

# KATTEN MUCHIN & ZAVIS

IRVINE, CA  
LOS ANGELES, CA  
NEW YORK, NY  
WASHINGTON, D.C.

525 WEST MONROE STREET • SUITE 1600  
CHICAGO, ILLINOIS 60661-3693

TELEPHONE  
(312) 902-5200  
TELECOPIER  
(312) 902-1061

WRITER'S DIRECT DIAL NUMBER

(312) 902-5627

## FOIA/PA REQUEST

December 24, 1996

Case No:  
Date Rec'd:  
Action Off:  
Related Case:

96-535

12-30-96

Pool

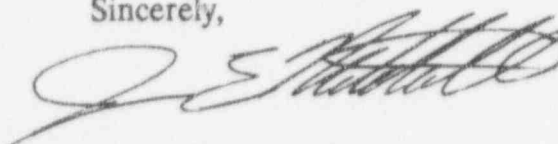
FOIA Officer  
Nuclear Regulatory Commission  
Washington, DC 20555-0001

To Whom It May Concern:

This is a request for records pursuant to the Freedom of Information Act. Specifically, we request copies of any and all records identifying localities designated in the past, designated currently or proposed for designation in the future as sites for location of low-level radioactive waste disposal facilities within the State of Illinois. Such documents should at a minimum identify the designated or proposed municipality (i.e. they may, but need not necessarily, identify street addresses or other descriptors of particular parcels of land). If any designation previously made has since been superseded or withdrawn, the response should include documents sufficient to describe and explain the rationale for such withdrawal.

We authorize in advance payment of charges up to \$100.00 to cover administrative and copying expenses of your response to this request. Please contact the undersigned if this limit will be exceeded. Thank you for your attention to this Freedom of Information Act request.

Sincerely,



James E. Mitchell  
Law Clerk

9701240017 970124  
PDR FOIA  
MITCH96-5359 PDR

# THE POLITICS OF NUCLEAR-WASTE DISPOSAL

PAUL TARRICONE

*After 72 days of public hearings and testimony from more than 100 witnesses, the first commission of its kind in the U.S. found that politics—not science and engineering—led to the selection of Martinsville, Ill. as the host site for a nuclear-waste-disposal facility.*

**B**ack in June 1990, an article in *CIVIL ENGINEERING* described a plan to build a low-level radioactive-waste-disposal facility in Illinois. The facility would serve as the "final resting place" for 10 million–15 million cu ft of waste generated by nuclear powerplants, research and medical laboratories, hospitals, pharmaceutical companies and other industrial sources. Project principals described state-of-the-art steel and concrete vaults within a facility that would have a 50-year operating life and 560-year design life. The Illinois Department of Nuclear Safety (IDNS) selected the town of Martinsville to host the facility, with site approval and construction start-up expected by mid-1991.

But it never happened. By the middle of 1990, the Martinsville site was under increasing scrutiny due to claims that it was selected more for its political appeal than for the engineering and science so vividly described in the *CIVIL ENGINEERING* article. In May 1990, a report by an Illinois State Senate subcommittee criticized the inherent conflict of interest in having IDNS serve as both "promoter" of the disposal site and as licensor and regulator of the disposal facility. While not recommending the site's outright rejection, the senate subcommittee concluded that IDNS "determined Martinsville a safe site well before the experts it hired could provide technical confirmation ... in sum the department attempted to

make the science at Martinsville fit as well as the politics did."

That report led to the formation of an independent, three-person Illinois Low-Level Radioactive Waste Disposal Facility Siting Commission, with sole authority for approving or rejecting any proposed site. No other nuclear-facility siting decision in the U.S. had been left in the hands of a completely independent commission. In June 1990, Governor James Thompson named to the commission William J. Hall, then head of the department of civil engineering at the University of Illinois; Carolyn Raffensperger, then state field representative for the Illinois chapter of the Sierra Club; and, as commission chair, Seymour Simon, Chicago attorney and former justice of the Illinois Supreme Court.

Beginning in June 1991 and ending the following March, the commission would hold 72 days of public hearings, all in Martinsville. Some 107 witnesses testified, including 31 expert witnesses and 67 members of the community offering their personal opinions. The commission toured the proposed site, compiled 20,539 pages of transcript and more than 500 exhibits, and produced a final report of 454 pages.

In October 1992, the commission voted unanimously to reject Martinsville as a disposal site for low-level radioactive waste. "Our deliberations required that we look far into the future and deep into the earth,"

the introduction to the December 1992 report reads. "We considered what would come to a facility, how it would be disposed of, and how it might get out. We considered how it might travel and where it might go. We considered its ultimate impact on the people of Martinsville and the State of Illinois."

