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May 17, 1972

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CABLE ADDRESS  
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Mr. Roger S. Boyd  
Assistant Director for  
Boiling Water Reactors  
Division of Reactor Licensing  
Atomic Energy Commission  
Washington, D.C. 20545



ENG	RAR
FAD	URS
CME	CCW
DWH	MAT
CEJ	HP
REO	File

Re: The Detroit Edison Company  
AEC Docket No. 50-341

Dear Mr. Boyd:

As counsel for The Detroit Edison Company, we hereby transmit three signed originals and twenty-five copies of Detroit Edison's answers to your letter of April 20, 1972, regarding the quarry operations at the site. These on-site quarrying activities were described in Detroit Edison's Revised Environmental Report (p.4.49-4.51) and the Commission's Draft Environmental Statement (p.46-47). Detroit Edison will, if necessary, submit additional copies of this information at your request.

Very truly yours,

LeBoeuf, Lamb, Leiby & MacRae  
Counsel for The Detroit Edison Company

By Eugene B. Thomas Jr  
Eugene B. Thomas, Jr.  
Partner

MAY 24 1972

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PDR FOIA  
BACC185-776 PDR

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The Detroit Edison Company

May 5, 1972

ANSWERS TO U. S. ATOMIC ENERGY  
COMMISSION'S LETTER OF APRIL 20, 1972  
ON QUARRY OPERATIONS

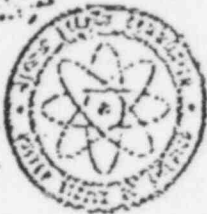
Enrico Fermi Unit 2

Docket 50-341

U. S. Atomic Energy Commission



2301



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

APR 20 1972

W.J. MCCARTHY, JR.

Docket No. 50-341

1972 APR 21 PM 3 11

Mr. Walter J. McCarthy, Jr.  
Manager for Engineering-Nuclear  
The Detroit Edison Company  
2000 Second Avenue  
Detroit, Michigan 48226

Dear Mr. McCarthy:

Members of the Atomic Energy Commission's regulatory staff met with Mr. Tom Morgan, Trustee of the Frenchtown Township Board, and Mr. Frank Euron of Newport, Michigan on April 3, 1971, and with representatives of the Detroit Edison Company on April 7, 1971, at the Commission's Bethesda, Maryland Offices to discuss environmental matters associated with quarrying operations at the Enrico Fermi Atomic Power Plant site.

For  
Applicant's  
Response  
Refer to  
Page No.

In order that we may assess the environmental impact of the pumping of water and of blasting at the onsite quarry, please provide the Division of Radiological and Environmental Protection (REP) with the following information for our continuing environmental review, and for preparation of the Final Environmental Statement for the Enrico Fermi Atomic Power Plant:

- 1 A. Please provide detailed information for wells in the vicinity of the Fermi-2 site.
  - 1 1. Include maps showing the locations and total numbers of wells in each 45° compass sector within 1 mile, 5 mile, and 10 mile radii.
  - 2 2. For all wells for which data are available provide
    - 2 a. locations, depths of wells and water levels (referenced to a common datum if possible), and
    - 4-15 b. dates of measurements.
  - 16 3. Detail information on wells concerning which complaints have been received including any follow-up actions thereon taken or planned.
  - 22 4. Substantiate, for example by current-water measurements at appropriate locations, that the areas of high ground-water flow at the north end of the quarry have been sealed.

*package dupl*

*8601230349*

Mr. Walter J. McCarthy, Jr.

- 2 -

APR 20 1972

23

5. Provide previous, current and anticipated future pump sizes, flow rates and durations of flow in quarrying and in dewatering construction sites, including details on discharge locations.

25

6. Provide information, such as data from borings near the quarry, to indicate the types of groundwater strata that might be encountered in future quarrying. What further lateral and vertical excavation of the quarry is planned for the completion of Ferni-2 or for future construction?

26

B. Discuss alternatives to onsite quarrying and provide a cost-benefit analysis between these alternatives and past, current and future quarrying. Include conclusions and actions taken or planned.

29

C. Provide information on environmental impact of blasting operations and any safeguards or alleviating actions taken or planned.

The information provided should be in sufficient detail and supplemented by such additional data as might be available and deemed pertinent and necessary for full review and evaluation of the environmental impact. Your reply should consist of three signed originals and 297 additional copies as a sequentially numbered supplement to your Environmental Report. The Final Environmental Statement for the Enrico Fermi Atomic Power Plant cannot be completed without these data. Please inform us when we might expect to receive the requested information.

Sincerely,



Roger S. Boyd, Assistant Director  
for Boiling Water Reactors  
Division of Reactor Licensing

cc: Arvin E. Upton, Esq.  
Lalor, Lamb, Leiby &  
McRae  
1621 Jefferson Place, N.W.  
Washington, D.C. 20036

Answers to AEC Letter of April 20, 1972

A. Question

Please provide detailed information for wells in the vicinity of the Fermi 2 site.

1. Include maps showing the locations and total numbers of wells in each 45° compass sector within 1 mile, 5 mile, and 10 mile radii.

Response

The approximate number of wells now in use and their distribution within 10 miles of the quarry are shown on Figure 1. All wells are small-capacity type for individual household water systems. Municipal and industrial water supplies use surface water sources. The aquifer that supplies water to wells is described in the PSAR, Section 2.4.3.

