Category 1.8

Site: [illegible]
ID #: MUL [illegible]
Break: 10.0
Other:
NO

40045848
SUPERFUND RECORDS

X

Site: Westlake Ldfl
ID #: MOD079900930
Break: 6.8
Other:

HAZARD RANKING MODEL (MITRE) QUALITY CONTROL REVIEW

Site Name: Westlake Landfill

Location: 13570 St. Charles Rock Rd. Bridgeton, Missouri.

EPA Region: VII

Name of Q.C. Reviewer Jim Buchanan Jim Buchanan 7-28-81

Correct Worksheets Used Yes - with the exception of the revised aggregate site scoring form.

Worksheet Calculations Accurate, subscores rounded to nearest tenth.

Observed Values Provided where appropriate

Documentation Supporting Site Score unknown.

One Page Summary Describing Site Conditions or Problems A brief summary (description of site) has been included. This should be expanded upon, however, to include more information.

Enforcement Status Not included.

General Comments Revised aggregate site scoring form has been completed by Q.C. reviewer. Page 130 Catagory #8 "Groundwater Use" this value appears low- groundwater is used for irragation and drinking-value of "2" may be more appropriate. Page 131 Catagory #2 1 year 24 hour rainfall - this value may be incorrect-a value of "2" would probably be more accurate. Catagory #3"containment" reviewer has been conservative in his observation-if this surface impoundment is potentially unsound then the value should be "2". Page 134 Catagory #3 "Containment" reviewer has considered a river dike as a natural barrier. This barrier is on

Westlake Landfi

10

AGGREGATE SITE RATING

Route	Route Subtotal from 6 or 9	Route Subtotal Squared	Maximum Possible Score
Ground Water	7.6	57.8	$(97.2)^2 = 9447.84$
Surface Water	12.4	153.8	$(97.2)^2 = 9447.84$
Air	0	0	$(97.2)^2 = 9447.84$
Sum		211.6	28,343.52
Square Root of Sum		14.5	168.36
Overall Score* = $\frac{\text{sum} \times 100}{168.36}$		8.6	100

FIRE AND EXPLOSION

Route Subtotal from 8	Maximum Possible Score
0	97.2
Adjusted Score = $\frac{\text{Route Subtotal} \times 100}{97.2}$	0

DIRECT CONTACT

Route Subtotal from 8	Maximum Possible Score
48.6	97.2
Adjusted Score = $\frac{\text{Route Subtotal} \times 100}{97.2}$	50.0

*The overall and adjusted scores will be between 0 and 100. The maximum overall score for a site with only one exposure route is 57.7.

Recd from MONS 7/20/81

QC. review by Jim Buchanan 7-28-81

APPENDIX E
MODEL WORKSHEETS

Site Name [illegible]

Location [illegible]

EPA Region [illegible]

Person(s) in Charge of the Site [illegible]

Name of Reviewer [illegible]

Site Overall Score 22.21 8.62 Three path.

General Description of the Site

(For example: landfill, surface impoundment, pile, container, types of wastes, location of the site, contamination route of major concern, types of information needed for rating, agency action, etc.)

[illegible] In the past radioactive materials have been deposited in the landfill. NRC is investigating the leaching of radioactive materials from landfill.

ROUTE - GROUND WATER

Rating Factor	Basis of Information	Site Rating (Circle One)	Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE					
Observed Release	No Data	(0) 45	1	0	45
If the site score is zero go to step 2 otherwise go to step 5					
2 ROUTE CHARACTERISTICS					
Depth to Aquifer of Concern		0 1 (2) 3	2	4	6
Net Precipitation	—	0 (1) 2 3	1	1	3
* Permeability of Unsaturated Zone		0 (1) 2 3	2	2	6
			Subtotal	7	15
3 CONTAINMENT					
Containment	Ponds	0 1 (2) 3	1	2	3
4 POTENTIAL FOR RELEASE					
Multiply site score from 2 by site score from 3 The product is site rating for this route		7x2	1	14	45
5 RELEASE					
Enter site score from 1 or 4				14	45
6 WASTE CHARACTERISTICS					
Physical State	Liquids	0 1 2 (3)	1	3	3
Persistence	Pesticides	0 1 2 (3)	2	6	6
Toxicity/Hazardousness	Pesticides, Radioactives	0 1 2 (3)	2	6	6
			Subtotal	15	15
7 HAZARDOUS WASTE QUANTITY					
Total Waste Quantity	4000 T	0 1 2 3 4 (5)	1	5	5
(Use Section 3 information to estimate waste quantity if containment is unknown)					
8 TARGETS					
Ground Water Use	Limited Use	0 (1) 2 3	3	3	9
* Distance to Nearest Well/Population Served	1-3 miles	0 (1) 2 3	3	3	9
* Distance to Nearest Population	1-100 POP	0 (1) 2 3 4 5	6	6	30
			Subtotal	12	48
9 GROUND WATER ROUTE SUBTOTAL					
A. Multiply 5 x 6 x 7 x 8				12600	162,000
B. Multiply (A) ÷ Normalization Factor of 0 and 0 (derived in 3)			0.6	[illegible]	97.2

[illegible] 7.6

[illegible]

[illegible]

ROUTE - SURFACE WATER

Rating Factor	Basis of Information	Site Rating (Circle One)	Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE (see sw 1)					
Measured release [illegible]	No Data	0	45	0	45
If the site score is zero go to step 2 otherwise go to step 5					
2 ROUTE CHARACTERISTICS[1] (see sw 2)					
* [illegible]		0 1 2 3	1	1	3
* 1 year 24 hour [illegible]		0 1 2 3	1	1	3
Distance to Surface Water		0 1 2 3	1	2	3
Flood Potential	[illegible]	0 1 2 3	2	2	6
			Subtotal	6	15
3 CONTAINMENT[1,2] (see sw 3)					
+ Containment	[illegible]	0 1 2 3	1	1	3
4 POTENTIAL FOR RELEASE					
Multiply site score from 2 by site score from 3. The product is site rating for this route		[illegible]	1	[illegible]	45
5 RELEASE					
Enter site score from 1 or 4				6	45
6 WASTE CHARACTERISTICS[1,3] (see sw 4)					
Physical State	Liquids	0 1 2 3	1	3	3
Toxicity/Persistence	Pesticides	0 1 2 3	2	6	6
Hazardousness	[illegible]	0 1 2 3	2	6	6
	Radioactive		Subtotal	15	15
7 HAZARDOUS WASTE QUANTITY[1] (see sw 5)					
Total Waste Quantity	4000 Tons	0 1 2 3 4 5	1	5	5
[illegible]					
8 TARGETS[1] (see sw 6)					
Surface Water Use	Major Drinking	0 1 2 3	3	9	9
Critical Habitats	[illegible]	0 1 2 3	2	4	6
[illegible]	Stocks & Game	0 1 2 3 4 5	6	30	30
			Subtotal	43	45
9 SURFACE WATER ROUTE SUBTOTAL					
A. Multiply 5 x 6 x 7 x 8				19,350	151,875
B. Multiply (A) by normalization factor of 0.64 and divide by 1,000			0.64	12.38 (9) Route Subtotal	97.2

12.4

ROUTE - AIR

Rating Factor	Basis of Information	Site Rating (Circle One)				Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE								
Evidence of Release	No Data	0		45		1	0	45
If the site score is zero the route subtotal score is zero, otherwise go to Step 2								
2 RELEASE								
Enter site score from 1								45
3 WASTE CHARACTERISTICS								
Physical State Volatility		0	1	2	3	1		3
Reactivity		0	1	2	3	1		3
Incompatibility		0	1	2	3	1		3
Toxicity Persistence		0	1	2	3	2		6
						Subtotal		15
4 HAZARDOUS WASTE QUANTITY								
Total Waste Quantity		0	1	2	3	4	5	1		5
(For Superfund prioritization excluding waste materials to be contained)								
5 TARGETS								
Distance to Nearest Population		0	1	2	3			2		6
Population within 1 Mile Radius		0	1	2	3	4	5	5		25
Critical Environments		0	1	2	3			2		6
Land Use		0	1	2	3			1		3
								Subtotal		40
6 AIR ROUTE SUBTOTAL								
A Multiply 2 x 3 x 4 x 5							0	135,000
B Multiply (A/5), normalization factor of 0.72 and divide by 1000						0.72	0 (B) Route Subtotal	97.2

*Only air monitoring data will be considered as evidence of release

ROUTE - FIRE AND EXPLOSION ← need all data

Rating Factor	Basis of Information	Site Rating (Circle One)	Multiplier	Site Score	Maximum Possible Score
1 ROUTE CHARACTERISTICS					
* [illegible]	No Data	0 | 15	1	0	15
2 CONTAINMENT					
Containment		0 | 3	1		3
3 POTENTIAL FOR RELEASE					
Multiply site score from 1 by site score from 2. The product is site rating for this route			1		45
4 RELEASE					
Enter site score from 3					45
5 WASTE CHARACTERISTICS					
[illegible]		0 | 1 | 2 | 3	1		3
[illegible]		0 | 1 | 2 | 3	1		3
[illegible]		0 | 1 | 2 | 3	1		3
			Subtotal		9
6 HAZARDOUS WASTE QUANTITY					
Total Waste Quantity		0 | 1 | 2 | 3 | 4 | 5	1		5
[illegible]					
7 TARGETS					
[illegible]		0 | 1 | 2 | 3 | 4 | 5	1		5
[illegible]		0 | 1 | 2 | 3	1		3
[illegible]		0 | 1 | 2 | 3	1		3
Land Use		0 | 1 | 2 | 3	1		3
[illegible]		0 | 1 | 2 | 3 | 4 | 5	1		5
[illegible]		0 | 1 | 2 | 3 | 4 | 5	1		5
			Subtotal		24
8 FIRE AND EXPLOSION ROUTE SUBTOTAL					
A Multiply 4 × 5 × 6 × 7				0	48 600
B Multiply (A) by normalization factor of 2.0 and divide by 1,000			2.0	0 (B) Route Subtotal	97.2

*The fire or explosion route [illegible] Marshal has confirmed that the site represents a high potential for fire and explosion effects to the public and to sensitive environment. However, any confirmation of fire and explosion threat based on field observation (e.g., explosimeter meter readings) will also be considered as sufficient evidence.

ROUTE - DIRECT CONTACT

Rating Factor	Basis of Information	Site Rating (Circle One)				Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE								
Evidence of Contact	[illegible]	0	45			1	[illegible]	45
If the site score is zero go to step 2. Otherwise go to step 5								
2 ROUTE CHARACTERISTICS								
Accessibility of Waste	Black Diamond Lake	0	(15)			1	15	15
3 CONTAINMENT								
Containment	[illegible]	0	1	(2)	3	1	2	3
4 POTENTIAL FOR RELEASE								
Multiply site score from 2 by site score from 3. The product is site rating for this route		[illegible]				1	30	45
5 RELEASE								
Enter site score from 1 or 4							[illegible]	45
6 WASTE CHARACTERISTICS								
Toxicity/Persistence	[illegible]	0	1	2	(3)	5	15	15
7 TARGETS								
Population Within 1 Mile Radius	[illegible]	0	1	2	3	4	[illegible]	20
Critical Habitat	[illegible]	0	1	(2)	3	2	[illegible]	6
Land Use	[illegible]	0	1	(2)	3	2	[illegible]	6
						Subtotal	[illegible]	32
8 DIRECT CONTACT ROUTE SUBTOTAL								
A. Multiply 5 x 6 x 7	[illegible]						[illegible]	21,600
B. Multiply [A] by Normalization Factor of 4.5 and divide by 1,000						4.5	[illegible]	97.2

*Health report certified by a physician will be considered as sufficient evidence

10	AGGREGATE SITE RATING		
Route	Route Subtotal from 6, 8 or 9	Route Subtotal Squared	Maximum Possible Score
Ground Water	7.56	57.15	$(97.2)^2 = 9447.84$
Surface Water	12.38	153.26	$(97.2)^2 = 9447.84$
Air	[illegible]	[illegible]	$(97.2)^2 = 9447.84$
Fire and Explosion	[illegible]	[illegible]	$(97.2)^2 = 9447.84$
Direct Contact	42.6	[illegible]	$(97.2)^2 = 9447.84$
Sum		2572.37	47239.2
Square root of Sum		50.72	217.35
Overall Score* $= \left(\frac{\sqrt{\text{sum}} \times 100}{217.35}\right)$ 16.29		23.34	100

8.62
Three [illegible]

*The overall score will be between 0 and 100 The Maximum Overall Score for a Site With Only One Exposure Route Is 44.7

RECORD OF COMMUNICATION	☐ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY) (Record of item checked above)
TO: Dave Crawford SPFD	FROM: Lyle Graker MDNR
	DATE 7/30/8/2/82
	TIME

SUBJECT

Westlake Lfl

SUMMARY OF COMMUNICATION

0 for Containment under SW

Lyle had called with a question regarding how dontainment of the Westlake Landfill should be scored ~~on~~ under the surface water route. He is doing a Mitre ranking of this site. Lyle said that the daily cover applied to the site is adequate. However the site is occasionally flooded. Diking surrounds the site. However the diking is apparently not high enough or sound enough to protect against all flooding. The landfill has apparently been flooded several times in recent years.

I read over the wording for containment under the surface water & was unsure how to score this site. The wordigg is confusing in that it says a landfill must have inadequate cover and have inadequate diversion to score high for inadequate containment. Beth checked with Steve Caldwell & said that the wording for contianment here was not properly written. Beth said that if the diversion system for the landfill is not adequate as eveidenced by recent flooding, they should probably score the site a 3 under containment for surface water. BEth said the wording should have been and/or or just and.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

Site: Westlake Ldfl
ID #: MOD079900932
Brock: 1.8
Other:

INFORMATION COPIES
TO:

EPA

EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 8300-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

Cross Reference of NPL-FR 9-2-87

Site: Westlake Landfill
ID #: MOD079900932
Break: 4.8
Other:

Adjusted Final NPL-11-10-2-15 8/90

National Priorities List

Superfund hazardous waste site listed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended in 1986

WESTLAKE LANDFILL
Bridgeton, Missouri

Conditions at listing (October 1989): Westlake Landfill covers 200 acres in Bridgeton, St. Louis County, Missouri, about 16 miles northwest of downtown St. Louis. The area is adjacent to prime agricultural land and is in the floodplain of the Missouri River. Between 1939 and the spring of 1987, limestone was quarried on the site. Starting in 1962, portions of the property were used for landfilling of solid and liquid industrial wastes, municipal refuse, and construction debris. In 1973, Cotter Corp. disposed of over 43,000 tons of uranium ore processing residues and soil in two areas covering a total of 16 acres of the Westlake Landfill, according to a Nuclear Regulatory Commission (NRC) report published in 1977.

In 1976, the Missouri Department of Natural Resources (MDNR) closed the unregulated landfill. Since then, MDNR has issued several permits for various portions of the 200-acre site. Currently, an operating sanitary landfill has a permitted area of 52 acres, and an operating demolition landfill has a permitted area of 22 acres.

Uranium was detected in on-site monitoring wells in tests conducted in 1985 and 1986 by a consultant to the owner of the landfill. An estimated 60 people obtain drinking water from private wells within 3 miles of the site.

Status (May 1990): EPA is monitoring investigations by NRC and Cotter Corp. of potential remedies for the site.

Site: Westlake LdFl
ID #: MOD079960232
Break: 1.8
Other:

WESTLAKE LANDFILL

Narrative Summary

The Westlake Landfill is located on the floodplain of the Missouri River near the City of Bridgeton, in St. Louis County, Missouri. The Bridgeton community has a population of about 18,000 people and is located adjacent to the site. The City of St. Charles, Missouri is also located in the site's vicinity. Scattered residences are located throughout the area. The landfill is located near prime agricultural land. Commercial and industrial sites are adjacent and near the landfill as well. The geology of the area is alluvial, with Missouri River deposits overlying limestone. Seven tons of uranium ore processing residues are known to have been deposited in the landfill. The extent of contamination by uranium has been well characterized, and consists of two areas within the landfill. Radioactivity has also been detected in the groundwater. The uranium is known to have been owned by Cotter Corporation at the time it was deposited. Pursuant to the Missouri Hazardous Waste Management Law, the site is listed on the Registry of Confirmed Abandoned and Uncontrolled Hazardous Waste Sites in Missouri.

Quality assured
August 2 1989
Dr. William A Cantrell Jr.

RCRA/NPL POLICY QUESTIONNAIRE FOR INITIAL SCREENING

Site Name Westlake Landfill

City Bridgeton State Missouri

Facility I.D. Number MOD079900932

Type of Facility: Generator____ Transporter____ TSD____

I. RCRA APPLICABILITY	yes	no
Does the facility have RCRA interim status?		X
Did the facility ever have RCRA interim status?		X
Does the facility have a final or post-closure permit? If so, date issued_____		X
Is the facility a non-notifier that has been identified by states or EPA?		X
Is the facility a known or possible protective filer?		X

STOP HERE IF ALL ANSWERS TO QUESTIONS IN SECTION I ARE NO

Quality Assured
August 2, 1989
Dr. William A Chartes

Facility name: Westlake Landfill

Location: Bridgeton, Missouri

EPA Region: VII

Person(s) in charge of the facility: Francis Baldwin*

13570 St. Charles Rock Road

Bridgeton, Missouri

Name of Reviewer: John Madras Date: February 8, 1989

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The Westlake Landfill has been an active landfill for over two decades. It is located on the Missouri River Flood plain in St. Louis County, Missouri. In addition to accepting sanitary refuse, it has also accepted wastes from chemical production facilities and unranium processing facility. Due to the observed release of uranium [illegible], the route of major concern is the groundwater route. The aquifer of concern is used as a drinking water supply for some local residents. Chemical and radiological data from water were used to score the site. This is a state lead site.

Scores: $S_M = 29.85$ ($S_{gw} = 51.02$ $S_{sw} = 8.00$ $S_a =$ NS)

$S_{FE} =$ NS

$S_{DC} =$ NS

NS=Not scored

FIGURE 1
HRS COVER SHEET

*Francis Baldwin is the registered agent for the owner and operator of Westlake Landfill.

Quality assured
August 2, 1989
Dr. William A Stanley Jr

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref (Section)
1 Observed Release	0 45	1	45	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
3 Containment	0 1 2 3	1		3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	8	8	
	Total Waste Characteristics Score		26	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	16	40	
	Total Targets Score		25	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			29250	57,330	
7 Divide line 6 by 57,330 and multiply by 100		S_{gw} = 51.02			

FIGURE 2
GROUND WATER ROUTE WORK SHEET

GAEd
8/2/89
WAG

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	0	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3		2	3	
1-yr. 24-hr. Rainfall	0 1 2 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 3	2	4	6	
Physical State	0 1 2 3	1	3	3	
Total Route Characteristics Score			11	15	
3 Containment	0 1 2 3	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	8	8	
Total Waste Characteristics Score			26	26	
5 Targets					4.5
Surface Water Use	0 1 2 3	3	6	9	
Distance to a Sensitive Environment	0 1 2 3	2	0	6	
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 / 12 16 18 20 / 24 30 32 35 40	1	0	40	
Total Targets Score			6	55	
6 If line 1 is 45, multiply 1 x 4 x 5 / If line 1 is 0, multiply 2 x 3 x 4 x 5			5148	64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} = 8.00			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

QAEd
8/2/89
WAC

NOT SCORED

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1		45	5.1
Date and Location:					
Sampling Protocol:					
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100		S_a =			

FIGURE 9
AIR ROUTE WORK SHEET

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8/2/89
WAC

	S	S^2
Groundwater Route Score (S_{gw})	51.02	2603.04
Surface Water Route Score (S_{sw})	8.00	64.00
Air Route Score (S_a)	———	———
$S_{gw}^2 + S_{sw}^2 + S_a^2$		2667.04
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		51.64
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		29.85

FIGURE 10
WORKSHEET FOR COMPUTING S_M

QAEd
8/2/89
WHC

Not Scored

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100	S_{FE} = N.S.				

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

QAed
8/2/89
WAG

Not Scored

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	0 45	1		45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 3	1		3	8.2
3 Containment	0 15	1		15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5		15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 5	4		20	
Distance to a Critical Habitat	0 1 2 3	4		12	
Total Targets Score				32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				21,600	
7 Divide line 6 by 21,600 and multiply by 100	S_{DC} =				

FIGURE 12
DIRECT CONTACT WORK SHEET

QAEd
8/2/89
WHC

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference.

FACILITY NAME: Westlake Landfill

LOCATION: 13570 St. Charles Rock Road, Bridgeton
St. Louis County, Missouri

DATE SCORED: July 17, 1989 (Revised)

PERSON SCORING: John Madras

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):

Missouri Department of Natural Resources (MDNR) Files
Nuclear Regulatory Commission reports
USGS Documents

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

Air Route
Direct Contact
Fire & Explosion

COMMENTS OR QUALIFICATIONS:

QAED
8/3/89
WAG

GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

Uranium in monitoring wells S-53, I-56, I-58, I-59, S-60, I-62, I-67, S-75, D-81, S-82, D-83, S-84, S-88, D-92, and D-93 (Reference 10, Appendix E)

Groundwater flow is generally to the northwest (Reference 10 page III-6 to 7) Well I-73 is located to the east of the facility and was chosen to represent background conditions. However it contains low level radiation which most likely originated from the site.

Further background wells were identified in the Burns & McDonnell hydrogeologic investigation report as wells D-89, S-53, S-52, S-51, D-90, S-80, I-50 and D-91. (Reference 10, page III-22 to 23) Contaminants were absent from all of these wells except S-80, I-73 and S-53. A review of Reference 10 indicated that wells S-51, S-52 and S-53 may not represent background all of the time, and that more water level readings were needed to determine if wells D-91 and I-50 (which are adjacent to well S-80) are outside of the area of influence of the landfill. (Reference 17)

The detection limit was 0.4 pCi/l for uranium (Reference 16). The Oak Ridge Associated Universities participates in rigorous quality assurance programs.

Score = 45 for Observed Release (Reference 5, page 9)

Rationale for attributing the contaminants to the facility:

Uranium ore processing residues are known to have been deposited in the landfill. (Reference 15, page 4) Groundwater monitoring in and around the landfill has established that radioactive material has entered the groundwater and that the contamination has reached perimeter wells. (Reference 1, page 11) No other source of the contaminant is located in the vicinity of the landfill. The contaminant was not detected in background wells except as noted above.

***

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WESTLAKE QUARRY LANDFILL

OBSERVED RELEASE DATA

Compound	Release/ Background	Well Number	Well Depth (feet)	Observed Concentration (PCi/l)
Uranium[1]	Release	S-53	23.7	22.0[2]
	Release	I-56	61.1	8.9
	Release	I-58	60.0	13.0
	Release	S-60	21.0	19.0
	Release	I-67	35.4	7.4
	Release	S-75	26.0	16.0
	Release	D-81	61.5	4.9
	Release	S-82	26.5	13.0
	Release	S-84	31.5	9.0
	Release	D-92	143.6	17.0
	Release	D-93	119.2	6.0
	Background	I-73	50.0	3.0

Underlined values represent significant observed releases of uranium.

[1] Sampling for uranium was conducted from May 7, 1986 through May 8, 1986. (Reference 10, pager II-7)

[2] The detection limit for uramium was 0.4 pCi/l. (Reference 16)

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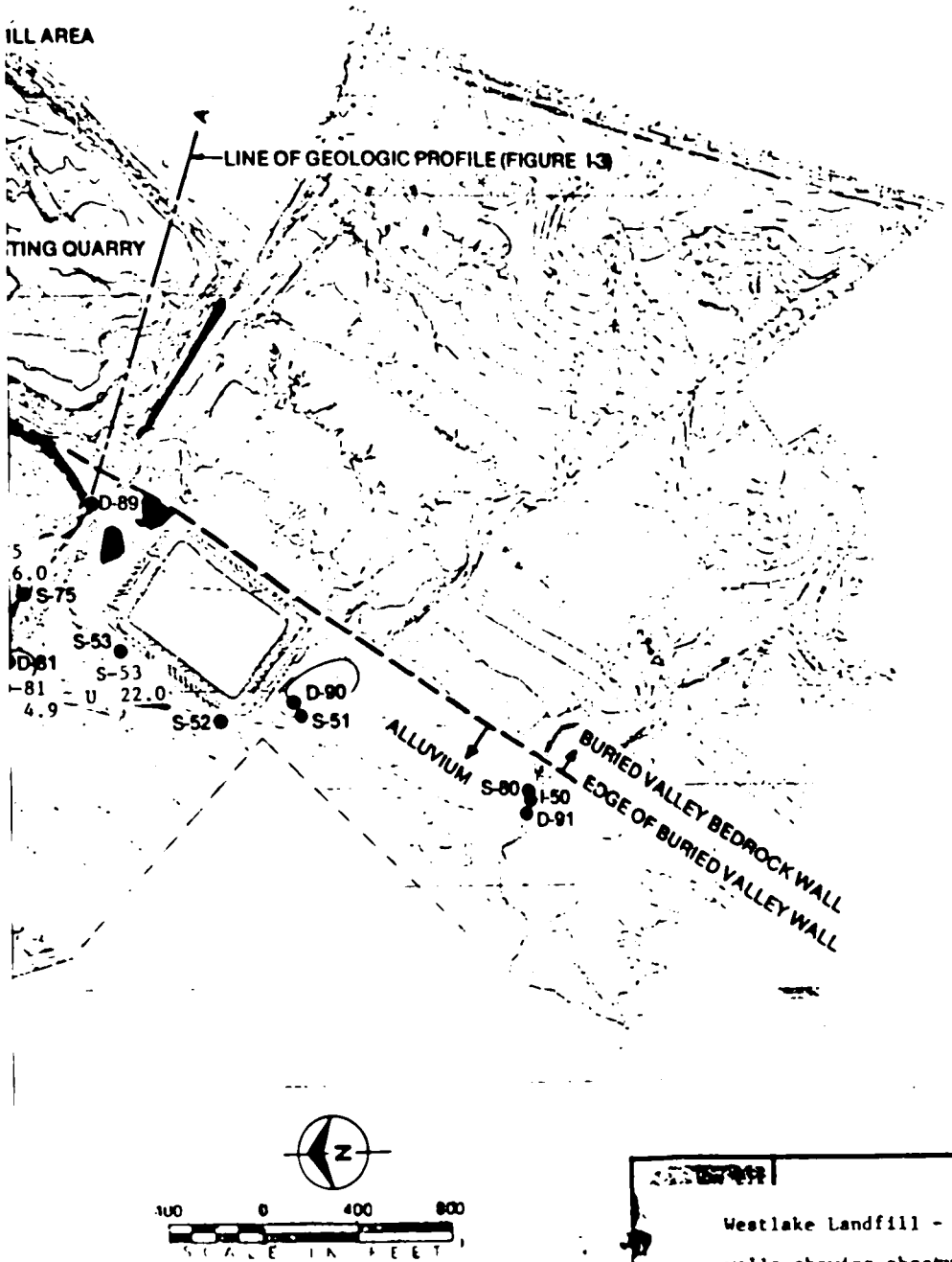
8/3/89
Dr. W A Chantrey



Westlake Landfill - Locations of wells showing observed release. (U = Uranium, pCi/l)

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The aquifer of concern is the Missouri River alluvium which consists of clay, silt and gravel. The alluvium includes thick deposits of glacial outwash and some river terrace deposits, and fills the deeply eroded bedrock channel formed by the Missouri River (Reference 10, page I-2). In general, the alluvium becomes coarser-grained with depth. (Reference 10, page I-3) The deep Missouri River alluvium, which is under about ten feet of more recent alluvium, acts as a single aquifer of very high permeability. This aquifer is relatively homogeneous in a downstream direction and decreases in permeability near the valley walls. A profile of the aquifer is presented in Reference 10 (page I-6). The depth of the aquifer increases from edge of the buried valley wall toward the Missouri River. It is 28 feet deep at well D-89 which is near the buried valley wall and increases to 110 feet at the riverward well D-83. Well logs show no discontinuities in the alluvial aquifer. (Reference 18) The groundwater of this aquifer flows generally to the northwest. (Reference 10, page III-6 to 7) The base of the limestone aquifer is formed by the relatively impermeable Warsaw shale. The Warsaw shale acts as an aquiclude. (Reference 1, page 6)

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Depth from the ground surface to the lowest point of waste disposal/storage:

***

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Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

Mean annual lake or seasonal evaporation (list months for seasonal):

Net precipitation (subtract the above figures):

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Permeability associated with soil type:

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

***

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3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Method with highest score:

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Uranium. Uranium is known to have been deposited at this site.

Compound with highest score:

Uranium.

Score = 18 For Toxicity/Persistence (Reference 5, page 18; Reference 6, page 3445)

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

The original amount of radioactive material was 8700 tons of barium sulfate sludge containing 7 tons of uranium ore processing waste. This was mixed with 39,000 tons of soil before being deposited in the landfill. (Reference 15, page 4) The material had been stored by Cotter Corporation under Nuclear Regulatory Commission license at 9200 Latty Avenue, Hazelwood, Missouri. This waste was originally reported to have been disposed at St. Louis County sanitary landfill area No. 1 (Reference 15, page 2) A subsequent NRC investigation clarified that a total of over 43,000 tons of waste were removed from the Latty Avenue site and that htis material was dumped at the Westlake Landfill. (Reference 15, page 3)

Score = 8 for Hazardous Waste Quantity (Reference 5, page 19)

Basis of estimating and/or computing waste quantity:

The amount of radioactive material was known at the time of disposal, as described above. (Reference 15, page 4)

***

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5. TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

There are at least fifteen known private drinking water wells within three miles of the facility. Groundwater is being used as a drinking water source, for other domestic purposes and for irrigation. (Reference 1, page 6; Reference 7, map; Reference 12; Reference 13; Reference 20)

No municipal water from alternative unthreatened sources is presently available to these users. (Reference 14)

Score = 3 for Ground Water Use (Reference 5, page 24)

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

The nearest well is about 2500 feet from the facility. (Reference 20) Seventeen additional wells are within three miles of the facility. (Reference 7, map; Reference 12; Reference 13)

Distance to above well or building:

The nearest well is about 2500 feet from the facility. (Reference 20, map; Reference 9, map showing distance)

Score = 3 for Distance to Nearest Well (Reference 5, page 26)

Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

At least fifteen wells provide drinking water. (Reference 12 identifies eleven homes and two businesses; Reference 7 shows two additional wells not documented in Reference 12) The human population estimated to be served is at least 57. (Homes and businesses identified by References 7 and 12 times 3.8)

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Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

At least 480 acres of cropland (rowcrops and produce) are irrigated from wells within the three mile radius. (Reference 13) The population equivalent is 720 people.

Total population served by groundwater within a 3-mile radius:

The population served by groundwater is at least 777.

Score = 2 for Population Served (Reference 5, page 27)

Score = 16 for Distance to Nearest Well/Population Served (Reference 5, page 25)

***

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SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

None.

Score = 0 for Observed Release (Reference 5, page 29)

Rationale for attributing the contaminants to the facility:

Surface water was not sampled.

***

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

Radioactive gases have been detected in the atmosphere above the landfill. (Reference 3, page 17) Buried deposits extend in excess of 20 feet in depth from the highest point of detection. They are also present on the surface of the sideslope of the landfill where they are available for migration by overland flow. (Reference 3, page 42) The slope from the top of the landfill to the location where the subsurface radioactive deposit intersects the sideslope is about 20%. The top of the landfill slopes less than 1 percent. (Reference 10, page I-6)

Name/description of nearest downslope surface water:

An unnamed, permanently flowing tributary to the Missouri River drains the site. The tributary is located about 1000 feet west of the landfill. (Reference 9)

Average slope of terrain between facility and above-cited surface water body in percent:

The landfill slopes directly to drainage ditches, which discharge to the tributary. Average slope between lowest point of documented contamination on the landfill sideslope (elevation 460 feet) and the tributary is about 4 percent. The elevation of the surface water was determined to be 440 feet. (Reference 3, page 42; Reference 9; Reference 10, page I-6)

Score = 2 for Facility Slope and Intervening Terrain (Reference 5, page 31)

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Is the facility located either totally or partially in surface water?

No. (Reference 9)

Is the facility completely surrounded by areas of higher elevation?

No. (Reference 9)

1-Year 24-Hour Rainfall in Inches

2.9" (Refeence 5, page 33)

Score = 2 for 1-Year 24-Hour Rainfall (Reference 5, page 32)

Distance to Nearest Downslope Surface Water

The landfill is about 1000 feet from the tributary and about 1.25 miles from the Missouri River. (Reference 9)

Score = 2 for Distance to Nearest Downslope Surface Water (Reference 5, page 32)

Physical State of Waste

Radioactive gases have been detected above the landfill surface. (Reference 3, page 17) The buried radioactive material intersects the surface of the ladfill sideslope. (Reference 3, page 42) Radon is water soluble and is available to wash into surface waters from the landfill. (Reference 1, page 10)

Score = 3 for Physical State of Waste (Reference 5, page 16)

***

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Some of the radioactive contaminated soil is at or near the surface of the landfill. (Reference 1, page 5)

Method with highest score:

Landfill not covered and no diversion system present.

Score = 3 for Containment (Reference 5, page 35)

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4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Uranium. Uranium is known to have been deposited at this site, and has been detected on the surface of the sideslope of the landfill (Reference 3, page 42).

Compound with highest score:

Uranium.

Score = 18 for Toxicity/Persistence (Reference 5, page 18; Reference 6, page 3445)

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

The original amount of radioactive material was 8700 tons of barium sulfate sludge containing 7 tons of uranium ore processing waste. This was mixed with 39,000 tons of soil before being deposited in the landfill. (Reference 15, page 4) The material had been stored by Cotter Corporation under Nuclear Regulatory Commission license at 9200 Latty Avenue, Hazelwood, Missouri. This waste was originally reported to have been disposed at St. Louis County sanitary landfill area No. 1 (Reference 15, page 2) A subsequent NRC investigation clarified that a total of over 43,000 tons of waste were removed from the Latty Avenue site and that htis material was dumped at the Westlake Landfill. (Reference 15, page 3)

Score = 8 for Hazardous Waste Quantity (Reference 5, page 19)

Basis of estimating and/or computing waste quantity:

The amount of radioactive material was known at the time of disposal, as described above. (Reference 15, page 4)

***

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

The Missouri River has state-designated beneficial uses of irrigation, livestock and wildlife watering, protection of aquatic life, commercial fishing, boating, and drinking water, and industrial water supplies. (Reference 4, page 57) No beneficial uses are specifically designated for

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TC/HC

the permanently flowing tributary of the Missouri River that drains the landfill area. (Reference 4) No water supply intake is located within 3 miles downstream of the hazardous substance.

Score = 2 for Surface Water Use (Reference 5, page 34)

Is there tidal influence?

No. (Reference 9)

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

NA (Reference 9)

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Areas of freshwater wetlands may be present within one mile of the facility. (Reference 9)

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

NA

Score = 0 for Distance to a Sensitive Environment (Reference 5, page 37)

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

None.

Score = 0 for Population Served/Distance to Water Intake Downstream (Reference 5, page 38)

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Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

There is no known irrigation from the permanently flowing stream which drains the landfill area.

Total population served:

NA

Name/description of nearest of above water bodies:

NA

Distance to above-cited intakes, measured in stream miles.

