20%) reduction in bluff recession, 22% would have no reduction in current recession rates, and 18% would be unaffected, since no recession currently exists in these areas.

An inundation and erosion damage evaluation model was developed during the International Lake Erie Regulation Study in the late 1970's. It is based on shoreline reaches around the Great Lakes. Berrien County is part of Reach 7006 used for historic damage estimates. The erosion and inundation stage-damage curves were updated for all reaches along the U.S. shoreline in 1991 to include damage information from the high water period 1985-1987. In 1992, the stage-damage curves for Reach 7006 were reevaluated in greater detail.

To determine the adequacy of the results of the erosion stage-damage curves, an alternate methodology of determining potential damages was completed as part of this detailed site study. Historic recession data for Berrien County were used to determine a projected 50-year recession line. The recession data were then adjusted based upon erosion processes modeling of expected impacts from a 50% reduction in water level range to determine a "modified" long-term recession line projection.

The two recession lines were plotted relative to the current bluff line to determine the number of structures that would be expected to be lost over the next 50 years under the current water level range, and consequently the number of structures that potentially could be saved under a 50% water level range reduction scenario. The number of structures were then multiplied by average township market values, and summed with estimates of the losses to developed and undeveloped lands, and losses incurred to roads. This was used to determine the potential damage and resultant benefits expected as a consequence of implementing this alternative water level regulation measure.

A comparative analysis of this alternative approach and the stage-damage model revealed that the erosion stage-damage model may underestimate *actual losses* by a factor of 1.6 for this location. This inconsistency may be attributed to the inadequate reporting of losses to undeveloped properties in the past. This comparison also is based upon assumptions that may be contested. Another evaluation was conducted based on the *potential benefits* that would be expected from a 50% reduction in water level range. The results of this analysis indicated that the historic stage-damage model may underestimate benefits derived by the alternative methodology by a factor of 2.7 for this location. Technical considerations cast doubt on the validity of this analysis, particularly if these results were applied in system-wide cost/benefit analyses of alternative water level control measures.

A variety of land use management practices could be, or in some cases have been, undertaken in Berrien County to either reduce the potential for damage to existing shoreline property or limit the damage potential due to improper future development. Practices that should be considered include remedial measures for existing development (relocation, acquisition, insurance, and/or structural and non-structural shore protection) and preventative measures (such as setbacks, development controls, habitat preservation projects, and shoreline alteration regulations) to insure that the damage potential is not exacerbated in the future due to a lack of foresight.

Private property owners in Berrien County have attempted shore protection using steel sheet piling, revetments, groins, sand traps, seawalls, and riprap. However, the protective structures are often too scattered to present a common barrier or are damaged and no longer serve their purpose. Further study is warranted to determine if large-scale structural shore protection measures could be cost-effective for Berrien County's shorelines, and to determine the social, environmental, and engineering consequences of this option.

Non-structural shore protection, such as beach nourishment and shoreline stabilization, are also used in Berrien County on approximately 5.5% of the shoreline. Beach nourishment programs appear to have mitigated erosion impacts immediately downdrift of the federal harbors at St. Joseph and New Buffalo.

Lake Michigan shoreline, with new development typically being second- or first-homes. The longevity of these structures will likely vastly exceed the 30-year setback limitation placed on new construction along the shoreline. Erosion and bluff recession will continue, regardless of lake level controls or structural shore protection measures. Hence, even with 30-year setbacks in place for Berrien County, this measure will simply forestall economic losses into the future.