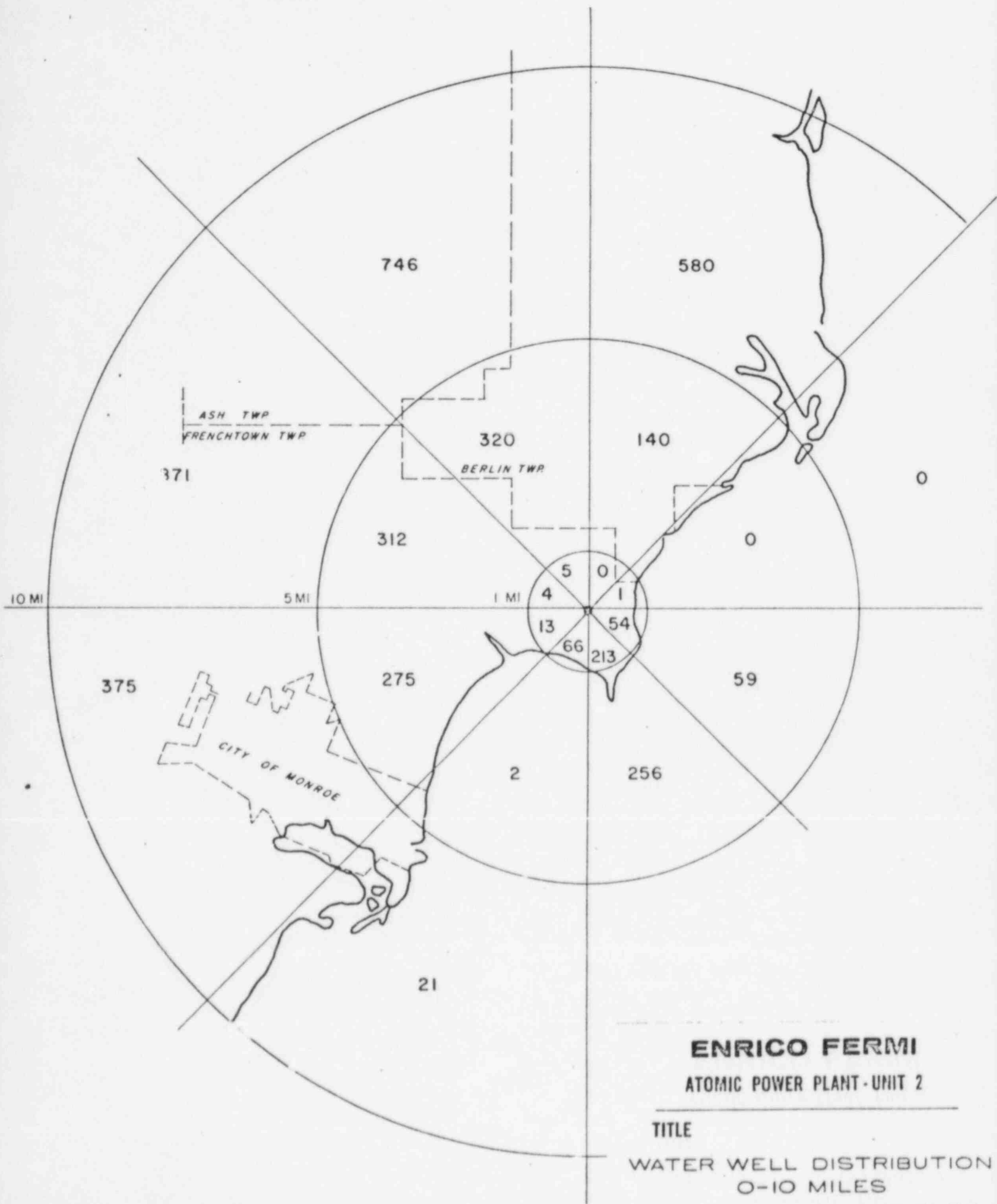


FIGURE-1

A - 2. Question

For all wells for which data are available provide

- a. locations, depths of wells and water levels (referenced to a common datum if possible) and
- b. dates of measurements.

Response

Water well data have been collected for numerous wells in the Fermi 2 vicinity. Well depths and water level elevations measured on various dates are shown on Table 1. Since March 1970, the applicant has maintained a program of regular monitoring of ground water level in wells in the vicinity of the quarry. Five observation wells have been installed. Additional water level measurements are made in privately owned water wells near the site. Water level data prior to 1970 are from records of local well drillers, for which the accuracy of measurement is not predicted.

The water level elevations are all referenced to the same datum, mean sea level, which is used for the U. S. Geological Survey Topographic Maps covering the area:

Stony Point  
Estral Beach  
Rockwood  
Flat Rock  
Monroe  
Erie  
Carleton

A - 2. Response (cont'd)

The well locations are identifiable by the well number. The well numbering system, which is commonly used by water resource agencies, including the U. S. Geological Survey, designates the well's location within a 40-acre parcel of land. The standard 1 square mile section is subdivided into 40 acre parcels as follows:

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

As an example, suppose a given well is located as follows:

Township       7       South

Range          10      East

Section 32, northeast corner.

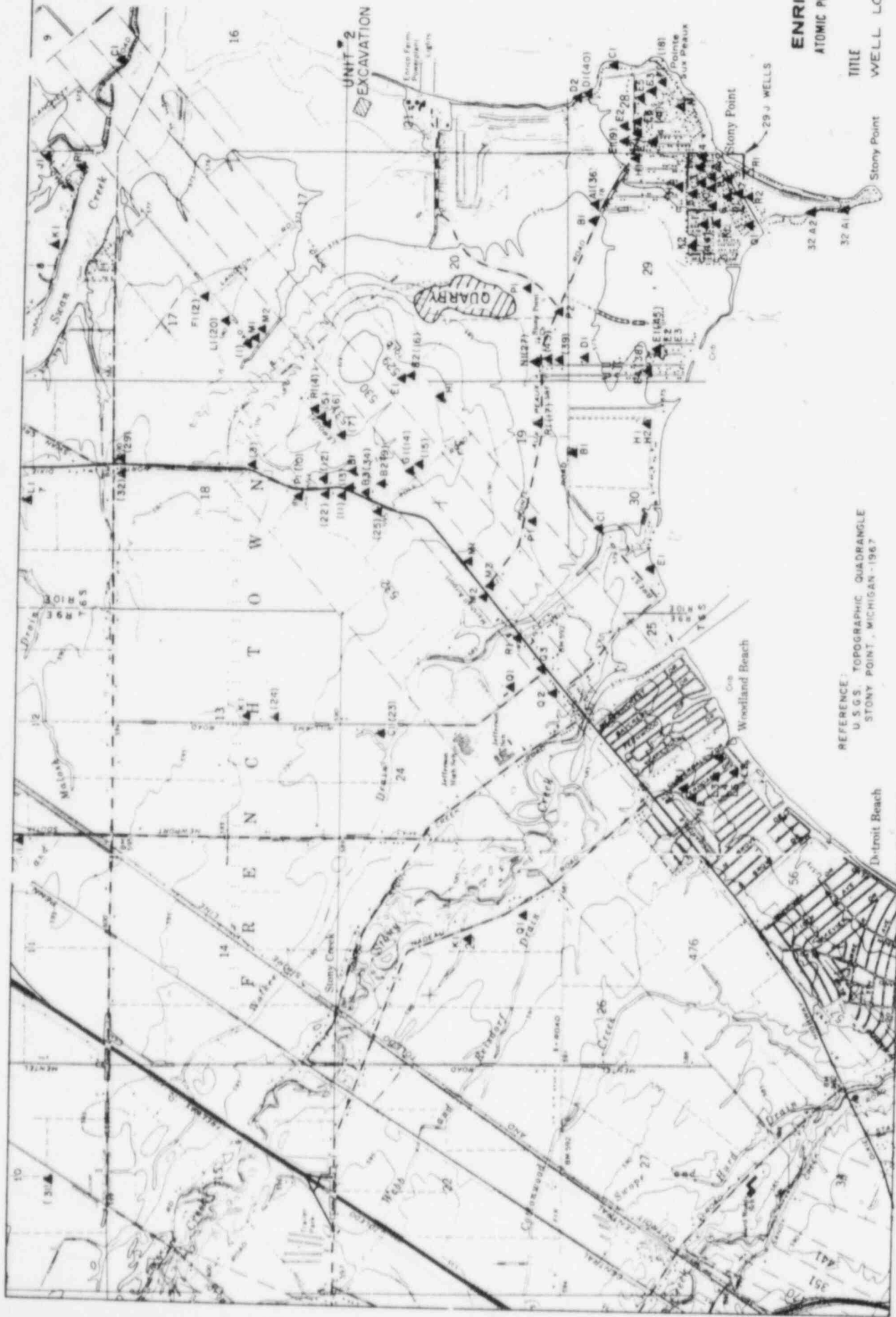
It would be given a number

7S/10E - 32A1

The number 1 following A indicates that this is the first well inventoried in the 40-acre parcel lettered A.