NA

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RAJ

AIR ROUTE

Not Scored

1. OBSERVED RELEASE

Contaminants detected:

Date and location of detection of contaminants

Methods used to detect the contaminants:

Rationale for attributing the contaminants to the site:

***

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Most incompatible pair of compounds:

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Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

* * *

3. TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

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Distance to critical habitat of an endangered species, if 1 mile or less:

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

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FIRE AND EXPLOSION

Not Scored

A score for the fire and explosion hazard mode has not been computed. Neither a state or local fire marshal has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments. Field observations have not demonstrated a fire or explosion threat.

1. CONTAINMENT

Hazardous substances present:

Type of containment, if applicable:

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

Ignitability

Compound used:

Reactivity

Most reactive compound:

Incompatibility

Most incompatible pair of compounds:

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WAG

* * *

REFERENCES

If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of the Reference
1.	U. S. Nuclear Regulatory Commission, Radioactive Material in the West Lake Landfill, Summary Report, NUREG-1308, Rev.1, June 1988.
2.	U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of St. Louis County and St, Louis City, Missouri, May 1982.
3.	Radiation Management Corporation, Radiological Survey of the West Lake Landfill, St. Louis County, Missouri, NUREG/CR-2722, U.S. Nuclear Regulatory Commission, May 1982.
4.	Missouri Code of State Regulations, Rules of the Clean Water Commission, Chapter 7, Water Quality Standards, 10 CSR 20-7.031.
5.	U.S. Environmental Protection Agency, Uncontrolled Hazardous Waste Site Ranking System - A User's Manual, 1984.
6.	Sax, N. Irving and Lewis, J., Sr., Dangerous Properties of Industrial Materials, Seventh Edition. Van Nostrand Reinhold, New York. 1989.
7.	Scott A. Meierotto letter to West Lake Quarry with map attachment, dated January 14, 1982.
8.	Roy D. Blunt, Missouri Secretary of State, Official Manual State of Missouri 1987-1988.
9.	U.S. Geological Survey, St. Charles, Missouri; 7.5 minute quadrangle map, revised 1974.
10.	Burns & McDonnell, Hydrogeologic Investigation West Lake Landfill Primary Phase Report, October 1986.
11.	EPA Forms 8900-1, Notification of Hazardous Waste Site, filed by various waste haulers who deposited solid waste in Westlake Landfill.
12.	Mike Struckhoff, Memo to John Madras, dated June 30, 1989.
13.	John Madras, Memo to Westlake Quarry Landfill File, dated July 14, 1989.
14.	Record of phone conversation between Dave Pruitt, St. Louis County Water Co., and John Madras, dated June 6, 1989.

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8/2/89
MAC

REFERENCES (Continued)

Reference Number	Description of the Reference
15.	U. S. Nuclear Regulatory Commission, IE Investigation Report No. 76-01, dated January 5, 1977.
16.	Record of phone conversation between Clayton Weaver, Oak Ridge Associated Universities and John Madras, dated July 18, 1989.
17.	Janese Neher, Memo to Miles H. Stotts, dated June 16, 1989.
18.	Division of Geology and Land Survey, Well Logs of the Missouri River Floodplain of St. Louis County north of Route 115.
19.	Record of phone conversation between John Meadows and Lynn Hartman, and John Madras dated July 26, 1989.
20.	Record of phone conversation between Mike Struckhoff and John Madras, dated July 26, 1989.

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DIRECT CONTACT

Not Scored

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

* * *

2. ACCESSIBILITY

Describe type of barrier(s)

* * *

3. CONTAINMENT

Type of containment, if applicable:

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Compound with highest score:

* * *

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Ref. b.

Dangerous Properties of Industrial Materials

Seventh Edition

Volume III

N. IRVING SAX

and

RICHARD J. LEWIS, SR.

VAN NOSTRAND REINHOLD
NEW YORK

SYNS:

2,4-DIHYDROXYPYRIMIDINE	2,4-PYRIMIDINEDIONE
2,4-DIOXOPYRIMIDINE	2,4(1H,3H)-PYRIMIDINEDIONE (9CI)
HYBAR X	
PIROD	PYROD
2,4-PYRIMIDINEDIOL	

TOXICITY DATA:	CODEN:
pic-esc 1 g/L	ZAPOAK 12,583,72
cyt-mus-ipr 15 ng/kg	NULSAK 19,40,76
orl-rat TDLo 18 g/kg (17-22D preg/21D post) REP	OYYAA2 22,109,81
orl-rat TDLo 616 mg/kg (7-17D preg) REP	OYYAA2 22,85,81
orl-rat TDLo 378 g/kg/30W-C: ETA	CNREA8 46,2062,86
ipr-mus LD50 1513 mg/kg	JPETAB 207,504,78

EPA Genetic Toxicology Program. Reported in EPA TSCA Inventory.

THR: Moderately toxic by intraperitoneal route. An experimental tumorigen. Experimental reproductive effects. Mutagenic data. When heated to decomposition it emits toxic fumes of NO_x.

UNJ810 *HR: 3*

URACIL mixture with TEGAFUR (4:1)

CAS: 74578-38-4 NIOSH: YR 0450000

mf: $C_8H_9FN_2O_3 \cdot 4C_4H_4N_2O_2$ mw: 648.59

SYNS:

FT mixture with URACIL (1:4)	UFT
TEGAFUR mixture with URACIL (1:4)	URACIL mixture with FT (4:1)
1-(2-TETRAHYDROFURFURYL)-5-FLUOROURACIL mixture with URACIL (1:4)	URACIL mixture with 1-(2-TETRAHYDROFURFURYL)-5-FLUORO-URACIL (4:1)

TOXICITY DATA:	CODEN:
orl-rat TDLo 713 mg/kg (7-17D preg) TER	OYYAA2 22,85,81
orl-rat TDLo 891 mg/kg (7-17D preg) REP	OYYAA2 22,85,81
orl-rat TDLo 2503 mg/kg (17-22D preg/21D post) TER	OYYAA2 22,109,81
orl-rat LD50 1580 mg/kg	OYYAA2 20,1009,80
orl-mus LD50 1275 mg/kg	OYYAA2 20,1009,80
orl-dog LD50 150 mg/kg	OYYAA2 20,1009,80
orl-rbt LD50 242 mg/kg	OYYAA2 20,1005,80

THR: Poison by ingestion. An experimental teratogen. Experimental reproductive effects. When heated to decomposition it emits toxic fumes of F^- and NO_x. See also URACIL.

UNS000 *HR: 3*

URANIUM

CAS: 7440-61-1 NIOSH: YR 3490000

DOT: 2979

af: U aw: 238.00

PROP: A heavy, silvery-white, malleable, ductile, softer-than-steel, metallic element. Mp: 1132°, bp: 3818°, d: 18.95 (ca). Radioactive material.

SYN: URANIUM METAL, PYROPHORIC (DOT)

Reported in EPA TSCA Inventory.

OSHA PEL: TWA 0.25 mg(U)/m^3

ACGIH TLV: TWA 0.2 mg(U)/m^3, STEL 0.6 mg(U)/m^3

DFG MAK: 0.25 mg/m^3

DOT Classification: Radioactive Material, Label: Radioactive and Flammable

THR: A highly toxic element on an acute basis. The permissible levels for soluble compounds are based on chemical toxicity, while the permissible body level for insoluble compounds is based on radiotoxicity. The high chemical toxicity of uranium and its salts is largely shown in kidney damage which may not be reversible. Acute arterial lesions may occur after acute exposures. The most soluble uranium compounds are UF_6, $UO_2(NO_3)_2$, UO_2Cl_2, UO_2F_2, and uranyl acetates, sulfates, and carbonates. Some moderately soluble compounds are UF_4, UO_2, UO_4, $(NH_4)_2U_2O_7$, UO_3, and uranyl nitrates. The rapid passage of soluble uranium compounds through the body tends to allow relatively large amounts to be taken in. Soluble uranium compounds may be absorbed through the skin. The least soluble compounds are high-fired UO_2, U_3O_8, and uranium hydrides and carbides. The high toxicity effect of insoluble compounds is largely due to lung irradiation by inhaled particles. This material is transferred from the lungs of animals quite slowly.

A very dangerous fire hazard in the form of a solid or dust when exposed to heat or flame. It can react violently with air, Cl_2, F_2, HNO_3, NO, Se, S, water, NH_3, BrF_3, trichloroethylene, nitryl fluoride. During storage it may form a pyrophoric surface due to effects of air and moisture. Depleted uranium (the ^{238}U-by-product of the uranium enrichment process, with relatively low radioactivity) is used in armor-piercing shells, ship or aircraft ballast, and counterbalances. Uranium is also used in making colored ceramic glazes.

UOA000 *HR: 3*

URANIUM AZIDE PENTACHLORIDE

CAS: 55042-15-4

mf: Cl_5N_3U mw: 457.32

THR: A radioactive material. An explosive. When heated to decomposition it emits very toxic fumes of Cl^- and NO_x. See also URANIUM and AZIDES.

UOB100 *HR: 3*

URANIUM CARBIDE

CAS: 12070-09-6

mf: UC mw: 250.04

THR: A radioactive material. The powdered carbide ignites spontaneously in air. See also URANIUM.

A-90-102

WATS control
Superfund 2wks

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation, and Historic Preservation

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176
Jefferson City, MO 65102

June 29, 1990

Mr. David Wagoner, Director
Waste Management Division
U.S. EPA, Region VII
726 Minnesota Avenue
Kansas City, KS 66101

Dear Mr. Wagoner:

I was very pleased to note that the U.S. Environmental Protection Agency (EPA) proposed in October of 1989 to place the Westlake Landfill Site on the National Priorities List (NPL). I also understand that in October of 1989 the U.S. Nuclear Regulatory Commission (NRC) initiated an enforcement action against the Cotter Corporation as the responsible party in regard to the low-level radioactive waste at the site. The Missouri Department of Natural Resources (MDNR) has been concerned about this site for over ten years and I am encouraged to see activity begin which will lead to a cleanup.

However, I am concerned that these two federal actions seem to be completely separate and totally uncoordinated. Negotiations between the NRC and the Cotter Corporation have been taking place since October of 1989, but neither the EPA nor the MDNR have been a party to these negotiations. Since there appear to be other uncontrolled nonradioactive hazardous substances at the site, I believe that it is essential that any further investigations and actions be coordinated with all appropriate state and federal agencies. Unilateral actions could make the eventual cleanup more difficult and expensive.

I would like to inquire as to the present status of the proposed NPL listing and your estimate as to date of the final listing. I assume that listing on the NPL will allow you to assume the role of lead agency and coordinator on this project. Therefore, I urge that this listing be finalized as soon as possible.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

David A. Shorr
Director

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JUL 11 1990
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cc: Mr. Tracy Mehan, MDNR
Mr. Ron Kucera, MDNR
Mr. David Bedan, MDNR
Mr. Nick Di Pasquale, MDNR
Mr. Jerry Swift, NRC

Site: Westlake Ldfl.
ID #: MOD 079900932
Break: 1.8
Other:

AUG 02 1990

Mr. David A. Shorr
Director
Division of Environmental Quality
P.O. Box 176
Jefferson City, MO 65102

Dear Mr. Shorr:

In response to your letter dated June 29, 1990, Westlake Landfill was proposed for inclusion on the National Priorities List (NPL) on October 26, 1989. EPA Headquarters currently anticipates publishing Final Rule 9, which will result in the promulgation of Westlake Landfill on the NPL, in the Federal Register later this month.

We share your concerns regarding the Westlake Landfill, and agree that further investigations and actions should be coordinated with all appropriate state and federal agencies. We are currently undertaking discussions with our Office of Regional Counsel to determine the most appropriate approach to identifying and addressing the various contaminants and potentially responsible parties associated with the site. At this time, we anticipate assuming the role as the lead regulatory agency. However, we would welcome any input you wish to provide concerning the site.

If you have any questions or comments regarding the Westlake Landfill, please contact me at (913)551-7670 or Diana Newman of my staff at (913)551-7887.

Sincerely yours,

David A. Wagoner
Director
Waste Management Division

WSTM:SPFB:SAFB:NEWMAN:final:bm:8/1/90:Disk 1:wlndnr

SAFE	SAFE	SAFE	SPFD	WSTM
NEWMAN	MCCABE	FLOURNOY	MORBY	WAGONER
8/1/90	8/1/90	8/1/90		

RECEIVED

JUL 1 1 1990

SUPERFUND BRANCH

WASTE MANAGEMENT DIVISION
ACTION REQUEST SCHEDULE

Lauer

DATE: 07/11/90

TYPE/NUMBER:	BRANCH:	ORIGINATOR:
A-90-102	SPFD	Wagoner

SUBJECT/DATE: Letter from David Shorr, MDNR, re: EPA proposal to place Westlake Landfill Site on the NPL and NBC enforcement action against Cotter Corp.

ACTION REQUESTED:

COMMENTS/RESPONSE:

DATE DUE:	DATE COMPLETED:
~~07/23/90~~ 8/1/90 per ltr	8/1/90 Logged out of WATS

Site: Westlake Ldfl
ID #: MOD079900932
Break: 1.8
Other:

ROUTING AND TRANSMITTAL SLIP

Date: 8/23/90

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Wanda Thomas, OPE		
2.		
3.		
4.		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

The Final Rule 9 decision was signed late Wednesday afternoon about 4:15pm, August 22, 1990. A press release is scheduled next Tuesday, August 28th. The status pertaining to each site will be published in the Federal Register next Wednesday, August 29th 1990. The docket will be mailed out to our office on Monday, August 27th. I should receive it on Tuesday, August 28th.

See attached sheet for the sites involved in this action.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post) Karla Asberry

Room No.—Bldg.

Phone No.

5041-102 ☆ U.S. GPO: 1986—181-046/60013

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

National Priorities List,
New Final Sites
By EPA Region
August 1990

EPA Reg	St	Site Name	City/County
07	IA	E.I. Du Pont de Nemours & Co., Inc. (County Road X23)	West Point
07	IA	Fairfield Coal Gasification Plant	Fairfield
07	IA	Farmers' Mutual Cooperative	Eagle Grove
07	IA	Iowa Army Ammunition Plant	Middletown
07	IA	Lehigh Portland Cement Co.	Mason City
07	IA	Northwestern States Portland Cement Co.	Mason City
07	IA	Peoples Natural Gas Co.	Dubuque
07	IA	Shelter-Globe Corp. Disposal	Keokuk
07	IA	White Farm Equipment Co. Dump	Charles City
07	KS	Fort Riley	Junction City
~~07~~	~~MO~~	~~Sindett Corp.~~	~~St. Charles~~ will not be dropped
07	MO	Oronogo-Duenweg Mining Belt	Jasper County
07	MO	Westlake Landfill	Bridgeton
07	NE	10th Street Site	Columbus
07	NE	Nebraska Ordnance Plant (Former)	Mead

Total Number of Sites: 15

State top priority site

~~** Site being dropped from consideration for the NPL, subject to RCRA Subtitle C~~

TOTAL P.04

Site: Westlake Ldfl
ID #: MOD079980932
Break: 1.8
Other:

National Priorities List

Superfund hazardous waste site listed under the
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended in 1986

WESTLAKE LANDFILL
Bridgeton, Missouri

Westlake Landfill covers 200 acres in Bridgeton, St. Louis County, Missouri, about 16 miles northwest of downtown St. Louis. The area is adjacent to prime agricultural land and is in the floodplain of the Missouri River. Between 1939 and the spring of 1987, limestone was quarried on the site. Starting in 1962, portions of the property were used for landfilling of solid and liquid industrial wastes, municipal refuse, and construction debris. In 1973, Cotter Corp. disposed of over 43,000 tons of uranium ore processing residues and soil in two areas covering a total of 16 acres of the Westlake Landfill, according to a Nuclear Regulatory Commission (NRC) report published in 1977.

In 1976, the Missouri Department of Natural Resources (MDNR) closed the unregulated landfill. Since then, MDNR has issued several permits for various portions of the 200-acre site. Currently, an operating sanitary landfill has a permitted area of 52 areas, and an operating demolition landfill has a permitted area of 22 acres.

Uranium was detected in on-site monitoring wells in tests conducted in 1985 and 1986 by a consultant to the owner of the landfill. An estimated 60 people obtain drinking water from private wells within 3 miles of the site.

EPA

United States
Environmental Protection
Agency

Office of Emergency &
Remedial Response
Washington, DC 20460

HW-8.20
October 1989

DESCRIPTIONS OF 25 SITES IN PROPOSED UPDATE #10 TO THE NATIONAL PRIORITIES LIST

This document consists of descriptions of 25 sites proposed in October 1989 as Update #10 to the National Priorities List (NPL). Sites are arranged alphabetically by State and by site name.

The size of the site is generally indicated based on information available at the time the site was scored using the Hazard Ranking System. The size may change as additional information is gathered on the sources and extent of contamination.

Remedial Actions Under Superfund

The Superfund program is authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA), enacted on October 17, 1986. Under SARA, the Hazardous Substances Superfund pays the costs not assumed by responsible parties for cleaning up hazardous waste sites or emergencies that threaten public health, welfare, or the environment. The Superfund program is managed by the U.S. Environmental Protection Agency (EPA).

Two types of responses may be taken when a hazardous substance is released (or threatens to be released) into the environment:

- o Removal actions, emergency-type responses to imminent threats. SARA limits these actions to 1 year and/or $2 million, with a waiver possible if the actions are consistent with remedial actions. Removal actions can be undertaken by the private parties responsible for the releases or by the Federal Government using the Superfund.

- o Remedial responses, actions intended to provide permanent solutions at abandoned or uncontrolled hazardous waste sites. Remedial responses are generally longer-term and more expensive than removals. A Superfund remedial response can be taken only if a site is on the NPL. After publishing two preliminary lists and proposing a formal list, EPA published the first NPL in September 1983. The list must be updated at least annually.

The money for conducting a remedial response or removal action at a hazardous waste site can come from several sources:

- o The individuals or companies responsible for the problems can clean up voluntarily with EPA or State supervision.

- o The responsible party or parties can be forced to clean up by Federal or State legal action.

- o A State or local government can choose to assume the responsibility to clean up without Federal dollars.

- EPA can take the lead under a Superfund State Contract, with the State having an advisory role. EPA, generally using contractor support, manages work early in the planning process. In the later design and implementation (construction) phases, contractors do the work under the supervision of the U.S. Army Corps of Engineers. Under both arrangements, the State must share in the cost of the implementation phase of cleanup. EPA expects this phase to average out at about $13.5 million per site, plus any costs to operate and maintain the remedial action.

10/19/89

NOTIFICATION PLAN

UPDATE #10 TO THE NATIONAL PRIORITIES LIST (NPL)

Prior to signature on Federal Register package

Headquarters communications network (OERR, OEA Coordinator, OPA, OCL, OCIR, OFA, AA/IO, Office of the Administrator) meets to coordinate information, develop materials, and plan communications activities for the NPL update. During the weeks preceding the public announcement, Regional NPL Coordinators and Public Affairs Directors also should meet to discuss/brief others on sites to be proposed.

Day 1

o SIGNATURE (NPL Update #10 - Cannon)
(timed with completion of information materials to be sent to Regions)

o HSED notifies appropriate HQ offices (OEA, hotline, docket)

o OEA (Bullard) notifies OPA, OCL, OFA, OCIR, OA, OR

o Calls to Regional NPL Coordinators (HSED) and Regional Public Affairs Directors (HQ OPA) to officially identify sites and confirm signature date. (The Regions will be aware prior to this notification. The call will serve as confirmation of sites to be listed in the Federal Register notice.)

o Regions alert appropriate State personnel of sites to be listed.

o Materials:
Q & A
background information (2 sections)
narrative summary for each site
press release
notification strategy
sent to Regional OPA Directors (HQ OPA), NPL Coordinators (HSED), and Superfund Community Relations Coordinators (HSCD) (overnight mail/allow two days).

o E-mail to Regional Administrators (notice that materials are being sent to OPA/NPL Coordinators) (HQ/ORO).

Day 2/3 (depending on receipt of overnight mail)

o Regions (OPA/NPL coordinators) receive materials - provide copies to appropriate Regional offices and States

o Docket index, concurrence memos, HRS packages mailed by Superfund Docket clerk to Regions (by Express Mail).

o Information packages delivered to Hill on evening of Day 3 for early morning distribution on Day 4. (HQ/OCL). They are provided to Members with site-specific interest and key committee staff (Senate Environment and Public Works; House Energy and Commerce).

Day 4

o Notifications for appropriate members of Congress (following early morning distribution of materials) and calls to Members' DC offices, when appropriate. Information will be provided to Members with sites in their districts and key Committees (HQ/OCL). Regions should make OCL aware of any special calls they would like to have HQ make.

o Press release issued (HQ OPA)

o Notification of Federal agencies, as appropriate (HQ/OFA)

o Materials provided to RCRA/Superfund Hotline (HSED)

o Notice of actions in OCIR update/press release and fact sheets or Q&A sent to DC Governors' offices with appropriate site summaries/calls if appropriate (HQ OCIR)

Day 5+

o Publication in **Federal Register**

o Provide Federal Register citation to NPL Coordinators (HSED)

Special Considerations

o All sites being proposed have HRS scores of 28.50 or above.

CONTACTS

Karen Burgan OSWER communications coordinator	382-4617
Susan Sladek OERR communications coordinator	382-2180
Susan Bullard OEA communications coordinator	382-5660
Stacey Lupton OCL communications coordinator	382-5660
Barbara Ramsey, OFA	475-8792
Mary Mears, OPA	382-4355
Terry Feldman, OCIR	382-4454
Penny Hansen, OERR, HSED	475-8103
Marti Otto, OERR, HSED (NPL Update #10)	382-6941

Acronyms

AA/DAA/OSWER - Assistant Administrator/Deputy Assistant Administrator/Office of Solid Waste and Emergency Response (signature on NPL Update Federal Register packages is currently delegated to the DAA/OSWER)
AA/IO - Immediate Office of OSWER
HQ - EPA Headquarters
HSCD - Hazardous Site Control Division
HSED - Hazardous Site Evaluation Division
NCP - National Contingency Plan
NPL - National Priorities List
OA - Office of the Administrator
OCIR - Office of Community and Intergovernmental Relations
OCL - Office of Congressional Liaison
OEA - Office of External Affairs
OERR - Office of Emergency and Remedial Response
OFA - Office of Federal Activities
OPA - Office of Public Affairs
ORO - Office of Regional Operations

NOTE:
Materials are being provided to the Regions for copying and use by appropriate offices immediately upon completion.

10/19/89

SUMMARY

NPL UPDATE #10 - Proposed Rule

The National Priorities List (NPL), established under the National Contingency Plan (NCP), identifies known or threatened releases. The primary purpose of the NPL is to guide EPA and the States in determining which sites need further investigation under CERCLA.

Candidate sites are submitted by States and Regions and may be proposed for the NPL if they score at least 28.50 on the Hazard Ranking System (HRS). A State also may designate one site, regardless of its score, as the State's top priority site. Finally, the NCP has been amended to allow a site to be placed on the NPL based on an ATSDR health advisory. All sites in this update have HRS scores of 28.50 or above.

When sites are proposed for the NPL, EPA provides a 60-day public comment period, during which interested parties have the opportunity to comment on the technical and policy issues involved in placing a particular site on the NPL. EPA must evaluate these comments before making a final listing decision on a site and must respond to each comment when a final decision is made. EPA's responses appear in a written Support Document, available in the Headquarters and Regional EPA dockets, when final decisions on sites are made.

This rule proposes to add 25 sites to the NPL, including 2 Federal facility sites. These sites meet the NPL eligibility criteria and listing policies. Of particular relevance to this rulemaking are the special study waste requirements and the mining waste policy.

- Total number of sites being proposed - 25
- Number of Federal facility sites - 2
- Number of landfills that accepted municipal waste - 5
- Number of special study waste sites - 1
- Number of mining sites - 1

See Q & A for NPL proposed Update #10 for additional information.

NPL Proposed Update #10 Questions and Answers

1. Q. How many sites are being proposed for the National Priorities List (NPL) in Update #10?

A. In this final rule, 25 sites are being proposed for the NPL. Based on this action, there are currently 238 sites proposed to the NPL and 981 final sites, for a total of 1,219 NPL sites.

2. Q. Are any Federal facility sites included in this update?

A. Yes. The following 2 Federal facility sites are included in this update:

- Ellsworth Air Force Base, Rapid City, South Dakota
- New London Submarine Base, New London, Connecticut

With these proposals, 65 Federal facility sites currently are proposed for the NPL and 52 Federal facility sites are on the final NPL.

3. Q. Are any special study waste sites included in this proposal?

A. Yes. This update includes the following special study waste site that contains mining wastes:

- Carson River Mercury Site, Lyon and Churchill Counties, Nevada

4. Q. How many municipal landfills are included in this proposed update?

A. This proposed update includes 5 landfills that accepted municipal waste.

5. Q. Does EPA plan to propose any additional sites under the current HRS?

A. The Agency will continue to assess the need for additional NPL updates before the effective date of the revised HRS, in keeping with Congressional intent, expressed in the Conference Report on SARA, that the current HRS shall continue in force "until the new regulations are <u>in effect</u>."

6. Q. How long is the comment period for Update #10 sites?

A. The comment period is 60 days from date of publication in the Federal Register. In the past, EPA has considered, to the extent practicable, late comments, i.e., comments postmarked after the last day of the comment period. For proposed Update #10, EPA will read all comments received, including late comments, and will respond to comments mailed within the comment period. However,

given the need to make final decisions on all currently proposed sites prior to the date that the revised HRS takes effect, it is unlikely that EPA will be able to respond to all late comments received for sites in this proposed rule.

EPA

United States
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Office of Emergency &
Remedial Response
Washington, DC 20460

HW-10.11
October 1989

BACKGROUND INFORMATION:
NATIONAL PRIORITIES LIST, PROPOSED UPDATE #10

The U.S. Environmental Protection Agency (EPA) is proposing 25 sites, including 2 Federal facility sites, as Update #10 to the National Priorities List (NPL). Of the States and Territories, 19 are proposing sites. Nevada is proposing its first site. This brings the number of proposed sites to 238, including 65 in the Federal facility section.

Final sites now total 981, including 52 in the Federal facility section. Final and proposed sites total 1,219 including 117 Federal facility sites. New Jersey has the largest number of final and proposed sites (109), followed by Pennsylvania (97) and California (91).

The proposed sites are subject to public comment for 60 days following publication of the proposal in the Federal Register in mid-October. Based on these comments and further review by EPA, those sites still meeting the listing requirements will be placed on the final NPL.

The NPL identifies abandoned or uncontrolled hazardous waste sites that warrant further investigation to determine if long-term "remedial action" is necessary. Sites on the NPL are eligible for such action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), enacted on December 11, 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA), enacted on October 17, 1986. SARA authorizes a "Hazardous Substances Superfund" totaling $8.5 billion over 5 years to pay costs for overseeing work by those responsible for cleaning up waste sites, and to pay costs not assumed by responsible parties. EPA has the primary responsibility for managing cleanup and enforcement activities under Superfund.

This document provides background information on Proposed Update 10 and the following lists:

- The 25 new sites being proposed for the NPL arranged alphabetically by State; the Federal facility sites are listed separately.
- The distribution of all sites by State arranged by the number of new proposed sites.

Federal Facility Sites

Section 120(a) of SARA requires that Federal facilities be subject to and comply with CERCLA in the same manner as any nongovernmental entity. CERCLA Section 111(e)(3), however, generally prohibits use of the Superfund for remedial actions at Federally owned facilities.

RCRA Policy for Federal Facility Sites. On June 10, 1986 (FR 21054), EPA announced components of a policy for the listing or the deferral from listing of several categories of non-Federal sites subject to the Resource

RCRA Policy for Federal Facility Sites. On June 10, 1986 (FR 21054), EPA announced components of a policy for the listing or the deferral from listing of several categories of non-Federal sites subject to the Resource Conservation and Recovery Act (RCRA) Subtitle C corrective action authorities. Because most Federal facilities have RCRA-regulated units within their boundaries, EPA determined that a separate NPL/RCRA policy should be adopted for Federal facilities. As a result, on March 13, 1989 (54 FR 10520), EPA announced it would place on the NPL those sites located on Federally-owned or -operated facilities that meet the NPL eligibility requirements—e.g., Hazard Ranking System (HRS) scores of 28.50 or greater—even if the Federal facility also is subject to the corrective action authorities of RCRA Subtitle C. Cleanup, if appropriate, could then proceed at those sites under either CERCLA or RCRA. The policy is based on several considerations:

- Congress clearly intended that Federal facility sites should be on the NPL.
- Strict application of the non-Federal NPL/RCRA policy would exclude virtually all Federal facility sites from the NPL because they would not likely meet any of the criteria necessary for listing (inability to pay as evidenced by invocation of bankruptcy laws or demonstrated unwillingness to comply with RCRA).
- Placing RCRA-regulated Federal sites on the NPL serves the primary purpose of listing Federal facility sites: to advise the public of the status of Federal government cleanup efforts.
- Listing these sites helps Federal agencies set priorities and focus cleanup efforts on those sites that present the most serious problem.

Special Study Waste Sites

Section 105(g) of CERCLA, as amended by SARA, requires EPA to consider certain factors (waste characteristics, extent of release, potential exposure, and degree of hazard) before proposing sites with "special study wastes," as defined under RCRA Section 3001(b)(2) [drilling fluids], 3001(b)(3)(A)(ii)[mining wastes], and 3001(b)(3)(A)(iii)[cement kiln dust]. One containing or possibly containing special study wastes is being proposed to the NPL. The site, which contains mining wastes, is:

- Carson River Mercury Site, Lyon/Churchill Counties, Nevada

Mining Sites and SMCRA

EPA's position is that mining wastes may contain hazardous substances, pollutants, or contaminants as defined under CERCLA and, therefore, mining waste sites are eligible for the NPL. This position was affirmed in 1985 by the United States Court of Appeals.

Prior to listing mining sites, EPA has considered whether they might be satisfactorily addressed using State-share monies from the Abandoned Mine Land Reclamation (AMLR) Fund under the Surface Mining Control and Reclamation Act of

One noncoal mining site is being proposed to the NPL in this rule:

- o Carson River Mercury Site, Lyon/Churchill Counties, Nevada

Revised HRS

On December 23, 1988 (53 FR 51962), EPA proposed revisions to the HRS in response to CERCLA Section 105(c)(1), added by SARA, which provides that EPA should revise the HRS by October 17, 1988 (24 months after the enactment of SARA). The revised HRS is scheduled to be published in the Federal Register in 1990. Until then, EPA is continuing to propose and promulgate sites using the current HRS, in accordance with CERCLA Section 105(c)(1) and Congressional intent (see 54 FR 13299, March 31, 1989). EPA plans to take final action on all sites now in proposed status before the effective date of the revised HRS.

Additional Publications

Additional publications related to this proposed rule are available:

- "Descriptions of 25 Sites in Proposed Update #10 to the National Priorities List." October 1989. Publication HW-8.20. For a single free copy, contact EPA's Public Information Center (PIC), PM-211B, 401 M St. SW, Washington, DC 20460, telephone 202-382-2080.

- "National Priorities List, Supplementary Lists and Supporting Materials, October 1989." Publication HW-10.11S. Available from PIC.

Descriptions of all proposed and final NPL sites are now contained in nine documents: HW-8.20 (just issued) plus these eight previously issued documents:

- "Descriptions of 93 Sites Placed on the National Priorities List in September 1989." Publication HW-10.19. Available from PIC.

- Addendum to "Background Information, National Priorities List, Special Proposed Update." August 1989. Available from PIC.

- "Descriptions of 52 Federal Facility Sites in Proposed Update #9 to the National Priorities List." July 1989. Publication HW-8.18. Available from PIC.

- "Descriptions of 10 Sites in Proposed Update #8 to the National Priorities List." May 1989. Publication HW-8.17. Available from PIC.

- "Descriptions of 101 Sites Placed on the Final National Priorities List in March 1989." Publication HW-8.15. Available from PIC.

- "Descriptions of 273 Sites Proposed for the National Priorities List as of March 1989." The descriptions have been compiled into one document as a convenience. Publication HW-8.16. Available from PIC.

- Descriptions of 272 Sites Placed on the Final National Priorities List, 1985-87." Previously, these descriptions were available in two documents. They have been compiled into one document as a convenience. Publication HW-8.10/8.11. Available from PIC.

- Descriptions of 538 sites placed on the Final NPL in 1983-84: "Hazardous Waste Sites: Descriptions of Sites on Current National Priorities List, October 1984." Publication HW-8.5 Available from the National Technical Information Service, Springfield, VA 22161, telephone 703-487-4650. Accession No. PB85-224756. Cost is $49.95 per copy, $6.95 in microfiche, plus $3 handling fee per order.

Publication HW-10.10 is obsolete and may be discarded.