More significantly, the commission, like the senate subcommittee before it, considered the alarming propensity by IDNS to let politics, not the quest for a "technically excellent" site, dictate the site-selection process. Although political approval had always been "an integral part of finding a suitable site, it was never intended to dominate the siting process as it did," the report continued. The commission rejected in part "the explanation ... that a careful scientific analysis settled upon a site that also was politically acceptable." Instead, it found that "political acceptability was the cornerstone of the selection process. Science was summoned after the fact in an attempt to justify the politically selected and, indeed, the only site available ... the best answer science and engineering gave was equivocal."

Here is the story of how the plan to dispose of nuclear waste in Martinsville ultimately unraveled.

## ARRIVING AT MARTINSVILLE

The ill-fated Martinsville project traces back to federal and state legislation that ad-

addressed the growing problem of low-level hazardous-waste disposal. On the federal level, the 1980 Low-Level Radioactive Waste Policy Act made each state responsible for the waste generated within its borders and authorized states to form regional compacts to handle the waste. The act was passed to relieve the burden on South Carolina, Washington and Nevada—the three states that for years had received all low-level radioactive waste generated commercially in the U.S. As a result, Illinois and Kentucky formed the Central Midwest Compact in 1984.

On the state level in 1983, Illinois' legislature mandated a comprehensive plan be drawn up for storing, treating and disposing low-level radioactive waste. IDNS was charged with designating a site for the facility, and by March 1988 its search would lead to Martinsville.

Located in agricultural Clark County, Martinsville is characterized by the commission as an economically struggling small town in a typical rural county. Hosting the facility held the promise of hundreds of temporary and permanent jobs, plus up to \$1 million in additional annual revenue, grants and general improvement in schools, infrastructure, and health-care facilities, according to IDNS estimates.

Martinsville, at least initially, was not alone in the derby to host the depository. In 1987, the first step in IDNS's siting plan was a geographic-information-system (GIS) mapping of the entire state to identify geologic, hydrologic, environmental and socioeconomic conditions in prospective areas for the facility. GIS mapping was used to exclude areas of the state that were not acceptable because of free-standing water, earthquake potential, and federal and state land protection. While the GIS screening was at first applied statewide, more focused screening was only applied to interested counties. Indeed, according to the commission's report, the former director of IDNS said that "a safe site will be found, but it will be located only in a county that wants

it." He reportedly noted that site screening was more of an economic than a safety consideration. Based on statewide mapping and the level of political interest, IDNS identified 21 counties for more detailed analysis.

Meanwhile, technical criteria for the site were drawn up by contractor Battelle Memorial Institute, Columbus, Ohio, and its subcontractor Hanson Engineers, Springfield, Ill. Among the most critical requirements were that any potential site should be a minimum of 4 sq mi and should not contain an interstate highway.

As the criteria were being drawn up, however, the field of 21 prospective counties began to narrow. By October 1987, five county boards had voted to oppose siting the facility, and November brought what the commission called "furious activity on the political front." First, the Illinois legisla-

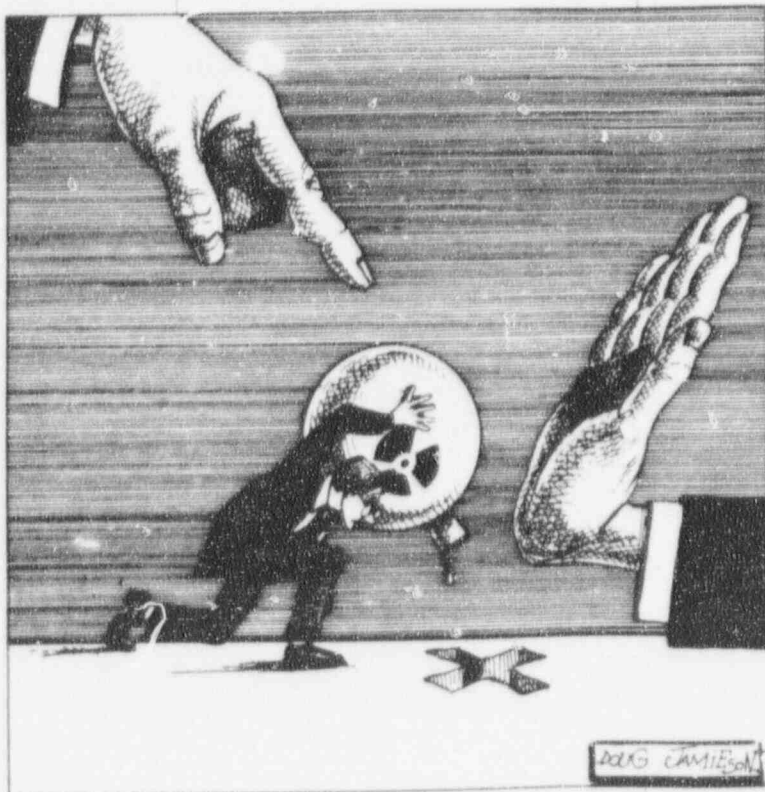
ture, Clark County had emerged as the leading contender. But some in the county were not entirely enthusiastic about the project. A 200-signature petition had been submitted to the Clark County Board of Commissioners, a local newspaper reporter was strongly opposed to the project and approval was in doubt as the board's vote on Jan. 22 approached. More important, "windshield surveys," conducted by field reconnaissance teams who drove around selected counties looking for conditions both favorable and adverse to siting a facility, characterized the area north of Martinsville (which was ultimately selected) as having "frequent ponds; it was hard to find 4 sq mi there."