All of the wells within the immediate vicinity of the site are shown on Figure 2. These wells are identified and located by the last 2 digits of the above described well numbering system and listed in Table 1 under the heading of "Map Reference Number". Wells shown with an additional number in parentheses are referred to also in our response to Question A-3.





**ENRICO FERMI**  
**ATOMIC POWER PLANT - UNIT 2**

TITLE  
 WELL LOCATION PLAN

FIGURE - 2

REFERENCE:  
 U. S. G. S. TOPOGRAPHIC QUADRANGLE  
 STONY POINT, MICHIGAN - 1967

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
R1	5S/8E-36R1	77	594.	9/9/64	Off Site Monitoring Well
			597.6	4/28/72	
D1	5S/9E-2D1	33	590.	5/20/65	
			588.11	4/28/72	
J1	6S/9E-11J1	-	581.22	2/3/72	
K1	6S/9E-13K1	-	577.02	12/29/70	
			577.25	12/30/70	
			576.68	10/22/71	
C1	6S/9E-23C1	35	580.74	2/3/72	
			583.	11/13/54	
K1	6S/9E-23K1	95	572.	11/24/69	
			570.64	9/8/70	
Q1	6S/9E-23Q1	76	572.	11/6/69	
			575.4	9/8/70	
			574.65	10/27/70	
			576.39	12/29/70	
			575.8	2/26/71	
			577.0	3/26/71	
			576.25	4/30/71	
			576.3	5/28/71	
			574.8	7/2/71	
			573.0	7/30/71	
			572.8	8/24/71	
			573.52	10/22/71	
			572.3	10/30/71	
			579.13	4/28/72	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
C1	6S/9E-24C1	-	576.87	12/29/70	} Off Site Monitoring Well
Q1	6S/9E-24Q1	50	575.	9/19/69	
			574.76	9/8/70	
			573.84	10/27/70	
			575.97	12/29/70	
			573.4	11/5/71	
			573.4	12/3/71	
			574.4	1/7/72	
			575.4	2/4/72	
			576.1	3/3/72	
			579.8	4/7/72	
			580.5	4/21/72	
			580.73	4/29/72	
Q2	6S/9E-24Q2	70	571.	11/6/53	
Q3	6S/9E-24Q3	65	577.	6/13/53	
R1	6S/9E-24R1	127.5	577.	3/27/51	
L1	6S/9E-25L1	32	568.	8/2/56	
L2	6S/9E-25L2	45	572.	7/9/52	
L3	6S/9E-25L3	41.5	570.	4/28/50	
L4	6S/9E-25L4	50.5	565.	7/3/50	
L5	6S/9E-25L5	28.5	572.	6/17/53	
			575.04	2/3/72	
	6S/9E-25M1	49.5	574.	4/17/53	
	-25M1A	37	570.	10/18/55	
	-25M2	39	575.	4/12/48	
	-35H1	34.5	569.	1/20/49	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
J1	6S/10E 6J1	52	575.	8/31/63	
Q1	-6Q1	55	570.	10/17/53	
Q2	-6Q2	56.5	575.	7/3/47	
A1	-7A1	55	576.	9/18/53	
A2	-7A2	116	570.	12/12/69	
			570.7	2/3/72	
H1	-7H1	52	567.	6/12/56	
K1	-7K1	67	576.	6/6/68	
L1	-7L1	35	572.	7/1/50	
J1	6S/10E-8J1	49	575.	12/21/55	
K1	-8K1	36	571.	11/26/57	
R1	6S/10E-8R1	51	571.	1/30/66	
			570.63	9/8/70	
			570.03	2/3/72	
B1	6S/10E-16B1	52	572.		
C1	6S/10E-16C1	49	570.	6/25/54	
F1	-17F1	59	562.	2/17/64	
			568.91	9/8/70	
M2	6S/10E-17M2	-	567.59	10/27/70	
			571.75	2/3/72	
P1	6S/10E-18P1	60	572.1	9/8/70	
			571.84	12/30/70	
		-	576.3	2/26/71	
			576.5	3/26/71	
			575.2	5/28/71	
					Off Site Observation Well

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
		-	574.0	7/2/71	} Off Site Observation Well
			575.0	7/39/71	
			573.25	8/27/71	
			573.30	9/24/71	
			573.30	10/30/71	
			571.2	12/3/71	
			573.5	1/7/72	
			573.6	2/4/72	
			574.0	3/3/72	
			577.3	4/7/72	
			578.3	4/21/72	
			576.67	4/29/72	
	6S/10E-18R1	80	573.49	9/8/70	} Off Site Observation Well
			569.24	10/27/70	
			569.56	12/29/70	
B1	6S/10E-19B1	65	577.00	12/22/64	
B2	6S/10E-19B2	65	583.	2/17/69	
			576.86	9/8/70	
			571.86	10/27/70	
			568.94	12/29/70	
			583.0	2/17/69	
			576.42	9/8/70	
			571.42	10/27/70	
			568.3	12/29/70	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
B2	6S/10E-19B2	65	571.33	8/6/71	Off Site Observation Well
			570.26	8/27/71	
			570.21	9/24/71	
			570.14	10/30/71	
			570.94	12/10/71	
			570.94	1/7/72	
			571.84	2/4/72	
			572.34	3/3/72	
			575.02	4/7/72	
			578.19	4/21/72	
			576.69	4/29/72	
B3	6S/10E-19B3	45	581.	10/30/53	
G1	6S/10E-19G1	-	591.	3/2/56	
H1	6S/10E-19H1	-	570.7	5/12/71	Off Site Observation Well
			570.4	6/1/71	
			570.75	7/2/71	
			570.32	8/2/71	
			570.21	8/27/71	
			570.57	10/1/71	
			569.8	11/5/71	
			569.5	12/3/71	
			570.25	12/23/71	
			572.0	1/31/72	
			571.3	2/25/72	
			573.0	3/14/72	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
H1	6S/10E-19H1	-	574.4	4/7/72	} Off Site Observation Well
			578.0	4/21/72	
			576.67	4/29/72	
M1	6S/10E-19M1	56	580.	5/17/68	
			570.03	9/8/70	
			572.36	2/3/72	
M2	6S/10E-19M2	40.5	580.0	12/8/45	
M3	6S/10E-19M3	31	582.	4/12/49	
P1	6S/10E-19P1	58	569.	10/5/64	
R1	6S/10E-19R1	45	566.72	9/3/70	
			573.94	4/28/72	
E1	6S/10E-20E1	62	583.	10/27/70	
			585.18	4/28/72	
E2	6S/10E-20E2		580.51	12/29/70	
N1	6S/10E-20N1	53.5	565.	5/26/50	
P1	6S/10E-20P1	84	568.0	3/18/70	} On Site Observation Well (Abandoned)
			568.0	4/1/70	
			567.3	5/6/70	
			559.8	8/10/70	
			562.2	8/19/70	
			563.58	3/1/71	
			565.38	4/1/71	
			562.58	5/3/71	
			554.48	6/1/71	
			548.38	7/1/71	
			544.78	7/23/71	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
P2	6S/10E-20P2	-	568.0	3/18/70	On Site Observation Well
			567.2	5/6/70	
			564.3	6/25/70	
			563.9	7/30/70	
			563.8	8/18/70	
			566.92	3/1/71	
			567.62	4/1/71	
			565.92	5/3/71	
			564.52	6/1/71	
			559.12	7/1/71	
			556.77	8/2/71	
			552.02	8/27/71	
			551.81	10/1/71	
			550.94	11/5/71	
			549.61	12/3/71	
			549.14	12/23/71	
			546.94	1/31/72	
			547.14	2/25/72	
			540.34	3/14/72	
			537.99	4/7/72	
E1	6S/10E-21E1	42	540.77	4/21/72	On Site Observation Well
			541.86	4/29/72	
			557.91	7/1/70	
			559.59	8/3/70	
			555.02	9/1/70	



Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
E1	6S/10E-21E1	42	555.74	10/1/70	On Site Observation Well
			556.74	11/2/70	
			556.60	12/2/70	
			556.94	1/4/71	
			556.1	2/1/71	
			557.14	3/1/71	
			556.94	4/1/71	
			555.49	5/3/71	
			556.54	6/1/71	
			555.94	7/1/71	
			555.99	8/2/71	
			556.53	8/28/71	
			557.12	10/1/71	
			556.24	11/5/71	
			556.24	12/3/71	
			556.64	12/23/71	
			558.14	1/31/72	
			559.44	2/25/72	
			559.64	3/14/72	
			562.16	4/7/72	
			562.99	4/21/72	
			561.91	4/29/72	
C1	6S/10E-28C1	58	569.	12/12/50	
D1	6S/10E-28D1	39	568.19	10/22/71	
D2	6S/10E-28D2	51.5	571.	3/12/51	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
E1	6S/10E-28E1	-	567.97	9/8/70	Off Site Observation Well
			567.88	10/27/70	
			569.84	12/29/70	
			571.5	2/26/71	
			572.1	3/26/71	
			571.75	4/30/71	
			570.4	5/28/71	
			568.5	7/2/71	
			566.0	7/30/71	
			566.17	8/27/71	
			565.82	9/24/71	
			565.9	10/30/71	
			566.17	12/3/71	
			567.5	1/7/72	
			569.3	2/4/72	
			570.84	3/3/72	
			572.1	4/7/72	
			572.8	4/21/72	
			572.42	4/29/72	
E2	6S/10E-28E1	74.5	574.5	6/30/51	
E3	-28E3	43	577.	5/1/56	
E4	-28E4	56.5	575.	4/19/52	
E5	-28E5	51	572.	7/28/65	
E6	-28E6	-	568.6	10/22/71	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
E7	6S/10E-28E7	-	569.4	10/22/71	On Site Observation Well
			576.4	5/1/72	
F1	6S/10E-28F1	68	573.	11/20/67	
			571.61	10/22/71	
M1	6S/10E-28M1	68	572.	5/17/49	
A1	6S/10E-29A1	-	566.52	10/22/71	
			570.65	4/28/72	
B1	6S/10E-29B1	-	567.45	7/1/70	
			567.42	8/3/70	
			566.22	9/1/70	
			566.37	10/1/70	
			566.87	11/2/70	
			567.07	12/2/70	
			567.17	1/4/71	
			566.6	2/1/71	
			568.57	3/1/71	
			569.57	4/1/71	
			568.43	5/3/71	
			567.87	6/1/71	
			565.97	7/1/71	
			564.82	8/2/71	
			564.15	8/27/71	
			564.15	10/1/71	
			563.57	11/5/71	
			563.57	12/3/71	
			563.77	12/23/71	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
B1	6S/10E-29B1	-	564.57	1/31/72	} On Site Observation Well
			563.87	2/25/72	
			564.37	3/14/72	
			565.27	4/7/72	
			566.24	4/21/72	
			566.40	4/29/72	
D1	6S/10E-29D1	28.5	570.	10/2/54	
			563.25	10/22/71	
			567.45	4/28/72	
E1	-29E1	38.5	572.	7/16/53	
E2	-29E2	31	567.	8/31/55	
E3	-29E3	60.5	572.	7/13/62	
E4	6S/10E-29E4	40	572.2	1970	
			562.4	10/22/71	
H1	6S/10E-29H1	39	571.		
H2	-29H2	38.5	569.	10/15/47	
J1	6S/10E-29J1	37	570.	5/27/60	
J2	-29J2	35	567.	6/4/56	
			570.55	2/3/72	
J3	6S/10E-29J3	35	572.	1/8/53	
J4	6S/10E-29J4	74	566.	11/18/52	
J5	-29J5	46	568.	7/25/64	
J6	-29J6	40	572.	6/2/52	
J7	-29J7	45	571.	6/13/53	
J8	-29J8	28	572.	4/12/49	

Table 1.

Ground Water Levels near Enrico Fermi Atomic Power Plant Site

Map Reference Number	Well no.	Depth (ft.)	Elevation of Water Level (ft.)	Date	Comments
J9	6S/10E-29J9	38	570.	5/13/50	
J10	6S/10E-29J10	31	570.	7/29/53	
J11	-29J11	36	572.	6/14/57	
K1	6S/10E-29K1	30	575.	3/19/52	
K2	6S/10E-29K2	47	573.	6/7/63	
Q1	6S/10E-29Q1	40	566.		
R1	6S/10E-29R1	30	573.	4/18/57	
R2	6S/10E-29R2	50	564.	11/16/54	
B1	6S/10E-30B1	60	569.	10/7/68	
C1	6S/10E-30C1	40	569.	11/26/63	
			568.93	2/3/72	
E1	6S/10E-30E1	29	571.	8/8/45	
H1	6S/10E-30H1	42.5	570.	9/18/65	
H2	-30H2	49	572.	10/28/57	
A1	6S/10E-32A1	49	570.	6/7/56	
A2	-32A2	41.5	575.	6/11/51	

A - 3. Question

Detail information on wells concerning which complaints have been received including any follow-up actions thereon taken or planned.

Response

All complaints received by Detroit Edison regarding problems associated with domestic well performance have been promptly investigated and action was taken where problems truly existed. The action taken has been classified as follows:

- a) New Well and/or Submersible Pump Installed
- b) Denied
- c) Acting and pending
- d) No further problems.

An explanation of each classification follows on Table 2, along with a reference map (Figure 3) showing the residence location in proximity to the quarry.

Table 2. (a) New Well and/or Submersible Pump Installation

Upon receipt of each of these complaints, if the customer reported he was out of water, tank or bottled water was supplied immediately and prior to inspection. If there was any indication that at times the customers were unable to obtain an adequate water supply, wells and/or pumps were installed at no cost to the customer.