National Priorities List,
Proposed Update 10 Sites (by State)
October 1989

NPL Gr[1]	St	Site Name	City/County
8	AK	Arctic Surplus	Fairbanks
18	AR	Magnolia City Landfill	Magnolia
6	AR	Monroe Auto Equip (Paragould Pit)	Paragould
4	CA	Industrial Waste Processing	Fresno
9	CA	United Heckathorn Co.	Richmond
10	CA	Western Pacific Railroad Co.	Oroville
15	DE	Koppers Co., Inc. (Newport Plant)	Newport
17	FL	Anaconda Aluminum/Milgo Electron	Miami
4	IL	MIG/Dewane Landfill	Belvidere
8	MN	Dakhue Sanitary Landfill	Cannon Falls
18	MO	Westlake Landfill	Bridgeton
19	NE	10th Street Site	Columbus
16	NE	Nebraska Ordnance Plant (Former)	Mead
11	NJ	Chemical Insecticide Corp.	Edison Township
10	NV	Carson River Mercury Site	Lyon/Churchill Cnty
18	NY	Sealand Restoration, Inc.	Lisbon
17	OK	Kerr-McGee Corp. (Cushing Plant)	Cushing
11	OR	Union Pacific Railroad Tie Treat	The Dalles
19	PA	Dublin TCE Site	Dublin Borough
4	PA	Ohio River Park	Neville Island

* State top priority site

1: Sites are placed in groups (Gr) corresponding to groups of 50 on the final NPL

National Priorities List,
Proposed Update 10 Sites (by State)
October 1989

NPL Gr[1]	St	Site Name	City/County
15	SC	Para-Chem Southern, Inc.	Simpsonville
8	SD	Williams Pipe Line Disposal Pit	Sioux Falls
5	WI	Better Brite Chrome & Zinc Shops	DePere

Number of Sites Proposed for Listing: 23

National Priorities List,
Federal Facility Sites, Proposed Update 10 (by State)
October 1989

NPL Gr[1]	St	Site Name	City/County
12	CT	New London Submarine Base	New London
15	SD	Ellsworth Air Force Base	Rapid City

Number of Federal Facility Sites Proposed for Listing: 2

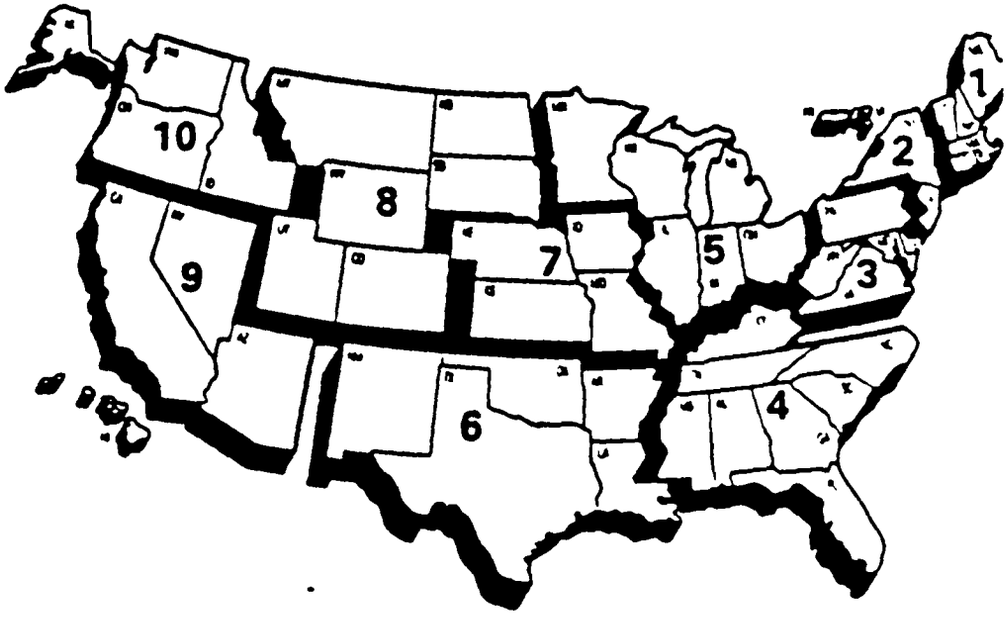
National Priorities List,
Final and Proposed Sites Per State/Territory
(by Proposed Update 10 Sites)
October 1989

State/Territory	Proposed Update 10		Previously proposed		Final		Total
	Non-Fed	Fed	Non-Fed	Fed	Non-Fed	Fed	
California	3	0	14	13	53	8	91
Arkansas	2	0	0	0	9	0	11
Nebraska	2	0	0	0	3	1	6
Pennsylvania	2	0	7	1	84	3	97
South Dakota	1	1	0	0	1	0	3
Alaska	1	0	0	4	1	0	6
Delaware	1	0	5	0	13	1	20
Florida	1	0	8	4	38	0	51
Illinois	1	0	11	0	22	4	38
Minnesota	1	0	0	1	39	1	42
Missouri	1	0	4	1	16	2	24
Nevada	1	0	0	0	0	0	1
New Jersey	1	0	2	3	100	3	109
New York	1	0	5	3	73	1	83
Oklahoma	1	0	3	0	7	1	12
Oregon	1	0	1	0	5	1	8
South Carolina	1	0	5	1	16	0	23
Wisconsin	1	0	3	0	36	0	40
Connecticut	0	1	2	0	12	0	15
Alabama	0	0	2	0	8	2	12
American Samoa	0	0	0	0	0	0	0
Arizona	0	0	2	3	6	0	11
Colorado	0	0	1	1	12	2	16
Commonwealth of Marianas	0	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0	0
Georgia	0	0	3	1	8	1	13
Guam	0	0	0	0	1	0	1
Hawaii	0	0	6	1	0	0	7
Idaho	0	0	2	2	5	0	9
Indiana	0	0	4	0	31	0	35
Iowa	0	0	10	1	10	0	21
Kansas	0	0	1	1	9	0	11
Kentucky	0	0	5	0	12	0	17
Louisiana	0	0	1	0	9	1	11
Maine	0	0	1	1	6	1	9
Maryland	0	0	1	1	7	1	10
Massachusetts	0	0	1	3	21	0	25
Michigan	0	0	11	0	68	0	79
Mississippi	0	0	1	0	2	0	3
Montana	0	0	2	0	8	0	10
New Hampshire	0	0	0	1	15	0	16
New Mexico	0	0	1	1	7	1	10
North Carolina	0	0	2	0	19	1	22
North Dakota	0	0	0	0	2	0	2
Ohio	0	0	1	2	29	1	33
Puerto Rico	0	0	0	0	8	1	9
Rhode Island	0	0	0	2	9	0	11
Tennessee	0	0	2	1	10	1	14
Texas	0	0	2	2	24	1	29
Trust Territories	0	0	0	0	0	0	0
Utah	0	0	4	2	4	2	12
Vermont	0	0	1	0	7	0	8
Virgin Islands	0	0	0	0	0	0	0
Virginia	0	0	4	0	15	1	20
Washington	0	0	8	5	23	9	45
West Virginia	0	0	0	0	5	0	5
Wyoming	0	0	1	1	1	0	3
Total	23	2	150	63	929	52	1219

United States Environmental Protection Agency

For further information, call the Superfund Hotline, toll-free at 1-800-424-9346 or 382-3000 in Washington, DC, metropolitan area, or the U. S. EPA Superfund Offices listed below

For publications, contact:
Public Information Center
401 M Street SW
Washington DC 20460
CML:(202) 382-2080
FTS: 382-2080



)ffice of Emergency and Remedial lesponse (OS-230)
01 M Street, SW
Vashington, DC 20460
ML: (202) 475-8103
TS: 475-8103

egion 1
/aste Management Division, HAA-CAN 2
ohn F. Kennedy Building
oston, MA 02203
ML: (617) 573-5700
'S: 833-1700

egion 2
nergency & Remedial Response Division
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w York, NY 10278
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gion 3
ardous Waste Management ivision, 3HW00
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Region 4
Waste Management Division
345 Courtland Street, NE
Atlanta, GA 30365
CML: (404) 347-3454
FTS: 257-3454

Region 5
Waste Management Division, 5HR-12
230 South Dearborn Street, 12th Floor
Chicago, IL 60604
CML: (312) 886-7579
FTS: 886-7579

Region 6
Hazardous Waste Management Division, 6H
1445 Ross Avenue
Dallas, TX 75202-2733
CML: (214) 655-6700
FTS: 255-6700

Region 7
Waste Management Division
726 Minnesota Avenue
Kansas City, KS 66101
CML: (913) 236-2850
FTS: 757-2850

Region 8
Hazardous Waste Management Division, 8HWM
999 18th Street, Suite 500
Denver, CO 80202-2405
CML: (303) 293-1720
FTS: 564-1720

Region 9
Hazardous Waste Management Division, H-1
215 Fremont Street
San Francisco, CA 94105
CML: (415) 974-7460
FTS: 454-7460

Region 10
Hazardous Waste Division, HW-111
1200 6th Avenue
Seattle, WA 98101
CML: (206) 442-1906
FTS: 399-1906

National Priorities List,
Final and Proposed Sites (by Region)
October 1989

St	Site Name	City/County	Date Proposed or Announced[1]	Date Final	Rank/ Group[2]
IA	Aidex Corp. *	Council Bluffs		9/83	93
IA	Chemplex Co.	Clinton/Camanche	10/84		Gr 4
IA	Des Moines TCE (once listed as DICO)	Des Moines		9/83	373
IA	E.I. Du Pont de Nemours & Co., Inc. (County Road X23)	West Point	6/88		Gr 6
IA	Electro-Coatings, Inc.	Cedar Rapids	6/88	10/89	385
IA	Fairfield Coal Gasification Plant	Fairfield	6/88		Gr 14
IA	Farmers' Mutual Cooperative	Hospers	6/88		Gr 15
IA	Iowa Army Ammunition Plant	Middletown	7/89		Gr 18F
IA	John Deere (Ottumwa Works Landfills)	Ottumwa	6/88		Gr 8
IA	LaBounty Site	Charles City		9/83	8
IA	Lawrence Todtz Farm	Camanche	9/85	6/86	154
IA	Lehigh Portland Cement Co.	Mason City	6/88		Gr 2
IA	Mid-America Tanning Co.	Sergeant Bluff	6/88	3/89	223
IA	Midwest Manufacturing/North Farm	Kellogg	9/85	6/86	768
IA	Northwestern States Portland Cement Co.	Mason City	6/88		Gr 2
IA	Peoples Natural Gas Co.	Dubuque	6/88		Gr 6
IA	Red Oak City Landfill	Red Oak	6/86	3/89	669
IA	Shaw Avenue Dump	Charles City	9/85	7/87	871
IA	Sheller-Globe Corp. Disposal	Keokuk	5/89		Gr 13
IA	Vogel Paint & Wax Co.	Orange City	10/84	6/86	804
IA	White Farm Equipment Co. Dump	Charles City	6/88		Gr 3
KS	29th & Mead Ground Water Contamination	Wichita	6/88		Gr 7
KS	Arkansas City Dump *	Arkansas City		9/83	100
KS	Big River Sand Co.	Wichita	10/84	6/86	747
KS	Cherokee County (once listed as Tar Creek, Cherokee County)	Cherokee County		9/83	55
KS	Doepke Disposal (Holliday)	Johnson County		9/83	234
KS	Fort Riley	Junction City	7/89		Gr 14F
KS	Hydro-Flex Inc.	Topeka	6/88	3/89	344
KS	Johns' Sludge Pond	Wichita		9/83	571
KS	Obee Road	Hutchinson	1/87	7/87	720
KS	Pester Refinery Co.	El Dorado	6/88	3/89	867
KS	Strother Field Industrial Park	Cowley County	10/84	6/86	719
MO	Bee Cee Manufacturing Co.	Malden	10/84	6/86	926
MO	Conservation Chemical Co.	Kansas City	4/85	10/89	876
MO	Ellisville Site *	Ellisville		9/83	91
MO	Findett Corp.	St. Charles	10/84		Gr 10
MO	Fulbright Landfill	Springfield		9/83	430
MO	Kem-Pest Laboratories	Cape Girardeau	1/87	10/89	687
MO	Lake City Army Ammunition Plant (Northwest Lagoon)	Independence	10/84	7/87	Gr 15F
MO	Lee Chemical	Liberty	10/84	6/86	247
MO	Minker/Stout/Romaine Creek (once listed as Arena 2: Fills 1 and 2)	Imperial		9/83	549
MO	Missouri Electric Works	Cape Girardeau	6/88		Gr 15
MO	North-U Drive Well Contamination	Springfield	10/84	6/86	912
MO	Oronogo-Duenweg Mining Belt	Jasper County	6/88		Gr 6
MO	Quail Run Mobile Manor	Gray Summit	9/83		Gr 19
MO	Quality Plating	Sikeston	10/84	6/86	428
MO	Shenandoah Stables (once listed as Arena 1: Shenandoah Stables)	Moscow Mills		9/83	869
MO	Solid State Circuits, Inc.	Republic	10/84	6/86	517
MO	St. Louis Airport/Hazelwood Interim Storage/Futura Coatings Co.	St. Louis County	5/89	10/89	489
MO	Syntex Facility	Verona		9/83	320
MO	Times Beach Site	Times Beach		9/83	445
MO	Valley Park TCE	Valley Park	4/85	6/86	597

* State top priority site

1: Date first eligible for Superfund action. First NPL proposed 12/82. Sites announced earlier in the Interim Priorities List (10/81) and Expanded Eligibility List (7/82) were included in the first proposed NPL.

2: Sites on the final NPL are numbered. Proposed NPL sites and all Federal Facility sites (F) are placed into groups (Gr) corresponding to groups of 50 on the final NPL.

National Priorities List,
Final and Proposed Sites (by Region)
October 1989

St	Site Name	City/County	Date Proposed or Announced[1]	Date Final	Rank/ Group[2]
MO	Weldon Spring Quarry/Plant/Pits (USDOE/Army) (once listed as Weldon Spring Quarry (USDOE/Army))	St.Charles County	10/84	7/87	Gr 1F
MO	Weldon Spring Former Army Ordnance Works	St. Charles County	7/89		Gr 17F
MO	Westlake Landfill	Bridgeton	10/89		Gr 18
MO	Wheeling Disposal Service Co. Landfill	Amazonia	1/87	10/89	214
NE	10th Street Site	Columbus	10/89		Gr 19
NE	Cornhusker Army Ammunition Plant	Hall County	10/84	7/87	Gr 4F
NE	Hastings Ground Water Contamination	Hastings	10/84	6/86	386
NE	Lindsay Manufacturing Co.	Lindsay	10/84	10/89	224
NE	Nebraska Ordnance Plant (Former)	Mead	10/89		Gr 16
NE	Waverly Ground Water Contamination	Waverly	10/84	6/86	518

41 Final + 21 Proposed = 62

John Madias

National Priorities List

Superfund hazardous waste site listed under the
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended in 1986

WESTLAKE LANDFILL
Bridgeton, Missouri

Original Text at listing (Oct 1989):

Westlake Landfill covers 200 acres in Bridgeton, St. Louis County, Missouri, about 16 miles northwest of downtown St. Louis. The area is adjacent to prime agricultural land and is in the floodplain of the Missouri River. Between 1939 and the spring of 1987, limestone was quarried on the site. Starting in 1963, portions of the property were used for landfilling of solid and liquid industrial wastes, municipal refuse, and construction debris. In 1973, Cotter Corp. disposed of over 43,000 tons of uranium ore processing residues and soil in two areas covering a total of 16 acres of the Westlake Landfill, according to a Nuclear Regulatory Commission (NRC) report published in 1977.

In 1976, the Missouri Department of Natural Resources (MDNR) closed the unregulated landfill. Since then, MDNR has issued several permits for various portions of the 200-acre site. Currently, an operating sanitary landfill has a permitted area of 83 acres, and an operating demolition landfill has a permitted area of 22 acres.

Uranium was detected in on-site monitoring wells in tests conducted in 1985 and 1986 by a consultant to the owner of the landfill. An estimated 60 people obtain drinking water from private wells within 3 miles of the site.

Status (May 1990):

NRC is pursuing potential remedys with Cotter Corp. EPA is monitoring this progress and is evaluating appropriate action for site.

Karla,

How about: "EPA is initating an RI/FS and PRP search. In addition, NRC is pursuing potential remedies of the radioactive contamination with Cotter Corporation."

This would show that EPA is taking an active role and suggest that there may be more of concern at Westlake than a uranium deposit (there is!). Even if NRC and Cotter come together to resolve the uranium problem, more work will be required because the groundwater is contaminated with more than uranium. Cotter will likely not be willing to foot the bill to analyze for (much less clean up) the chlordane, phenol, etc. in the groundwater.

Please call if we need to discuss further.

Thank you.

Site: Westlake Ldfl
ID#: MOD079900937
Page 1.8
Other:

Site: Westlake Ldfl
ID #: MOD079900932
Break: 1.8
Other:

7.12 WESTLAKE LANDFILL, BRIDGETON, MISSOURI

7.12.1 List of Commenters

NPL-U10-3-14-R7 Correspondence dated 12/21/89 from James G. Gunn of The Stolar Partnership on behalf of John L. May, the Roman Catholic Archbishop of the Archdiocese of St. Louis, Missouri.

NPL-U10-3-20-R7 Correspondence dated 12/22/89 from Scott Schreiber, Regional Engineer, Laidlaw Waste Systems, Inc.

NPL-U10-8-1 Correspondence dated 11/22/89 from Robert Myers, NPL Operations Section, U. S. EPA, Washington, D.C., to Kitti K. Quarfoot of Katten Muchin and Zavis.

7.12.2 Summary of Comments and Response

James G. Gunn of The Stolar Partnership, on behalf of Archbishop John L. May, requested that the site name be changed and that the ground water targets score be re-evaluated. Scott Schreiber of Laidlaw Waste Systems, Inc. also requested that the site name be changed, and incorporated Mr. Gunn's comments. Robert Myers, U.S. EPA, responded to a Freedom of Information Act (FOIA) request from Kitti K. Quarfoot of Katten Muchin and Zavis.

7.12.2.1 Ownership and Name of Site

Messrs. Gunn and Schreiber requested that the site name be changed to Rock Road Industries, which they indicated would more accurately reflect the location and nature of the site.

Mr. Schreiber indicated that the areas of contamination (Areas 1 and 2) "are now largely owned by Rock Road Industries, Inc., in conjunction with certain religious and/or charitable not-for-profit institutions. Neither Laidlaw, nor any of its affiliated corporations have ever owned, or had any responsibility for, Areas 1 and 2." Mr. Schreiber stated that Laidlaw acquired the operational portion of the Westlake Landfill in 1988, but noted that "Laidlaw did not acquire

any interest whatsoever in Areas 1 and 2." The commenter indicated that "[a]t the time of the disposal of the uranium waste, the operator of the site was the Westlake Landfill Inc.," and noted that Laidlaw Waste Systems "...was formerly known as the Westlake Landfill, Inc."

Mr. Gunn remarked that corporations were currently operating on "...property adjacent to or in close proximity to Areas 1 and 2." These corporations may include "West Lake" in their corporate name, but "no entity with the name 'Westlake Landfill' presently exists," according to the commenter. Mr. Gunn noted also that Laidlaw Waste Systems, formerly known as Westlake Landfill, Inc., operates on property adjacent to or in close proximity to Areas 1 and 2.

In response, the names of sites are provided for purposes of identification only. The Agency's opinion is that the site has been known historically as the Westlake Landfill, and that there is no confusion concerning its location or identity. Further, all EPA's records refer to the site by that name, and it is known to the public as such. Moreover, the name "Rock Road Industries" has no connotation or local history. Consequently, the Agency believes that retaining the name "Westlake Landfill" is appropriate.

7.12.2.2 Ground Water Targets

Mr. Schreiber stated that "[t]he maximum scores for ground water use and distance [to nearest well] are not supported by the actual use of ground water in the vicinity." Mr. Gunn stated that the ground water targets score provided an "...inaccurate portrait of the true site conditions, which will distort its priority ranking, and misinform the public." Mr. Gunn further indicated that minimal use is made of ground water in the vicinity of the site because "...only a single well is identified within a mile of the contaminant, and the closest drinking water use cited is at 1.4 miles." Mr. Gunn indicated that the values assigned for distance to nearest well and ground water use do not "fairly reflect" the threat presented by the site.

Mr. Gunn provided as Exhibit B a statement by David Pruitt of the St. Louis County Water Co., as evidence "...that MDNR [Missouri Department of Natural Resources] data regarding public water availability north of the contaminant location was not accurate." The commenter implied that Exhibit B supported his belief that an appropriate score for ground water use is 2. Mr. Pruitt stated that Reference 14 in the HRS documentation record at the time of proposal, which documented conversation between Mr. Pruitt and John Madras, MDNR, regarding the extent of the St. Louis County Water Co. service, "does not present an accurate description of public water availability in this area." Further, Mr. Pruitt indicated that he had reviewed documents indicating the location of water mains, "and in [his] judgment public water service is available in the area in which the Wilfred Hahn well appears to be located."

In response, Mr. Gunn has apparently confused and combined the distance to nearest well and ground water use evaluations, and has explained that the nearest well is not used for drinking water. However, as explained in greater detail below, these two evaluations are considered separately when determining targets for the ground water route.

Mr. Pruitt was quoted in Reference 14 as having stated that the St. Louis County Water Co. "provided no service north of [Route 115] on the Missouri River floodplain." Although he has now indicated in his statement (Exhibit B of Mr. Gunn's comment) that this was not "an accurate description of public water available in this area," no information was provided documenting availability of alternative drinking water to those persons within the 3-mile radius around the site and north of Route 115. Instead, Mr. Pruitt has merely suggested that after reviewing the location of water mains, he has judged that an alternate source of drinking water may be available to the Hahn property. However, the Hahn well was cited as the nearest well to the site, which is evaluated separately from the use made of ground water

drawn from the aquifer of concern within a 3-mile radius of the site. At the Agency's request, a map indicating the extent of the St. Louis County Water Co. water lines was provided and has been added during this response to comment as Reference 21 in the HRS documentation record at the time of promulgation. The map shows that north of the site, along Ferguson Road, Missouri Bottom Road, and Aubuchon Road (within the 2-mile radius around the site), there are no water lines to provide a readily available, unthreatened, alternative source of drinking water. Additionally, References 1, 7, 12, 13, and 20 indicate that at least 15 private drinking water wells are within 3 miles of the facility. While Mr. Pruitt may be correct in stating that an alternate source of ground water is available to the Hahn property, not all residences served by ground water, notably those north of Route 115, have an alternative source of drinking water readily available. Consequently, the Agency believes that it has properly evaluated ground water use, and no change is required as a result of this comment.

Mr. Gunn stated that the value of 3 assigned to the distance to nearest well factor was exaggerated because it was based on a single well (i.e., the Hahn well) identified by the MDNR within 1 mile of the site. He said that no evidence was cited that this well was used for drinking purposes, and noted that the closest well clearly used for drinking water is 1.4 miles from the site.

In response, Section 3.5 of the HRS Users Manual (47 FR 31231, July 16, 1982) indicates that the distance to the nearest well is "measured from the hazardous substance (not the facility boundary) to the nearest well that draws water from the aquifer of concern." The well must be used for drinking or purposes that influence the food chain, such as food production or irrigation, not monitoring or industrial purposes (47 FR 31191, July 16, 1982). References 7, 9, and 20 indicate that the Hahn well is located approximately 2,500 feet north of the buried uranium wastes and supplies water to a greenhouse for raising produce and other purposes, as well as for irrigating crops.

The commenters have provided no data which indicate that the distance to the Hahn well is inaccurate, that the well is not used for irrigation purposes, or that the well does not draw from the aquifer of concern. Mr. Pruitt has indicated that municipal water lines "are located throughout this area," but this fact has no relevance in evaluating the distance to nearest well factor; as explained previously, ground water use and distance to nearest well are considered separately. Consequently, the Agency believes that it has accurately evaluated the distance to nearest well factor. This comment does not affect the HRS score for this site.

7.12.2.3 Potential Risk to Human Health and the Environment

Mr. Gunn indicated that the site contaminants are "essentially site stable, with low migration likelihood," and "in their present state do not pose an imminent or substantial threat to human health or the environment."

In response, while Mr. Gunn states that the contaminants on-site are essentially stable and that the likelihood of migration is low, a release of uranium to ground water at the site was observed (Appendix E of Reference 10). The Agency has previously explained (47 FR 31188, July 16, 1982) its position that an observed release indicates that the likelihood of a release is 100 percent, and that the release of some substances is a good indication that substances at the site can escape, increasing the likelihood of a more substantial subsequent release.

With respect to Mr. Gunn's concern about the lack of an "imminent and substantial threat to human health or the environment," the Court has ruled (Eagle-Picher Industries, Inc. v. EPA, 759 F.2d 922 (D.C. Cir. 1985)) that "the element of 'imminent and substantial danger' is not requisite to the threshold agency action of including a particular facility on the NPL." The Court concluded that:

> In our view, it is well within EPA's discretion to decide that, for a determination of "imminent and substantial danger" at a site to have any degree of reliability, that assessment

> would have to be based upon a more detailed, complex and thus rather expensive study all out of proportion to the limited, threshold-like goals of the NPL. It is, in our judgment, entirely reasonable for EPA to decide to await the results of in-depth examinations of specific sites before making a determination of "imminent and substantial danger."

As the Court noted, the determination of "imminent and substantial danger" at a site is not assessed during the listing process. Such an assessment is addressed following the listing of sites containing hazardous substances, pollutants or contaminants and is more properly based on significantly more detailed studies, such as an RI/FS, that typically follow listing. Given the limited purpose of the NPL, there are insufficient data to enable EPA to determine what risk the site poses, and it is appropriate to list the site to obtain such information.

Mr. Gunn stated that particulate air monitoring revealed little basis for concern at the site.

In response, EPA did not evaluate the air route for the Westlake Landfill site. Consequently, this comment has no bearing on the HRS score.

Mr. Gunn cited a July 1989 Nuclear Regulatory Commission report which stated that "contamination of water in the bedrock aquifer does not appear likely."

In response, the aquifer of concern was identified as the Missouri River alluvium in the HRS documentation record. The aquifer of concern does not include the bedrock aquifer, and the bedrock aquifer was not evaluated for HRS purposes. No change in the HRS score is required as a result of this comment.

Mr. Gunn noted that radioactivity in off-site water samples has never exceeded applicable guidelines or EPA standards.

In response, on July 16, 1982, when responding to public comments on the proposed HRS (47 FR 31188) and again on September 8, 1983 (48 FR

40665), the Agency rejected the idea that releases within regulatory limits should not be considered "observed releases" under the HRS. As the Agency noted in 1982,

> emission or effluent limits do not necessarily represent levels which cause no harm to public health or the environment. These limitations are frequently established on the basis of economic impacts or achievability.

By contrast, an observed release represents a 100 percent likelihood that substances can migrate from the site (47 FR 31188); under the HRS, an observed release has occurred when a contaminant is measured at a significantly higher level than background (Section 3.1 of the HRS Users Manual, 47 FR 31224, July 16, 1982). Even though levels may be lower than regulatory limits, an observed release has nevertheless occurred if the measured levels are significantly higher than background levels. As reported in the HRS documentation record, uranium was observed in wells S-53, S-60, S-75, and D-92 in concentrations significantly greater than background.

7.12.3 Conclusion

The original migration score for this facility was 29.85. Based on the above response to comments, the score remains unchanged. The final HRS scores for Westlake Landfill are:

Ground Water	51.02
Surface Water	8.00
Air	0.00
Total	29.85

Category 10.1

Site: Westlake Ldfl
ID#: MOD079900932
Other: 10.1

SEP 08 1989

MOD079900932

MEMORANDUM

SUBJECT: Request for Counsel
West Lake Landfill
Bridgeton, Missouri

FROM: David A. Wagoner
Director, Waste Management Division

TO: Martha Steincamp
Regional Counsel

We request that counsel be assigned to the West Lake Landfill site in Bridgeton, St. Louis County, Missouri. The site which contains radioactive waste as well as solvent and pesticide waste is scheduled to be proposed for update 10 to the NPL. The Missouri Department of Natural Resources is currently the lead agency for the site. If you have any questions, please call Greg Reesor of my staff at extension 695.

WSTM:SPFD:PREP:REESOR:gr:final:bh:9/7/89:Disk #1:westlake.ws4

PREP	PREP	SPFD	WSTM
REESOR	HERNDON	MORBY	WAGONER
9/7/89	9-8-89	9-8-89	9/8/89

Category 11.6

NPL-U10-3-14-R1

RECEIVED
12/22/89

Site: Westlake Ldfl
ID #: MOD079900932
Brank: 11.6
Other: Archdiocese of St. Louis

"WESTLAKE LANDFILL, BRIDGETON, MISSOURI"

Comments on Proposed Addition to National Priorities List for Uncontrolled Hazardous Waste Sites (Proposed Update No. 10)

Submitted by:

THE STOLAR PARTNERSHIP

on behalf of
John L. May, the Roman
Catholic Archbishop
of the Archdiocese of
St. Louis

11

THE STOLAR PARTNERSHIP
ATTORNEYS AT LAW
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JAMES F GUNN

H M STOLAR
(RETIRED 1984)

December 21, 1989

FEDERAL EXPRESS

Mr. Larry Reed, Acting Director
Hazardous Site Evaluation Division
(Attention: NPL Staff)
Office of Emergency and
Remedial Response (OS-230)
United States Environmental Protection Agency
401 M Street, N.W.
Washington, D.C. 20460

Re: Comments on Proposed Addition of "Westlake Landfill, Bridgeton, Missouri" to National Priorities List for Uncontrolled Hazardous Waste Sites (Proposed Update No. 10)

Dear Mr. Reed:

These comments are submitted on behalf of John L. May, the Roman Catholic Archbishop of the Archdiocese of St. Louis, and Rock Road Industries, Inc., a Missouri corporation. The Archdiocese of St. Louis, along with other not-for-profit organizations, were the beneficiaries of a charitable bequest under a will which resulted in its ownership of (a) an interest in real estate located within the site proposed to be placed on the National Priorities List by reason of the existence thereon (prior to the bequest) of radioactive waste contaminants, and (b) a majority shareholder interest in Rock Road Industries, Inc., an entity which also owns an interest in real estate located within the proposed site. The Archdiocese of St. Louis, therefore, together with two other charities, has a substantial economic interest in the subject site. Neither the Archdiocese of St. Louis -- nor any of the other charity beneficiaries -- knew of the presence of radioactive contamination at the site at the time of acceptance of the bequest.

The site designated by the EPA as "Westlake Landfill, Bridgeton, Missouri" was proposed on October 26, 1989 to be added to the National Priorities List ("NPL") for Uncontrolled Hazardous Waste Sites (Proposed Update No. 10). The Hazard Ranking System ("HRS") evaluation performed for the site analyzed the human or environmental risks presented by the potential for exposure to radioactive materials through ground water and surface routes. The HRS score for the site as computed by the EPA was 29.85.

Radiological contamination is the sole reason for the proposed NPL listing of "Westlake Landfill, Bridgeton, Missouri." See EPA HRS Cover Sheet. Radiological contamination at the site has been identified by the parties commissioned to perform site studies for the Nuclear Regulatory Commission ("NRC") in two distinct areas of the site. This letter constitutes formal written comments regarding the proposed listing as solicited by the October 26, 1989 Federal Register notice (54 Fed. Reg. 43778).

I. Purpose of Comments

These comments are submitted for the following purposes:

1. To identify the ownership of the site which will enable a more accurate and equitable name for the site.

2. To emphasize the genesis of the radiological contamination at the site.

3. To suggest a revised HRS score which more accurately reflects the site's relative placement with regard to the nation's priority listings.

4. To provide an evaluation of the potential for risk to human health or the environment posed by the site based upon findings of studies commissioned by the NRC which demonstrate that the site does not present an imminent and substantial danger to human health or the environment.

II. Summary

1. Radioactive contaminants, generated by the United States government during World War II, and later owned by the Cotter Corporation of Canon City, Colorado, were transported

and dumped, without the knowledge or consent of the site owners or operators, in two areas of the former West Lake Landfill. The contaminated parcels, designated Area 1 (3 acres) and Area 2 (13 acres) are primarily owned by religious charitable institutions and a corporate entity, Rock Road Industries, Inc.

2. The HRS evaluation performed by the EPA on February 8, 1989, resulted in a score of 29.85. High scores in "target" areas, however, such as Ground Water Use and Distance to Nearest Well, rest upon minimal evidence of qualifying usage. The result is an HRS score which is not representative of the site vicinity's actual low probability of harmful occurrence or damage. Suggested revisions to the HRS scoring would reduce the total score to a revised score which is well below the standards for inclusion on the NPL.

3. The site does not pose an imminent or substantial danger to human health or the environment. Studies commissioned or authored by the NRC, as cited herein, have consistently determined that contaminant migration is minimal, and current exposure levels do not present an immediate health hazard.

4. Nearby businesses which utilize the name "West Lake" -- but which do not operate any business on the contaminated site -- are concerned about public confusion over the site's name designation. Because no entity exists or is doing business as "Westlake Landfill," it is suggested that an alternative site designation of "Rock Road Industries, Bridgeton, Missouri" be adopted.

III. Ownership and Name of Site

The two areas of radioactive contamination (Areas 1 and 2) assessed by the HRS are owned by (a) John L. May, the Roman Catholic Archbishop of the Archdiocese of St. Louis (herein the "Archdiocese"), The Shrine of St. Jude, an Illinois not-for-profit corporation (herein the "Shrine"), and The Society for the Propagation of the Faith of the Archdiocese, a Missouri not-for-profit corporation (herein the "Society"), (b) Rock Road Industries, Inc., a Missouri corporation (the shareholders of which are the Archdiocese, the Shrine and the Society) and (c) Walter Trump, individually and as Trustee for Dorothy Trump, his sister, and Dorothy Trump, individually and as Trustee for her brother, Walter Trump.

West Lake Quarry and Material Company, West Lake Ready Mix Co., and Laidlaw Waste Systems (Bridgeton) Inc. (formerly West Lake Landfill, Inc.) are Missouri corporations which operate separate businesses on property adjacent to or in close proximity to Areas 1 and 2. HOWEVER, MOST IMPORTANTLY, NEITHER WEST LAKE QUARRY AND MATERIAL COMPANY, NOR WEST LAKE READY MIX CO. HAS EVER OWNED ANY PORTION OF AREA 1 OR 2. NO ENTITY WITH THE NAME "WESTLAKE LANDFILL" PRESENTLY EXISTS. IT WOULD BE MORE APPROPRIATE AND ACCURATE TO DESIGNATE THE SITE AS "ROCK ROAD INDUSTRIES, BRIDGETON, MISSOURI."

III. History and Overview

The two areas of radiological contamination scored in the HRS were created in 1973 when soil contaminated with radioactive material was surreptitiously placed there. The radioactive material originated from uranium-ore-processing residues which had been stored at Lambert Airport by the United States Atomic Energy Commission ("AEC"), and had been sold in 1966 to the Continental Mining and Milling Company of Chicago, Illinois. In 1966, the material was moved from the Airport to nearby 9200 Latty Avenue, Hazelwood, Missouri. In 1967, the Commercial Discount Corporation of Chicago took possession of the residues for removal of moisture and shipment to the Cotter Corporation facilities in Canon City, Colorado. In 1969, the remaining material was sold to the Cotter Corporation. In the following four years, most of the residues were shipped to Canon City.

In 1974, Region III representatives of the NRC's Office of Inspection and Enforcement visited the Cotter Corporation's Latty Avenue site to check on the progress of the decommissioning activities being performed there. This inspection disclosed that in 1973 Cotter Corporation had disposed of approximately 8,700 tons of leached barium sulfate residues mixed with 39,000 tons of topsoil at a local landfill.

By letter dated June 2, 1976, the Missouri Department of Natural Resources ("MDNR") forwarded newspaper articles to the NRC Region III Office which alleged that only 9,000 tons of waste had been moved from the Latty Avenue site (rather than 40,000 tons) and that the 9,000 tons were moved to the West Lake Landfill (rather than to the St. Louis Landfill No. 1). Region III personnel investigated the allegations and found that 43,000 tons of waste and soil had been removed from the Latty Avenue site and had been dumped at a construction

landfill site in Bridgeton then operated by a corporation called West Lake Landfill, Inc. Disposal in the West Lake Landfill was not authorized by either (a) the NRC (in fact, it was contrary to the disposal locations indicated in the NRC records), (b) MDNR (state officials were not notified of this disposal and the landfill was not regulated by the state at the time), or (c) West Lake Landfill, Inc. (it was only later that West Lake Landfill's officials became aware of the unauthorized disposition). Of course, none of the charities -- which would not own an interest in the land until many years later -- nor Rock Rock Industries, Inc. -- which was not even in existence at the time -- authorized, or could have authorized, the dumping of the contaminated material.

In 1978, an aerial radiological survey revealed two areas within the landfill where the gamma radiation levels indicated radioactive material had been deposited. A more extensive radiological survey of the site was initiated in 1980-81 by the Radiation Management Corporation ("RMC") of Chicago, Illinois under contract to the NRC. The findings were published in May, 1982 in NUREG/CR-2722, "Radiological Survey of the West Lake Landfill, St. Louis County, Missouri."

In 1983, the NRC through Oak Ridge Associated Universities ("ORAU") contracted with the University of Missouri-Columbia ("UMC") Department of Civil Engineering to conduct an engineering evaluation of the site and propose possible remedial measures for dealing with the radioactive waste at the site. In 1986, ORAU sampled water from wells on and close to the site to determine if the radioactive material had migrated into the ground water.

The NRC reports issued in June, 1988 and July, 1989 are based upon these previous investigations and samplings.