#### CHANGING THE RULES

It was at this point in January 1988 that the site-selection process took one of its most dubious twists. According to a scathing passage in the commission's report, the likelihood that the Clark County board would disapprove a facility within its jurisdiction "apparently influenced IDNS and Battelle both to re-examine the areas of Clark County that the field reconnaissance teams initially had identified as most favorable and to supplement them with additional areas within 1.5 mi of Martinsville that the survey teams had largely ignored as too small or inappropriate because of Interstate 70. By adding areas adjacent to Martinsville, the city ... acquired the political jurisdiction to approve a proposed site." In short, the power to reject the site could

thus be wrested from the Clark County board.

What happened next may have been most responsible for dooming Martinsville. Project principals suddenly decided that the 4 sq mi criterion, which originally had eliminated certain areas around Martinsville, was "arbitrary and conservative," and the presence of the highway and other concerns about ponding and drainage could be dismissed because they were neither exclusionary nor performance-related in nature. "Apparently, someone decided



ture passed a law allowing a county veto over any site in that county, except one located within 1.5 mi of a municipality; within that area, the municipality would have jurisdiction. Just days after the change became effective, some of the newly empowered counties voted no; others dropped out after a briefing hosted by IDNS in December 1987, leaving 15 counties in the running. All the while, IDNS insisted that it would choose a "technically excellent" site.

By Jan. 14, 1988, as the number of counties willing to host the site continued to

that the long standing and carefully crafted site criteria could be changed," the report found, "and that the area north of Martinsville bisected by Interstate 70 could be considered." The report concluded that the criteria change "had nothing to do with well-reasoned or thoughtful science ... it was clear that the criteria changed for political expediency."

Simply put, the guidelines that called for a site of at least 4 sq mi were abruptly changed just prior to the vote by the Clark County board. "Rather than looking elsewhere to find a technically acceptable site with local approval, IDNS simply changed the rules, abandoning the technical criteria it had used for months," the report found. The person who approved this change in criteria was never identified nor brought forward to justify the change.

Just one week later, the Martinsville City Council, now empowered to override the county due to the recent legislation, held an emergency sunrise meeting one day before the Clark County vote and passed a resolution endorsing the county as a host for the low-level radioactive-waste site. The next day, the Clark County Board of Commissioners voted 4-3 to remove the county from the siting process. But by then, IDNS contractors had fervently begun homing in on areas within Martinsville jurisdiction—even though these areas were considered unfit during the original wind-shield surveys.

Finally, on Feb. 3, 1988, Marshall County, the last key county in contention, voted against hosting the facility. Martinsville was now the sole survivor, and seven weeks later, on March 28, IDNS announced that it had selected an area north of Martinsville as an alternative site.

In truth, it was the only site available.

#### TECHNICAL SHORTCOMINGS

If the politicized nature of the site-selection process wasn't enough to damage Martinsville's chances, then the site's technical shortcomings sealed its fate with the commission. "Had the plan been followed, the Martinsville site could not have been selected," the report said simply. "It was bisected by an interstate highway and thus could not satisfy the 4 sq mi. requirement."

The commission dissected the site's other technical weaknesses in explaining why it was rejected.

- Questionable site geology: The most controversial element concerned whether bod-

ies of sand encountered in various boreholes across the site formed an identifiable stratigraphic unit (Vandalia sand) located within the thick clay unit under the site (Vandalia till). The report concluded that questions about the underlying site geology and hydrology—how thick and tight was the Vandalia till, and how long would it take contaminated water to travel through it to the Martinsville public wells—were never adequately explained. There was serious uncertainty over how contaminated the ground water would be in the event of a leak, and there was no definitive information on the long-term health consequences of increases over the current levels of background radiation in Clark County.