Relocation of dwellings involves the movement and subsequent relocation of dwellings out of the flood and recession hazard zones. Relocations can be permanent or temporary. In 1985, Michigan enacted its Emergency Home Moving Program (EHMP), Public Act 108, which specified that relocating structures away from erosion hazards was the preferred alternative. The program was overseen by the MDNR who was authorized to provide grants or loans to property owners to relocate their homes inland of a setback line. Homes that were within 10.7 meters (35 feet) of the bluff, in "imminent danger", were eligible, thereby not waiting until the damage had occurred. The program provided a 3% subsidy on 30-year loans of up to $25,000 per project, or a one time grant of 50% of the project cost, up to $3,500. During the initial phase, between August 1986 and February 1987, the state received 273 applications, of which 199 were found potentially eligible. Sixty-five relocation projects were certified as eligible, and sixty-two homeowners actually moved for a cost of approximately $267,000, with an average payment of $3,700. During the second phase in 1987, the state received 48 applications, of which 25 were found potentially eligible. Six relocation projects were certified as eligible, and four homeowners actually moved for a cost of approximately $24,000, with an average payment of $4,000 (Ecologistics, 1992). The U.S. Riparian Survey indicated that out of 85 respondents on Lake Michigan, 4.4% had participated in some form of moving of buildings. The number of homes relocated under the Michigan program in Berrien County is unknown at the time of this report.

Costs of implementation of a home relocation program, such as that used in Michigan, can be variable depending on the value of the structure and the extent of the relocation. New foundations and utility connections may have to be prepared, and possibly additional land purchased. Some property owners may not find this a viable alternative if their lots are not deep enough to allow relocation to the minimum setback distance, and they cannot afford or do not want to relocate to another lot. Some homes, such as those with slab foundations, concrete block walls, or extensive brick or stone work are many times not considered movable (Ecologistics, 1992).

Home relocations, although costing initially more than the construction of shore protection, only occur once during the life of the home. The long term costs of maintaining a shore protection project would be avoided, with an ultimate lower cost to the property owner over the long term. A University of Michigan SeaGrant research program determined that most property owners in the State of Michigan would spend more money on shore protection, over 20 years, than they spent purchasing their property, adjusted for inflation (Ecologistics, 1992).

Comparison of these costs with projected erosion damages for the same 50-year period indicate that implementation of structural shore protection measures at the most critically susceptible shorelines in Berrien County would have a benefit/cost ratio of approximately 8.5 to 1. These results are preliminary and warrant further investigation.

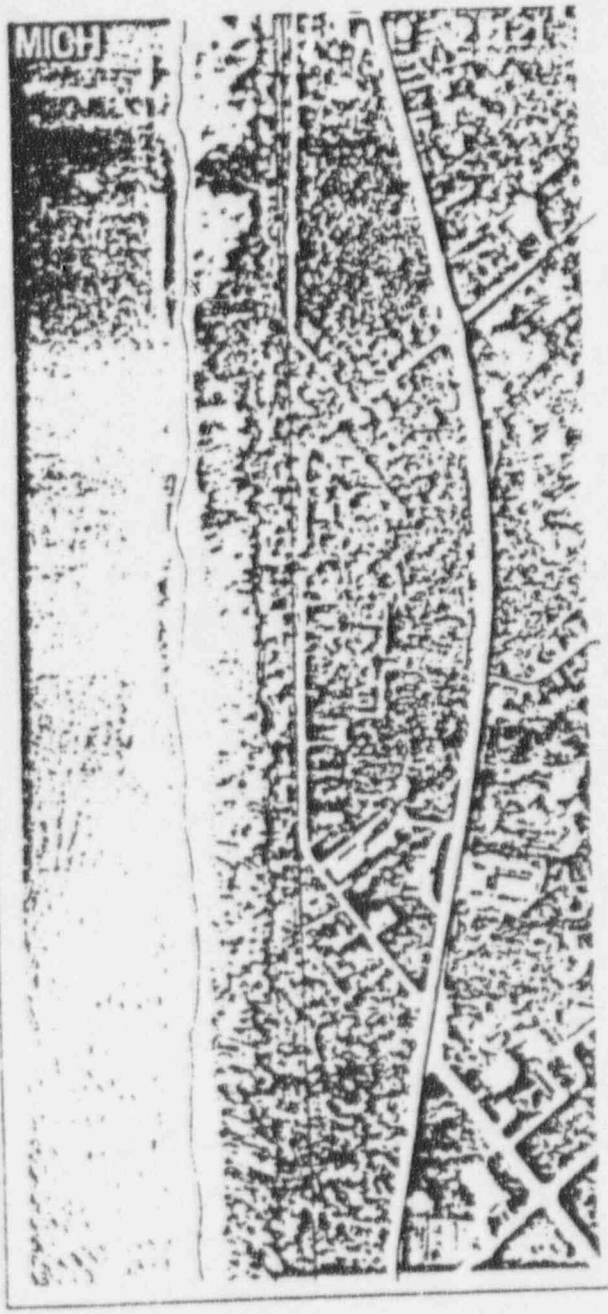
- Implementation of structural shore protection comprehensively along the Berrien County shoreline is not a panacea. Revetments can impede access to beaches, reducing recreational opportunities; construction of groins, revetments, and seawalls can significantly disrupt human and natural environments; significant implementation of groins and revetments will starve beaches downdrift by robbing the natural sand sources (effectively moving the problem onto others); and, all of these measures can encourage (instead of discourage) further development in the recession hazard zone.