The conclusions of these reports are that the radioactive contaminants present at the site are located in two areas. The southern area of radioactive contamination (Area 1) contains a relatively minor fraction of the debris covering approximately three acres with most of the contaminated soil buried under no less than three feet of clean soil and sanitary fill. The northern area (Area 2) comprises about thirteen acres. The NRC reports inaccurately indicate that the radioactive debris forms a layer two to fifteen feet thick and is exposed in a small

area on the landfill surface along the berm on the northwest face of the Landfill.*

IV. HRS Scoring

The EPA assigned high HRS scores in "Target" categories for the site in the February 8, 1989 scoring. Such scoring would only be appropriate where a substantial number of individuals ingest water from wells in close proximity to the site of contamination. This characterization is an inaccurate portrait of the true site conditions, which will distort its priority ranking, and misinform the public.

The site is surrounded by a rural, unpopulated area. The MDNR memorandum relied upon by the EPA scorer found only a single well within a mile radius of the contaminated site, with no evidence that the well was used for drinking purposes. (Reference 20, HRS Docket). For the three mile surrounding area, only seven and one-half percent (7-1/2%) of the HRS "population" served by ground water are individuals, with the remainder derived from usable-cropland equivalence calculations (1-1/2 "people" per irrigated acre).

The NRC stated in its July, 1989 Report, "it is believed that only one private well (Figure 2.9) in the vicinity of the the landfill is used as a drinking water supply. This well is 2.2 km (1.4 miles) N 35° W of the former Butler-type Building located on the West Lake Landfill. In 1981, analysis showed water in this well to be fairly hard (natural origins) but otherwise of good quality (Long, 1981)."

These studies reflect the minimal use of ground water in the immediate site vicinity: only a single well is identified within a mile of the contaminant, and the closest drinking water use cited is at 1.4 miles. Yet, the HRS scorer assigned the maximum value of "3" in the Target category of "Ground Water Use." This rating does not fairly reflect the facts cited in the studies.

---

* Remedial activities were performed in 1986 to cover more adequately the contaminant in Area 1. The information cited in the reports to the contrary is inaccurate, as is more fully explained at page 10 of this comment letter, and in the Affidavit of William Canney dated December 21, 1989, attached hereto as Exhibit A.

Further investigation has revealed that MDNR data regarding public water availability north of the contaminant location was not accurate. Mr. John Madras of the MDNR stated in a June 6, 1989 telephone record (Reference 14, HRS Docket) that Mr. David Pruitt of St. Louis County Water Co. confirmed the unavailability of public water service north of Route 115. In the Statement attached hereto as Exhibit B, Mr. Pruitt denies the accuracy of this MDNR memorandum. Mr. Pruitt states that public water service is available in many areas north of Route 115 (St. Charles Rock Road). With regard to the only well identified by MDNR as lying within a mile of the contaminant, that of Wilfred Hahn (Reference 20, HRS Docket), Mr. Pruitt states that public water mains run in close proximity to this site, providing availability of a public water supply in this area.

EPA's discretion to select a reasonable regulatory interpretation is well-established; however, accuracy in development of the NPL is best promoted by HRS scoring which realistically describes site conditions. Most importantly, simple fairness dictates the application of reasonable standards. A maximum Ground Water Use value of "3," based only upon minimal usage and support, results in a distorted rating score.

The Ground Water Use value appropriate for the site vicinity taken as a whole, is at most "2," the second highest ranking. Utilizing this value would reduce the total HRS score to 26.36, thereby reducing the scoring for the site below the NPL listing guidelines, and providing an accurate evaluation of this site's low threat to health and the environment.

In another exaggerated valuation, the HRS scorer selected a "distance to nearest well" value of "3" ("between 2,001 feet and one mile"). Yet, only a single well was detected by MDNR within a mile of the site, and no evidence was cited of its use for drinking purposes. (Reference 20, HRS Docket). Moreover, as stated above, municipal water from St. Louis County Water Co. is available for this area. (Exhibit B). The closest well used for drinking purposes identified in the studies is 1.4 miles from the site. The value which accurately characterizes the proximity of well water use causing potential environmental harm is therefore "2" ("one to two miles"). Use of this number reduces the HRS overall score to 25.20, again reducing the scoring for the site well below the NPL listing guidelines.

The primary purpose of the NPL, which is to prioritize fairly the nation's environmental threats, is thwarted where exaggerated evaluations obscure realistic assessments. Normal fluctuations found within an assessment category are compounded where, as in this case, excessively high scoring occurs in multiple areas.

If values for both Ground Water Use and Distance to Nearest Well are reduced to the more accurate values suggested above, the HRS score for the site falls to 20.58. A score of 20.58 is far closer to the site's actual priority level than EPA's assigned HRS score of 29.85.

EPA is requested to reduce the HRS score as suggested so that (a) national environmental resources may be better directed toward true priority sites, and (b) the public is not misled as to the actual conditions at this site.

V. Potential for Risk to Human Health and the Environment

A review of the findings of the NRC studies of the site conducted over a several year period yields two strong conclusions: (a) the contaminants are essentially site stable, with low migration likelihood; and (b) the contaminants in their present state do not pose an imminent or substantial threat to human health or the environment.

The following is a synthesis of the findings and conclusions contained in NRC-sponsored or NRC-authored studies which support a determination that the site poses minimal risk to health and the environment.

(a) Contaminants are Essentially Site Stable. In a report prepared for the NRC in 1982 by RMC entitled "Radiological Survey of the West Lake Landfill, St. Louis County, Missouri," the authors' conclusions are clear:

> There is no indication that significant quantities of contaminants are moving off-site at this time. [NRC 1982 Radiological Survey, Abstract.]

In the body of its report, RMC cited MDNR's 1980 Groundwater Investigation to conclude the existence of "little or no surface or sub-surface movement of materials from the

site." (NRC 1982 Radiological Survey, page 4). No off-site water samples exceeded existing Ra-226 EPA standards:

> None of the sample alpha activities exceeded the MPC for Ra-226 (the most restrictive nuclide present) in water for unrestricted areas. Only one sample exceeded the EPA gross alpha activity guidelines for drinking water and that was a sample of standing water near the Shuman building. . . . None of the off-site samples exceeded either EPA standard. [NRC 1982 Radiological Survey, page 16.]

Vegetation samples from farm areas of likely site run-off were also analyzed: no elevated activities were found. (Id., page 19). The report goes on to state:

> At no time has radioactivity in off-site water samples risen above any applicable guidelines. These results indicate that the buried ore residues are probably not soluble and are not moving off-site via ground water. . . . The absence of significant contamination in the leachate liquid or sludge is consistent with the implication that the buried material is not moving through the landfill. [NRC 1982 Radiological Survey, page 22.]

The July, 1989 report prepared by the NRC, entitled "Site Characterization and Remedial Action Concepts for the West Lake Landfill," continued to rely on the 1982 findings, in the absence of any significant contrary data produced thereafter. (NRC 1989 Site Characterization, page 3-6.) This report also noted that the most proximate drinking water well, identified as 1.4 miles from the contaminant, was sampled and analyzed in 1981, and was found to be free of site contaminants. (Id. at page 2-8). The hydro-geologic conditions were also described:

> Since the limestone is fairly impervious, and groundwater flows in most areas from the bedrock into the alluvium, contamination of water in the bedrock aquifer does not appear likely. [NRC 1989 Site Characterization, page 2-7.]

(b) Contaminants Do Not Pose an Imminent or Substantial Danger. Both the 1982 and 1989 NRC reports contain assessments that the site contaminants constitute no present or imminent threat to human health or the environment. The

Summary of the 1989 report unequivocally states that health concerns are not short-term, imminent, or immediate factors:

> Although the contamination does not present an immediate health hazard, authorities have been concerned about whether this material poses a long-term health hazard to workers and residents of the area and what, if any, remedial action is necessary. [NRC 1989 Site Characterization, page ix.]

Contaminant risk will only grow slowly over a period of decades and centuries:

> Assuming the ratio of activities of 100:1 used above, the Ra-226 activity will increase by a factor of five over the next 100 years, by a factor of nine 200 years from now, and by a factor of thirty-five 1000 years from now. [NRC 1989 Site Characterization, page 4-1.]

In addition, particulate air monitoring revealed little basis for concern:

> Particulate air samples established indicated the presence of Rn-222 and Rn-219 daughters near the locations of surface deposits. However, concentrations are very low, and do not exceed allowable levels for unrestricted areas, except in one location. In general, cover of a few feet of fill reduces airborne concentrations to near background levels. [NRC 1982 Radiological Survey, page 22.]

The 1989 report noted that "the highest levels [of air particulate] were detected in November 1980, near and inside the Butler-type building which has since been removed." (page 3-5).

Other remediation activities have further stabilized the site and further reduced any threat of surface contaminant release. The portions of Area 2 cited on page 12 of the 1982 report, including the berm near the northwest edge of the site were addressed by West Lake Landfill, Inc. in 1986 in accordance with the guidance of ORAU, the NRC contractor. See Affidavit of William Canney dated December 21, 1989, attached hereto as Exhibit A.

CONCLUSION

Radioactive contamination, originating from the government's World War II weapons development program was placed in two confined areas, without the knowledge or consent of the areas' owners or operators. These areas, most appropriately called the "Rock Road Industries, Bridgeton, Missouri" site, have received an HRS score which constitutes an inflated assessment of the probability of a harmful occurrence and the magnitude of the potential damage. Studies commissioned or authored by the NRC support the conclusions that the site does not pose an imminent or substantial risk of danger to human health or the environment.

For the reasons stated herein, the proposed HRS scoring should be recomputed to reflect accurately the state of conditions on the site. Such recomputation will result in the removal of this proposed site -- which in any event should have its name changed -- from inclusion on the NPL.

Respectfully submitted,

THE STOLAR PARTNERSHIP

By: _____
James F. Gunn, on behalf of
John L. May, the Roman
Catholic Archbishop of the
Archdiocese of St. Louis

JFG:mc

Enclosures

Exhibits

A. Affidavit of William Canney, dated December 21, 1989.

B. Statement of David Pruitt, St. Louis County Water Company, dated December 21, 1989.

Affidavit of William Canney

My name is William Canney. From approximately 1977 through 1988, I was employed by Westlake Landfill, Inc., in several capacities including that of Environmental Engineer.

In approximately 1986, under the guidance of the Nuclear Regulatory Commission's contractor, Oak Ridge Associated Universities, I supervised the deposit of approximately 420,000 pounds of clean fill dirt along the berm on the northwest face of the landfill. This location is referred to as Area 2 in the NRC reports.

William Canney

State of Missouri)
County of St. Louis)

Subscribed and sworn to before me this 21st day of December, 1989.

My Commission Expires May 2, 1992

Notary Public

County Water

ST LOUIS COUNTY WATER CO • 535 North New Ballas Road • St Louis, Mo 63141 (314) 991-3404 FAX 432-7824

STATEMENT OF DAVID PRUITT

My name is David Pruitt. I am employed by the St. Louis County Water Company. My job title is Engineering Technician.

I have reviewed the attached statement by John Madras, an employee of the Missouri Department of Natural Resources, concerning our telephone conversation of June 6, 1989, regarding the extent of St. Louis County Water Company service in the area north of St. Charles Rock Road (Rt. 115). Mr. Madras' statement does not present an accurate description of public water availability in this area.

I have also reviewed the attached Missouri Department of Natural Resources memorandum and map describing the location of the well belonging to Wilfred Hahn. Although the precise location of this well is not indicated, St. Louis County Water Company water main lines are located throughout this area. I have reviewed the official St. Louis County Water Company documentation showing water main locations, and in my judgment public water service is available in the area in which the Wilfred Hahn well appears to be located.

David Pruitt

State of Missouri)
County of St. Louis)

Before me, a notary public, appeared this 21st day of December, 1989, Mr. David Pruitt, known to me, and stated that he executed the foregoing as his free act and deed.

Ref. 14

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

File Westlake Quarry Landfill

Date June 6, 1989

TELEPHONE

CONFERENCE

Incoming ( )

Field ( )

Outgoing (XX)

Office ( )

SUBJECT Extent of St. Louis County Water Co. Service

PERSONS INVOLVED

Name	Representing
Mr. Dave Pruitt	St. Louis County Water Co.
John Madras	MDNR

SUMMARY OF CONVERSATION

Mr. Pruitt and I discussed the extent of the public water supply availability in the vicinity of Westlake landfill. He stated that the water company served the Earth City area (which is south of Route 115) and had one main that parallel Route 115, but provided no service north of that highway on the Missouri River floodplain. The water company does provide service to residences in the upland east of the floodplain (in the vicinity of Interstate 270). He indicated that maps of water mains could be reviewed in his office.

ACTION TAKEN

FINAL RESULTS

John Madras

John Madras
Environmental Specialist

Ref. 20

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

File Westlake Landfill, St. Louis Co. Date July 26, 1989

TELEPHONE

Incoming (XX)

Outgoing ( )

CONFERENCE

Field ( )

Office ( )

SUBJECT Well survey in vicinity of landfill

PERSONS INVOLVED

Name	Representing
Mike Struckhoff	MDNR-SLRO
John Madras	MDNR-WMP

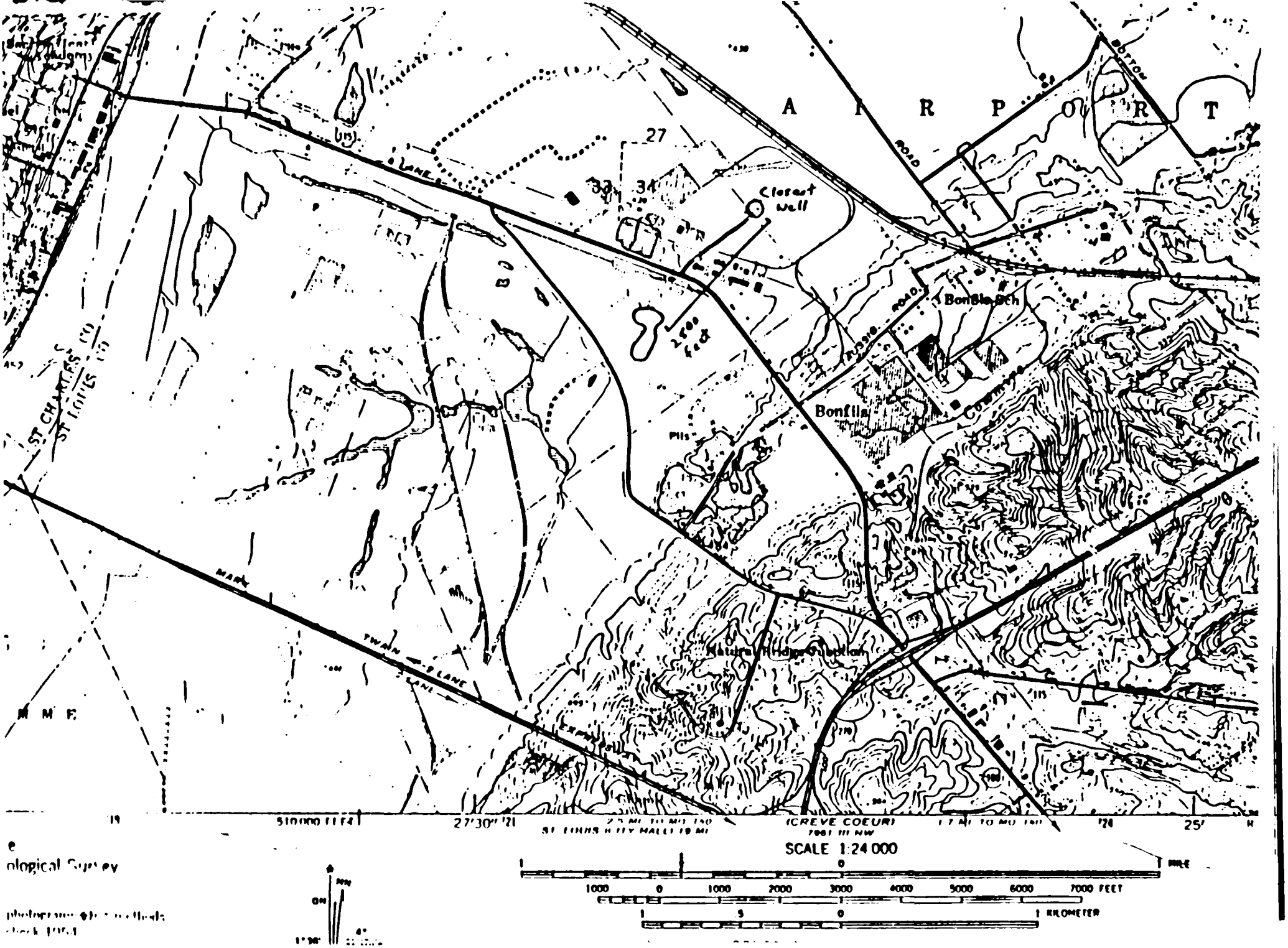
SUMMARY OF CONVERSATION

Mike stated that he had visited the property of Wilfred Hahn north of Westlake Quarry Landfill. The property is located north of Route 115 one half mile northwest of Taussing Road and one quarter mile north on the side road. The property has a trailer and greenhouse. The well supplies water to the greenhouse for raising produce and is available for other purposes as well, but it could not be determined if it is used for drinking water. Irrigation equipment was also present on-site. Corn is raised on the land surrounding the trailer. Domestic animals (cats and dogs) were also present. No residents were present at the time of the site visit.

ACTION TAKEN

FINAL RESULTS

John Madras
John Madras
Environmental Specialist



ological Survey

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

Site: Westlake LdFl
ID #: MOD079900832
Break: Hole
Other: Laidlaw

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation, and Historic Preservation

OFFICE OF THE DIRECTOR
P.O. Box 176
Jefferson City, MO 65102
314-751-4422

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May 31, 1990

Mr. Miles Stotts
Assistant Regional Engineer
Laidlaw Waste Systems, Inc.
2340 South Arlington Heights Road
Suite 230
Arlington Heights, Illinois 60005

Dear Mr. Stotts:

I have reviewed your letter of April 13, 1990 concerning those areas of West Lake Landfill in which radioactive waste had previously been landfilled. Essentially, your letter correctly depicts the Waste Management Program's (WMP) position on issuance of a solid waste disposal area operating permit for those areas.

In summary, the site in question was placed on the EPA's Comprehensive Environmental Response Compensation Liability Information System (CERCLIS) list November 1, 1979. The site was subsequently placed on the State of Missouri's Registry of Abandoned or Uncontrolled Sites February 22, 1985. The WMP's position is that a site that is verified to contain hazardous substances, as in this case, must be evaluated and assessed in accordance with the appropriate federal, state, and local law and rules, and proper corrective action implemented prior to the department evaluating the site for future non-hazardous solid waste deposition or permits. To date, the environmental impact and appropriate closure/remediation of this site have not yet been determined. On October 26, 1989, the USEPA proposed to place the site on the National Priorities List. That proposal has not yet been finalized.

The WMP has held the position that no proposal for a solid waste disposal area permit or permit modification would be considered which would allow the placement of additional non-hazardous solid waste and related soil cover on these portions of the site until the radioactive waste and other possible hazardous

RECEIVED
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DEC BRANCH

substance issues are resolved. Soil cover placement (without placement of additional waste) as a short-term remedial action step would be considered if it were shown to be necessary and effective in minimizing adverse environmental effects of the existing wastes disposed on-site.

If you should have further questions concerning this issue, please contact me at (314) 751-3176.

Sincerely,

DIVISION OF ENVIRONMENTAL QUALITY

Nicholas Di Pasquale
Director, Waste Management Program

NAD:ltl

cc: Mr. Scott Schreiber, Laidlaw Waste Systems
Mr. Jim Belcher, Superfund Section, WMP
Mr. Dave Bedan, DEQ Administration
Mr. Jim Hull, Solid Waste Section, WMP

NPL-W10-3-20-R7

LAIDLAW

LAIDLAW WASTE SYSTEMS INC.

Site: Westlake Ldfl.
ID #: MOD029900937
Break: 11.6
Other: Laidlaw

December 22, 1989

Mr. Larry Reed
Acting Director, Hazardous Site Evaluation Division
(Attention: NPL Staff)
Office of Emergency and Remedial Response
(OS-230)
United States Environmental Protection Agency
401 M Street, N.W.
Washington, D.C. 20460

Re: Comments to the Proposed Addition of "Westlake Landfill, Bridgeton, Missouri" to the National Priorities List: 54 Fed. Reg. 43778 (Oct. 26, 1989)

Dear Mr. Reed:

These comments are submitted by Scott I. Schreiber on behalf of Laidlaw Waste Systems ("Laidlaw"), to the United States Environmental Protection Agency's to address the proposal to place the "Westlake Landfill, Bridgeton, Missouri" site on the National Priorities List ("NFL") are submitted. See, 54 Fed. Reg. 43778 (Oct. 26, 1989). The comments are submitted for the following reasons:

(1) to clarify Laidlaw's association with the "Westlake Landfill, Bridgeton, Missouri" NPL site (the "site").

(2) to request that the name of this proposed site be changed to the "Rock Road Industries site" so as to more accurately reflect the location and nature of the U.S. EPA's concerns at the site. See e.g., 52 Fed. Reg. 27631 (July 22, 1987);

(3) to emphasize the conclusion reached by studies commissioned by the United States Nuclear Regulatory Commission ("NRC") that the proposed site does not present an imminent and substantial endangerment to human health or the environment.

2340 S Arlington Heights Road, Suite 230, Arlington Heights, Illinois 60005 (708) 439-6686

1. Factual Background

The name "Westlake Landfill" had at one time been used to describe a 200 acre waste disposal area in Bridgeton, Missouri. documents in the hazardous ranking system ("HRS") docket reveal that uranium ore processing residues and soil were placed in the "Westlake Landfill" by the Cotter Corporation in 1973. See, Radioactive Materials in the Westlake Landfill, U.S. Nuclear Regulatory Commission, June, 1988, p. 3. At the time of the disposal of the uranium waste, the operator of the site was the Westlake Landfill Inc., 13570 St. Charles Rock Road, Bridgeton, Missouri, Registered Agent, Mr. Francis Baldwin. Id., p. 3, 11.

In 1974, a new sanitary landfill was opened and continues to operate in the vicinity of the site. The new landfill was constructed with state of the art waste disposal technology and is protected from groundwater contact. The bottom of the new landfill is lined with clay and leachate collection systems have been installed. Id., p. 3.

In 1988, Laidlaw acquired this operational portion of the Westlake Landfill from the following parties: (1) John L. May, in his capacity as Archbishop of the Archdiocese of St. Louis; (2) the Shrine of St. Jude, an Illinois not-for-profit corporation; and (3) the Society for the Propagation of the Faith of the Archdiocese, a Missouri not-for-profit corporation, (collectively the "Sellers"). Although two areas denominated as Areas 1 and 2 have been identified as containing radiological material, Laidlaw did not acquire any interest whatsoever in Areas 1 and 2. Those areas are now largely owned by Rock Road Industries, Inc., in conjunction with certain religious and/or charitable not-for-profit institutions. Neither Laidlaw, nor any of its affiliated corporations have ever owned, or had any responsibility for, Areas 1 and 2.

The property currently operated by Laidlaw is, and always has been, an environmentally sound waste disposal operation. The HRS docket documents and previous studies of the area support this fact. Significantly, the HRS docket reveals:

(1) The Summary Report "Radioactive Materials in the Westlake Landfill" prepared by the NRC in June 1988 (NRC Summary Report) states that the operating landfill is protected from groundwater contact. The landfill is lined with clay and leachate collection systems are utilized. NRC Summary Report, p. 3.

(2) A recent hydrogeologic investigation of the site and its surroundings found that the current landfill operation was being conducted in a deep quarry constructed in bedrock formation. The landfill operation incorporates leachate collection, treatment and monitoring. Based on these findings, the investigation concluded that the operating landfill was not even an appropriate target for inquiry. Hydrogeologic Investigation, West Lake Landfill Primary Phase Report, October 1986, p. IN-1.

2. Name of Site

Areas 1 and 2 are owned by entities other than Laidlaw and its subsidiary corporations. The Laidlaw operations consist of Laidlaw Waste Systems (Bridgeton), Inc. which was formerly known as the Westlake Landfill, Inc. As a practical matter the Laidlaw Waste Systems operations are often referred to as "the Westlake Landfill." However, the former Westlake Landfill, Inc. does not own property or operate businesses at Areas 1 and 2. Therefore, denominating the proposed NPL site as the "Westlake Landfill" does not accurately describe the true areas of U.S. EPA's concern.

Confusion of an environmentally sound, properly operated solid waste disposal facility with the areas identified in U.S. EPA's HRS docket could be deleterious to Laidlaw and achieve no environmental policy objective. Therefore, since the areas identified in the HRS scoring and docket are owned by Rock Road Industries, Laidlaw joins with the comments submitted on behalf of Archbishop John L. May, the Roman Catholic Archbishop of the Archdiocese of St. Louis in the comments on re-naming this site. Laidlaw requests that the site, should the listing be promulgated as final, be under the name "Rock Road Industries."

3. HRS Scoring and Risk

Laidlaw also joins in, and incorporates herewith, the comments submitted on behalf of Archbishop May regarding scoring and risk relative to this proposed site. The HRS score inaccurately assigned certain elevated values to scoring parameters, thereby creating an HRS score slightly above 28.5. Further, the HRS docket documents reveal that the contaminants at the proposed site are essentially stable and do not pose an imminent or substantial endangerment to human health or the environment.

Missouri Department of Natural Resources' investigations in the vicinity of the proposed site reveal minimal ground water use. MDNR Memorandum, June 30, 1989. Only one well is located within a one mile radius of the site, and the nearest drinking water well is 1.4 miles from the site. Nevertheless, the HRS for "ground water use" and "distance to nearest well." The maximum scores for ground water use and distance are not supported by the actual use of ground water in the vicinity. A reformulated HRS score of the site based on more realistic ground water use values would be less than the regulatory minimum score of 28.5.

This result is further mandated by the low level risk posed by the proposed site. The extensive NRC studies and investigation of the proposed site over the past several years reveal little or no immediate risk. The NRC has concluded that "there is no indication that significant quantities of contaminants are moving off-site at this time." NRC Radiological Survey of the Westlake Landfill, May 1982, p. 1 Abstract. Furthermore, off-site sampling conducted by the NRC investigation detected no exceedences of U.S. EPA standards. Id p. 16. Consequently, the NRC has consistently concluded that "the contamination (at the site) does not present an immediate health hazard..." NRC Site Characterization, 1989, p. ix.

In summary, Laidlaw respectfully requests that U.S. EPA take notice of the facts surrounding Laidlaw's association with the site, and rename the proposed site "Rock Road Industries" to more accurately reflect ownership of the site. Laidlaw further requests that U.S. EPA adopt a corrected rescoring of this site that will more accurately reflect the minimal threat the site poses.

Respectfully submitted,

Scott Schreiber,
Regional Engineer

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 25 1989

Site: Westlake Lfl
ID #: MOD079900932
Group: File
Other: Cotter Corp

Docket Nos. 40-8035
40-8801

Cotter Corporation
ATTN: Mr. George Rifakes
President
P.O. Box 767
Chicago, Illinois 60690

Gentlemen:

I am writing this letter to follow through on our discussion of September 13, 1989, and your discussion with Mr. Rouse on October 16, concerning the radioactive material in the West Lake Landfill. In view of the record, I have concluded that the Cotter Corporation is responsible for the presence of this material in the landfill, and the consequent environmental and radiation health problems that may result from the radioactive material.

The situation of this radioactivity is summarized in the Nuclear Regulatory Commission's report titled "Radioactive Material in the West Lake Landfill, Summary Report," NUREG-1308, Revision 1, June 1988. This radioactive material, if neglected, has the potential of becoming a threat to the public health and safety because its concentrations of radium-226 and other radioactive decay products will be continually increased by the radioactive decay of the thorium-230 present. The increasing concentrations will mean proportionally increasing gamma radiation emissions, radon-222 generation, and potential for leaching into the groundwater.

The record shows that Cotter Corporation purchased the radioactive material and used it under an Atomic Energy Commission license at its processing site on Latty Avenue in Hazelwood, Missouri, and that later, in the process of decontaminating the site prior to termination of the license, the contractor for Cotter Corporation had the material trucked to the West Lake Landfill in Bridgeton, Missouri. Incorrect information was reported to the Commission with regard to which landfill the material was trucked to and with regard to how deeply it was buried. The dilution of the material with soil prior to transport to the landfill was noted as a violation of regulations. The record establishes the traceability of the material to Cotter Corporation activities under license.

We have concluded that remediation is called for, and we see nothing in the circumstances of the radioactive material in the West Lake Landfill which argues for delay in this matter. Please advise us within 30 days of the date of this letter what your plans are for further site characterization and evaluation of what remediation is appropriate.

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

cc: Edward J. McGrath, Esq.
Holme Roberts & Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

Docket Nos. 40-8035
40-8801

Cotter Corporation
ATTN: Mr. George Rifakes
President
P.O. Box 767
Chicago, Illinois 60690

Gentlemen:

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Sincerely,

(Signed) Robert M. Bernero

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

cc: Edward J. McGrath, Esq.
Holme Roberts & Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

Distribution:
Docket Nos. 40-8035/40-8801

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(JS/LTR TO MR. RIFAKES)

OFC: IMAF	:IMIF	:OGC	:IMSB
NAME: JSwift:jc	:FBrown	:JGoldberg	:LCRouse
DATE:10/24/89	:10/ /89	:10/24/89	:10/24/89

OFC: DD/IMNS	:DD/IMNS	:DD/NMSS	:D/NMSS
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Docket Nos. 40-8035
40-8801

Cotter Corporation
ATTN: Mr. George Rifakes
President
P.O. Box 767
Chicago, Illinois 60690

Dear Mr. Rifakes:

In my letter dated October 25, 1989, I stated that remedial action is called for at the West Lake Landfill and requested to be advised what your plans are for further site characterization and evaluation of what remediation is appropriate.

In further communication since then, you have requested guidance on the appropriate standards for decontamination in order to determine the options and the choice for remedial action. We have concluded that the requirements for disposal of uranium mill tailings in 10 CFR Part 40, Appendix A are appropriate for disposal of the radioactive material which is in the West Lake Landfill. The disposal should include the material with concentrations of thorium-230 (Th-230) greater than 15 pCi per gram of soil.

The appropriate decontamination criteria for property to be released for unrestricted use are in Criterion 6 of Appendix A to 10 CFR Part 40. The Criterion 6 guidance specifies cleanup to less than 5 pCi radium-226 (Ra-226) per gram of soil averaged over the first 15 cm below the surface, and 15 pCi Ra-226 per gram averaged over 15-cm thick layers more than 15 cm below the surface. In the particular case of the West Lake Landfill, where the ratio of Ra-226 to its precursor, Th-230 is far from equilibrium, the concentration limit of 15 pCi/g should also be applied to the Th-230; this provides for the future ingrowth of Ra-226 due to the radioactive decay of Th-230.

Given these criteria for remedial action, please advise me in 30 days of your plans and schedule for consideration of options and the selection of remedial action.

Sincerely,

(Signed) Robert M. Bernero

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

cc: Edward J. McGrath, Esq.
Holme Roberts and Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

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JSwift	
FBrown	
GBeveridge/SCornell 1-23	(COTTER CORP./1)

*see previous concurrence

OFC	:IMAF*	:IMIF *	:IMSB*	:OGC*	:IMNS*
NAME	:JSwift	:FBrown	:GSjoblom	:RFonner	:GSjoblom
DATE	:1/25/90	:1/25/90	:1/25/90	:1/25/90	:1/26/90

OFC	:IMNS*	:NMSS*	:NMSS
NAME	:RCunningham	:GArlotto	:RBernero
DATE	:1/26/90	:1/26/90	:2/2/90

OFFICIAL RECORD COPY

Cotter Corporation
General Office

303 980 1232
2596 WEST BAYAUD AVENUE SUITE 250
LAKEWOOD COLORADO 80228

February 26, 1990

Site: Westlake Ldfl
ID #: MOR07990093
Prock: H-6
Other: Cotter Corp.

Mr. Robert M. Bernero
Director
Office of Nuclear Materials
Safety and Safeguards
United States Nuclear
Regulatory Commission
Washington, D. C. 20555

Dear Mr. Bernero:

We have received your most recent letter advising that the provisions of 10 C.F.R. part 40 appendix are appropriate guidance for disposal of radioactive material found in the Westlake landfill. We appreciate receipt of the information since it will provide some assistance in our evaluation. However, we still have unresolved the remaining two primary concerns which have been raised with your staff, and the Office of General Counsel. Namely:

1. Our position that any action which may be taken to remediate conditions at the Westlake landfill be subject to unitary regulatory jurisdiction and oversight.

2. Our need to have access to the documents, data and other information pertaining to the acquisition, processing or other treatment, handling and disposition by the United States or its contractors, of the radioactive material now asserted to be in the Westlake landfill.

As you know, answers to both of these issues are critical to our determination of the role, if any, which Cotter might agree to in dealing with the Westlake landfill. We understand from conversations with Robert Fonner that he has raised with U.S. EPA the jurisdictional issue created by potentially overlapping N.R.C. and EPA regulatory authorities, and the proposed listing of the Westlake landfill on the National Priority List. The information which he conveyed to us indicates that there is a very serious potential that any remediation of the radioactive materials at Westlake by a private party may be seriously impeded and complicated by dual regulation.

Cotter is, of course, powerless to resolve the jurisdictional issues between U.S. EPA and N.R.C. It is our firm belief, however, that unless resolution of this issue is reached in advance of any undertakings by us, all parties and the public will be subjected to unwarranted burdens, cost and delay.

With respect to the historical information concerning the materials, Mr. Fonner advised us in early January that an effort was being made to locate and make those records available. We have not heard further from him. Cotter cannot make a responsible decision about its possible role in the matter without access to the historical information, nor can it make prudent decisions about the roles of other parties who have owned, had possession or otherwise been involved with the material. Information with respect to the original nature and form of the material and the manner in which it has been processed or otherwise treated is necessary to help us evaluate remedial alternatives.

We are anxious to resolve the relationship and responsibility of Cotter regarding this material as expeditiously as possible. Please advise me regarding your ability to respond to our outstanding questions. Should you have any questions or wish to discuss our concerns, please call me on 312-294-4416.

Very truly yours,

George P. Rifakes
President, Cotter
Corporation

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 10, 1990

Site: Westlake LdFl
ID #: MOD079900932
Break: 1.16
Other: Cotter Corp.

RECEIVED
APR 27 1990
REML SECTION

Docket Nos. 40-8035
40-8801

Cotter Corporation
ATTN: Mr. George Rifakes
President
P.O. Box 767
Chicago, Illinois 60690

Dear Mr. Rifakes:

In your letter of February 26, 1990, you emphasized two areas of concern which you consider unresolved. The first is your position that any action which may be taken to remediate conditions at the West Lake Landfill "be subject to unitary regulatory jurisdiction and oversight." The second is your "need to have access to the documents, data and other information pertaining to the acquisition, processing or other treatment, handling and disposition by the United States or its contractors, of the radioactive material now asserted to be in the West Lake Landfill."