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Tank or Bottle Water Supplied Temporarily</u>	<u>Date of Installation</u>	<u>Date of Follow- Up Inspection and Customer Comments</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>
1	Ralph Fix 6394 Leroux	X	5/4/71	4-26-72 - advises well and pump okay, no problems.	8/11/70	8/20/70
3	Justin Sisung 6398 North Dixie	X	4/12/72		8/26/70	8/27/70
4	Romley Russeau 6130 Leroux	X	5/3/71	4-27-72 - reports all okay, pump works beautifully.	8/24/70	8/26/70
8	Louis Berns 5909 Leroux		6/2/71	Unable to contact, however, have re- ceived no reports of difficulty.	8/26/70	8/26/70
14	Charles Barton 5681 Toll Road	X	6/2/71	4-26-72 - reports all okay, no problems.	8/20/70	8/26/70
16	Lillie Sisung 6001 Toll Road	X	11/18/70	4-26-72 - stated she has good quality water, no problems, all okay.	8/20/70	8/20/70
21	Lena Masson 5795 North Dixie	X	5/1/71	4-26-72 - per Mrs. Sisung, no problem obtaining adequate water supply.	8/21/70	8/27/70

Table 2.

(a) New Well and/or Submersible Pump Installation (cont'd)

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Tank or Bottle Water Supplied Temporarily</u>	<u>Date of Installation</u>	<u>Date of Follow- Up Inspection and Customer Comments</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>
38	Douglas McComas 4732 Sycamore		Installation authorized on 3/14/72	5-3-72 - to this date well-driller unable to work in area due to soft ground.	8/30/71	9/17/71
39	Barbara Grabitz 1952 Elm		Installation authorized on 3/14/72.	5-3-72 - to this date well-driller unable to work in area due to soft ground.	9/8/71	9/18/71
43	Carl Jondro 51 Pt. Aux Peaux		Installation authorized on 3/14/72.	5-3-72 - to this date well-driller unable to work in area due to soft ground.	2/29/72	2/29/72

New Submersible Pump Installation

9	James Remick 5832 Leroux (New owner - Frank Rocca)	X	3/9/71	4-26-72 - Mr. Rocca reports everything okay, plenty of water.	8/26/70	8/26/70
15	James Barczewski 5701 Toll Road	X	12/7/70	4-26-72 - advises plenty of water. Pump blew a fuse on 4-24, all okay since then.	8/26/70	8/26/70

New Well Installation

33	Floyd Leach 5848 Leroux		9/25/71	4-26-72 - daughter, Denise reports well okay, every- thing works well.	5/11/71	5/19/71
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Cash Settlement

27	Larry Collins 5151 Pt. Aux Peaux		<u>Date of Settlement</u> 1/6/71		1/4/71	1/6/71
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Table 2. (b) Denied

Denial was based upon investigation that revealed faulty pumping system, no change in water level or location too distant from quarry.

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Complaint</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>	<u>Date Denied</u>
24	Morris Rye 6334 Williams Rd.	Low well	10/12/71	10/22/71	1/27/72
31	J. D. McPhail 6205 War Road	Low well	4/16/71	4/27/71	5/19/71
32	Clayton Nadeau 6887 North Dixie	Low well	5/7/71	5/19/71	10/4/71
34	Vincent Taylor 5872 North Dixie	Low well	7/29/71	8/5/71	10/4/71
37	T. Victor Menard 9647 Swan Creek Ash Township (Not shown on map)	Low well	10/1/71	10/1/71	10/15/71

Table 2. (c) Active and Pending

Investigation of these complaints is continuing.

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Complaint</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>
40	Violet Domrowski 4944 Long	Low well	9/27/71	10/1/71
41	Arthur Hemry 6139 Goddard	Low well	10/19/71	10/22/71
42	Walter Maus 6133 Goddard	Low well	10/19/71	10/22/71
44	Everette Morgan 4345 Avenue "B"	Foul Odor	1/3/72	2/7/72

Table 2. (d) No Further Problems

The complaints received that are now classified under this heading were those in which no problem was found to be present upon investigating the complaint. The Detroit Edison Company investigator's identification was left with each customer to contact us if they experienced further difficulty. No calls have been received from any of the following beyond the original complaint.

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Tank or Bottle Water Supplied Temporarily</u>	<u>Complaint</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>
2	Gerald Langton 5511 Leroux		Low well	8/26/70	8/26/70
5	William Dempsey 6110 Leroux		Low well	8/26/70	8/26/70
6	Richard Russeau 6080 Leroux		Low well	8/26/70	8/26/70
7	Luther Prewitt 6034 Leroux		Low well	8/20/70	8/26/70
10	Leo Masserant 6175 North Dixie		Low well	8/20/70	8/27/70
11	Woodrow Smith 5993 North Dixie		Low well	8/20/70	8/27/70
12	George Chopson 5940 North Dixie		Low well	8/20/70	8/27/70
13	John Hein 5914 North Dixie		Low well	8/24/70	8/27/70
17	Roman Bodenmiller 4771 Pt. Aux Peaux		Low well	8/20/70	8/27/70
18	Gordon Handloser 6333 Sterling Drive	X	Low well Foul Odor, Discolored	8/24/70	8/27/70
19	William Ray 6057 Pt. Au Peaux		Low well Well is abandoned	8/20/70	10/27/70
20	Valarian Langton 6445 Leroux		Low well	8/26/70	8/26/70
22	Arthur Humphrey 6039 North Dixie	X	Low well	8/31/70	8/31/70
23	Hubert McLaughlin 5839 Williams Road		Low well	10/23/70	10/23/70

Table 2. (d) No Further Problems (cont.)

<u>Map Reference Number</u>	<u>Name and Address</u>	<u>Tank or Bottle Water Supplied Temporarily</u>	<u>Complaint</u>	<u>Date of Complaint</u>	<u>Date of First Contact</u>
25	Roy Courts 5845 North Dixie	X	Low well	11/5/70	11/10/70
26	Ney Kirkland 6511 Leroux		Low well	8/26/70	8/26/70
28	Mrs. Prather 4891 Greenville Berlin Twp. (Not shown on map)		Muddy water	1/4/71	1/14/71
29	Leander Labo 6994 North Dixie		Low well Well is abandoned	4/2/71	4/15/71
30	H. J. Johnson 3880 Lakeshore Dr.		Dirty water Foul odor	4/5/71	4/15/71
35	Joseph Knapp 4018 Lakeshore Dr.		Cloudy water	6/18/71	6/22/71
36	Andrew Meyer 5701 Pt. Aux Peaux		Water seeping out of ground around well casing. Plastic water line was leaking, not damaged.	9/14/71	10/11/71