- The long-term effectiveness of structural shore protection measures can also be questioned. Costs in this study are based upon well-engineered and consistently maintained structural shore protection. Most of the shore protection currently in place can not meet these standards.

- An example of a large-scale, well-engineered and maintained structural shore protection project is the CSX RR / MDOT groin/revetment system immediately south of St. Joseph harbor. Figure 10 is an aerial photograph of a section of this system. This system was built in the early 1970's to protect an area with high beach erosion and bluff recession. This system has been effective in controlling bluff recession during both of the high water periods of 1973-76 and 1985-87. Some bluff failure is evident on recent photographs behind this system which appear to be caused by land drainage patterns.

- It is questionable whether the CSX RR / MDOT system may be able to maintain its effectiveness over its entire design life. The U.S. Geological Survey conducted a pilot study in 1991 using side scan sonar and other sophisticated bathymetric sounding equipment to map coastal changes between St. Joseph and Michigan City. Preliminary results from this study indicated that the nearshore area immediately south of St. Joseph harbor and immediately offshore of the CSX RR / MDOT system has undergone as much as a 4 meter erosion of lake bed since 1964-65 (USGS, 1992). This erosion has been speculated to be a transfer of wave energies from onshore erosion to vertical erosion of the lakebed. In this particular case, the structural stability of the revetment may be affected, potentially causing a need for more maintenance expenditures than anticipated over time. A detailed study of this particular area may be justified.

IJC Level Reference Study
Berrien County Detailed Site Study
Typical Long-Term Recession Mapping



1991 Shoreline Position
199- Bluff Line
Modified 50-Year Recession Line
50-Year Average Recession Line

N

Scale 1:6,000

Figure 9

FILE: 703-01

FINAL REPORT

An Evaluation of the Four Licensed and Operating Nuclear Power Plant Sites in Michigan for Co-Location of a Low-Level Radioactive Waste Isolation Facility

May 24, 1988

PREPARED FOR:
MICHIGAN LOW-LEVEL RADIOACTIVE WASTE AUTHORITY
DEPARTMENT OF MANAGEMENT AND BUDGET
P.O. BOX 30026
HOLLISTER BUILDING
LANSING, MI 48909

PREPARED BY:
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2000 HOGBACK ROAD
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ERM

SECTION FOUR

Conclusions

This study found that none of the four nuclear power plants in Michigan are suitable sites for co-location of a low-level radioactive waste isolation facility. Based on the available information listed in Section Five of this report, the nuclear power plant sites and immediately adjacent areas did not meet several key exclusionary criteria. These criteria include those in which areas of intense geologic processes such as mass wasting, erosion and the like must be excluded, areas with high values of soil permeability must be excluded, areas exhibiting poor drainage and ponding must be excluded, and areas designated as wetlands must be excluded.

Although some specific detailed information about the sites was unavailable, the information that did exist was enough for a proper initial evaluation as requested by the Authority.