With regard to the first concern, the U.S. Nuclear Regulatory Commission (NRC) cannot guarantee to the Cotter Corporation that only one regulatory agency will be involved in the remediation of the West Lake Landfill. The NRC has not formally asserted its authority, e.g., by issuance of a license or an Order or a Confirmation of Action Letter. Even such an action by the NRC might not preclude other agencies from exercising authority. The Environmental Protection Agency (EPA) has authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to remediate releases of hazardous materials, and the State of Missouri (State) may have authority under State law. However, remediation pursuant to NRC regulations might result in the remediated site being considered a, "federally permitted release," such that the liability provisions of Section 107 of CERCLA would not apply. You may wish to consult EPA and the State with regard to your concern about unitary regulatory jurisdiction and oversight.

With regard to your second concern, about documentation of the history of the radioactive material in the West Lake Landfill, we furnished you copies of the principal documents in the NRC's files by our letters of September 6 and September 15, 1989. We recently received some additional documents which staff of the Department of Energy (DOE) retrieved from their files at our request;

copies of these are enclosed. The history of the material is relevant to the issue of whether it is Section 11e.(2) byproduct material or source material. The determination on this issue controls some of the options available for remedial action.

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosures: As stated

cc: Edward J. McGrath, Esq.
Holme Roberts and Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

copies of these are enclosed. The history of the material is relevant to the issue of whether it is Section 11e.(2) byproduct material or source material. The determination on this issue controls some of the options available for remedial action.

Sincerely,

for Original signed by G. A. Arlotto

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosures: As stated

cc: Edward J. McGrath, Esq.
Holme Roberts and Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

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[JS/NMSS90105]

C2J 4/10/90

OFC	IMAF	IMIF	OGC	IMSB	DD:IMNS	D:IMNS
NAME	JSwift:ls	FBrown	RFonner	CHaughney	GSjoblom	RCunningham
DATE	04/5/90	04/11/90	04/6/90	04/5/90	04/9/90	04/9/90

OFC	NMSS	NMSS				
NAME	GArlotto	RBernero				
DATE	04/10/90	04/10/90				

LIST OF ENCLOSURES

1. Atomic Energy Commission memorandum from R.J. Smith, Jr. to J.P. Morgan, subject "Low Grade Uranium Bearing Materials," January 6, 1954.

2. Atomic Energy Commission memorandum from F.R. Dowling to R.W. Bistyga, subject "Pitchblende AM-7 Raffiante at St. Louis Airport," June 15, 1956.

3. Paper titled "St. Louis Airport Residues" by Miller, dated 9-23-65, annotated.

4. "Committee Report on Disposition of St. Louis Airport Storage Site," Airport Committee: R.H. Miller, E.B. Kiser, Jr., W.T. Thornton, E.E. Green, D.L. Oakley, November 5, 1965.

5. "Bill of Sale," Contract No AR-(23-2)-56, in which the U.S. Atomic Energy Commission sells to Continental Mining & Milling Co. the Pitchblende Raffinate, Colorado Raffinate, Barium Sulfate Cake, Barium Cake and Miscellaneous Residues stored at the St. Louis Airport site, February 25, 1966.

6. Quitclaim Deed transferring property at the St. Louis Airport site from the U.S. Government to the St. Louis Airport Authority, dated May 15, 1973, (lacking pages 1 and 2).

7. "History & Background Relative to the Radiological Re-monitoring of Mallinckrodt by the Energy Research & Development Administration," Mont G. Mason, August 19, 1977.

8. Letter from William E. Mott, U.S. DOE to Burt McCullough, Missouri Department of Natural Resources, January 28, 1981.

10. U.S. Department of Energy memorandum from Raymond Cooperstein to Jerry Counts subject "Information on FUSRAP and surplus facility sites in Missouri," November 10, 1981, transmitting excerpts from the Background Report on Former MED/AEC sites, DOE/EV-0097A.

11. Copy of the front cover and the title page from report DOE/EV-0005/27 (ORNL-5715(, titled "Radiological Survey of the Mallinckrodt Chemical Works, St. Louis, Missouri," December 1981.

12. U.S. Department of Energy memorandum from Edward G. Delaney to E.L. Keller, dated August 16, 1982, transmitting 2 reports received from W. Crow, NRC (Reports attached), and 2 tables of data.

13. Letter from William R. Voigt, Jr., U.S. DOE to the Honorable Vincent Shoemehl, Mayor of City of St. Louis, February 27, 1986.

14. Letter from Edward G. DeLaney, U.S. DOE to Jerry Everding, St. Louis Globe Democrat, dated Mary 29, 1986, transmitting 5 documents.

15. Letter from James J. Fiore, U.S. DOE to Leland Rouse, U.S. NRC, dated August 13, 1987, with 2 enclosures.

16. Copy of the front cover and title page from report ORNL/TM-10008, titled "Radiological Survey of Properties in the Vicinity of the Former Cotter Site, Hazelwood/Berkeley, Missouri (LM003)," May 1987.

17. Letter from L.R. Levis of Weston to Andrew Wallo, III, of U.S. DOE, subject "Historical Summary-FUSRAP sites-St. Louis, Missouri," April 1, 1988.

18. Paper titled "Appendix A: St. Louis Site and Contaminant Description," annotated with the date 3/7/88.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 09 1990

Bill Sexton WJS
Chuck Hinchliffe
Don Sniezek
For info.
DM 7/16/90

Site: Westlake Ldfl
ID #: MOD079900932
Break: file
Other: Cotter Corp

Docket Nos. 40-8035
40-8801

Cotter Corporation
ATTN: Mr. George Rifakes
President
P.O. Box 767
Chicago, Illinois 60690

Dear Mr. Rifakes:

Your letter of May 21, 1990, indicates that you need additional guidance in reaching a decision regarding the remediation of the radioactive contamination in the West Lake Landfill, Bridgeton, Missouri. I had hoped that with the extensive information provided by my letter of April 10, 1990, the Cotter Corporation would have been able to choose in a timely fashion a path toward responsible remediation of the landfill.

In your letter you raised a concern about the legal characterization of the material. The documentation already provided by you establishes that the process residues which the Atomic Energy Commission sold in 1966 and which later came into possession of the Cotter Corporation at its Latty Avenue site in Hazelwood, Missouri, contained greater than 0.05 percent by weight of uranium and were sold for their uranium content. Accordingly, under Atomic Energy Act authority, at that time a source material license was issued to Cotter Corporation. However, as the documentation also shows, the residuals are the byproduct of the processing of ores by Mallinckrodt Chemical Works primarily for their source material content and thus are also byproduct material as defined in subsequent legislation (the Uranium Mill Tailings Radiation Control Act of 1978). The opinion of the court in Kerr-McGee Chemical Corporation vs Nuclear Regulatory Commission (NRC) (D.C. Circuit April 27, 1990) validates the present characterization of the material as byproduct material based on the mill tailings act. Because the material in question is byproduct material, both in law and in its radiological characteristics, we concluded that the requirements of 10 CFR Part 40 Appendix A are appropriate and applicable, as stated in my letter of February 11, 1990.

In your letter of February 26, 1990, and reiterated in your letter of May 21, 1990, you expressed a concern that action be taken to remediate conditions at the one agency. I explained clearly in my reply of April 10, 1990, that the NRC cannot make such a guarantee. It is commonplace for commercial or industrial operations to be conducted under the purview of more than one regulatory agency. However, it is the responsibility of the NRC to protect the public health and safety and the environment from radiological impacts of activities with licensable radioactive materials, and I intend to carry out this responsibility. In this case,

JUL 09 1990

it is my strong recommendation that Cotter Corporation apply promptly for a license authorizing remediation of the radioactive waste in the West Lake Landfill. I will be pleased to meet with you to discuss your filing an application.

Sincerely,

Signed: Robert M. Bernero

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

cc: Edward J. McGrath, Esq.
Holme Roberts and Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

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Ticket NMSS90-279
Docket Nos. 40-8035 & 40-8801

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*SEE PREVIOUS CONCURRENCE (JS/NMSS90279)

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NAME	JSwift:jc:ls:ce	FBrown	RFonner	CHaughney	GSjoblom
DATE	7/03/90	7/03/90	7/03/90	7/07/90	7/ /90

OFC	D:IMNS*	NMSS	NMSS
NAME	RCunningham	GArlotto	RBernero
DATE	7/ /90	7/6/90	7/9/90

OFFICIAL RECORD COPY

Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690 - 0767

Docket
40-8035
40-8801
PDR

May 21, 1990

Mr. Robert M. Bernero
Director
Office of Nuclear Materials
Safety and Safeguards
United States Nuclear
Regulatory Commission
Washington, D. C. 20555

Dear Mr. Bernero:

Subject: Docket Nos. 40-8035 and 40-8801

We have reviewed your letter of April 10, 1990, along with the accompanying materials. Thank you for providing more of the history related to the material which is stored at the St. Louis airport site. We are disappointed, however, that you were unable to fully respond to our two principal concerns.

With respect to our concern about regulatory jurisdiction and oversight of any remedial effort, it is our position that NRC, having asserted jurisdiction to require remedial action should accept the responsibility of dealing with concurrent and conflicting jurisdictional assertions by other regulatory agencies. Cotter, as the regulated party, has no power to resolve this matter.

With respect to the proper legal characterization of the material based on its origin and treatment, you correctly point out that history should help form the decision as to whether the material is source material or by-product material. However, you have not informed us as to the characterization NRC will apply.

As we have indicated to you during our meetings and in our correspondence, Cotter is anxious to address the issues which you have raised. However, we are unable to grapple with them effectively without more definitive participation by NRC. Cotter is available to meet with you again in the hope that the roles and responsibilities of all interested parties can be determined. Please let me know if you wish to proceed in this manner.

Sincerely,

George P. Rifakes
President,
Cotter Corporation

9006110033 900521
PDR ADOCK 04008035
C PDC

Delete: Region III

NF11

24

Greg R.

Site: Westlake Ldfl
ID #: MOD079900932
Break: 11.11
Other:

August 15, 1989 MOD079900932

MEMORANDUM

SUBJECT: Assistance on PRP Searches

TO: Ron King, Chief REML

FROM: Kerry Herndon, Chief PREP

THRU: Robert Morby, Chief SPFD

I would like to request Joe Sheehy's assistance in initiating and overseeing two PRP searches in the state of Missouri. The sites are:

1. Westlake Landfill, Bridgeton
2. St. Joseph Mineral, Viburnum

Westlake Landfill will be proposed on NPL Update 10 in late September and therefore has the highest priority. The St. Joseph Mineral Site will be the subject of an LSI next fiscal year and probable NPL listing late in FY'90.

I would be happy to meet with Joe initially about these assignments. Then he should work with Greg Reesor and CNSL on the specifics of the investigations.

Ron

Category 11 7

Westlake LdFl
MOD079900932
Other: 13.3
Other:

POST DISPATCH 11/12/84

Bridgeton Landfill Seeks 30-Acre Expansion

By Karen L. Koman
Post-Dispatch Jefferson City Bureau

JEFFERSON CITY — The West Lake Landfill of Bridgeton, contaminated with both toxic chemicals and radioactive waste, has applied to the state for permission to expand its site by 30 acres.

The request, filed recently with Missouri's Department of Natural Resources, says the sanitary landfill is almost filled and asks that the landfill be allowed to expand into an adjacent depleted limestone quarry.

The proposal surprised some officials in Bridgeton because the municipality was unaware of the plan. No public hearings have been scheduled.

"Environmentally, the things that have happened there in the past should not have happened," said City Councilwoman Peggy Meyer. "And the site is in such close proximity to the Missouri River that contamination is extremely possible."

A spokesman for the project said the expansion was on ground that had no waste and posed no threats for leakage. He said the proposal must not be prejudged by the history of the landfill.

The landfill is at 13570 St. Charles Rock Road and has long been considered one of the worst hazardous-waste sites in the state because it has a lot of waste, is in an urban area and is close to the river.

State officials said Friday that some liquid waste had seeped from the site, although no dangerous levels of hazardous material were detected in the seepage. Toxic radon gas has also been detected coming from the site in recent months.

The landfill contains thousands of tons of pesticides, solvents and other chemicals from chemical companies in the area. The landfill also was the burial site in 1973 of about 40,000 tons of low-level radioactive waste from a former uranium processing plant in Weldon Spring, operated by Mallinckrodt Inc.

Mrs. Meyer said residents were worried about the hazardous waste and about truck traffic and odors from the landfill.

Bridgeton Mayor E.W. "Bill" Abram said he had expected an expansion at West Lake because of recent limestone excavation. "But I'm a little upset about it because of the record that place has had," he said.

State officials say Bridgeton lacks jurisdiction in the matter because the expansion would require no zoning change.

And the proposal to expand is unlikely to be the subject of a public hearing at the state level because of a shortage of staff and a backlog of projects, said Tom Gredell, of the state's Solid Waste Management Division. He said the department would invite written comments on the proposal from the public during its review, which could take up to a year.

The application will be reviewed solely on its geological and environmental merits.

If a renewable permit is granted, the landfill would be able to continue to accept waste — six days a week for the next 30 years — until it exhausted its capacity of 13 million cubic yards.

The president of West Lake, William J. McCullough, was unavailable for comment.

The project's manager, Robert Robinson, said the site proposed for expansion was geologically stable. landfill's history and problem hazardous waste were irrelevant, he Robinson is from the Burns and McDo Engineering Co. of Kansas City.

"There's no hazardous waste in the that we're expanding into," Robinson "And I don't know that anyone has substantiated that there was any hazar waste buried there to begin with."

Gredell of the Department of Nat Resources agreed that the areas hazardous waste were separate from area proposed for the expansion. proposal ought to be considered on its merits, he said.

But some critics contend that West La troubled history and its unsolved probl raise a question about its plans for growth

"The problem is that everyone is goin say, 'Where are we going to put all trash?'" said Kay Drey, an environme activist in St. Louis.

Site: Westlake LdFl
ID #: MOD079909932
Break: 13.3
Other:

MONDAY, AUGUST 15, 1988

ST. LOUIS POST-DISPATCH

Agency: Landfill Cleanup Needed

By Carolyn Bower
Of the Post-Dispatch Staff

Radioactive material illegally dumped at the West Lake Landfill in Bridgeton 15 years ago has contaminated nearby soil and ground water and should be cleaned up, the U.S. Nuclear Regulatory Commission says.

In a report made public last week, the agency found that a cleanup was needed because of "potential long-term adverse impacts." But the report says that it is unlikely that anyone has received significant radiation exposure from the site.

The Missouri Department of Natural Resources has said the landfill poses a health threat.

The federal agency said a cleanup could cost from $370,000 to $25 million in 1984 dollars. Newer cost estimates were unavailable.

The report, some of which has taken five years to complete, says more study is needed to determine whether the 170,000 cubic yards of contaminated material could be stored safely at the landfill or should be moved elsewhere.

The landfill lies northwest of the intersection of Interstates 70 and 270 and east of Earth City. It is surrounded by residential subdivisions, a farm and industrial development.

Federal officials have said the West Lake material could not be stored at the earthen bunker that has been proposed for 82.7 acres north of Lambert Field. Officials have proposed spending $246 million to store about 750,000 cubic yards of radioactive material from elsewhere in the St. Louis area at that site.

The contamination at West Lake, at 13570 St. Charles Rock Road, and the other sites in this area is left over from uranium processing in St. Louis for nuclear weapons in the 1940s and 1950s.

The primary contaminants at West Lake Landfill are thorium 230 and radium 226, both of which can cause cancer. Concentrations of the radioactive substances in the soil and ground water at the 200-acre landfill exceed federal cleanup guidelines, the report says.

The concentration of thorium 230 in soil at West Lake ranges as high as 19,130 picocuries a gram. It averages about 9,000 picocuries a gram, federal officials have said. The normal concentration of thorium 230 in soil in St. Louis County runs about 0.2 picocuries a gram.

The concentration of radium 226 at the landfill has been found as high as 699 picocuries a gram and averages about 90 picocuries a gram, officials have said. Normally, 0.5 picocuries a gram of radium 226 are found in soil in this area.

Because of the way the elements decay, the concentrations of radium 226 and radon 222, a gas that is extremely harmful if ingested or inhaled, are expected to increase ninefold over the next 200 years at the landfill. The report says some of the radioactive material on the northwestern edge of the landfill has no protective cover of soil to prevent the spread of contamination.

The commission also said that tests showed "some low-level contamination of ground water," indicating that the waste was leaching through the landfill. Further complicating a cleanup, the radioactive material may have become mixed with chemically hazardous material, the report says.

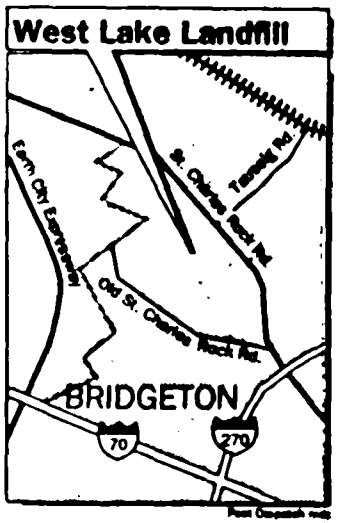
"Under these conditions, on-site disposal, if possible, will likely require moving the material to a carefully designed and constructed disposal cell," the report says.

Councilwoman Peggy J. Meyer of Ward 1 in Bridgeton said Saturday that city officials support cleanup of the landfill.

But Bridgeton officials, like other officials in north St. Louis County, have urged that the West Lake material and all the radioactive material in this area be consolidated and moved out of the populated area.

"My first reaction to this report is 'Let's get started,'" Meyer said.

The West Lake property was bought within the last month by Laidlaw Waste Systems Inc., a trash-collection company, from the Archdiocese of St. Louis, Meyer said.



Post-Dispatch map

A spokesman for the company could not be reached for comment.

In 1973, about 8,700 tons of radioactive barium sulfate cake from a nearby radioactive waste site on Latty Avenue in Hazelwood was dumped illegally at the West Lake Landfill.

Site: Westlake Ldfl
ID #: MOD079900932
Break: 13.3
Other:

Metropolitan
THE KANSAS CITY STAR

MONDAY, March 26, 1990 ★

Radioactivity woes plague St. Louis

Contamination is most extensive yet in U.S., dates back to earliest atomic research projects.

By KEITH SCHNEIDER
The New York Times

ST. LOUIS — Nearly a half-century after a company here began processing fuel for nuclear weapons, St. Louis and several western suburbs are battling over a new disposal plan for millions of cubic yards of dirt contaminated with uranium, thorium, radium, actinium and other radioactive elements that are polluting the water, soil and air.

Not even in Denver, where plutonium particles escaped from the nearby Rocky Flats plant, or in Salt Lake City, where a pile of uranium wastes was recently moved from the city to the desert, has a major metropolitan area contended with radioactive wastes on the scale facing St. Louis.

"We have a million cubic yards of radioactive waste on this side of the Missouri River, a million and a half on the other side, and they don't know where to put the first cupful," said Kay Drey, a nuclear opponent who is providing technical assistance to several

See PLANS, A-8, Col. 1

Plan for nuclear waste inflam

Continued from A-1

suburban leaders.

"This is the oldest radioactive waste of the atomic age, and there still is no safe place to put the stuff."

The federal government, which has spent a decade and $75 million studying the extent of the contamination, has not settled on a solution, but officials are leaning toward a plan that they say can accommodate half the waste: consolidating debris from a former uranium processing plant downtown and a handful of other sites onto 82 acres just north of Lambert-St. Louis International Airport in the suburb of Berkeley.

The city of St. Louis owns the land, which is divided into a site where some waste is already stored and an adjoining park that was closed in 1988 because of radiation in the soil.

Showing support for the Energy Department plan, the St. Louis Board of Aldermen has voted to transfer ownership of the land to the department.

But the mayor of Berkeley, William Miller, wants all the wastes removed from the area; he is leading a campaign to collect signatures from 15,000 St. Louis voters and repeal the board's decision.

Risk assessment

The Energy Department's response to such concerns has hardly been reassuring. It has displayed a new candor about the risks that residents face, describing in a January report the extent of contamination around the metropolitan area, with special attention to the problem in Berkeley.

The radioactive waste near the airport, along the Berkeley-Hazelwood border, "represents a potential health hazard to the general public," the authors of the report said.

"There is no control of off-site contamination to prevent further spread of this material. The problem is magnified by the extensive commercial development in this area."

The situation here is one of the most graphic illustrations of the enduring costs paid by an American community for its participation in the Cold War.

For 24 years, St. Louis was a vital link in the chain of production for atomic weapons because of a chemical process that the Mallinckrodt Chemical Works developed for purifying large quantities of uranium.

The company, one of the city's oldest industrial concerns, produced the uranium used at the University of Chicago on Dec. 2, 1942, to sustain the world's first nuclear chain reaction and for the atomic bombs that destroyed Hiroshima and Nagasaki in August 1945.

Until 1966, Mallinckrodt processed uranium for nuclear weapons at its main plant along the Mississippi River in downtown St. Louis and in Weldon Spring, 25 miles to the west.

Under the cover of national security secrecy, the government authorized the company to dump radioactive wastes quietly in the suburbs, including a 21-acre field in Berkeley but owned by St. Louis. It is that field and the 61-acre park across the street that the government is considering for a permanent storage site.

David R. Bohm, an assistant city counselor for St. Louis, said the transfer of the land to the government was subject to conditions.

"For the Department of Energy to gain control of the land," he said, "it must agree that it will not charge the city for the cost of the cleanup. It must also agree not to put any other radioactive wastes there except those from three specific sites in the region."

Changing estimates

In 1981 the department estimated that there were 556,000 cubic yards of radioactive wastes in the St. Louis metropolitan area, roughly a fifth the current estimate.

The wastes became an issue momentarily in 1946, when newspaper reporters in St. Louis asked questions about the trucks that were hauling dirt from the plant to land bordering the airport.

The concerns disappeared after the government and Mallinckrodt assured reporters that the wastes were "not radioactive or otherwise dangerous."

From 1946 to 1957, Mallinckrodt hauled wastes from its downtown processing plant and dumped them in shallow pits north of the airport.

In some places in Berkeley and Hazelwood, along roads where waste spilled from trucks, the Energy Department has found radiation levels seven times normal. Uranium, thorium and radium

nes St. Louis area

have also been found in sediments in Cold Water Creek, which drains the Berkeley park and then flows to the Missouri River.

The park, where children and adults played softball for decades, was closed in 1988 because of the high radiation levels found in the soil. The Energy Department hopes to use the park as the site for a permanent bunker to store the wastes, which will remain radioactive for tens of thousands of years.

Several sites

The problem is not Berkeley's alone. In 1957 Mallinckrodt transferred uranium processing to a government-owned plant across the Missouri River in Weldon Spring and began dumping radioactive wastes and debris into a quarry on the site.

Uranium processing was halted in 1966, but the accumulated wastes remain. Cleaning them up is now expected to cost $594 million. In 1979 the Energy Department estimated the cost of cleaning up Weldon Spring at $3.6 million.

And in downtown St. Louis, just south of the McKinley Bridge, the department found radiation levels in excess of federal health guidelines inside 14 buildings at the Mallinckrodt chemical plant that are still in use.

Contamination has been found at a fourth site, the West Lake landfill, about 10 miles west of Berkeley in Bridgeton.

Keith F. Pickett, a spokesman for the company, now called Mallinckrodt Inc. and owned by International Minerals and Chemical Corp., says the hazard to the company's workers is negligible because most of the contamination is confined to small spots. "The Department of Energy has assured us and our employees that there is no real risk," he said.

But some workers are worried. In 1980 a study by epidemiologists under contract to the Energy Department found an excessive number of deaths from cancer of the esophagus and leukemia among 2,731 white males who processed uranium for Mallinckrodt from 1942 to 1966. The researchers did not identify a cause of the cancers.

Fulton West Lake Landfill Missouri

ARHM/HAZM

Site: Westlake Ldfl
ID #: MOD079900932
Break: 13.3
Other:

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winds and freezes which will affect our economy and the nation's in the future."

The governor noted that nearly 2,600 homes were damaged or destroyed in the two counties and about 60 businesses. He asked that federal officials conduct another survey of the areas, saying that damage "is much greater than originally assessed."

Carlin added: "I wish to point out that the after-effects of the disaster are still being assessed. In Great Bend and Hoisington, basements and foundations of homes are collapsing and cracking.

Although it was not ... emergency agency, state o... speculated that the disaster declarations were denied because of substantial insurance coverage on damaged homes and businesses.

The federal agency told the governor's office of its decision Tuesday, explaining that surveys of the areas indicated that the state and affected communities had the "resiliency and unique capabilities to handle" the sit-

See REQUEST, Page D-12, Col. 1

grap...
traits o...
much else.

The majority
memorabilia, Floyd sa
a large circus clown mus
sota, Fla., where Kelly spent ...
years.

Although the clown theme still dominates the museum, a start has been made at looking at Chautauqua County. The curator, Modena Lewis, has displayed hundreds of photographs taken of, or by, local residents. Some show oil and gas exploration — a forest of wooden oil derricks that once rose above the small towns like Peru, Kan. There are some of floods or explosions or other disasters. But the most arresting photographs are the old "Kodaks," the wallet-sized pictures with intricate borders, that simply show people. Those pictures have frozen ordinary folks in time in commonplace situations such as standing proudly by a new 1930 Model A Ford or grinning lopsidedly at the camera while practicing archery on some long-ago summer day.

Floyd says plans call for future display of an old printing press that still works, an ancient fire engine and some antique oil-field equipment. The big problem, he repeats, is money.

Mark Hunt, the past president of the Kansas Museum Association, says most of the 200 to 400 museums in Kansas have similar cash problems.

"You've got inflation," Hunt says. "You've got the expense of building and presenting displays.

"What you've really got is a constant struggle to keep the physical plant together and at the same time maintaining artifacts which by their very nature and age are constantly deteriorating. It's not easy."

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Operators ask to expand hazardous-waste landfill

The Associated Press

BRIDGETON, Mo. — Operators of a landfill site that one state official calls the worst hazardous-waste repository in Missouri have asked permission to expand because they are running out of room.

The West Lake Landfill, which now covers 9 acres, wants to expand into an abandoned quarry just east of the current site. A spokesman for the Missouri Department of Natural Resources, Tom Ellis, said the agency would decide next month whether to grant the request.

Another department official, Ron Kucera, has called the site "the worst, by far" in the state because of the amount of hazardous waste buried there, its urban location and its nearness to the Missouri River flood plain. Bridgeton is in the St. Louis area.

Former Gov. Joseph P. Teasdale focused public attention on the site when he made a campaign visit there last year. Teasdale said he was concerned about the danger hazardous waste posed to drinking water.

About 9,000 tons of low-level radioactive waste from Mallinckrodt Inc.'s uranium processing facility are believed to be buried at the site. Hundreds of tons of other chemical waste from three St. Louis area companies are also believed to be buried at the site.

The Nuclear Regulatory Commission is conducting tests at the site, but results are not expected for several months.

The landfill, operated by William J. McCullough, has a state permit to dispose of municipal solid waste and demolition and construction waste.

Officials of the landfill could not be reached for comment but have said in the past that they had no knowledge that hazardous waste was stored there when they began operating the site.

Waste

From page seven

carving out moats and rubble.

"That's why I never minded going to work," Schroeder said. "Everything was so interesting."

Sometimes the workers drove their cars on top of the piles to watch the planes fly in and out of Lambert Field to the south. The mounds, perhaps of feet tall, were so high the workers could feel the heat from the aircraft engines.

Schroeder remembers rolling drums that had contained uranium ore to merchants, who would resell them.

Bruno Bovolo tells about the day they buried the pickup truck.

"An AEC (Atomic Energy Commission) man came out and said the truck was too hot, don't use it anymore, bury it," said Bovolo, a foreman at the airport.

"We got a backhoe and dug a hole right there. They wouldn't let anybody have it. I said, 'That's too bad.' I could have used a truck."

Bovolo, now 72, said it bothered him that the trucks tracked muddy residue along McDonnell Boulevard and that when the drivers washed out the trucks, the residue overflowed into Coldwater Creek.

"I hitched the hell," Bovolo said. "I told them, 'You people are screwing up the creeks.' All they kept saying was, 'Don't worry about it.'"

Bovolo and Schroeder, who often play golf together now, tried to dump the radioactive material from spreading.

Before dumping truckloads of waste in railroad cars headed for reprocessing plants in other cities, Schroeder would line the cars with wax paper and shell rags to the sides.

Then he'd wet the dirt to keep the dust down.

"I always hoped somewhere along the sandy piles of radioactive material on Latty Avenue.

But he doesn't think the children were harmed because he thinks he has spent more time there than they did, and he thinks the radiation hasn't affected him.

Three of the children were the sons of Coll and Jim Bogovich.

With their dogs and bows and arrows and BB guns, the boys, then ages 9 to 13, played off and on from 1966 until the early 1970s around the piles of dirt and in the creek.

Coll Bogovich said she wasn't aware that the radioactive material at Latty Avenue could be a problem until she heard environmentalists discuss the dangers at a meeting in Florissant in 1978.

"I was quite angry," she said.

The Nuclear Regulatory Commission arranged for Kenneth Bogovich and Richard O'Brien — the two boys who had played at Latty Avenue the most — to fly to Oak Ridge, Tenn., for tests. The families were told that the boys were fine.

But federal officials cautioned that they were unable to determine whether the boys had inhaled radon. Radon gas, which has been linked to cancer, is present at the site.

Kenneth Bogovich, now 28, joined the Navy and worked on nuclear submarines. He says he has no qualms about his health. His mother says she has come to accept the situation, but she is not happy about it.

O'Brien, now 34, is not worried about his health, family members say.

In the meantime, in 1973, radioactive material had secretly been trucked to Bridgeton from Latty Avenue. A St. Ann company had a contract to dry the waste at Latty Avenue and send it to Cotter Corp. in Colorado.

Instead, the firm, S&K

Larry Williams/Post-Dispatch

Velma Vasquez's yard may be part of a cleanup effort.

Activist Kay Drey joined the fight again

Chance Sparked To Clean Up Wa

O'NEIL, St. Louis Post-Dispatch

UNTIL a chance meeting in 1978 between a Catholic nun in St. Louis and a nuclear physicist from Cornell University, few residents even knew there was radioactive waste stored in the St. Louis area.

Sister Mary Ann McGivern was returning by plane to St. Louis from New York, where she had attended a meeting on nuclear disarmament.

McGivern found herself seated next to Robert Pohl, a physicist on his way to testify at a hearing on uranium mining on Indian lands in the West.

As they chatted over dinner, Pohl asked McGivern whether she was fighting to have the nuclear waste in the St. Louis area cleaned up.

"What waste?" she asked.

The waste on "Latty Avenue" in south St. Louis, Pohl replied. He told her he had just read about it in

EPA 0099

Larry Williams/Post-Dispatch

Helena Vasquez's yard may be part of a cleanup effort.

North County Waste Sites

Dots indicate areas where contamination was found

Post-Dispatch Map/Sam Dugan

Rhonda and Schroeder, who often play golf together now, tried to keep the radioactive material from spreading.

Before dumping truckloads of waste in railroad cars headed for reprocessing plants in other cities, Schroeder would line the cars with wax paper and stuff rags in the holes.

Then he'd wet the dirt to keep the dust down.

"I always hoped somewhere along the route someone would wet the stuff down again," Schroeder said. He was never told where the material went.

There wasn't anything the workers could do about the wind that blew the powdery residue toward a cornfield that later became the Berkeley ballfields.

Rhonda said: "I saw them putting in those ballfields right next to the place. I said, 'That's too close.' But they said, 'Don't worry about it.'"

Last year, federal officials confirmed that the ballfields contain radioactive contamination. They have said, however, that the ballfield area poses a hazard only if someone eats the dirt.

The city of Berkeley closed the fields last April 19; they remain closed.

□

In the summer of 1966, the trucks were rolling again, this time hauling waste from the airport to an industrial park on Latty Avenue about a mile to the north.

A Los Angeles firm, Continental Mining & Milling Co., bought the material in an effort to recover valuable minerals such as copper and cobalt.

Workers for companies along Latty Avenue remember the operation.

"The dirt would fall off the trucks," said Billy Colbert, now 50, who drove a forklift for Wagner Electric Co. at the time.

"There was waste all over Hazelwood and Latty (avenue). Sometimes if it rained, the stuff got so thick and sticky it looked like cow manure."

Velma Vasquez, mother of one of the boys who had played with the radioactive dirt, didn't think much about the dirt falling from the trucks.

"Nobody considered it as radioactive," said Vasquez, now 63.

But today her yard may be part of a cleanup. Last fall, Bechtel National Inc. completed drilling holes up to 100 feet into her property to see how far the contamination spread.

Less than a month after Continental Mining & Milling Co. moved the dirt, the company went bankrupt. Several years later, Cotter Corp., a subsidiary of Commonwealth Edison, a utility based in Chicago, bought the residue and over the years shipped most of it to its plant in Canon City, Colo.

But enough thorium, uranium and radium seeped into the ground and remained in the buildings that the property was now contaminated.

Berkeley police Maj. Louis Charbonnet — then a patrolman — moonlighted about 40 hours a week between 1967 and 1971 as a private security guard at the Latty site. Security officers like Charbonnet were no badges to detect exposure to radiation.

"They told us there was no danger," Charbonnet said.

Charbonnet, 54, knows that several neighborhood children played in

Afterward, now 54, is not worried about his health, having emphysema only.

□

Throughout the mid-1970s, Rudy Thiele, who has farmed in the area for decades, was trying to grow crops at the Latty Avenue site.

His efforts failed.

"That land just wouldn't grow anything," said Thiele, 55. "I put in soybeans. I planted early in the spring, and, after May and June, there was nothing to harvest.

"The outer edge worked, but the middle — it was dead dirt. It never came out right."

Thiele was allowed to farm the land because the Atomic Energy Commission had declared it clean in 1974.

Two years later, the Nuclear Regulatory Commission, a successor to the AEC, said the Latty site remained contaminated. The Health and Safety Research Division of Oak Ridge National Laboratory also found excessive radioactivity.

'But nobody told Richard Jarboe.'

In 1977, Jarboe, whose manufacturer's coatings a shrewd businessman, paid $115,000 for 2.5 acres of property in the 9000 block of Latty Avenue. He made it headquarters for his plastic-coatings business.

Three days after closing the deal on the property, Jarboe learned from federal officials that his property was contaminated.

"I watched one guy come in the door, and then two and then three, and I said, 'What the hell is going on?'" Jarboe, 68, recalled in an interview at his Pulaski Coatings office.

"About nine of them came in. We all sat down and they said, 'You can't use that property.'"

The officials told him it was contaminated with radioactive waste.

"I was shocked," continued Jarboe, 68. "I mean I had no idea. I wouldn't have bought this."

Jarboe and his sons spent the next year with other workers digging up contaminated dirt and hauling out radioactive buildings.

In 1980, he thought he had the perfect solution to the waste problem and the future of his business.

On the theory that the government would have all the waste cleaned up and shipped away from Latty Avenue in two years, Jarboe paid about $100,000 for about seven more acres of contaminated property.

Jarboe thought it was a sweet deal. The government would consolidate all the waste on the new seven-acre parcel next to his business offices. He would get $15,000 from the government to temporarily store the waste there.

Once the radioactive material was gone, his business could expand.

Nearly a decade later, he's still waiting.

Every morning on his walk from his office, he sees two mounds of radioactive waste looming beside his corporate headquarters.

Jarboe employs 35 people in his business of supplying roof coatings, white-tank coatings and — a new venture — plastic liners for hazardous-waste disposal sites.