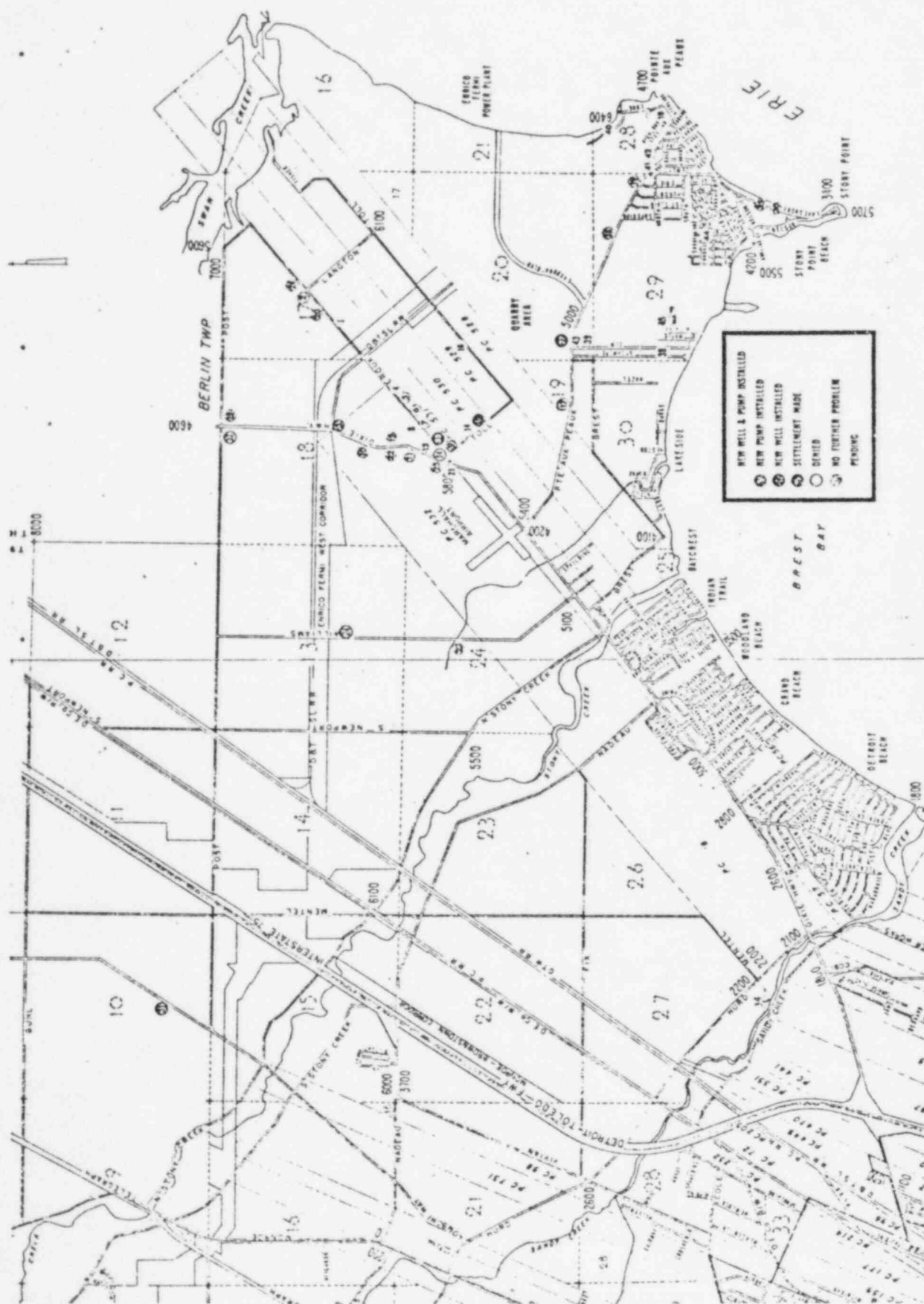


Figure 3. Location of complaints about well water supply.

A - 4. Question

Substantiate, for example by current-meter measurements at appropriate locations, that the areas of highground water flow at the north end of the quarry have been sealed.

Response

Before the quarry was established, there was natural flow of ground water toward the southeast. This natural flow through joints and solution enlarged openings was governed by the hydraulic gradient. The ground water discharged naturally by upward movement through overlying till, in the vicinity of Lake Erie shoreline, near the quarry site. (See PSAR 2.4.3.2)

After the quarry was established in 1969, the joints and solution openings in Bass Islands dolomite were uncovered, causing ground water to flow into the quarry by welling upward through the floor. The quarry operation had progressed to a depth of 20 feet, approximately elevation 560.

In 1971, the quarrying was relocated in an adjacent area to the south, where little additional flow occurred except for a single solution opening, and water from the abandoned north end flowed into the adjacent and more deeply excavated south section of the quarry. In August 1970, all quarrying and associated dewatering were terminated, and the water level inside the quarry was allowed to rise. It was reasoned that if the quarry water level were to rise to the approximate elevation of the piezometric level which existed prior to dewatering, the ground water level regimen would return to the natural state. In this condition there would be ground water flow through the joints and solution enlarged openings of the same magnitude that existed prior to quarry development. In October 1971, the water level in the abandoned quarry had reached an elevation of 569 feet. At the same time, the water level in well 6S/10E-19H1 was at elevation 570. This well is located 2200 feet west (upgradient) of the quarry. Very little flow is implied by the very small gradient that existed then. Since that time, the water level has risen to elevation 577, within 5 feet of the natural ground water level shown in PSAR Figure 2.4.2 and further confirmed by additional driller record data.

A - 5. Question

Provide previous, current and anticipated future pump sizes, flow rates and durations of flow in quarrying and in dewatering construction sites, including details on discharge locations.

Response

There have been two excavations at Fermi 2 which have been dewatered: the quarry and the reactor pit. Discharge from these excavations has been, is, and is expected to continue to be into the lagoon which discharges into Swan Creek and which in turn discharges into Lake Erie (PSAR Section 2.4.2).

Pump sizes and flow rates and durations follow:

Quarry

<u>Dates</u>	<u>Average discharge to Lagoon (gpm)</u>	<u>Pump Size</u>
10/69 - 8/70	770	3 in and 6 in
8/70 - 11/70	0	-
11/70 - 4/71	420	3 in and 4 in
4/71 - 10/71	0	-
10/71 - 11/71	110	10 in
11/71 - present	30	10 in