The goal of the siting criteria is to select a site with outstanding natural barriers in the event of a leak or spill breaching one of the many engineered barriers of the actual facility and disposal process.

Relying only on the available information that was reviewed, a low-level radioactive waste disposal facility would not meet the goals of the Siting Criteria Advisory Committee, Act 204 of 1987, the Authority's and the NRC's siting objectives and criteria and the overall goals of the NRC's performance objectives. All of the sites are located near either populated or popular seasonal resort areas of the State and are located adjacent to one of the Great Lakes. These sites do not offer suitable natural protection from an inadvertent spill or undetected leak of the anticipated waste mixture.

Finally, the shoreline setting of each of the nuclear power plants does not offer the safety and security of alternative non-shore sites. Wind-driven flooding and seiches will undoubtably play an important role in the integrity and longevity of the site and facility throughout its life.

50-255

5711 Summerset Dr.
Midland, MI 48640
April 20, 1994

Mr. John Zwolinski, Assistant Director
for Region III Reactors
U.S. Nuclear Regulatory Commission
Washington, D. C., 20555

Dear Mr. Zwolinski:

This is in response to your letter of March 25, '94. I would like to clarify, with specificity, the facts that surround many of the issues that you have described in general terms in your letter.

You listed a number of allegations that I had made before the Final Rule was promulgated on April 7, '93 on the first page of your letter. You refer to the numbers of NRC's responses to those allegations in the Final Rule in the footnote of page 2 of your letter. I will explain why those responses are inadequate in each instance, and why they should be the subject of an adjudicatory hearing. These allegations and my evaluation of NRC's responses are as follows:

1. The casks were untested. NRC's response in #35 is inadequate because it does not take into account the statement made by F. Sturz of the NRC in a letter to J. V. Massey, the vendor of the cask, in the Revision of the Proposed Certificate of Compliance (July 8, '92) that says: "This preoperational test is viewed by the NRC staff as necessary because the fuel clad temperatures predicted by the vendor is only 4 degrees F. below the design criteria for off-normal conditions. Also, the concrete temperature is very close to the design criteria under the same conditions." It also turned out that Consumers Power Co. did not have the type of fuel that the NRC was prescribing for that test load on site of the first MSB--it was of a lower temperature. (See Consumers Power Co. comments, Sept. 9, '92) Therefore, a verification of the heat removal capacity of the VSC system has yet to be made. This important function of this cask must be tested at yet another site that has higher temperature fuel, as, for example, at Point Beach.

Response #37 was not adequate because an NRC inspection of the construction of the casks on site after most of them were built--prior to the issuance of the Certificate of Compliance--found that the construction workers did not know they should be following a code and did not know what the ACI code was. (Inspection Rept. dated 6/22/92) Furthermore, in a comment by B and W Fuel Co., it was pointed out that the NRC staff had failed to identify a significant safety issue, i.e., closure welds of the interior metal basket holding the fuel are not sufficient to meet the structural strength requirements of ASME Sec. III, pressure vessel. The response further states that the NRC did not rely on the VSC-17 tests in Idaho for approval of the cask, but a letter from Gordon Gunderson of the NRC (NL/S-129) states that the cask designer did use the information in the VSC-24 design. We need to know what the implications are of

2222 See attached dist. E/21

NRC's refusing to use the results of that test in Idaho, and the fact that vendor did use these results in the design of the VSC-24 cask.

2) The manufacturer had refused to endorse use of the casks for the storage of spent fuel. NRC's Response #70 is inadequate because it does not bear out that NRC made any effort to find out the reasons why Pacific Nuclear, the original designer and manufacturer of the VSC-24 cask, divested itself of all interest and participation with Pacific Sierra Nuclear Associates (now Sierra Nuclear) and the VSC-24 cask design. In its letter on this matter to C. Haughney of the NRC, the company offered to give reasons, saying, "Please let us know if you would like any additional information related to the divestiture." The NRC made no such inquiry and therefore, NRC's response that it "is not aware of any safety, negligence, liability or legal concerns" for the divestiture is simply a self-serving statement, based on mere speculation and no investigation.