Sitting in his office at the site, Jarboe reflected on the problem. The government paid him $100,000 for the plastic liners that cover the radioactive piles on his property, but that's little consolation.

"Look, I don't know what I'm going to get out of this except a clean piece of property," he said, adding: "I may not even be here when that happens.

"You can't sue the government. I told that to the beginning. I couldn't find anything to sue them for. That's what my legal staff told me. You can't do it."

Jenny Brewing, a special correspondent of the Post-Dispatch, provided information for this story.

Atomic Surprises F

IN HAZELWOOD, a businessman can buy warehouses without knowing they are too radioactive to use.

In Berkeley, there is nothing to prevent homeowners from selling homes and yards without disclosing that they are radioactively contaminated.

It could happen anywhere in Missouri. No state law requires the mention of radiological contaminants in any real-estate transactions or deeds.

R. Roger Pryor, an

'Solution': Redrawi

RADIOACTIVE material stored in the floodway of Coldwater Creek jeopardized flood insurance coverage last winter for thousands of homeowners and business owners until Hazelwood and federal officials came up with a novel solution.

They simply redrew the flood maps so the 3,700 cubic yards of contaminated dirt ended up on the other side of the line.

The dirt had been dug up during installation of a sewer line for Hazelwood and Berkeley along Latty Avenue.

With Hazelwood's permission, the contaminated dirt had been placed in the flood plain in 1988 by the U.S. Department of Energy. Coldwater Creek flows more than 13 miles through north St. Louis County, past book yards and businesses.

The dirt was supposed to remain in the flood plain only temporarily, but it stayed.

The Federal Emergency Man-

Today: Unknown to area residents, radioactive waste is dumped in North County.

Category 17.8

federal register

Friday
July 16, 1982

REF #5

Site: Westlake LdFl
ID #: MOD079900932
Break: 17.8
Other:

Part V

Environmental Protection Agency

National Oil and Hazardous Substances Contingency Plan

SPMC

(1) Provision of individual treatment units;

(2) Provision of water distribution system;

(3) Provision of new wells in a new location or deeper wells;

(4) Provision of cisterns;

(5) Provision of bottled or treated water;

(6) Provision of upgraded treatment for existing distribution systems.

(e) *Relocation*—Permanent relocation of residents, businesses, and community facilities may be provided where it is determined that human health is in danger and that, alone or in combination with other measures, relocation would be cost-effective and environmentally preferable to other remedial response. Temporary relocation may also be taken in appropriate circumstances.

§ 300.71 Worker health and safety.

Lead agency personnel should be aware of hazards, due to a release of hazardous substances, to human health and safety and exercise great caution in allowing civilian or government personnel into an affected area until the nature of the release has been ascertained. Accordingly, the OSC or responsible official must conform to applicable OSHA requirements and other guidance. All private contractors who are working at the scene of a release must conform to applicable provisions of the Occupational Safety and Health Act and any other requirements deemed necessary by the lead agency.

Subpart G—Trustees for Natural Resources.

§ 300.72 Designation of Federal trustees.

When natural resources are lost or damaged as a result of a discharge of oil or release of a hazardous substance, the following officials are designated to act as Federal trustees pursuant to section 111(h)(1) of CERCLA for purposes of sections 111(h)(1), 111(b) and 107(f) of CERCLA:

(a)(1) *Natural Resource Loss.* Damage to resources of any kind located on, over or under land subject to the management or protection of a Federal land managing agency, other than land or resources in or under United States waters that are navigable by deep draft vessels, including waters of the contiguous zone and parts of the high seas to which the National Contingency Plan is applicable and other waters subject to tidal influence.

(2) *Trustee.* The head of the Federal land managing agency, or the head of any other single entity designated by it to act as trustee for a specific resource.

(b)(1) *Natural Resource Loss.* Damage to fixed or non-fixed resources subject to the management or protection of a Federal agency, other than land in resources in or under United States waters that are navigable by deep draft vessels, including waters of the contiguous zone and parts of the high seas to which the National Contingency Plan is applicable and other waters subject to tidal influence.

(2) *Trustee.* The head of the Federal agency authorized to manage or protect these resources by statute, or the head of any other single entity designated by it to act as trustee for a specific resource.

(c)(1) *Natural Resource Loss.* Damage to resource of any kind subject to the management or protection of a Federal agency and lying in or under United States waters that are navigable by deep draft vessels, including waters of the contiguous zone and parts of the high seas to which the National Contingency Plan is applicable and other waters subject to tidal influence, and upland areas serving as habitat for marine mammals and other species subject to the protective jurisdiction of NOAA.

(2) *Trustee.* The Secretary of Commerce or the head of any other single Federal entity designated by it to act as trustee for a specific resource; provided, however, that where resources are subject to the statutory authorities and jurisdictions of the Secretaries of the Departments of Commerce or the Interior, they shall act as co-trustees.

(d)(1) *Natural Resource Loss.* Damages to natural resources protected by treaty (or other authority pertaining to Native American tribes) or located on lands held by the United States in trust for Native American communities or individuals.

(2) *Trustee.* The Secretary of the Department of the Interior, or the head of any other single Federal entity designated by it to act as trustee for specific resources.

§ 300.73 State trustees.

Pursuant to section 111(h)(1) of CERCLA and for purposes of sections 111(h)(1), 111(b) and 107(f) of CERCLA, States may act as trustee for damage to resources within the boundary of a State belonging to, managed by, controlled by, or appertaining to such State.

§ 300.74 Responsibilities of trustees.

(a) The Federal trustees for natural resources shall be responsible for assessing damages to the resources in accordance with regulations promulgated under section 301(c) of CERCLA, seeking recovery for the losses from the person responsible or from the Fund, and devising and carrying out restoration, rehabilitation and replacement plans pursuant to CERCLA.

(b) Where there are multiple trustees, because of co-existing or contiguous natural resources or concurrent jurisdictions, they shall coordinate and cooperate in carrying out these responsibilities.

Subpart H—Use of Dispersants and Other Chemicals

§ 300.81 General.

(a) Section 311(c)(2)(G) of the Clean Water Act requires that EPA prepare a schedule of dispersants and other chemicals, if any, that may be used in carrying out the plan.

(b) The OSC, with the concurrence of the EPA representative to the RRT and in consultation with the States, may authorize the use of dispersants and other chemicals on oil spills; provided, however, that such dispersants and other chemicals must be on the list of accepted dispersants prepared by EPA.

(c) In the case of dispersants and other chemicals not included on the list of accepted dispersants, EPA will continue to authorize use on a case-by-case basis. Case-by-case approvals will be made by the Administrator or her designee.

Appendix A—Uncontrolled Hazardous Waste Site Ranking System; A Users Manual

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1.0 Introduction

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) (Pub. L. 96-510) requires the President to identify the 400 facilities in the nation warranting the highest priority for remedial action. In order to set the priorities, CERCLA requires that criteria be established based on relative risk or danger, taking into account the population at risk; the hazardous potential of the substances at a facility; the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecosystems; and other appropriate factors.

This document describes the Hazard Ranking System (HRS) to be used in evaluating the relative potential of uncontrolled hazardous substance facilities to cause health or safety problems, or ecological or environmental damage. Detailed instructions for using the HRS are given in the following sections. Uniform application of the ranking system in each State will permit EPA to identify those releases of hazardous substances that pose the greatest hazard to humans or the environment. However, the HRS by itself cannot establish priorities for the allocation of funds for remedial action. The HRS is a means for applying uniform technical judgment regarding the potential hazards presented by a facility relative to other facilities. It does not address the feasibility, desirability, or degree of cleanup required. Neither does it deal with the readiness or ability of a State to carry out each remedial action as may be indicated, or to meet other conditions prescribed in CERCLA.

The HRS assigns three scores to a hazardous facility:

- S_m reflects the potential for harm to humans or the environment from migration of a hazardous substance away from the facility by routes involving ground water, surface water, or air. It is a composite of separate scores for each of the three routes.
- S_{fe} reflects the potential for harm from substances that can explode or cause fires.
- S_{dc} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

The score for each hazard mode (migration fire and explosion and direct contact) or route is obtained by considering a set of factors that characterize the potential of the facility to cause harm (Table 1). Each factor is assigned a numerical value (on a scale of 0 to 3, 5 or 8) according to prescribed guidelines. This value is then multiplied by a weighting factor yielding the factor score. The factor scores are then combined: scores within a factor category are added, then the total scores for each factor category are multiplied together to develop a score for ground water, surface water, air, fire and explosion, and direct contact.

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TABLE 1

COMPREHENSIVE LIST TO RATING FACTORS

HAZARD MODE	FACTOR CATEGORY	FACTORS		
		GROUND WATER ROUTE	SURFACE WATER ROUTE	AIR ROUTE
Migration	Route Characteristics	• Depth to Aquifer of Concern • Net Precipitation • Permeability of Unsaturated Zone • Physical State	• Facility Slope and Intervening Terrain • One-Year 24-Hour Rainfall • Distance to Nearest Surface Water • Physical State	
	Containment	• Containment	• Containment	
	Waste Characteristics	• Toxicity/Persistence • Hazardous Waste Quantity	• Toxicity/Persistence • Hazardous Waste Quantity	• Reactivity/Incompatibility • Toxicity • Hazardous Waste Quantity
	Targets	• Ground Water Use • Distance to Nearest Well/ Population Served	• Surface Water Use • Distance to Sensitive Environment • Population Served/Distance to Water Intake Downstream	• Land Use • Population Within 4-Mile Radius • Distance to Sensitive Environment
Fire and Explosion	Containment	• Containment		
	Waste Characteristics	• Direct Evidence • Ignitability • Reactivity • Incompatibility • Hazardous Waste Quantity		
	Targets	• Distance to Nearest Population • Distance to Nearest Building • Distance to Nearest Sensitive Environment • Land Use • Population Within 2-Mile Radius • Number of Buildings Within 2-Mile Radius		
Direct Contact	Observed Incident	• Observed Incident		
	Accessibility	• Accessibility of Hazardous Substances		
	Containment	• Containment		
	Toxicity	• Toxicity		
	Targets	• Population Within 1-Mile Radius • Distance to Critical Habitat		

BILLING CODE 6560-50-C

In computing S_{gw} or S_{sw}, or an individual migration route score, the product of its factor category scores is divided by the maximum possible score, and the resulting ratio is multiplied by 100. The last step puts all scores on a scale of 0 to 100.

S_M is a composite of the scores for the three possible migration routes:

$$S_M = \frac{1}{1.73} \sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$$

where:

S_{gw} = ground water route score

S_{sw} = surface water route score

S_a = air route score

The effect of this means of combining the route scores is to emphasize the primary (highest scoring) route in aggregating route scores while giving some additional consideration to the secondary or tertiary routes if they score high. The factor 1/1.73 is used simply for the purpose of reducing S_M scores to a 100-point scale.

The HRS does not quantify the probability of harm from a facility or the magnitude of the harm that could result, although the factors have been selected in order to approximate both those elements of risk. It is a procedure for ranking facilities in terms of the potential threat they pose by describing:

- The manner in which the hazardous substances are contained,
- The route by which they would be released,
- The characteristics and amount of the harmful substances, and
- The likely targets.

The multiplicative combination of factor category scores is an approximation of the more rigorous approach in which one would express the hazard posed by a facility as the product of the probability of a harmful occurrence and the magnitude of the potential damage.

The ranking of facilities nationally for remedial action will be based primarily on S_M. S_{FE} and S_{DC} may be used to identify facilities requiring emergency attention.

2.0 *Using the Hazard Ranking System—General Considerations*

Use of the HRS requires considerable information about the facility, its surroundings, the hazardous substances present, and the geological character of the area down to the aquifers that may be at risk. Figure 1 illustrates a format for recording general information regarding the facility being evaluated. It can also serve as a cover sheet for the work sheets used in the evaluation.

Where there are no data for a factor, it should be assigned a value of zero. However, if a factor with no data is the only factor in a category (e.g., containment), then the factor is given a score of 1. If data are lacking for more than one factor in connection with the evaluation of either S_{gw}, S_{sw}, S_a, S_{FE}, or S_{DC}, that route score is set at zero.

The following sections give detailed instructions and guidance for rating a facility. Each section begins with a work sheet designed to conform to the sequence of steps required to perform the rating. Guidance for evaluating each of the factors then follows. Using the guidance provided, attempt to assign a score for each of the three possible migration routes. Bear in mind that if data are missing for more than one factor in connection with the evaluation of a route, then you must set that route score at 0 (i.e., there is no need to assign scores to factors in a route that will be set at 0).

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Facility name: _____

Location: _____

EPA Region: _____

Person(s) in charge of the facility: _____

Name of Reviewer: _____ Date: _____

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Scores: S_M = (S_{gw} = S_{sw} = S_a =)

S_{FE} =

S_{DC} =

FIGURE 1
HRS COVER SHEET

BILLING CODE 6560-50-C

.0 *Ground Water Migration Route*

3.1 *Observed Release.* If there is direct evidence of release of a substance of concern from a facility to ground water, enter a score of 45 on line 1 of the work sheet for the ground water route (Figure 2); then you need not evaluate route characteristics and containment factors (lines 2 and 3). Direct evidence of release must be analytical. If a contaminant is measured (regardless of frequency) in ground water or in a well in the vicinity of the facility at a significantly (in terms of demonstrating that a release has occurred, not in terms of potential effects) higher level than the background level, then quantitative evidence exists, and a release has been observed. Qualitative evidence of release (e.g., an oily or otherwise objectionable taste or smell in well water) constitutes direct evidence only if it can be confirmed that it results from a release at the facility in question. If a release has been observed, proceed to "3.4 *Waste Characteristics*" to continue scoring. If direct evidence is lacking, enter a value of 0 on line 1 and continue the scoring procedure by evaluating *Route Characteristics*.

3.2 *Route Characteristics. Depth to aquifer of concern* is measured vertically from the lowest point of the hazardous substances to the highest seasonal level of the saturated zone of the aquifer of concern (Figure 3). This factor is one indicator of the ease with which a pollutant from the facility could migrate to ground water. Assign a value as follows:

Distance (feet)	Assigned value
>150	0
76 to 150	1
21 to 75	2
0 to 20	3

Net precipitation (precipitation minus evaporation) indicates the potential for leachate generation at the facility. Net seasonal rainfall (seasonal rainfall minus seasonal evaporation) data may be used if available. If net precipitation is not measured in the region in which the facility is located, calculate it by subtracting the mean annual lake evaporation for the region (obtained from Figure 4) from the normal annual precipitation for the region (obtained from Figure 5). EPA Regional Offices will have maps for areas outside the continental U.S. Assign a value as follows:

Net precipitation (inches)	Assigned value
<−10	0
−10 to +5	1
+5 to +15	2
>−15	3

Permeability of unsaturated zone (or intervening geological formations) is an indicator of the speed at which a contaminant could migrate from a facility. Assign a value from Table 2.

TABLE 2.—PERMEABILITY OF GEOLOGIC MATERIALS[1]

Type of material	Approximate range of hydraulic conductivity	Assigned value
Clay, compact till, shale, unfractured metamorphic and igneous rocks.	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till.	$<10^{-5}>10^{-7}$ cm/sec	1
Fine sand and silty sand, sandy loams; loamy sands, moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till.	$<10^{-3}>10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lava; karst limestone and dolomite.	$>10^{-3}$ cm/sec	3

[1] Derived from: Davis, S. N., *Porosity and Permeability of Natural Materials in Flow-Through Porous Media*, R.J.M. DeWiest ed., Academic Press, New York, 1969; Freeze, R.A. and J.A. Cherry, *Groundwater*, Prentice-Hall, Inc., New York, 1979.

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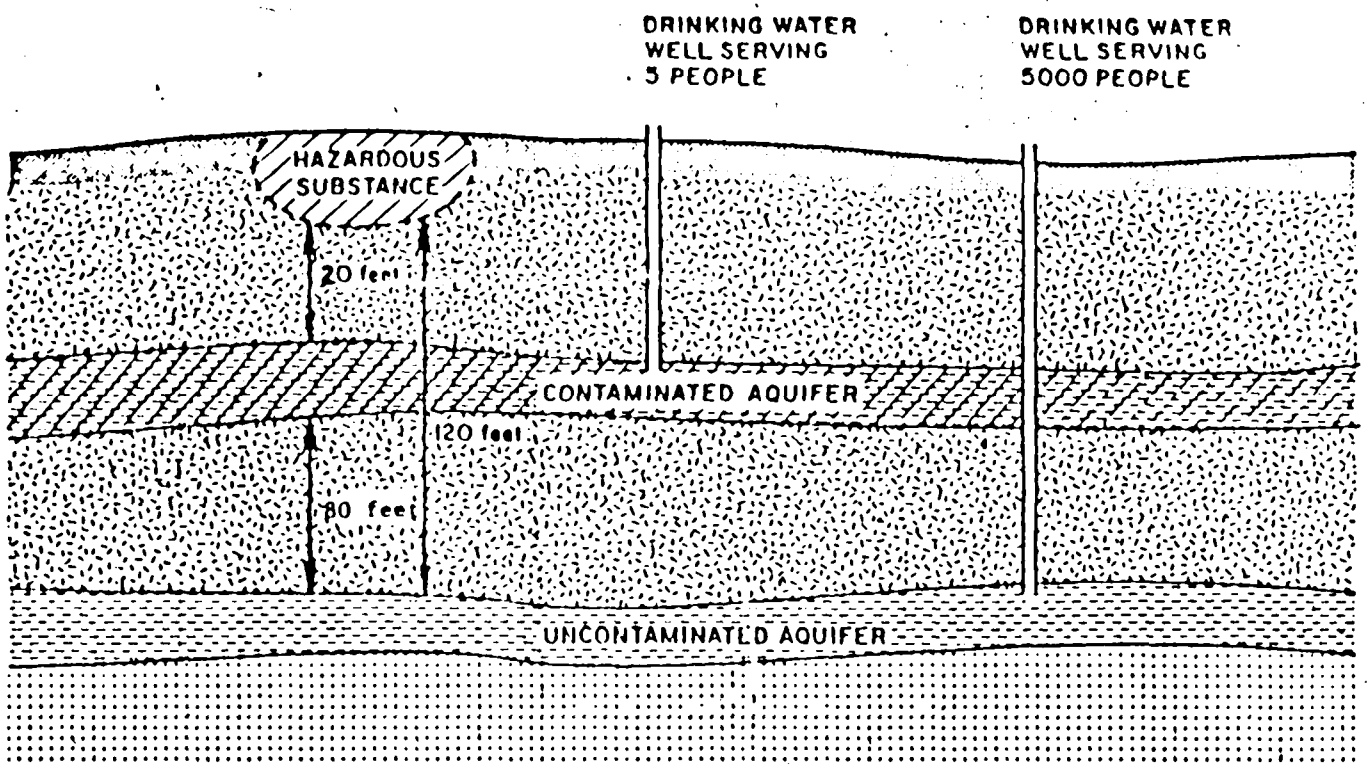
Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1		45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
3 Containment	0 1 2 3	1		3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 18	1		18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40	
	Total Targets Score			49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				57,330	
7 Divice line 6 by 57,330 and multiply by 100	S_{gw} =				

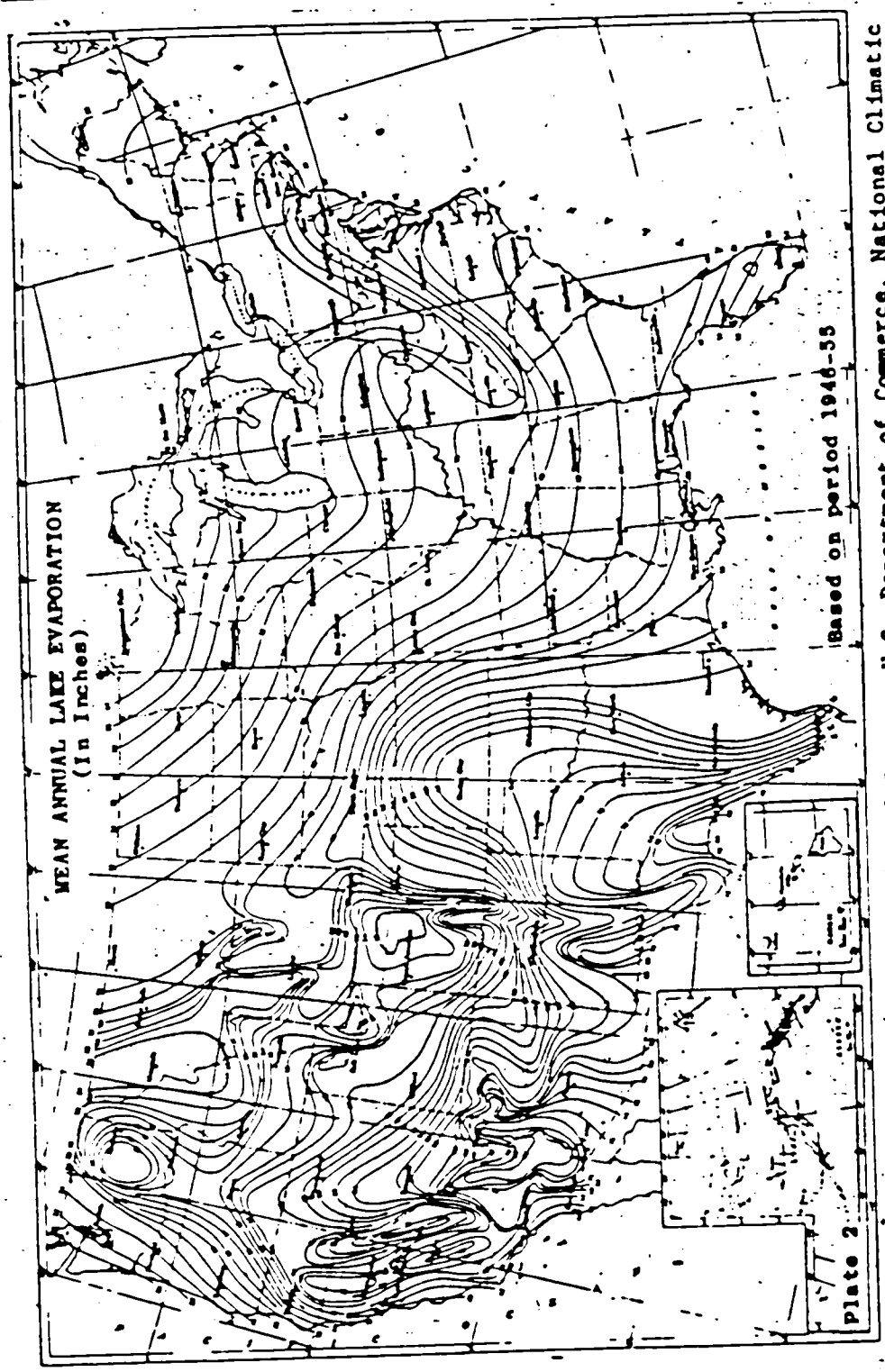
FIGURE 2
GROUND WATER ROUTE WORK SHEET



*Treat target and route characteristics factors consistently. For example, if the upper aquifer is the aquifer of concern, then the "depth to aquifer of concern" is 20 feet and the "population served" is 5 persons. If the lower aquifer is "of concern", the "depth" is 120 feet (assuming no known contamination below the indicated "hazardous substance") and the "population" is 5000 persons. If the upper aquifer is contaminated and the lower aquifer is "of concern", the "depth" would be 80 feet (vertical distance between hazardous substance and aquifer of concern) and the population would be 5000 persons.

FIGURE 3

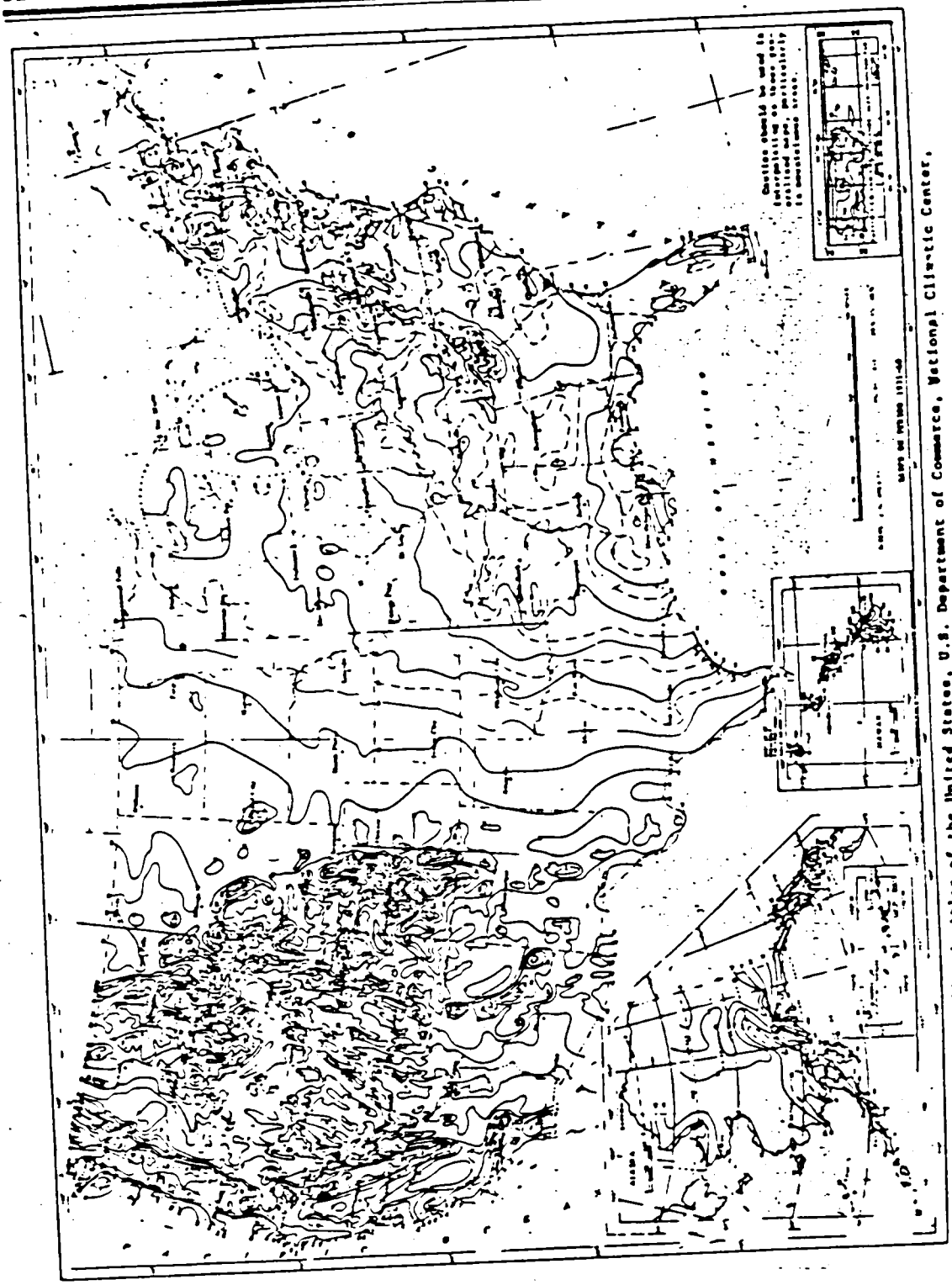
Depth to Aquifer of Concern



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Ashville, N.C., 1979.

Figure 4

Mean Annual Lake Evaporation (In Inches)



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Asheville, N.C., 1979.

Figure 5

Normal Annual Total Precipitation (inches)

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Physical state refers to the state of the hazardous substances at the time of disposal, except that gases generated by the hazardous substances in a disposal area should be considered in rating this factor. Each of the hazardous substances being evaluated is assigned a value as follows:

Physical state	Assigned value
Solid, consolidated or stabilized	0
Solid, unconsolidated or unstabilized	1
Powder or fine material	2
Liquid, sludge or gas	3

3.3 *Containment*

Containment is a measure of the natural or artificial means that have been used to minimize or prevent a contaminant from entering ground water. Examples include liners, leachate collection systems, and sealed containers. In assigning a value to this rating factor (Table 3), consider all ways in which hazardous substances are stored or disposed at the facility. If the facility involves more than one method of storage or disposal, assign the highest from among all applicable values (e.g., if a landfill has a containment value of 1, and, at the same location, a surface impoundment has a value of 2, assign containment a value of 2).

TABLE 3.—CONTAINMENT VALUE FOR GROUND WATER ROUTE

Assign containment a value of 0 if: (1) all the hazardous substances at the facility are undergoing by an essentially non permeable surface (natural or artificial) and adequate leachate collection systems and diversion systems are present; or (2) there is no ground water in the vicinity. The value "0" does not indicate no risk. Rather, it indicates a significantly lower relative risk when compared with more serious sites on a national level. Otherwise, evaluate the containment for each of the different means of storage or disposal at the facility, using the following guidance.

	Assigned value
A. Surface impoundment	
Sound run-on diversion structure, essentially non permeable liner (natural or artificial) compatible with the waste, and adequate leachate collection system	0
Essentially non permeable compatible liner with no leachate collection system; or inadequate freeboard	1
Potentially unsound run-on diversion structure; or moderately permeable compatible liner	2
Unsound run-on diversion structure; no liner; or incompatible liner	3
B. Containers	
Containers sealed and in sound condition, adequate liner, and adequate leachate collection system	0
Containers sealed and in sound condition, no liner or moderately permeable liner	1
Containers leaking, moderately permeable liner	2
Containers leaking and no liner or incompatible liner	3
C. Piles	
Piles uncovered and waste stabilized; or piles covered, waste unstabilized, and essentially non permeable liner	0
Piles uncovered, waste unstabilized, moderately permeable liner, and leachate collection system	1
Piles uncovered, waste unstabilized, moderately permeable liner, and no leachate collection system	2
Piles uncovered, waste unstabilized, and no liner	3

TABLE 3.—CONTAINMENT VALUE FOR GROUND WATER ROUTE—Continued

Assign containment a value of 0 if: (1) all the hazardous substances at the facility are undergoing by an essentially non permeable surface (natural or artificial) and adequate leachate collection systems and diversion systems are present; or (2) there is no ground water in the vicinity. The value "0" does not indicate no risk. Rather, it indicates a significantly lower relative risk when compared with more serious sites on a national level. Otherwise, evaluate the containment for each of the different means of storage or disposal at the facility, using the following guidance.

	Assigned value
D. Landfill	
Essentially non permeable liner, liner compatible with waste, and adequate leachate collection system	0
Essentially non permeable compatible liner, no leachate collection system, and landfill surface precludes ponding	1
Moderately permeable, compatible liner, and landfill surface precludes ponding	2
No liner or incompatible liner, moderately permeable compatible liner, landfill surface encourages ponding; no run-on control	3

3.4 *Waste Characteristics.* In determining a waste characteristics score, evaluate the most hazardous substances at the facility that could migrate (i.e., if scored, containment is not equal to zero) to ground water. Take the substance with the highest score as representative of the potential hazard due to waste characteristics. Note that the substance that may have been observed in the release category can differ from the substance used in rating waste characteristics. Where the total inventory of substances in a facility is known, only those present in amounts greater than the reportable quantity (see CERCLA Section 102 for definition) may be evaluated.

Toxicity and Persistence have been combined in the matrix below because of their important relationship. To determine the overall value for this combined factor, evaluate each factor individually as discussed below. Match the individual values assigned with the values in the matrix for the combined rating factor. Evaluate several of the most hazardous substances at the facility independently and enter only the highest score in the matrix on the work sheet.

Value for toxicity	Value for persistence			
	0	1	2	3
0	0	0	0	0
1	3	6	9	12
2	6	9	12	16
3	9	12	16	18

Persistence of each hazardous substance is evaluated on its biodegradability as follows:

Substance	Assigned value
Easily biodegradable compounds	0
Straight chain hydrocarbons	1
Substituted and other ring compounds	2
Metals, polycyclic compounds and halogenated hydrocarbons	3

More specific information is given in Tables 4 and 5.

Toxicity of each hazardous substance being evaluated is given a value using the rating scheme of Sax (Table 6) or the National Fire Protection Association (NFPA) (Table 7) and the following guidance

Toxicity	Assigned value
Sax level 0 or NFPA level 0	0
Sax level 1 or NFPA level 1	1
Sax level 2 or NFPA level 2	2
Sax level 3 or NFPA level 3 or 4	3

Table 4 presents values for some common compounds.

Hazardous waste quantity includes all hazardous substances at a facility (as received) except that with a containment value of 0. Do not include amounts of contaminated soil or water; in such cases, the amount of contaminating hazardous substance may be estimated.

On occasion, it may be necessary to convert data to a common unit to combine them. In such cases, 1 ton = 1 cubic yard = 4 drums and for the purposes of converting bulk storage, 1 drum = 50 gallons. Assign a value as follows:

Tons in cubic yards	Number of drums	Assigned value
0	0	0
1–10	1–40	1
11–42	41–250	2
43–125	251–500	3
126–250	501–1,000	4
251–625	1,001–2,500	5
626–1,250	2,501–5,000	6
1,251–2,500	5,001–10,000	7
> 2,500	> 10,000	8

TABLE 4.—WASTE CHARACTERISTICS VALUES FOR SOME COMMON CHEMICALS

Chemical/Compound	Toxicity[1]	Persistence[1]	Ignitability[2]	Reactivity[2]
Acetaldehyde	3	0	3	2
Acetic Acid	3	0	2	1
Acetone	2	0	3	0
Alcohol	3	3	1	0
Ammonia, Anhydrous	3	0	1	0
Aniline	3	1	2	0
Benzene	3	1	3	0
Carbon Tetrachloride	3	3	0	0
Chlordane	3	3	*0	*0
Chlorobenzene	2	2	3	0
Chloroform	3	3	0	0
Cresol-O	3	1	2	0
Cresol-M&P	3	1	1	0
Cyclohexane	2	2	3	0
Endrin	3	3	1	0
Ethyl Benzene	2	1	3	0
Formaldehyde	3	0	2	0
Formic Acid	3	0	2	0
Hydrochloric Acid	3	0	0	0
Isopropyl Ether	3	1	3	1
Lindane	3	3	1	0
Methane	1	1	3	0
Methyl Ethyl Ketone	2	0	3	0
Methyl Parathion in Xylene Solution	3	3*0	3	2
Naphthalene	2	1	2	0
Nitric Acid	3	0	0	0
Parathion	3	3*0	1	2
PCB	3	3	3*0	3*0
Petroleum, Kerosene (Fuel Oil No. 1)	3	1	2	0
Phenol	3	1	2	0
Sulfuric Acid	3	0	0	2
Toluene	2	1	3	0

TABLE 4.—WASTE CHARACTERISTICS VALUES FOR SOME COMMON CHEMICALS—Continued

Chemical/Compound	Toxicity[1]	Persistence[2]	Ignitability[3]	Reactivity[4]
Trichlorobenzene	2	3	1	0
α-Trichloroethane	2	2	1	0
Xylene	2	1	3	0

[1] Sax, N. I., *Dangerous Properties of Industrial Materials*, Van Nostrand Rheinhold Co., New York, 4th ed., 1975. The highest rating listed under each chemical is used.

[2] JRB Associates, Inc., *Methodology for Rating the Hazard Potential of Waste Disposal Sites*, May 5, 1980.

[3] National Fire Protection Association, National Fire Codes, Vol 13, No. 49, 1977.