Reactor Pit

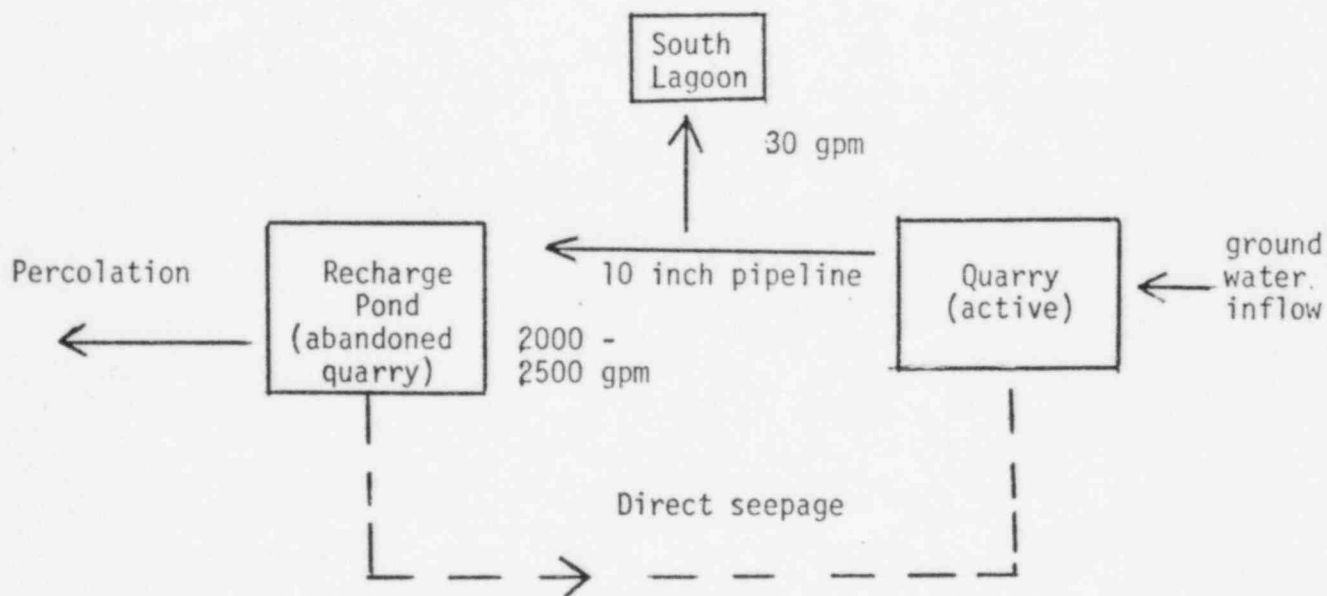
6/70 - 3/71	205	6 in
3/71 - 4/71	205	two 4 in
4/71 - 7/71	205	three 4 in
7/71 - present	145	three 4 in

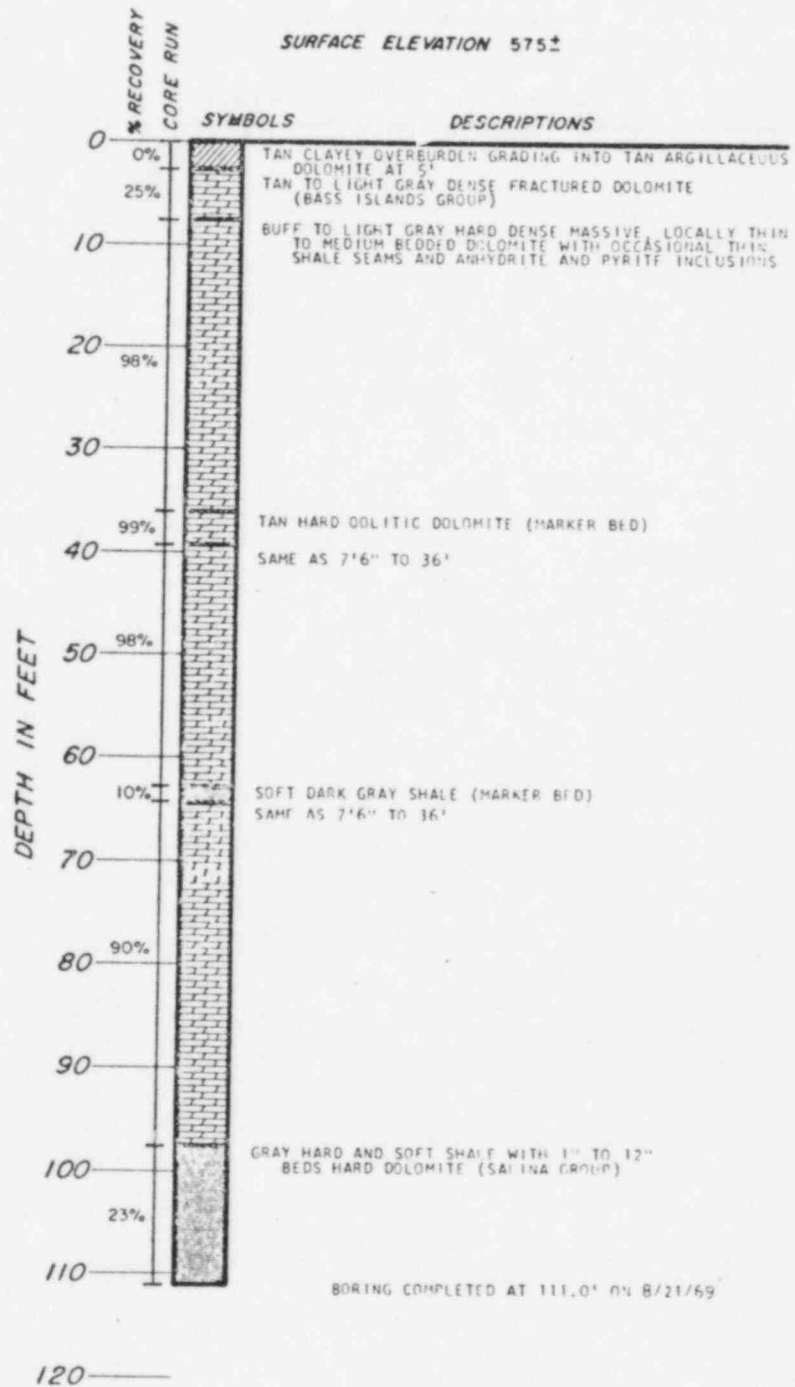
A - 5. Response (cont'd)

After the abandoned quarry was allowed to fill, quarry operations were relocated immediately to the south. The abandoned quarry functioned as a ground water recharge pond. All water accumulating in the new quarry was pumped into the abandoned quarry, at 2000-25000 gallons per minute. Much of this recycled water, or water entering the new quarry directly from the recharge pond.

To avoid flooding the active quarry area, it was decided to maintain the water level in the recharge pond at less than elevation 569. Under this condition it was found necessary to dispose surplus water at a rate of about 30 gpm. This water is discharged into South Lagoon. The amount discharged may increase as ground water levels in the area continue to rise.

The pumping system used is illustrated by the following diagram.





**ENRICO FERMI**

**ATOMIC POWER PLANT - UNIT 2**

**TITLE**

**LOG OF BORING  
AT QUARRY SITE**

**FIGURE-4**



A - 6. Question

Provide information, such as data from borings near the quarry, to indicate the types of ground water strata that might be encountered in future quarrying. What further lateral and vertical excavations of the quarry is planned for the completion of Fermi 2 or for future construction.

Response

The local aquifer is described in PSAR Section 2.4.3. A log of a boring at the site of the quarry (Figure 4) shows that fractured dolomite extends as a continuous hydrologic unit to about 100 feet depth. The rock cuts exposed in the quarry have not encountered any deviation from the rock conditions indicated on the log. Borings data (see PSAR) indicate a general uniformity of rock conditions throughout the site area.

No further vertical excavation of the quarry is planned. Lateral excavations of about 50 feet west and 150 feet east are planned during the summer of 1972.

Detroit Edison has not made a decision on a quarry location for future plant expansion beyond the construction of Unit 2.

B. Question

Discuss alternatives to onsite quarrying and provide a cost-benefit analysis between these alternatives and past, current and future quarrying. Include conclusions and actions taken or planned.