3. The NRC had failed to prepare an environmental impact statement on the action. NRC's response #61 claims that all potential environmental impacts were fully considered in an Environmental Assessment (with a finding of no significant impact). This was inadequate since this environmental assessment was largely based on NUREG-0575, Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Reactor Fuel, 1979. At that time, the impact of a national dry cask storage could not be assessed since the Department of Energy was only beginning its investigation of the use of dry cask storage for commercial operators. Adding the VSC-24 as a generic cask to the list of approved casks was a major Federal action that can significantly affect the human environment. Alternatives to continued generation are different today than in 1979. Economic alternative energy sources, demand-side management, and fossil fuel combustion plants other than coal fired plants are available today that argue for a new comparison to be made of the economics of nuclear power and alternative energy sources. The increase of spent fuel storage at reactor sites nationwide has significant economic and environmental impacts that should have been considered. The recent indepth studies of the U.S. Army Corps of Engineers and the State of Michigan of high risk soil erosion areas in the Great Lakes region should have been reviewed.

4. The only public hearing NRC was willing to have was without legal force. NRC's response that their staff technical reviews and public comments are sufficient to address all public health, safety and environmental issues overlooked the fact that there are significant site specific issues at the Palisades site that were identified as requiring an adjudicatory hearing. The fact that the NRC has now hired two experts to review the conditions of the site and the storage pad confirms that our views were correct.

5. The NRC, by allowing construction of casks to begin prior to the issuance of a "certificate of compliance," had failed to follow its own regulations. We have already shown that this breach of its own rules led to serious quality control problems in the construction of the casks (see #1 response above). We also note that about a month after the Final Rule was issued and 2 casks were already loaded, the vendor, J. V. Massey, wrote to the NRC and stated he was now ready to take up safety issues that the NRC had

stated needed review in Aug. of '92, during the comment period, and months before the Final Rule was issued in April, '93. At that time (Aug., '92), Massey had stated that he preferred to have the casks approved "as is" so the work at Palisades could be completed in speedy fashion, and he would be glad to attend to these safety issues later. The NRC agreed to that course of action. In other words, the safety of the casks were to be attended to after the casks were built and loaded.

6. The casks were to be inspected visually rather than continually monitored. Responses #17 and #18 in the Final Rule confirm the fact that the NRC requirements for monitoring the VSC-24 do not comply with their rule that requires the licensee to be able to determine at all times whether corrective action needs to be taken to ensure safe storage. We have already pointed out that the NRC failed to identify the fact that the closure welds for the MSB do not meet the structural strength requirements of the ASME code. (Response #1 above) Furthermore, NRC assertions in the past that there would be no degradation mechanism that would cause reactor parts to fail have been glaringly wrong--considering the corrosion of steam generators and pressure vessel embrittlement within just a fraction of the licensed operating time period. A Pacific Sierra Report states that corrosion rates are exacerbated by irradiation where metal cannisters are placed in a wet climate--and that is the case on the shore of Lake Michigan.

7. The casks were to be located 150 yards from Lake Michigan. NRC's response #12 is not supported by the indepth studies of the U.S. Army Corps of Engineer of that area indicating the high erosion potential of that area of Lake Michigan's shoreline. It does not take into account an indepth study made for the Michigan Low-level Radioactive Waste Authority whose consultants found that no nuclear reactor site in the state of Michigan was suitable, including the Palisades site, for the co-location of a low-level radioactive waste facility as required to meet the needs of the Midwest compact of states. If Michigan's reactor sites are not suitable for a low-level radioactive waste facility, how can they possibly be suitable for a high level nuclear waste storage facility?