More alarming was the conclusion of both the senate subcommittee and the governor's commission that a project geologist was pressured by IDNS into changing her original position that there might be continuous sand bodies in the Vandalia till; these permeable sand pockets could provide a relatively quick path for contaminants to leave the site. This opinion was "quashed," in the words of the senate subcommittee, while the commission determined that "IDNS attempted to guide the scientific characterization studies of the Martinsville site."

- Flawed site layout: The site would have to be the last barrier to contamination, but the commission found it entirely too small to provide an adequate buffer zone, given its hydrogeologic nature: "The site is virtually enveloped by water. The facility site itself has a nearby creek on one side and a stream bordering another; not desirable boundaries for a radioactive waste disposal site. There is a road open to the public on the third, which seems contrary to the goal of isolation. The entire site is upstream of the city—precisely the wrong side of a populated area on which to locate a disposal facility. A site further away from the population center obviously would be better, but the proximity was needed here to obtain local approval."

- Presence of aquifers: At least one, probably two and perhaps three aquifers lie beneath the site, the commission concluded. Proponents did not persuade the commission that the Vandalia till under the site could compensate for the presence of the aquifers.

- Suspect travel-time estimates: The commission found that statistical modeling was of limited help in determining the travel

time of contaminants through the till, because it was based on generalizations that sacrificed critical detail and on hydrostratigraphic assumptions that were not sufficiently varied. This reduced the modeling's value to the commission.

- Design questions: The commission uncovered no "hard evidence" that reinforced concrete would endure for 500 years, from either the facility's designer or an outside expert—only equivocating testimony that there was a distinct possibility the concrete could last that long. Although it appeared that newer cements properly mixed with carefully selected aggregates could lead to extremely long concrete life, the commission noted that one must search far and wide to find concrete in excellent condition in a wet climate like that of Illinois, even after just several decades of service. The commission "could not base its decision on a hope that the concrete would endure."

The commission had similar concerns about localized cracking and leaking in geomembrane liners.

#### A NEW PROCESS

What is the legacy of the Martinsville experience? The members of the commission resigned last December just prior to formal discharge by the state legislature. For its part, IDNS spokeswoman Patti Thompson says the department was "disappointed when the commission rejected the site. Obviously, if we recommended the site, we thought that it met the criteria, but when the governor named the commission we promised to abide by its decision. When it was rejected we moved on."

In the wake of Martinsville's rejection, Illinois has gone back to square one on the way it will select a site for the low-level radioactive-waste-disposal facility. Last December, Governor Jim Edgar named a nine-member task force that will develop new site-selection criteria.

Due in part to Martinsville, IDNS now has only regulatory, not site-selection, responsibility for the project.

*Editor's note: This article was excerpted in part from Martinsville: Report of the Illinois Low-Level Radioactive Waste Disposal Facility Siting Commission on its Inquiry into the Martinsville Alternative Site, issued in December 1992. Copies of the report are available from the Illinois Department of Nuclear Safety, 1035 Outer Park Drive, Springfield, IL 62704; tel. 217/785-9900.*



Notarized

Other states -  
must be part of project  
4/1/95 - from [unclear]  
[unclear] [unclear]

communication  
[unclear]

used in [unclear]  
to [unclear]

# MARTINSVILLE

## LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY

critical  
issues identification

W. J. Hall  
Professor Emeritus  
Department of Civil Engineering  
University of Illinois at Urbana-Champaign  
Urbana, Illinois 61801

Issue - not having a  
lead name.  
Clear public record.

Used common  
sense & judgment  
to elaborate on  
statutory criteria

What was the culture they  
worked from? - Haly.

Presentation To: Advisory Committee on Nuclear Waste  
February 22, 1995

Ted Smiley -

Technical group

as a result Ted [unclear]  
wrote "concluding remarks"  
which were [unclear]

Unstable [unclear] [unclear]

2/2

"Permanent disposal"

Per [unclear] [unclear]

# MARTINSVILLE

## LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY

*INEL Report  
presentation  
given to council*

### SITING

- Investigations as early as 1984
- March/June 1987 – Contacted 102 County Boards

Economic incentives

Up to 1 million dollars annually

Aid to:

Schools

Infrastructure

Health care

4 sq. miles (Will not go in if County Board says no)

- November 1987 Change in Management Act

X No low level radioactive waste disposal facility shall be located in or within 1 ½ miles of the boundaries of any municipality unless approval is given by governing body of that municipality