[4] Professional judgment based on information contained in the U.S. Coast Guard CHRIS Hazardous Chemical Data, 1978.

[5] Professional judgment based on existing literature.

TABLE 5.—PERSISTENCE (BIODEGRADABILITY) OF SOME ORGANIC COMPOUNDS*

Value = 3 Highly Persistent Compounds	
aldrin	heptachlor
benzopyrene	heptachlor epoxide
benzothiazole	1,2,3,4,5,7,7-heptachloronorbornene
benzothiophene	hexachlorobenzene
benzyl butyl phthalate	hexachloro-1,3-butadiene
bromochlorobenzene	hexachlorocyclohexane
bromoform butanal	hexachloroethane
bromophenyl phenyl ether	methyl benzothiazole
chlordane	pentachlorobiphenyl
chlorohydroxy benzophenone	pentachlorophenol
bis-chloroisopropyl ether	1,1,3,3-tetrachloroacetone
m-chloronitrobenzene	tetrachlorophenyl
DDE	thiomethylbenzothiazole
DDT	trichlorobenzene
dibromobenzene	trichlorobiphenyl
dibutyl phthalate	trichlorofuro-methane
1,4-dichlorobenzene	2,4,6-trichlorophenol
dichlorodifluoroethane	triphenyl phosphate
dieldrin	bromodichloromethane
diethyl phthalate	bromoform
di(2-ethylhexyl)phthalate	carbon tetrachloride
diphenyl phthalate	chloroform
di-isobutyl phthalate	chloromethylchloromethane
dimethyl phthalate	dibromodichloroethane
4,6-dinitro-2-aminophenol	tetrachloroethane
dipropyl phthalate	1,1,2-trichloroethane
endrin	

Value = 2 Persistent Compounds	
acenaphthylene	cis-2-ethyl-4-methyl-1,3-dioxolane
atrazine	trans-2-ethyl-4-methyl-1,3-dioxolane
(diethyl) atrazine	guaiacol
barbital	2-hydroxyadiponitrile
borneol	isophorone
bromobenzene	indene
camphor	isobornol
chlorobenzene	isopropenyl-4-isopropyl benzene
1,2-bis-chloroethoxy ethane	2-methoxy biphenyl
b-chloroethyl methyl ether	methyl biphenyl
chloromethyl ether	methyl chloride
chloromethyl ethyl ether	methylindene
3-chloropyridine	methylene chloride
d-t-butyl-p-benzoquinone	nitrocresole
dichloroethyl ether	nitrobenzene
dihydrocarvone	1,1,2-trichloroethylene
dimethyl sulfoxide	trimethyl-triazo-hexahydrotriazine isomer
2,6-dinitrotoluene	

Value = 1 Somewhat Persistent Compounds	
acetylene dichloride	1,2-dimethoxy benzene
behenic acid, methyl ester	1,3-dimethyl naphthalene
benzene	1,4-dimethyl phenol
benzene sulfonic acid	dioctyl adipate
butyl benzene	n-decane
butyl bromide	ethyl benzene
e-caprolactam	2-ethyl-n-hexane
carbon-disulfide	o-ethyltoluene
o-cresol	n-dodecane
decane	isopropyl benzene
1,2-dichloroethane	

TABLE 5.—PERSISTENCE (BIODEGRADABILITY) OF SOME ORGANIC COMPOUNDS*—Continued

limonene	octane
methyl ester of lignoceric acid	octyl chloride
methane	pentane
3-methyl-5-ethyl-pyridine	phenyl benzoate
methyl naphthalene	phthalic anhydride
methyl palmitate	propylbenzene
methyl phenyl carbinol	1-terpineol
methyl stearate	toluene
naphthalene	vinyl benzene
ionene	xylene

Value = 0 Nonpersistent Compounds	
acetaldehyde	methyl benzoate
acetic acid	3-methyl butanol
acetone	methyl ethyl ketone
acetophenone	2-methylpropanol
benzoic acid	octadecane
di-isobutyl carbinol	pentadecane
dodecane	pentanol
eicosene	propanol
ethanol	propylamine
ethylamine	tetradecane
hexadecane	n-tridecane
methanol	n-undecane

* JRB Associates, Inc., *Methodology for Rating the Hazard Potential for Waste Disposal Sites*, May 5, 1980.

TABLE 6.—SAX TOXICITY RATINGS

0—No Toxicity* (None)**

This designation is given to materials which fall into one of the following categories:

(a) Materials which cause no harm under any conditions of normal use.

(b) Materials which produce toxic effects on humans only under the most unusual conditions or by overwhelming dosage.

1—Slight Toxicity* (Low)**

(a) *Acute local.* Materials which on single exposures lasting seconds, minutes, or hours cause only slight effects on the skin or mucous membranes regardless of the extent of the exposure.

(b) *Acute systemic.* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slight effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose regardless of the quantity absorbed or the extent of exposure.

(c) *Chronic local.* Materials which on continuous or repeated exposures extending over periods of days, months, or years cause only slight and usually reversable harm to the skin or mucous membranes. The extent of exposure may be great or small.

(d) *Chronic systemic.* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slightly usually reversable effects extending over days, months, or years. The extent of the exposure may be great or small.

In general, those substances classified as having "slight toxicity" produce changes in the human body which are readily reversable and which will disappear following termination of exposure, either with or without medical treatment.

2—Moderate Toxicity* (Med)**

(a) *Acute local.* Materials which on single exposure lasting seconds, minutes, or hours cause moderate effects on the skin or mucous membranes. These effects may be the result of intense exposure for a matter of seconds or moderate exposure for a matter of hours.

(b) *Acute systemic.* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and produce moderate effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose.

TABLE 6.—SAX TOXICITY RATINGS—Continued

(c) *Chronic local.* Materials which on continuous or repeated exposures extending over periods of days, months, or years cause moderate harm to the skin or mucous membranes.

(d) *Chronic systemic.* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce moderate effects following continuous or repeated exposures extending over periods of days, months, or years.

Those substances classified as having "moderate toxicity" may produce irreversible as well as reversible changes in the human body. These changes are not of such severity as to threaten life or to produce serious physical impairment.

3—Severe Toxicity* (High)**

(a) *Acute local.* Materials which on single exposure lasting seconds or minutes cause injury to skin or mucous membranes of sufficient severity to threaten life or to cause permanent physical impairment or disfigurement.

(b) *Acute systemic.* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which can cause injury of sufficient severity to threaten life following a single exposure lasting seconds, minutes, or hours, or following ingestion of a single dose.

(c) *Chronic local.* Materials which on continuous or repeated exposures extending over periods of days, months, or years can cause injury to skin or mucous membranes of sufficient severity to threaten life or cause permanent impairment, which disfigurement, or irreversible change.

(d) *Chronic systemic.* Materials which can be absorbed into the body by inhalation, ingestion or through the skin and which can cause death or serious physical impairment following continuous or repeated exposures to small amounts extending over periods of days, months, or years.

*Sax, N. I., Dangerous Properties of Industrial Materials, Van Nostrand Rheinhold Co., New York, New York, 4th edition, 1975.

**Sax, N. I., Dangerous Properties of Industrial Materials, Van Nostrand Rheinhold Co., New York, New York, 5th edition, 1979.

TABLE 7.—NFPA TOXICITY RATINGS*

0 Materials which on exposure under fire conditions would offer no health hazard beyond that of ordinary combustible material.

1 Materials only slightly hazardous to health. It may be desirable to wear self-contained breathing apparatus.

2 Materials hazardous to health, but areas may be entered freely with self-contained breathing apparatus.

3 Materials extremely hazardous to health, but areas may be entered with extreme care. Full protective clothing, including self-contained breathing apparatus, rubber gloves, boots and bands around legs, arms and waist should be provided. No skin surface should be exposed.

4 A few whiffs of the gas or vapor could cause death, or the gas, vapor, or liquid could be fatal on penetrating the fire fighters' normal full protective clothing which is designed for resistance to heat. For most chemicals having a Health 4 rating, the normal full protective clothing available to the average fire department will not provide adequate protection against skin contact with these materials. Only special protective clothing designed to protect against the specific hazard should be worn.

*National Fire Protection Association, *National Fire Codes*, Vol. 13, No. 49, 1977.

3.5 *Targets. Ground water use* indicates the nature of the use made of ground water drawn from the aquifer of concern within 3 miles of the hazardous substance, including the geographical extent of the measurable concentration in the aquifer. Assign a value using the following guidance:

Ground water use	Assigned value
Unusable (e.g., extremely saline aquifer, extremely low yield, etc.)	0
Commercial, industrial or irrigation and another water source presently available; not used, but usable	1
Drinking water with municipal water from alternate unthreatened sources presently available (i.e., minimal hookup requirements); or commercial, industrial or irrigation with no other water source presently available	2
Drinking water, no municipal water from alternate unthreatened sources presently available	3

Distance to nearest well and population served have been combined in the matrix below to better reflect the important relationship between the distance of a population from hazardous substances and the size of the population served by ground water that might be contaminated by those substances. To determine the overall value for this combined factor, score each individually as discussed below. Match the individual values assigned with the values in the matrix for the total score.

Value for population served	Value for distance to nearest well				
	0	1	2	3	4
0	0	0	0	0	0
1	0	4	6	8	10
2	0	6	12	16	20
3	0	12	18	24	30
4	0	16	24	32	35
5	0	20	30	35	40

Distance to nearest well is measured from the hazardous substance (not the facility boundary) to the nearest well that draws water from the aquifer of concern. If the actual distance to the nearest well is unknown, use the distance between the hazardous substance and the nearest occupied building not served by a public water supply (e.g., a farmhouse). If a discontinuity in the aquifer occurs between the hazardous substance and all wells, give this factor a score of 0, except where it can be shown that the contaminant is likely to migrate beyond the discontinuity. Figure 6 illustrates how the distance should be measured. Assign a value using the following guidance:

Distance	Assigned value
>3 miles	0
2 to 3 miles	1
1 to 2 miles	2
2001 feet to 1 mile	3
<2000 feet	4

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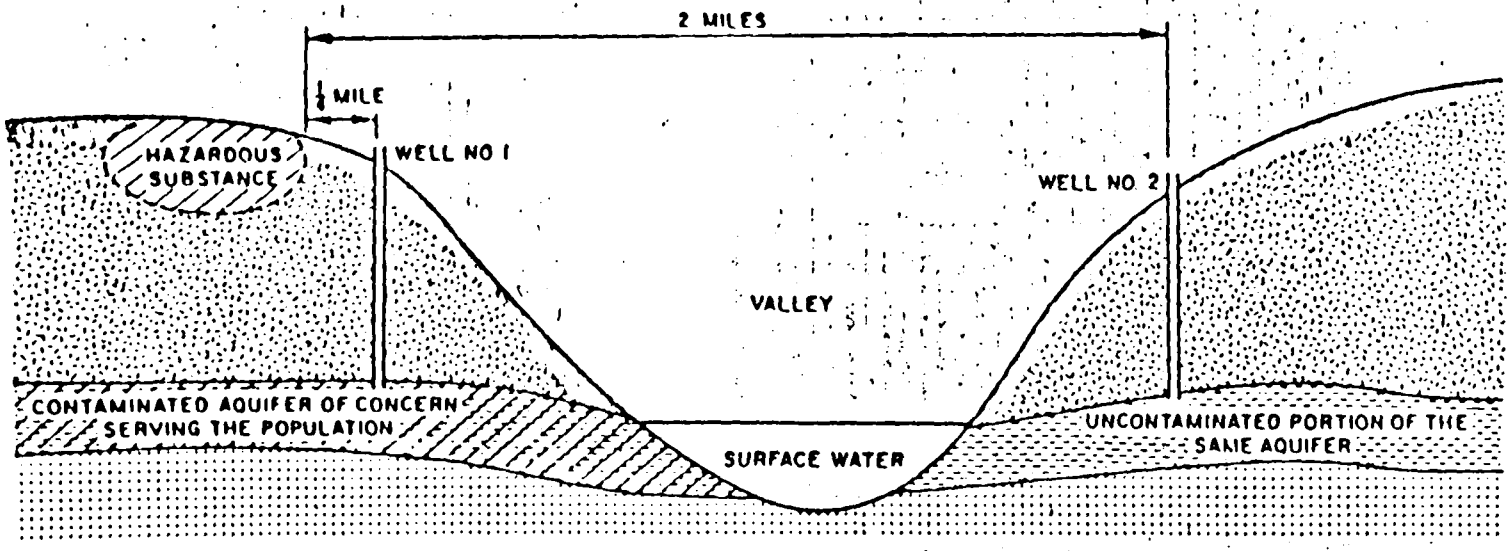

In the situation depicted above, the distance between the hazardous substance and the nearest well (No. 1) is ¼ mile. If well No. 1 did not exist, the distance to well No. 2 would be immaterial since there is a discontinuity in the aquifer (surface water) between it and the hazardous substance. Under such circumstances, the factor score would be "0". However, if it could be demonstrated that the contaminent had bridged the discontinuity, then the distance to the nearest well would be 2 miles (assuming well No. 1 does not exist).

FIGURE 6

Distance to Nearest Well

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Population served by ground water is an indicator of the population at risk, which includes residents as well as others who would regularly use the water such as workers in factories or offices and students. Include employees in restaurants, motels, or campgrounds but exclude customers and travelers passing through the area in autos, buses, or trains. If aerial photography is used, and residents are known to use ground water, assume each dwelling unit has 3.8 residents. Where ground water is used for irrigation, convert to population by assuming 1.5 persons per acre of irrigated land. The well or wells of concern must be within three miles of the hazardous substances, including the area of known aquifer contamination, but the "population served" need not be. Likewise, people within three miles who do not use water from the aquifer of concern are not to be counted. Assign a value as follows:

Population	Assigned value
0	0
1 to 100	1
101 to 1,000	2
1,001 to 3,000	3
3,001 to 10,000	4
> 10,000	5

4.0 Surface Water Route

4.1 *Observed Release.* Direct evidence of release to surface water must be quantitative evidence that the facility is releasing contaminants into surface water. Quantitative evidence could be the measurement of levels of contaminants from a facility in surface water, either at the facility or downhill from it, that represents a significant (in terms of demonstrating that a release has occurred, not in terms of potential effects) increase over background levels. If direct evidence of release has been obtained (regardless of frequency), enter a value of 45 on line 1 of the work sheet (Figure 7) and omit the evaluation of the route characteristics and containment factors. If direct evidence of release is lacking, enter a value of 0 on line 1 and continue with the scoring procedure.

4.2 *Route Characteristics. Facility slope and intervening terrain* are indicators of the potential for contaminated runoff or spills at a facility to be transported to surface water. The facility slope is an indicator of the potential for runoff or spills to leave the facility. Intervening terrain refers to the average slope of the shortest path which would be followed by runoff between the facility boundary and the nearest downhill surface water. This rating factor can be assessed using topographic maps. Table 8 shows values assigned to various facility conditions.

One-year 24-hour rainfall (obtained from Figure 8) indicates the potential for area storms to cause surface water contamination as a result of runoff, erosion, or flow over dikes. Assign a value as follows:

Amount of rainfall (inches)	Assigned value
< 1.0	0
1.0 to 2.0	1
2.1 to 3.0	2
> 3.0	3

TABLE 8.—VALUES FOR FACILITY SLOPE AND INTERVENING TERRAIN

Facility slope	Intervening terrain				
	Terrain average slope				Site in surface water
	<3 pct[1]	3 to 5 pct	5 to 8 pct	> 8 pct	
Facility is closed basin	0	0	0	0	3
Facility has average slope (<3 pct)	0	1	1	2	3
Average slope (3 to 5 pct)	0	1	2	2	3
Average slope (5 to 8 pct)	0	2	2	3	3
Average slope (> 8 pct)	0	2	3	3	3

[1] Terrain average slope <3 pct, or site separated from water body by areas of higher elevation.

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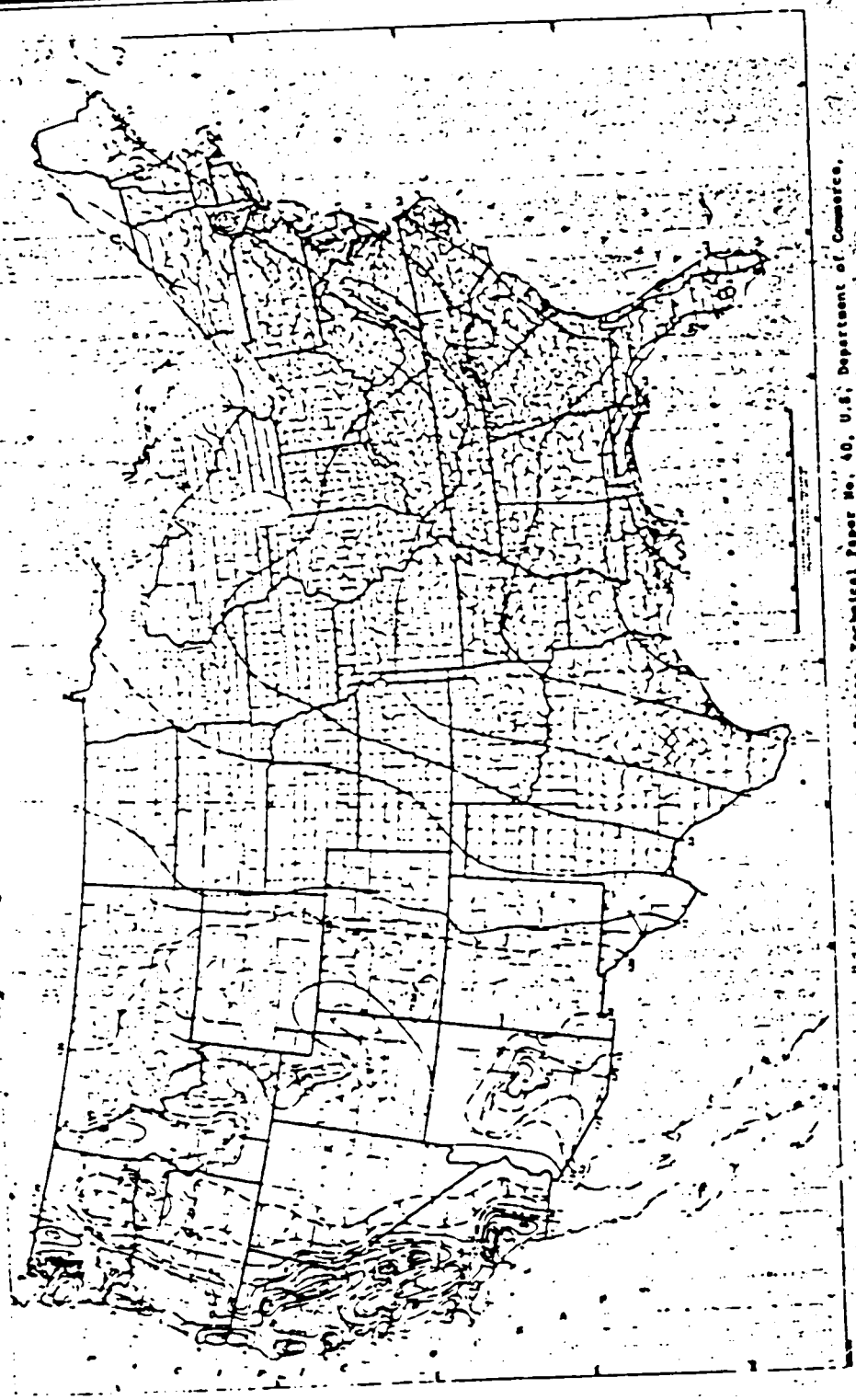
Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1		45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
1-yr. 24-hr. Rainfall	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
3 Containment	0 1 2 3	1		3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1		18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			26	
5 Targets					4.5
Surface Water Use	0 1 2 3	3		9	
Distance to a Sensitive Environment	0 1 2 3	2		6	
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40	
	Total Targets Score			55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} =			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET



Source: Rainfall-Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

Figure 8

1-Year 24-Hour Rainfall (Inches)

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Distance to the nearest surface water is the shortest distance from the hazardous substance, (not the facility or property boundary) to the nearest downhill body of surface water (e.g., lake or stream) that is on the course that runoff can be expected to follow and that at least occasionally contains water. Do not include man-made ditches which do not connect with other surface water bodies. In areas having less than 20 inches of normal annual precipitation (see Figure 5), consider intermittent streams. This factor indicates the potential for pollutants flowing overland and into surface water bodies. Assign a value as follows:

Distance	Assigned value
>2 miles	0
1 to 2 miles	1
1000 feet to 1 mile	2
< 1000 feet	3

Physical state is assigned a value using the procedures in Section 3.2.

4.3 *Containment. Containment* is a measure of the means that have been taken to minimize the likelihood of a contaminant entering surface water either at the facility or beyond the facility boundary. Examples of containment are diversion structures and the use of sealed containers. If more than one type of containment is used at a facility, evaluate each separately (Table 9) and assign the highest score.

TABLE 9.—CONTAINMENT VALUES FOR SURFACE WATER ROUTE

Assign containment a value of 0 if: (1) all the waste at the site is surrounded by diversion structures that are in sound condition and adequate to contain all runoff, spills, or leaks from the waste; or (2) intervening terrain precludes runoff from entering surface water. Otherwise, evaluate the containment for each of the different means of storage or disposal at the site and assign a value as follows:

	Assigned value
A. Surface Impoundment	
Sound dikes or diversion structure, adequate freeboard, and no erosion evident	0
Sound dikes or diversion structure, but inadequate freeboard	1
Dikes not leaking, but potentially unsound	2
Dikes unsound, leaking, or in danger of collapse	3
B. Containers	
Containers sealed, in sound condition, and surrounded by sound diversion or containment system	0
Containers sealed and in sound condition, but not surrounded by sound diversion or containment system	1
Containers leaking and diversion or containment structures potentially unsound	2
Containers leaking, and no diversion or containment structures or diversion structures leaking or in danger of collapse	3
C. Waste Piles	
Piles are covered and surrounded by sound diversion or containment system	0
Piles covered, wastes unconsolidated, diversion or containment system not adequate	1
Piles not covered, wastes unconsolidated, and diversion or containment system potentially unsound	2
Piles not covered, wastes unconsolidated, and no diversion or containment or diversion system leaking or in danger of collapse	3

TABLE 9.—CONTAINMENT VALUES FOR SURFACE WATER ROUTE—Continued

Assign containment a value of 0 if: (1) all the waste at the site is surrounded by diversion structures that are in sound condition and adequate to contain all runoff, spills, or leaks from the waste; or (2) intervening terrain precludes runoff from entering surface water. Otherwise, evaluate the containment for each of the different means of storage or disposal at the site and assign a value as follows:

	Assigned value
D. Landfill	
Landfill slope precludes runoff, landfill surrounded by sound diversion system, or landfill has adequate cover material	0
Landfill not adequately covered and diversion system sound	1
Landfill not covered and diversion system potentially unsound	2
Landfill not covered and no diversion system present, or diversion system unsound	3

4.4 *Waste Characteristics.* Evaluate waste characteristics for the surface water route with the procedures described in Section 3.4 for the ground water route.

4.5 *Targets. Surface water use* brings into the rating process the use being made of surface water downstream from the facility. The use or uses of interest are those associated with water taken from surface waters within a distance of three miles from the location of the hazardous substance. Assign a value as follows:

Surface water use (fresh or salt water)	Assigned value
Not currently used	0
Commercial or Industrial	1
Irrigation, economically important resources (e.g., shellfish), commercial food preparation, or recreation (e.g., fishing, boating, swimming)	2
Drinking Water	3

Distance to a sensitive environment refers to the distance from the hazardous substance (not the facility boundary) to an area containing an important biological resource or to a fragile natural setting that could suffer an especially severe impact from pollution. Table 10 provides guidance on assigning a value to this rating factor.

TABLE 10—VALUES FOR SENSITIVE ENVIRONMENT (SURFACE WATER)

Assigned value—	0	1	2	3
Distance to Wetlands[1] (5 acre minimum)				
Coastal	>2 miles	1 to 2 miles	½ to 1 mile	<½ mile
Fresh Water	>1 mile	½ to 1 mile	100 feet to ½ mile	<100 feet
Distance to Critical Habitat (of endangered species)[2]	>1 mile	½ to 1 mile	½ to ½ mile	<½ mile.

[1] Wetland is defined by EPA in the Code of Federal Regulations 40 CFR Part 230, Appendix A, 1980.
[2] Endangered species are designated by the U.S. Fish and Wildlife Service.

Population served by surface water with water intake within 3 miles downstream from facility (or 1 mile in static surface water such as a lake) is a rough indicator of the potential hazard exposure of the nearby population served by potentially contaminated surface water. Measure the distance from the probable point of entry to surface water following the surface water (stream miles). The population includes residents as well as others who would regularly use the water such as workers in factories or offices and students. Include employees in restaurants, motels, or campgrounds but exclude customers and travelers passing through the area in autos, buses and trains. The distance is measured from the hazardous substance, including observations in stream or sediment samples, regardless of facility boundaries. Where only residential houses can be counted (e.g., from an aerial photograph), and residents are known to be using surface water, assume 3.8 individuals per dwelling unit. Where surface water is used for irrigation, convert to population by assuming 1.5 persons per acre of land irrigated. Assign a value as follows:

Population	Distance to surface water				
	>3 miles	2–3 miles	1–2 miles	2000'–1 mile	0–2,000 feet
0	0	0	0	0	0
1–100	0	4	6	8	10
101–1,000	0	8	12	16	20
1,001–3,000	0	12	18	24	30
3,001–10,000	0	16	24	32	35
>10,000	0	20	30	36	40

5.0 Air Route

5.1 *Observed Release.* The only acceptable evidence of release for the air route is data that show levels of a contaminant at or in the vicinity of the facility that significantly exceed background levels, regardless of the frequency of occurrence. If such evidence exists, enter a value of 45 on line 1 of the work sheet (Figure 9); if not, assign line 1 a 0 value and then $S_a = 0$. Record the date, location, and the sampling protocol for monitoring data on the work sheet. Data based on transitory conditions due to facility disturbance by investigative personnel are not acceptable.

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Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1		45	5.1
Date and Location:					
Sampling Protocol:					
If line 1 is 0, the S_a = 0. Enter on line 5 If line 1 is 45, then proceed to line 2					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100			S_a =		

FIGURE 9
AIR ROUTE WORK SHEET

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5.2 *Waste Characteristics.* The hazardous substance that was observed for scoring the release category may be different from the substance used to score waste characteristics.

Reactivity and incompatibility, measures of the potential for sudden releases of concentrated air pollutants, are evaluated independently, and the highest value for either is recorded on the work sheet.

Reactivity provides a measure of the fire/explosion threat at a facility. Assign a value based on the reactivity classification used by NFPA (see Table 11). Reactivity ratings for a number of common compounds are given in Table 4.

TABLE 11.—NFPA REACTIVITY RATINGS

NFPA level	Assigned value
0 Materials which are normally stable even under fire exposure conditions and which are not reactive with water	0
1 Materials which in themselves are normally stable but which may become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently	1
2 Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Also includes those materials which may react violently with water or which may form potentially explosive mixtures with water	2
3 Materials which in themselves are capable of detonation or of explosive decomposition or of explosive reaction but which requires a strong initiating source or which must be heated under confinement before initiation. Includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement	3
4 Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. Includes materials which are sensitive to mechanical or localized thermal shock	3

TABLE 12.—INCOMPATIBLE MATERIALS

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge.
Alkaline caustic liquids	Acid and water.
Alkaline cleaner	Battery acid.
Alkaline corrosive liquids	Chemical cleaners.
Alkaline corrosive battery fluid	Electrolyte acid.
Caustic wastewater	Etching acid liquid or solvent.
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids.
Lime wastewater	Spent acid.
Lime and water	Spent mixed acid.
Spent caustic	Spent sulfuric acid.

Potential consequences: Heat generation; violent reaction.

Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B.
Beryllium	
Calcium	
Lithium	
Potassium	

TABLE 12.—INCOMPATIBLE MATERIALS—Continued

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 3-A	Group 3-B
Sodium	Any concentrated waste in Groups 1-A or 1-B.
Zinc powder	Calcium.
Other reactive metals and metal hydrides.	Lithium.
	Metal hydrides.
	Potassium.
	SO_3, O_2, $SOCl_2$, $POCl_3$, CrO_3, $SiCl_4$.
	Other water-reactive waste.

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes.
Aldehydes	Group 2-A wastes.
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents.	

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions.	Group 1-B wastes.

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids.
Chlorine	Concentrated mineral acids.
Chlorites	Group 2-A wastes.
Chromic acid	Group 4-A wastes.
Hypochlorites	Other flammable and combustible wastes.
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Potential consequences: Fire, explosion, or violent reaction.

Source: Hazardous Waste Management Law, Regulations, and Guidelines for the Handling of Hazardous Waste, California Department of Health, Sacramento, California, February 1975.

Incompatibility provides a measure of the increased hazard when hazardous substances are mixed under uncontrolled conditions, leading to production of heat, pressure, fire, explosion, violent reaction, toxic dusts, mists, fumes or gases, or flammable fumes or gases. Table 12 provides examples of incompatible combinations of materials.

Land use indicates the nature and level of human activity in the vicinity of a facility. Assign highest applicable value from Table 13.

6.0 Computing the Migration Hazard Mode Score, S_M

To compute S_M, complete the work sheet (Figure 10) using the values of S_a, S_w, and S_t obtained from the previous sections.

7.0 Fire and Explosion

Compute a score for the fire and explosion hazard mode, S_{fe}, when either a state or local fire marshal has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments or there is a demonstrated fire and explosion threat based on field observations (e.g., combustible gas indicator readings). Document the threat.

7.1 *Containment. Containment* is an indicator of the measures that have been taken to minimize or prevent hazardous substances at the facility from catching fire or exploding. Normally it will be given a value of 3 on the work sheet (Figure 11). If no hazardous substances that are individually ignitable or explosive are present and those that may be hazardous in combination are segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

7.2 *Waste Characteristics. Direct evidence* of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 0.

Additional information can be obtained from *A Method for Determining the Compatibility of Hazardous Wastes,* H. K. Hatayama, *et al.,* EPA-600/2-80-076 (1980). Assign a value using the following guidance:

Incompatibility	Assigned value
No incompatible substances are present	0
Present but do not pose a hazard	1
Present and may pose a future hazard	2
Present and posing an immediate hazard	3

Toxicity should be rated for the most toxic of the substances that can reasonably be expected to be transported away from the facility via the air route. Using the information given in Tables 4, 6, and 7, assign values as follows:

Toxicity	Assigned value
Sax level 0 or NFPA level 0	0
Sax level 1 or NFPA level 1	1
Sax level 2 or NFPA level 2	2
Sax level 3 or NFPA levels 3 or 4	3

Hazardous Waste Quantity

Assign hazardous waste quantity a value as described in Section 3.4.

5.3 *Targets. Population within a four-mile radius* is an indicator of the population which may be harmed should hazardous substances be released to the air.

The distance is measured from the location of the hazardous substances, not from the facility boundary. The population to be counted includes persons residing within the

four-mile radius as well as transients such as workers in factories, offices, restaurants, motels, or students. It excludes travelers passing through the area. If aerial photography is used in making the count, assume 3.8 individuals per dwelling unit. Select the highest value for this rating factor as follows:

DISTANCE TO POPULATION FROM HAZARDOUS SUBSTANCE

Population	0–¼ miles	0–1 mile	0–½ mile	0–2 mile
0	0	0	0	0
1 to 100	9	12	15	18
101 to 1,000	12	15	18	21
1,001 to 3,000	16	18	21	24
3,001 to 10,000	18	21	24	27
More than 10,000	21	24	27	30

Distance to sensitive environment is an indicator of the likelihood of that a region that contains important biological resources or that is a fragile natural setting would suffer serious damage if hazardous substances were to be released from the facility. Assign a value from Table 10.

Land use indicates the nature and level of human activity in the vicinity of a facility. Assign highest applicable value from Table 13.

6.0 Computing the Migration Hazard Mode Score, S_M

To compute S_M, complete the work sheet (Figure 10) using the values of S_{gw}, S_{sw} and S_a obtained from the previous sections.

7.0 Fire and Explosion

Compute a score for the fire and explosion hazard mode, S_{FE}, when either a state or local fire marshall has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments or there is a demonstrated fire and explosion threat based on field observations (e.g., combustible gas indicator readings). Document the threat.

7.1 Containment. Containment is an indicator of the measures that have been taken to minimize or prevent hazardous substances at the facility from catching fire or exploding. Normally it will be given a value of 3 on the work sheet (Figure 11). If no hazardous substances that are individually ignitable or explosive are present and those that may be hazardous in combination are segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

7.2 Waste Characteristics. Direct evidence of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 0.

TABLE 13.—VALUES FOR LAND USE (AIR ROUTE)

Assigned value =	0	1	2	3
Distance to Commercial-Industrial	> 1 mile	½ to 1 mile	¼ to ½ mile	< ¼ mile
Distance to National/State Parks, Forests, Wildlife Reserves, and Residential Areas	> 2 miles	1 to 2 miles	½ to 1 mile	< ½ mile
Distance to Agricultural Lands (in Production within 5 years):				
Ag land	> 1 mile	½ to 1 mile	¼ to ½ mile	< ¼ mile
Prime Ag Land [1]	> 2 miles	1 to 2 miles	½ to 1 mile	< ½ mile
Distance to Historic/Landmark Sites (National Register of Historic Places and National Natural Landmarks).				Within view of site or if site is subject to significant impacts

[1] Defined in the Code of Federal Regulations, 7 CFR 657.5, 1981.

	S	S^2
Groundwater Route Score (S_{gw})		
Surface Water Route Score (S_{sw})		
Air Route Score (S_a)		
$S_{gw}^2 + S_{sw}^2 + S_a^2$		
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} =			

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

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Ignitability is an indicator of the threat of fire at a facility and the accompanying potential for release of air contaminants. Assign this rating factor a value based on the NFPA classification scheme (Table 14). Table 4 gives values for a number of common compounds. Assign values as follows:

Ignitability	Assigned value
Flashpoint > 200°F, or NFPA level 0	0
Flashpoint 140°F to 200°F or NFPA level 1	1
Flashpoint 80°F to 140°F or NFPA level 2	2
Flashpoint < 80°F or NFPA levels 3 or 4	3

Reactivity. Assign values as in Section 5.2.

Incompatibility. Assign values as in Section 5.2.

Hazardous Waste Quantity. Assign values as in Section 3.4.

TABLE 14.—NFPA IGNITABILITY LEVELS AND ASSIGNED VALUES

NFPA level	Assigned value
4 Very flammable gases, very volatile flammable liquids, and materials that in the form of dusts or mists readily form explosive mixtures when dispersed in air	3
3 Liquids which can be ignited under all normal temperature conditions. Any materials that ignites spontaneously at normal temperatures in air	
2 Liquids which must be moderately heated before ignition will occur and solids that readily give off flammable vapors	2
1 Materials that must be preheated before ignition can occur. Most combustible solids have a flammability rating of 1	1
0 Materials that will not burn	0

7.3 *Targets. Distance to nearest population* is the distance from the hazardous substance to the nearest building or area in which one or more persons are likely to be located either for residential, educational, business, occupational, or recreational purposes. It is an indicator of the potential for harm to humans from fire and explosion. The building or area need not be off-site. Assign values as follows:

Distance	Assigned value
> 2 miles	0
1 mile to 2 mile	1
¼ mile to 1 mile	2
201 feet to ¼ mile	3
51 feet to 200 feet	4
0 to 50 feet	5

Distance to nearest building is an indicator of the potential for property damage as a result of fire or explosion. Assign a value as follows:

Distance	Assigned value
> ¼ mile	0
201 feet to ¼ mile	1
51 feet to 200 feet	2
0 to 50 feet	3

Distance to nearest sensitive environment is measured from the hazardous substances not from the facility boundary. It is an indicator of potential harm to a sensitive environment from fire or explosion at the facility. Select the highest value using the guidance provided in Table 15 *except* assign a value of 3 where fire could be expected to spread to a sensitive environment even though that environment is more than 100 feet from the hazardous substance.