In addition, on page 2 of your letter, I should like to emphasize that my telephone comments to Mr. John Jacobson of NRC's Region III staff that the concrete pad was built on "shifting dunes" in July, '93, was not the first time I had brought this up. I had pointed this out repeatedly in previous statements and in my comments long before the Final Rule was issued. It was a major reason why I was so interested in details on the construction of the storage pad in that area and its ability to hold 25 casks each weighing 130 tons over a long period of time. We have not been able to find this information. We appreciate the action the NRC has taken to examine the site and to get this information for the public.

While I did not ask about the consequences of an earthquake in the area, I have noticed that Consumers Power Co. is required to make an annual status report for Individual Plant Examination of External Events for Severe Accident Vulnerabilities (IPEEE) which includes development of seismic hazard curves as well as soil failure evaluation. In their Sept. 1, '93 letter to the NRC on this subject, they state that their original schedule for this was to be completed by the end of the first quarter of 1993, but they would not have it done until the end of October. In other words, this was not done in time to be

useful for the completion of the Final Rule. Their soil failure evaluation was also behind their original schedule.

Also, your letter states three reasons why you believe there is no undue risk by the use of the casks at this time. You state that the casks have been evaluated to assure their safety if tipped over. However, a Feb.1, '94 letter from F. Sturz of the NRC to J. Massey, the vendor, states, "A tip-over is not an acceptable occurrence and must be prevented." Please provide me with the documents that evaluate the casks' safety if tipped over, and whether the NRC position on this has changed since Feb. 1, '94, and for what reason.

Second, your letter states that the "casks have been evaluated to assure safety if all vents are blocked, as, for example, if the casks were to be enveloped in sand." Please send me the documents for this evaluation. Why have the vents at all, since they represent a hazard, if the cask can operate safely if they are blocked?

Your letter states that "any erosion of sand under the pad would be a very slow process and would be readily detectable." Please supply documents for this evaluation. Generally speaking, a slow process of erosion is not readily detectable, but a rapid one is. How does the NRC evaluation of the erosion process in this area compare with the studies that the U.S. Army Corps of Engineers has made which indicates substantial erosion can take place in that area in the next several decades?

In your reference to "new questions" being raised in this letter, I am assuming you are referring to NRC's evaluation of the cask site and pad and to Consumers Power Company's additional technical efforts. Please provide me with all the correspondence and any other documentation that is associated with how these "new questions" were initiated. To what extent are DOE and EPA responsibilities being brought into this decision?

The letter from Consumers Power Co. that you included with your letter states that it was recognized that "before the VSC-24 cask would be approved for use under a general license, it would be analyzed and its functional capability would be evaluated under the most stringent seismic criteria for most locations in the United States". Was this, in fact, done by the NRC? If so, why is the vendor now asking for changes in seismic design for a revised VSC Safety Analysis Report? (Sierra Nuclear letter to NRC, Nov. 11, 1993)

In addition, Consumers states that they will provide data to demonstrate that, in the event of a design basis (0.2g) seismic event, "the surrounding sand would not engulf the cask and prevent their ventilation function". This seems to contradict NRC's position, stated in your letter, that the NRC has already determined that the casks will be safe if all vents were blocked, for example, if they were enveloped by sand. We need documentation for all of these matters.

It is disturbing that all evaluations for the pad to maintain its structural ability and the ability of the dunes slopes to remain in place under all possible conditions were not done before the casks were

approved and allowed to be loaded, as Consumers Power Co. now states they are in the process of determining.

Small earthquakes, high winds, and atmospheric changes are known to cause seiches which have occurred in the Great Lakes--some have occurred on Lake Michigan. But there are well-known, more frequent and well-documented phenomena in the Great Lakes' dunes areas that are called "blow-outs". They can occur as the result of heavy storms and high winds over the Great Lakes, and they can greatly change the external shape of the dunes. Many have occurred on the shore of Lake Michigan. (See J.A. Dorr and D. F. Eschman, Geology of Michigan, University of Michigan Press, 1984) No one can predict where seiches or "blowouts" will occur.

Many thanks for your concerns on this important matter.

Mary P. Sinclair

Mary P. Sinclair, PhD
Co-chair, Don't Waste Michigan