- 15/21 counties left by end of 1987
- January 1988
  - January 11 – 12 Windshield Survey
  - January 14 4/21 counties left
  - January 21 Clark and Marshall County left
  - January 21 6:30 a.m. Meeting in Martinsville to approve Site  
(even though Co. Board later said no)
- Politics not Science appeared to select Site (Both needed)
- Second Site, (Geff Site in Wayne County, Near Fairfield, Illinois)  
Investigated, but dropped when Martinsville approved site.
- Low-Level Radioactive Waste Disposal Facility Siting Commission
  - Appointed June 1990 (After 2½ years of Site Characterization  
work by State)
    - The Honorable Seymour Simon
    - Carolyn Raffensperger
    - William Hall
    - Tom Geselbracht – Chief Council
  - Funds provided for Concerned Citizens and PRO

\$360K to  
CC

Proponents  
\$121K

## Illinois Low-Level Radioactive Waste Management Act 1990 (Statutory Criteria)

Section 12 (b): The site shall meet all of the following criteria with respect to the facility of the proposed design:

- (1) The site shall be located so that the public health, safety and welfare will be protected.
- (2) The site shall be located in a suitable geological and hydrological medium.
- (3) The site shall be located so as to minimize the possibility of radioactive releases into groundwaters utilized as public water supplies.
- (4) The site shall be located outside the boundary of the 100 year flood plain as determined by the Department of Transportation.
- (5) The site shall be located so as to consider the distance necessary for the transportation of low-level wastes and so that the impact on existing traffic flows is minimized.



- (6) No low-level radioactive waste disposal facility shall be located in or within 1 ½ miles of the boundaries of any municipality unless approval is given by the governing body of that municipality.
- (7) No low-level radioactive waste disposal facility shall be located in an area of a county situated more than 1 ½ miles beyond the boundaries of a municipality unless approval is given by the governing body of that county.

- 
- "Disposal" means the isolation of waste from the biosphere in a permanent facility designed for that purpose.

## GEOLOGY

### Description and Thickness (ft)

Surficial Material 0–12' plus 0–9' upper sand

Vandalia Till, 0–35'

Fractured Vandalia Till, 5–130'

Sand Facies (Mulberry Grove), 0–35'

Smithboro Till (pre glaciation), 0–100'

Petersburg Silt, 0–45'

Basal Sand, 0–39'

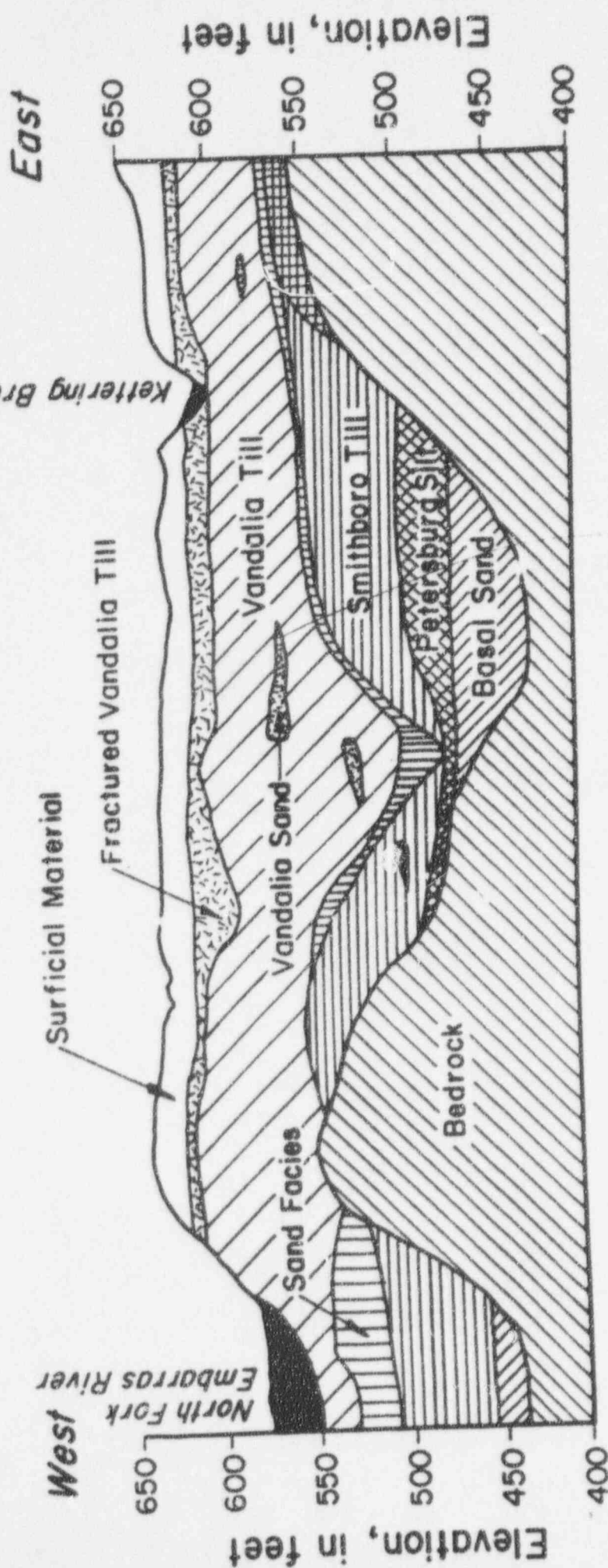
– (Discount. Clay, Silt, Sand

Pre-Illinois Silt and Clay, 0–10'

Bedrock

# Geology

## Profile B-B' West to East



Illinois Survey  
were not helpful.