Response

Prior to filling the site, in preparation for construction of Unit 2, Detroit Edison evaluated various methods of obtaining a suitable fill material. Methods and materials considered were:

- (a) Dredge sandy material from Lake Erie and deposit onsite for fill.
- (b) Use offsite materials, sand or gravel from a borrow pit and deposit onsite for fill.
- (c) Quarry rock from onsite quarry to fill site.

Detroit Edison evaluated these materials, quantities, and techniques of site fill and determined that the environmental impact to the general area would be less if an onsite quarry were used to obtain site fill materials. The evaluation considered the following factors.

Dredge Materials from Lake Erie

Sand materials available in Lake Erie adjacent to the site were not sufficient in quantity and were covered by an overburden of approximately 12 feet of clay and muck. This overburden material would have to be disposed of onsite creating a storage problem from the standpoint of land use. Also the dredging operators required that a safe harbor facility be built on the site or in the immediate vicinity since the harbor at Monroe is 8 miles away, requiring too much time to get to in the event of a sudden storm on Lake Erie.

It was estimated that this dredging operation would require two years to complete and the environmental impact on Lake Erie and local beaches was uncertain. The cost of materials excluding costs for site deposits, pollution controls of dredging, and safe harbor was estimated to be \$1.81 per cubic yard.

Since suitable materials were not available in sufficient quantities, this method of site fill was not given further consideration.

## B. Response (cont'd)

### Offsite Borrow Pit for Sand

A search for an offsite borrow pit for sand did not prove successful. A borrow pit closest to the site did not have sufficient quantities of sand to meet our needs. Further, the borrow pit was located on secondary roads and over 20 miles from the site. The cost of this material delivered to the site was quoted at \$3.50 per yard not including the cost of rebuilding roads and bridges to provide an adequate route for year round hauling.

The environmental impact of this type of operation was, in our opinion, the most severe of all methods of site fill considered. It required extremely heavy truck traffic for a considerable period of time. For example:

4 years hauling = 1 truck passing - every 2-1/2 minutes  
a given point

2 years hauling = 1 truck passing - every 1-1/4 minutes  
a given point

Since adequate quantities were not available and because of the potential environmental impact of heavy truck traffic on local secondary roads, this alternate was abandoned.

### Onsite Quarry

Detroit Edison had an onsite quarry which was opened in 1958 to obtain materials for the Unit 1 construction. From 1962-1969, it was abandoned and allowed to fill with water. In early 1969, it was activated to obtain materials for a new access road into the site. In October 1969, a decision was made to continue the onsite quarry to obtain site fill materials required for the construction of Unit 2. This decision was based on availability of other materials from offsite sources as previously discussed, and the minimal impact to the environs of the surrounding area. It was recognized at that time that the water table would be affected locally on a short term basis and that the required blasting would have to be controlled to minimize the affect on onsite and offsite structures. Both potential problem areas were controlled by very rigid requirements from the beginning and these controls have been successful in minimizing the affect to the environment. The cost of the rock has averaged about \$2.70 per yard.

The establishment of an onsite quarry lake for aesthetic and recreational purposes was considered to be a benefit to the environment.

B. Response (cont'd)

Current and Future Cost-Benefit Analysis

The site fill for Unit 2 is approximately 90% complete as of May 1, 1972. The alternate to continued use of the onsite quarry is to obtain stone from a quarry located in the City of Monroe. This quarry is presently the source of aggregate for Unit 2 concrete. The comparative costs for fill materials obtained from this source are as follows:

	<u>Cost per ton</u>	<u>Quantity of rock to be obtained</u>	<u>Total Cost</u>
Onsite Quarry	\$2.70	500,000 ton	\$1,350,000
Monroe Quarry	\$3.20 *	500,000 ton	\$1,600,000

\* estimated

Environmental Impact

<u>Onsite Quarry</u>	Localized and temporary depression of water table
	Minimal noise from blasting (residents adjacent to site)
<u>Monroe Quarry</u>	Added truck traffic (about 10,000 truck loads)
	Minimal noise from blasting (residents of the City of Monroe)

Conclusions

Detroit Edison concludes that the environmental impact of the quarry is not severe and any short term localized adverse effect has been and will be properly and promptly solved. The transfer of this quarry operation to the City of Monroe adds another environmental impact to the area with the added truck traffic over local roads. Detroit Edison anticipates continuing the onsite quarry operation to conclusion using the rigid controls and monitoring presently imposed on the operation.

C. Question

Provide information on environmental impact of blasting operations and any safeguards or alleviating actions taken or planned.

Response

Detroit Edison has made extensive geological studies of the Fermi 2 site and adjacent area to determine seismic response design criteria. Also, prior to onsite blasting for the Unit 2 excavation and quarry work, extensive studies were made to make certain no damage would be done to Unit 1 and any onsite or offsite structure.

A test blasting program was initiated by Dames & Moore, under contract to Detroit Edison, using a three component blast seismograph and two three component engineering seismographs. These instruments measured ground motion longitudinally, transverse and vertically. Types of explosives, amounts and methods used and measured distances were all recorded. These studies were used to set criteria for future blasting at the site and to set limits on charges that would be conservative to make certain no onsite or offsite structural damage would occur.

All blasts are monitored by an automatic vibration induced instrument activated by motion in the vertical component. This instrument is located in Unit 1 at a point in the structure of greatest motion sensitivity. This instrument has not indicated any excessive ground motion due to blasting since it was installed.

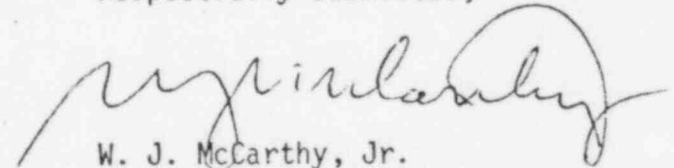
The recommended maximum charge based on studies was set at 500 pounds per delay with a total of 10 delay periods or a total charge of 5000 pounds. This value was judged to be conservative and would not cause excessive ground motion to damage onsite and offsite structures.

The quarry operation for site fill was limited to 400 pounds per delay with a 5000 pounds total. These values have been continually revised as complaints of noise were registered by residents of the area, and during 1972 the blasts have been limited to 100 pounds per delay with a 1400 pound total, well below the maximum judged safe and conservative.

C. Response (cont'd)

Residents of the area have from time to time voiced complaints concerning the quarry blasting operation, fearing damage to their homes. To demonstrate that the blast induced earth shock was very small, a blast with a maximum delay of 400 pounds was monitored near the corner of the residence of one of the complainants. The corner of the home reportedly rested on bedrock. The earth shock was shown to have a maximum particle velocity of 0.004 in./sec., less than the particle velocity of 1.0 in./sec. recommended by Dames & Moore as the maximum to which houses should be subjected. The residents have also been informed that wind conditions have a direct bearing on the amount of air blast noise heard. If the wind is out of the north-northwest, then the sound of the blast is carried directly from the quarry to the residential area. This wind direction accounts for the residents complaining about some blasts being louder than others.

Respectfully submitted,



W. J. McCarthy, Jr.  
Assistant Vice President  
& Manager of Engineering

WJM/wst  
ME72-272