Point was cut away (78)  
previously established (78)

some (8' deep)

inclusion they  
were interbedded  
in the sand, not Kettering

**QUALITY CONTROL/QUALITY ASSURANCE**

**FLOOD PLAIN — 1**

**GEOLOGY**

**GROUNDWATER HYDROLOGY**

**SITE GEOCHEMISTRY**

**MODELING**

**SURFACE WATER**

**EARTHQUAKES**

- 500 year event      MMI: VII–VIII      0.20 g
- MCE                      MMI: VIII              0.25 g

## **RADIOACTIVE WASTE**

(Estimate: 0.48 to 2.4 million curies)

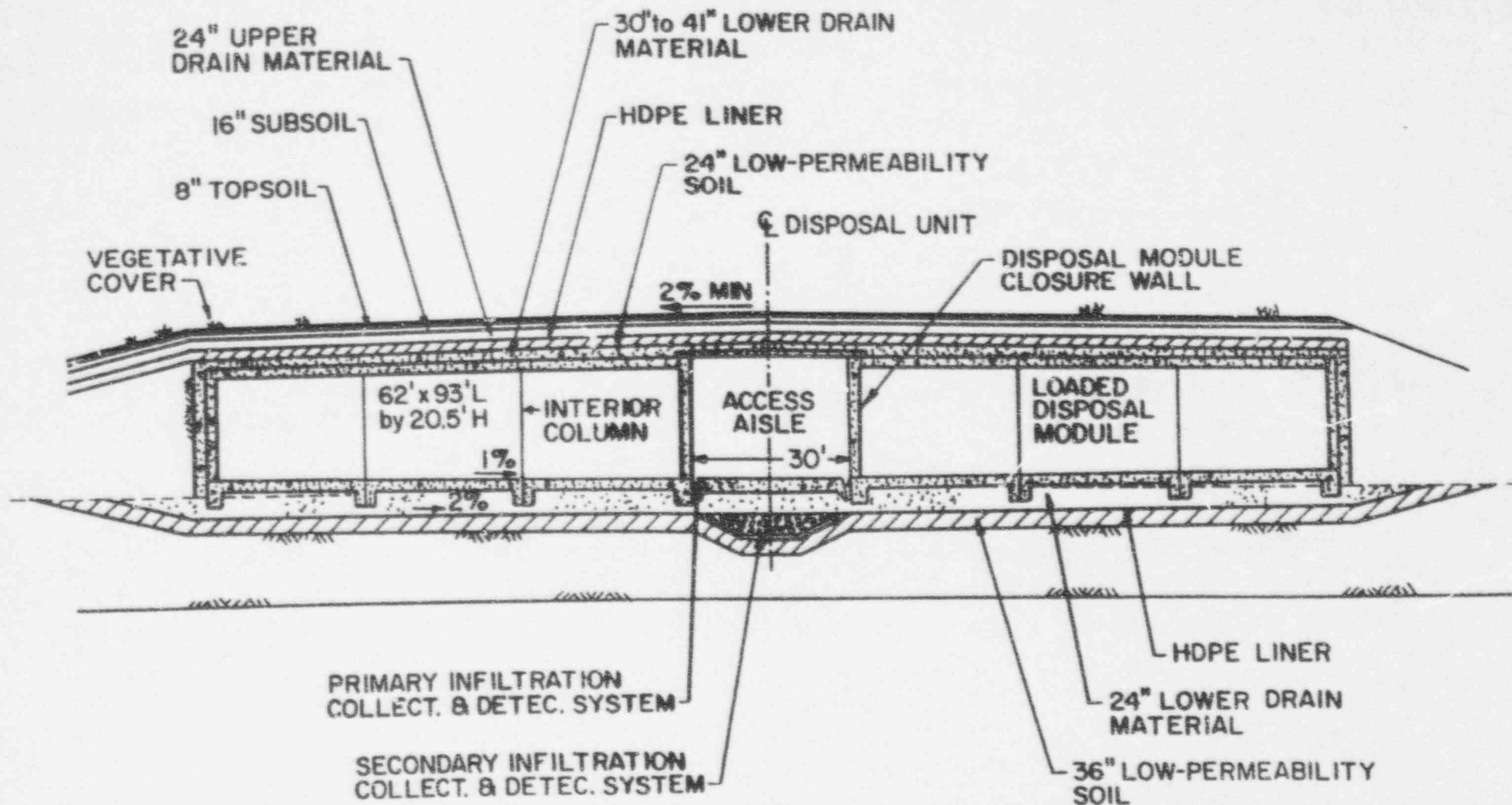
- Co - 60 (5.3 yr)
  - Cs - 137 (30.3 yr)
  - Ni - 63 (92 yr)
- 
- Tc - 99 ( $2 \times 10^5$  yr)
  - I - 129 ( $1.7 \times 10^7$  yr)
  - C - 14 ( $5.7 \times 10^3$  yr)
  - Am - 241 (458 yr)

## **RADIOLOGICAL RISK ASSESSMENT**

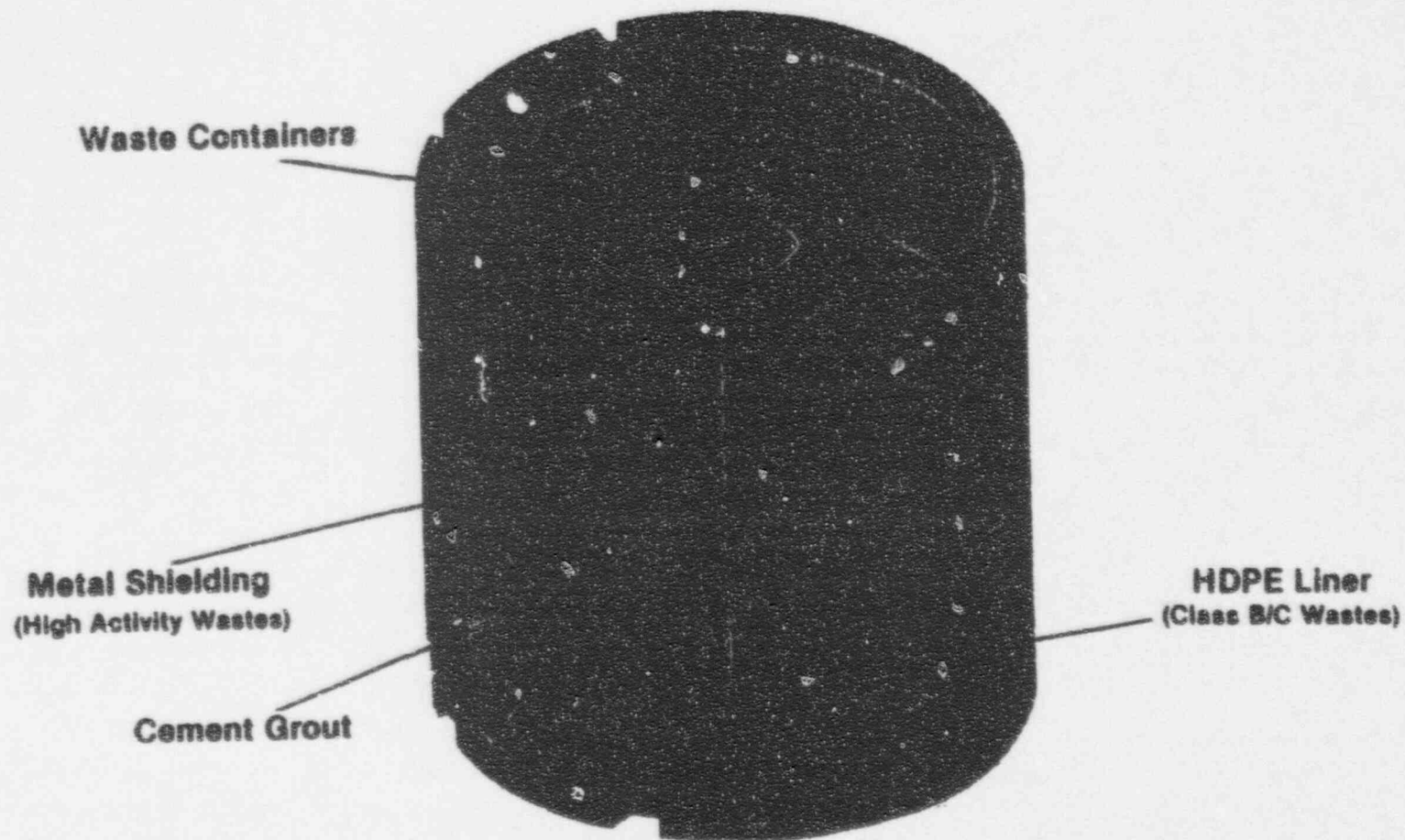
### **LONG-TERM HEALTH EFFECTS**



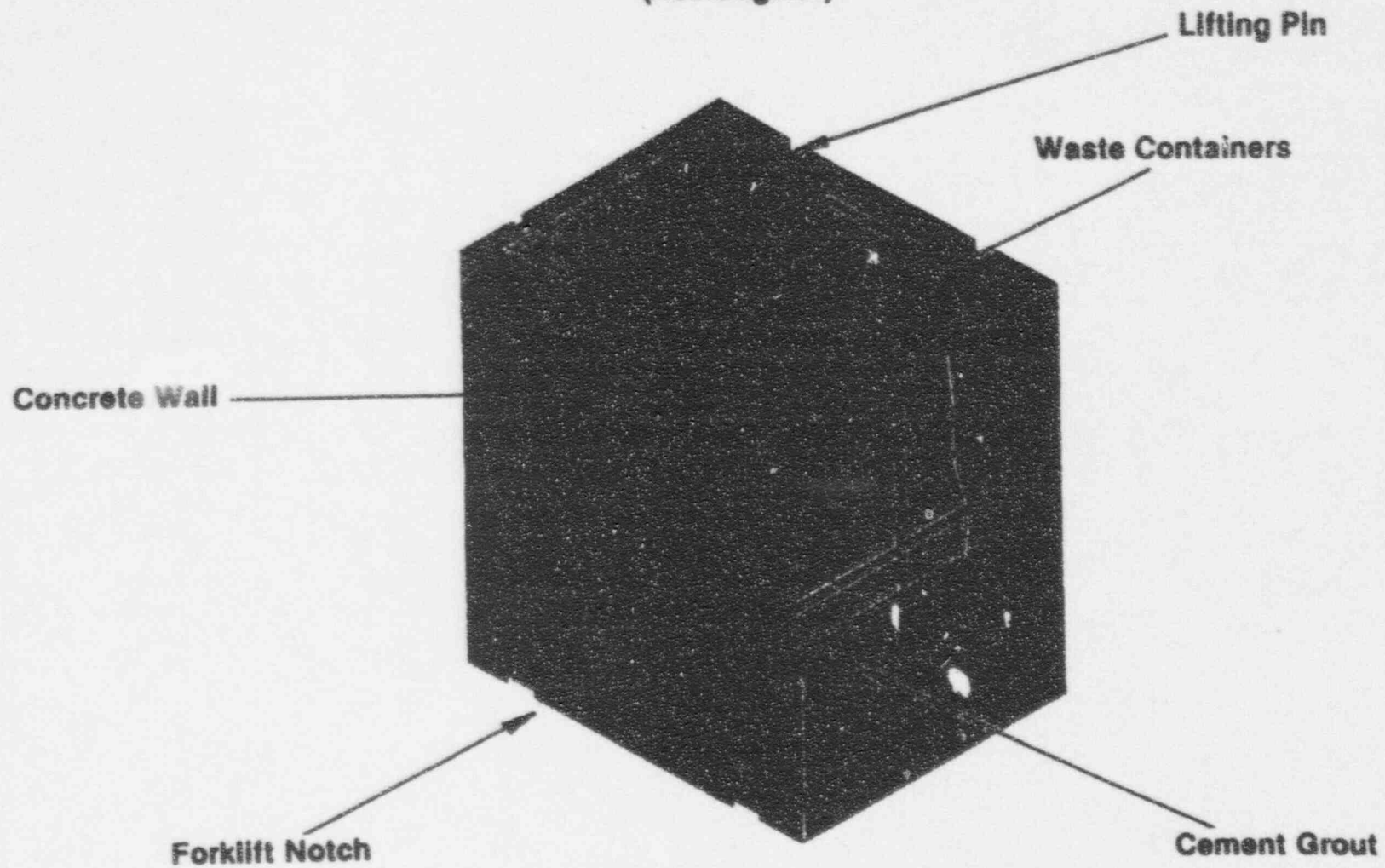
# TYPICAL CROSS-SECTION OF DISPOSAL UNIT



**CONCRETE WASTE OVERPACK**  
**(Cylindrical)**



**CONCRETE WASTE OVERPACK**  
(Rectangular)



## **OBSERVATIONS**

- Public Trust and Public Confidence
- Public Health, Welfare and Safety
- Perceived Risk (To Public, Workers, and Others)
- Political and Technical Issues
- Schedules (Realistic)
- Quality Assurance/Quality Control
- Minimize Uncertainties (Source Term, Site, Facility, Operation)
- Long-Term Health Issues
- Site Characteristics
- Facility Characteristics
- Management
- Monitoring
- Independent Review