TABLE 15.—VALUES FOR SENSITIVE ENVIRONMENTS (FIRE AND EXPLOSION)

Assigned value	0	1	2	3
Distance to Wetlands[1]	> 100 feet	—	—	< 100 feet
Distance to Critical Habitat[2]	> ¼ mile	1000 feet to ¼ mile	100 to 1000 feet	< 100 feet

[1] Wetland is defined by EPA in the Code of Federal Regulations 40 CFR Part 230, Appendix A, 1980.
[2] Designated by the U.S. Fish and Wildlife Service.

Land Use. Assign values as in Section 5.3.

Population within two-mile radius (measured from the location of the hazardous substance, not from the facility boundary) is a rough indicator of the population at risk in the event of fire or explosion at a facility. The population to be counted includes those residing within the two mile radius as well as people regularly in the vicinity such as workers in factories, offices, or students. It does not include travelers passing through the area. If aerial photography is used in making the count, assume 3.8 individuals per dwelling. Assign values as follows:

Population	Assigned value
0	0
1 to 100	1
101 to 1,000	2
1,001 to 3,000	3
3,001 to 10,000	4
> 10,000	5

Number of buildings within two mile radius (measured from the hazardous substance, not from the facility boundary) is a rough indicator of the property damage that could result from fire and explosion at a facility. Assign values to this factor as follows:

Number of buildings	Assigned value
0	0
1 to 26	1
27 to 260	2
261 to 790	3
791 to 2600	4
> 2600	5

8.0 *Direct Contact.* The direct contact hazard mode refers to the potential for injury by direct contact with hazardous substances at the facility.

8.1 *Observed Incident.* If there is a confirmed instance in which contact with hazardous substances at a facility has caused injury, illness, or death to humans or domestic or wild animals, enter a value of 45 on line 1 of the work sheet (Figure 12) and proceed to line 4 (toxicity). Document the incident giving the date, location and pertinent details. If no such instance is known, enter "0" on line 1 and proceed to line 2.

8.2 *Accessibility. Accessibility to hazardous substance* refers to the measures taken to limit access by humans or animals to hazardous substances. Assign a value using the following guidance:

Barrier	Assigned value
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility; or an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or combined card-key access to the facility)	0
Security guard, but no barrier	1
A barrier, but no separate means to control entry	2
Barriers do not completely surround the facility	3

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Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	0 45	1		45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 3	1		3	8.2
3 Containment	0 15	1		15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5		15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 5	4		20	
Distance to a Critical Habitat	0 1 2 3	4		12	
Total Targets Score				32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{DC} =			

FIGURE 12
DIRECT CONTACT WORK SHEET

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8.3 *Containment. Containment* indicates whether the hazardous substance itself is accessible to direct contact. For example, if the hazardous substance at the facility is in surface impoundments, containers (sealed or unsealed), piles, tanks, or landfills with a cover depth of less than 2 feet, or has been spilled on the ground or other surfaces easily contacted (e.g., the bottom of shallow pond or creek), assign this rating factor a value of 15. Otherwise, assign a value of 0.

8.4 *Waste Characteristics. Toxicity.* Assign a value as in Section 3.4.

8.5 *Targets. Population within one-mile radius* is a rough indicator of the population that could be involved in direct contact incidents at an uncontrolled facility. Assign a value as follows:

Population	Assigned value
0	0
1 to 100	1
101 to 1,000	2
1,001 to 3,000	3
3,001 to 10,000	4
> 10,000	5

Distance to a critical habitat (of an endangered species) is a rough measure of the probability of harm to members of an endangered species by direct contact with hazardous substance. Assign a value as follows:

Distance	Assigned value
< 1 mile	0
½ to 1 mile	1
¼ to ½ mile	2
> ¼ mile	3

[FR Doc. 82-19141 Filed 7-15-82; 8:45 am]

BILLING CODE 6560-50-M

Presidential Documents

Site: Westlake LDF
ID #: MOD079900932
Break: 17.8
Other:

Executive Order 12580 of January 23, 1987

Superfund Implementation

By the authority vested in me as President of the United States of America by Section 115 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. 9615 *et seq.*) ("the Act"), and by Section 301 of Title 3 of the United States Code, it is hereby ordered as follows:

Section 1. *National Contingency Plan.* (a)(1) The National Contingency Plan ("the NCP"), shall provide for a National Response Team ("the NRT") composed of representatives of appropriate Federal departments and agencies for national planning and coordination of preparedness and response actions, and regional response teams as the regional counterpart to the NRT for planning and coordination of regional preparedness and response actions.

(2) The following agencies (in addition to other appropriate agencies) shall provide representatives to the National and Regional Response Teams to carry out their responsibilities under the NCP: Department of State, Department of Defense, Department of Justice, Department of the Interior, Department of Agriculture, Department of Commerce, Department of Labor, Department of Health and Human Services, Department of Transportation, Department of Energy, Environmental Protection Agency, Federal Emergency Management Agency, United States Coast Guard, and the Nuclear Regulatory Commission.

(3) Except for periods of activation because of a response action, the representative of the Environmental Protection Agency ("EPA") shall be the chairman and the representative of the United States Coast Guard shall be the vice chairman of the NRT and these agencies' representatives shall be co-chairs of the Regional Response Teams ("the RRTs"). When the NRT or an RRT is activated for a response action, the chairman shall be the EPA or United States Coast Guard representative, based on whether the release or threatened release occurs in the inland or coastal zone, unless otherwise agreed upon by the EPA and United States Coast Guard representatives.

(4) The RRTs may include representatives from State governments, local governments (as agreed upon by the States), and Indian tribal governments. Subject to the functions and authorities delegated to Executive departments and agencies in other sections of this Order, the NRT shall provide policy and program direction to the RRTs.

(b)(1) The responsibility for the revision of the NCP and all of the other functions vested in the President by Sections 105(a), (b), (c), and (g), 125, and 301(f) of the Act is delegated to the Administrator of the Environmental Protection Agency ("the Administrator").

(2) The function vested in the President by Section 118(p) of the Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) ("SARA") is delegated to the Administrator.

(c) In accord with Section 107(f)(2)(A) of the Act and Section 311(f)(5) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1321(f)(5)), the following shall be among those designated in the NCP as Federal trustees for natural resources:

(1) Secretary of Defense;

(2) Secretary of the Interior;

(3) Secretary of Agriculture;

(4) Secretary of Commerce;

(5) Secretary of Energy.

(d) Revisions to the NCP shall be made in consultation with members of the NRT prior to publication for notice and comment. Revisions shall also be made in consultation with the Director of the Federal Emergency Management Agency and the Nuclear Regulatory Commission in order to avoid inconsistent or duplicative requirements in the emergency planning responsibilities of those agencies.

(e) All revisions to the NCP, whether in proposed or final form, shall be subject to review and approval by the Director of the Office of Management and Budget ("OMB").

Sec. 2. *Response and Related Authorities.* (a) The functions vested in the President by the first sentence of Section 104(b)(1) of the Act relating to "illness, disease, or complaints thereof" are delegated to the Secretary of Health and Human Services who shall, in accord with Section 104(i) of the Act, perform those functions through the Public Health Service.

(b) The functions vested in the President by Sections 104(e)(7)(C), 113(k)(2), 119(c)(7), and 121(f)(1) of the Act, relating to promulgation of regulations and guidelines, are delegated to the Administrator, to be exercised in consultation with the NRT.

(c)(1) The functions vested in the President by Sections 104(a) and the second sentence of 126(b) of the Act, to the extent they require permanent relocation of residents, businesses, and community facilities or temporary evacuation and housing of threatened individuals not otherwise provided for, are delegated to the Director of the Federal Emergency Management Agency.

(2) Subject to subsection (b) of this Section, the functions vested in the President by Sections 117(a) and (c), and 119 of the Act, to the extent such authority is needed to carry out the functions delegated under paragraph (1) of this subsection, are delegated to the Director of the Federal Emergency Management Agency.

(d) Subject to subsections (a), (b) and (c) of this Section, the functions vested in the President by Sections 104(a), (b) and (c)(4), 113(k), 117(a) and (c), 119, and 121 of the Act are delegated to the Secretaries of Defense and Energy, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of their departments, respectively, including vessels bare-boat chartered and operated. These functions must be exercised consistent with the requirements of Section 120 of the Act.

(e)(1) Subject to subsections (a), (b), (c), and (d) of this Section, the functions vested in the President by Sections 104(a), (b), and (c)(4), and 121 of the Act are delegated to the heads of Executive departments and agencies, with respect to remedial actions for releases or threatened releases which are not on the National Priorities List ("the NPL") and removal actions other than emergencies, where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of those departments and agencies, including vessels bare-boat chartered and operated. The Administrator shall define the term "emergency", solely for the purposes of this subsection, either by regulation or by a memorandum of understanding with the head of an Executive department or agency.

(2) Subject to subsections (b), (c), and (d) of this Section, the functions vested in the President by Sections 104(b)(2), 113(k), 117(a) and (c), and 119 of the Act are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction,

custody or control of those departments and agencies, including vessels bareboat chartered and operated.

(f) Subject to subsections (a), (b), (c), (d), and (e) of this Section, the functions vested in the President by Sections 104(a), (b) and (c)(4), 113(k), 117(a) and (c), 119, and 121 of the Act are delegated to the Secretary of the Department in which the Coast Guard is operating ("the Coast Guard"), with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(g) Subject to subsections (a), (b), (c), (d), (e), and (f) of this Section, the functions vested in the President by Sections 101(24), 104(a), (b), (c)(4) and (c)(9), 113(k), 117(a) and (c), 119, 121, and 126(b) of the Act are delegated to the Administrator. The Administrator's authority under Section 119 of the Act is retroactive to the date of enactment of SARA.

(h) The functions vested in the President by Section 104(c)(3) of the Act are delegated to the Administrator, with respect to providing assurances for Indian tribes, to be exercised in consultation with the Secretary of the Interior.

(i) Subject to subsections (d), (e), (f), (g) and (h) of this Section, the functions vested in the President by Section 104(c) and (d) of the Act are delegated to the Coast Guard, the Secretary of Health and Human Services, the Director of the Federal Emergency Management Agency, and the Administrator in order to carry out the functions delegated to them by this Section.

(j)(1) The functions vested in the President by Section 104(e)(5)(A) are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of those departments and agencies, to be exercised with the concurrence of the Attorney General.

(2) Subject to subsection (b) of this Section and paragraph (1) of this subsection, the functions vested in the President by Section 104(e) are delegated to the heads of Executive departments and agencies in order to carry out their functions under this Order or the Act.

(k) The functions vested in the President by Section 104(f), (g), (h), (i)(11), and (j) of the Act are delegated to the heads of Executive departments and agencies in order to carry out the functions delegated to them by this Section. The exercise of authority under Section 104(h) of the Act shall be subject to the approval of the Administrator of the Office of Federal Procurement Policy.

Sec. 3. *Cleanup Schedules.* (a) The functions vested in the President by Sections 116(a) and the first two sentences of 105(d) of the Act are delegated to the heads of Executive departments and agencies with respect to facilities under the jurisdiction, custody or control of those departments and agencies.

(b) Subject to subsection (a) of this Section, the functions vested in the President by Sections 116 and 105(d) are delegated to the Administrator.

Sec. 4. *Enforcement.* (a) The functions vested in the President by Sections 109(d) and 122(e)(3)(A) of the Act, relating to development of regulations and guidelines, are delegated to the Administrator, to be exercised in consultation with the Attorney General.

(b)(1) Subject to subsection (a) of this Section, the functions vested in the President by Section 122 (except subsection (b)(1)) are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases not on the NPL where either the release is on or the sole source of the release is from any facility under the jurisdiction, custody or control of those Executive departments and agencies. These functions may be exercised only with the concurrence of the Attorney General.

(2) Subject to subsection (a) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Section 122 of the Act, are delegated to the heads of Executive departments and agencies, with

respect to releases or threatened releases not on the NPL where either the release is on or the sole source of the release is from any facility under the jurisdiction, custody or control of those Executive departments and agencies. These functions may be exercised only with the concurrence of the Attorney General.

(c)(1) Subject to subsection (a) and (b)(1) of this Section, the functions vested in the President by Sections 106(a) and 122 of the Act are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(2) Subject to subsection (a) and (b)(2) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Sections 103 (a) and (b), and 122 of the Act, are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(d)(1) Subject to subsections (a), (b)(1), and (c)(1) of this Section, the functions vested in the President by Sections 106 and 122 of the Act are delegated to the Administrator.

(2) Subject to subsections (a), (b)(2), and (c)(2) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Sections 103 and 122 of the Act, are delegated to the Administrator.

(e) Notwithstanding any other provision of this Order, the authority under Sections 104(e)(5)(A) and 106(a) of the Act to seek information, entry, inspection, samples, or response actions from Executive departments and agencies may be exercised only with the concurrence of the Attorney General.

Sec. 5. *Liability.* (a) The function vested in the President by Section 107(c)(1)(C) of the Act is delegated to the Secretary of Transportation.

(b) The functions vested in the President by Section 107(c)(3) of the Act are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(c) Subject to subsection (b) of this Section, the functions vested in the President by Section 107(c)(3) of the Act are delegated to the Administrator.

(d) The functions vested in the President by Section 107(f)(1) of the Act are delegated to each of the Federal trustees for natural resources designated in the NCP for resources under their trusteeship.

(e) The functions vested in the President by Section 107(f)(2)(B) of the Act, to receive notification of the state natural resource trustee designations, are delegated to the Administrator.

Sec. 6. *Litigation.* (a) Notwithstanding any other provision of this Order, any representation pursuant to or under this Order in any judicial proceedings shall be by or through the Attorney General. The conduct and control of all litigation arising under the Act shall be the responsibility of the Attorney General.

(b) Notwithstanding any other provision of this Order, the authority under the Act to require the Attorney General to commence litigation is retained by the President.

(c) The functions vested in the President by Section 113(g) of the Act, to receive notification of a natural resource trustee's intent to file suit, are delegated to the heads of Executive departments and agencies with respect to response actions for which they have been delegated authority under Section 2 of this Order. The Administrator shall promulgate procedural regulations for providing such notification.

(d) The functions vested in the President by Sections 310 (d) and (e) of the Act, relating to promulgation of regulations, are delegated to the Administrator.

Sec. 7. *Financial Responsibility.* (a) The functions vested in the President by Section 107(k)(4)(B) of the Act are delegated to the Secretary of the Treasury.

The Administrator will provide the Secretary with such technical information and assistance as the Administrator may have available.

(b)(1) The functions vested in the President by Section 108(a)(1) of the Act are delegated to the Coast Guard.

(2) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(a)(1) of the Act, are delegated to the Coast Guard.

(c)(1) The functions vested in the President by Section 108(b) of the Act are delegated to the Secretary of Transportation with respect to all transportation related facilities, including any pipeline, motor vehicle, rolling stock, or aircraft.

(2) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(a)(3) of the Act, are delegated to the Secretary of Transportation.

(3) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(b) of the Act, are delegated to the Secretary of Transportation with respect to all transportation related facilities, including any pipeline, motor vehicle, rolling stock, or aircraft.

(d)(1) Subject to subsection (c)(1) of this Section, the functions vested in the President by Section 108 (a)(4) and (b) of the Act are delegated to the Administrator.

(2) Subject to Section 4(a) of this Order and subsection (c)(3) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108 (a)(4) and (b) of the Act, are delegated to the Administrator.

Sec. 8. *Employee Protection and Notice to Injured.* (a) The functions vested in the President by Section 110(e) of the Act are delegated to the Adminstrator.

(b) The functions vested in the President by Section 111(g) of the Act are delegated to the Secretaries of Defense and Energy with respect to releases from facilities or vessels under the jurisdiction, custody or control of their departments, respectively, including vessels bare-boat chartered and operated.

(c) Subject to subsection (b) of this Section, the functions vested in the President by Section 111(g) of the Act are delegated to the Administrator.

Sec. 9. *Management of the Hazardous Substance Superfund and Claims.* (a) The functions vested in the President by Section 111(a) of the Act are delegated to the Administrator, subject to the provisions of this Section and other applicable provisions of this Order.

(b) The Administrator shall transfer to other agencies, from the Hazardous Substance Superfund out of sums appropriated, such amounts as the Administrator may determine necessary to carry out the purposes of the Act. These amounts shall be consistent with the President's Budget, within the total approved by the Congress, unless a revised amount is approved by OMB. Funds appropriated specifically for the Agency for Toxic Substances and Disease Registry ("ATSDR"), shall be directly transferred to ATSDR, consistent with fiscally responsible investment of trust fund money.

(c) The Administrator shall chair a budget task force composed of representatives of Executive departments and agencies having responsibilities under this Order or the Act. The Administrator shall also, as part of the budget request for the Environmental Protection Agency, submit to OMB a budget for the Hazardous Substance Superfund which is based on recommended levels developed by the budget task force. The Administrator may prescribe reporting and other forms, procedures, and guidelines to be used by the agencies of the Task Force in preparing the budget request, consistent with budgetary reporting requirements issued by OMB. The Administrator shall prescribe

forms to agency task force members for reporting the expenditure of funds on a site specific basis.

(d) The Administrator and each department and agency head to whom funds are provided pursuant to this Section, with respect to funds provided to them, are authorized in accordance with Section 111(f) of the Act to designate Federal officials who may obligate such funds.

(e) The functions vested in the President by Section 112 of the Act are delegated to the Administrator for all claims presented pursuant to Section 111 of the Act.

(f) The functions vested in the President by Section 111(o) of the Act are delegated to the Administrator.

(g) The functions vested in the President by Section 117(e) of the Act are delegated to the Administrator, to be exercised in consultation with the Attorney General.

(h) The functions vested in the President by Section 123 of the Act are delegated to the Administrator.

(i) Funds from the Hazardous Substance Superfund may be used, at the discretion of the Administrator or the Coast Guard, to pay for removal actions for releases or threatened releases from facilities or vessels under the jurisdiction, custody or control of Executive departments and agencies but must be reimbursed to the Hazardous Substance Superfund by such Executive department or agency.

Sec. 10. *Federal Facilities.* (a) When necessary, prior to selection of a remedial action by the Administrator under Section 120(e)(4)(A) of the Act, Executive agencies shall have the opportunity to present their views to the Administrator after using the procedures under Section 1-6 of Executive Order No. 12088 of October 13, 1978, or any other mutually acceptable process. Notwithstanding subsection 1-602 of Executive Order No. 12088, the Director of the Office of Management and Budget shall facilitate resolution of any issues.

(b) Executive Order No. 12088 of October 13, 1978, is amended by renumbering the current Section 1-802 as Section 1-803 and inserting the following new Section 1-802:

"1-802. Nothing in this Order shall create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person."

Sec. 11. *General Provisions.* (a) The function vested in the President by Section 101(37) of the Act is delegated to the Administrator.

(b)(1) The function vested in the President by Section 105(f) of the Act, relating to reporting on minority participation in contracts, is delegated to the Administrator.

(2) Subject to paragraph 1 of this subsection, the functions vested in the President by Section 105(f) of the Act are delegated to the heads of Executive departments and agencies in order to carry out the functions delegated to them by this Order. Each Executive department and agency shall provide to the Administrator any requested information on minority contracting for inclusion in the Section 105(f) annual report.

(c) The functions vested in the President by Section 126(c) of the Act are delegated to the Administrator, to be exercised in consultation with the Secretary of the Interior.

(d) The functions vested in the President by Section 301(c) of the Act are delegated to the Secretary of the Interior.

(e) Each agency shall have authority to issue such regulations as may be necessary to carry out the functions delegated to them by this Order.

(f) The performance of any function under this Order shall be done in consultation with interested Federal departments and agencies represented on the NRT, as well as with any other interested Federal agency.

(g) The following functions vested in the President by the Act which have been delegated or assigned by this Order may be redelegated to the head of any Executive department or agency with his consent: functions set forth in Sections 2 (except subsection (b)), 3, 4(b), 4(c), 4(d), 5(b), 5(c), and 8(c) of this Order.

(h) Executive Order No. 12316 of August 14, 1981, is revoked.

Ronald Reagan

THE WHITE HOUSE,
January 23, 1987.

[FR Doc 87-1842
Filed 1-27-87, 2:35 pm]
Billing code 3195-01-M

of accidents, evaluating the adequacy of safeguards and procedures concerning the transportation of hazardous materials and the performance of other Government agencies charged with ensuring the safe transportation of such materials, and reporting annually to the Congress on its activities.

Certificate or License Appeal The Board also reviews on appeal the suspension, amendment, modification, revocation, or denial of any certificate or license issued by the Secretary or an Administrator of the Department of Transportation.

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All other persons interested in receiving NTSB publications must purchase them from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Va. 22161. Orders may be placed by telephone to the NTIS Subscription Unit, 703-487-4630, or to their sales desk on 703-487-4650.

Public Reference Room The Public Reference Room of the Safety Board is available for record inspection or copying. It is located in Room 808G at the Board's Washington, D.C., headquarters. Requests for access to public records should be made in person at Room 808G, or by writing the Public Inquiries Section, National Transportation Safety Board, Washington, D.C. 20594. Phone, 202-382-6735.

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For further information, contact the Office of Government and Public Affairs, National Transportation Safety Board, 800 Independence Avenue SW., Washington, D.C. 20594. Phone, 202-382-6600.

NUCLEAR REGULATORY COMMISSION

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Dist. Westlake Hfl
ID #: MOD079900932
Rank: 17.8
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[For the Nuclear Regulatory Commission statement of organization, see Code of Federal Regulations, Title 10, Chapter I]

The Nuclear Regulatory Commission (NRC) licenses and regulates the uses of nuclear energy to protect the public health and safety and the environment. It does this by licensing persons and companies to build and operate nuclear reactors and to own and use nuclear materials. NRC makes rules and sets standards for these types of licenses. NRC also carefully inspects the activities of the persons and companies licensed to ensure that they do not violate the safety rules of the Commission.

The Nuclear Regulatory Commission was established as an independent regulatory agency under the provisions of the Energy Reorganization Act of 1974 (88 Stat. 1242; 42 U.S.C. 5801) and Executive Order 11834 of January 15, 1975, effective January 19, 1975. Transferred to NRC were all licensing and related regulatory functions formerly assigned to the Atomic Energy Commission, which was established by the Atomic Energy Act of 1946 (60 Stat. 755) as amended by the Atomic Energy Act of 1954 (68 Stat. 919; 42 U.S.C. 2011 et seq.), as amended.

The major program components of NRC are the Office of Nuclear Reactor Regulation, the Office of Nuclear Material Safety and Safeguards, and the Office of Nuclear Regulatory Research, which were created by the Energy Reorganization Act of 1974; and the Commission-created Office of Inspection and Enforcement. Headquarters offices are located in Bethesda, Md., and there are five regional offices.

The Nuclear Regulatory Commission's purpose is to ensure that the civilian uses of nuclear materials and facilities are conducted in a manner consistent with the public health and safety, environmental quality, national security, and the antitrust laws. The major share of the Commission effort is focused on the use of nuclear energy to generate electric power.

Programs and Activities

NRC fulfills its responsibilities through a system of licensing and regulation which includes, among other things: licensing the construction and operation of nuclear reactors and other nuclear facilities and the possession, use, processing, handling, and disposal of nuclear materials; regulation of licensed activities including assurance that measures are taken for the physical protection of facilities and materials; development and implementation of rules and regulations governing licensed nuclear activities; inspection of licensee facilities and activities; investigation of nuclear incidents and allegations concerning any matter regulated by NRC; enforcement of NRC licenses and regulations by the issuance of orders, civil penalties and other types of actions; conduct of public hearings on nuclear and radiological safety, environmental, common defense and security and antitrust matters; and the development of effective working relationships with the States regarding the regulation of nuclear materials. This relationship includes the assurance that adequate regulatory programs are maintained by those States which exercise, by agreement with the Commission, regulatory control over certain nuclear materials within their respective borders. In addition, a systematic review of operational data, including reports of accidents and other events, from nuclear powerplants is performed in order to detect trends that will better enable NRC to forecast and solve safety problems. Inspection of NRC-licensed activities is carried out from five regional offices. In addition, resident inspectors operating out of the regional offices have been assigned to most reactor sites.

The Commission also contracts for research deemed necessary for performing licensing and related regulatory functions.

Sources of Information

General information may be obtained by directing inquiries to the Director, Office of Public Affairs, Nuclear Regulatory Commission, Washington, D.C. 20555. Phone, 301-492-7715. Specific information is available as shown below.

Public Document Room NRC maintains its principal Public Document Room (PDR) at 1717 H Street NW., Washington, D.C. 20555 (phone, 202-634-3274). As of December 31, 1983, the main Public Document Room contained about 1.2 million documents in hard copy or on microfiche. These documents pertain to the licensing of source material, production and utilization facilities, special nuclear material, transportation of radioactive materials, research and technical assistance reports, reports on generic technical issues, rules and regulations, Commission correspondence, transcripts of Commission meetings, minutes and reports of NRC's advisory committees, and other material relating to the regulatory responsibilities and operation of the Commission.

Members of the public may visit the PDR and examine any document in the collection, or phone or write-in requests. The services offered include reference assistance, copying services, and microfiche reader-printers. Indexes and Daily Accession Listings providing bibliographic descriptions of documents in the collection also are available.

In addition, NRC has established more than 130 Public Document Rooms around the country. The local PDR's are typically located in libraries in cities and towns near proposed and actual nuclear plant sites, and contain detailed information specific to the nearby facilities which are either licensed or under regulatory review. A list of these local Public Document Rooms, which may be visited, is available from the Director, Division of Rules and Records, Nuclear Regulatory Commission, Washington, D.C. 20555. To obtain specific information about the availability of documents at the local Public Document Rooms, NRC's local Public Document Room branch may be contacted directly by calling toll free, 800-638-8081.

Records Freedom of Information Act inquiries should be directed to the Director, Division of Rules and Records, Nuclear Regulatory Commission, Washington, D.G. 20555. Phone, 301-492-7211.

Publications *Annual Report 1982* provides a summary of major agency activities for the year. It is available for purchase from the NRC/Government Printing Office Sales Program. Pricing and ordering information may be obtained by writing to the Nuclear Regulatory Commission, Washington, D.C. 20555; Attention: Publications Sales Manager, or by calling 301-492-9530.

NRC produces a variety of scientific, technical, and administrative information dealing with licensing and regulating civilian nuclear power. Information on agency publications can be obtained from *Title List of Documents Made Publicly Available*, NUREG-0540. This document, published monthly, includes (1) docketed material associated with civilian nuclear powerplants and other uses of radioactive materials and (2) nondocketed material received and generated by NRC pertinent to its role as a regulatory agency. Single copies of monthly issues of NUREG-0540 are available for purchase from the NRC/GPO Sales Program and from the National Technical Information Service (NTIS), Springfield, Va. 22161. Phone, 703-557-4650. Subscription service for NUREG-0540, consisting of 12 consecutive monthly issues, is also available from the NRC/GPO Sales Program. All the documents listed are available for inspection and copying at the NRC Public Document Room, 1717 H Street NW., Washington, D.C. (phone, 202-634-3273). The formal reports are also available for purchase from the NRC/GPO Sales Program and NTIS.

Single copies of some publications, such as *Draft Environmental Statements* and *Draft Regulatory Guides* are available without charge, to the extent of supply, from the Nuclear Regulatory Commission Document Management Branch, Washington, D.C. 20555.

Phone, 301-492-9530. Active *Regulatory Guides* are available on subscription from the NRC/GPO Sales Program. These *Regulatory Guides* are published in 10 subject areas: Power Reactors, Research and Test Reactors, Fuels and Materials Facilities, Environmental and Siting, Material and Plant Protection, Products, Transportation, Occupational Health, Antitrust Review, and General.

Other subscription items available from the NRC/GPO Sales Program include: *Licensed Operating Reactors-Status Summary Report* (monthly), NUREG-0020; *Construction Status for Nuclear Power Plants* (quarterly), NUREG-0030; *Licensee, Contractor and Vendor Inspection Status Report* (quarterly), NUREG-0040; *Report to Congress on Abnormal Occurences* (quarterly), NUREG-0090; *Regulatory and Technical Reports* (quarterly), NUREG-0304; *U.S. Nuclear Regulatory Commission Rules and Regulations*; *U.S. NRC Telephone Directory*; *Information Report on State Legislation* (monthly), NUREG/BR-0025; and the *Weekly Information Report*. Details on ordering and pricing for these and other NRC subscription items can be obtained by writing to the Nuclear Regulatory Commission, Washington, D.C. 20555; Attention: Publications Sales Manager or by calling 301-492-9530. Subscription service for the *Standard Review Plan*, NUREG-0800, is handled exclusively by NTIS, Springfield, Va. 22161.

Nuclear Regulatory Commission Issuances (monthly, quarterly, and semiannual indexes), a compilation of adjudications and other issuances for NRC, including Atomic Safety and Licensing Boards and the Atomic Safety and Licensing Appeal Boards, is available for sale from the NRC/GPO Sales Program, either on subscription or on a single-issue basis. Hard-bound semiannual issuances and indexes are also available from the NRC/GPO Sales Program. *Nuclear Regulatory Commission Regulatory Agenda* (published in the *Federal Register* each April and October) are available in January, April, July, and October from the Director, Division of Rules and Records, Office of Administration, Nuclear Regulatory Commission, Washington, D.C. 20555. Persons may obtain information regarding the status of any regulation or petition for rulemaking before the Commission by calling toll free, 800-368-5642.

Procurement and Contracts Detailed information on how to do business with NRC and on programs to assist small business is available from the Director, Division of Contracts, Nuclear Regulatory Commission, Washington, D.C. 20555. Phone, 301-492-4347.

Employment NRC's employment activities are exempt from civil service requirements and are conducted under NRC's independent merit system. However, NRC employees receive Federal employee benefits (retirement, group life insurance, and health benefits) on the same basis as other Federal employees. Applicants with veterans preference are accorded the preference granted to them by the Veterans' Preference Act of 1944 (58 Stat. 387).

Recruitment is continual, and applications from individuals qualified for NRC needs are accepted whenever they are received. In addition to receiving applications from candidates at all grade levels throughout the year, NRC recruits annually from colleges as appropriate to fill needs for interns and entry-level professionals.

Employment inquiries, applications, and requests from schools for participation in the recruitment program may be directed to the Director, Division of Organization and Personnel, Nuclear Regulatory Commission, Washington, D.C. 20555. Phone, 301-492-8238.

For further information, contact the Office of Public Affairs, Nuclear Regulatory Commission, 1717 H Street NW., Washington, D.C. 20555. Phone, 301-492-7715.

Site: Westlake LDF
ID #: MOD079900932
Break: 17.8
Other:

Ref. 8

MISSOURI DEPT. OF NATURAL RESOURCES
WASTE MANAGEMENT LIBRARY
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

Official Manual

STATE OF MISSOURI

87-88

Rex D. Blunt

SECRETARY OF STATE

Place	County	1980	1970	Percent change
Albany city	Gentry	721	715	0.8
Alcoa town	Andrew	314	326	3.7
Amazonia town	DeKalb	74	86	14.0
Amity town	Bates	238	219	8.7
Amoret city	Bates	231	120	92.5
Amsterdam city	McDonald	1,237	1,065	16.2
Anabel town	Pike	70	109	35.8
Anderson city	Iron	370	310	17.1
Annada town	Mississippi	320	515	37.9
Annetta town	St. Clair	1,257	1,058	18.8
Appleton City city	Scotland	67	70	4.3
Arbela town	Dunklin	704	575	22.4
Arbyrd city	Iron	683	627	8.9
Archie city	Cass	753	525	43.4
Arcola city	Dade	136	80	70.0
Argyle town	Moniteau	216	262	17.6
Arlington town	Nodaway	63	49	28.6
Armstrong city	Howard	360	354	1.7
Arnold city	Jefferson	19,141		
Arrow Rock town	Saline	82	81	1.2
Asbury city	Jasper	210	201	4.5
Ashburn town	Pike	89		
Ash Grove city	Greene	1,157	934	23.9
Ashland city	Boone	1,021	769	32.8
Atlanta city	Macon	441	377	17.0
Augusta city	St. Charles	308	195	57.9
Aullville town	Lafayette	92	108	14.8
Aurora city	Lawrence	6,437	5,359	20.1
Auxvasse city	Callaway	958	898	6.2
Ava city	Douglas	2,761	2,504	10.3
Avenue City city	Nodaway	369	358	3.1
Avondale city	Clay	2,435	2,680	9.1
Baby town	Cole	34,361	31,282	9.8
Bagnell town	Dunklin	831	859	3.3
Baker town	Harrison	3,937	1,661	137.0
Balcom town	Cass	4,700	4,847	3.0
Baldwin town	Jasper	1,973	1,716	15.0
Ballwin city	St. Louis	11,104	11,035	0.6
Balltown town	Dent	7,958	7,350	8.3
Bucklin city	Linn	2,091	1,910	9.5
Bucyrus town	Scotland	180	122	47.5
Buffalo City city	Dallas	427	454	0.6
Bunceton city	Cooper	669	588	1.4
Burfordville town	Cape Girardeau	304	277	9.7
Burlington Junction city	Nodaway	223	234	4.7
Burnett city	Lincoln	241	209	15.3
Burr Oak town	Gentry	3,537	3,623	2.4
Burrton town	Harrison	3,241	2,793	16.0
Butler city	Bates	4,267	4,101	4.0
Butlerville town	Jennings	1,147	1,050	9.2
Byrnes Mill village	St. Louis	304	271	12.2
Cabool city	Texas	2,080	1,848	13.1
Calhoun city	Henry	486	454	9.3
Callao town	Macon	315	248	27.0
Calverton Park village	St. Louis	1,717	2,025	15.2
Camdenton city	Camden	2,303	1,636	40.8
Camdenton Court city	Camden	261	264	0.4
Cameron city	Clinton	4,519	3,960	14.1
Campbell city	Dunklin	2,134	1,979	7.8
Canalou city	New Madrid	369	358	3.1
Canton city	Lewis	2,435	2,680	9.1
Cape Girardeau city	Cape Girardeau	34,361	31,282	9.8
Cardwell city	Dunklin	831	859	3.3
Carl Junction city	Jasper	3,937	1,661	137.0
Carrollton city	Carroll	4,700	4,847	3.0
Carterville city	Jasper	1,973	1,716	15.0
Carthage city	Jasper	11,104	11,035	0.6
Caruthersville city	Pemiscot	7,958	7,350	8.3
Carytown city	Jasper	150		
Cassville city	Barry	2,091	1,910	9.5
Catron town	New Madrid	180	122	47.5
Cedar City city	Callaway	427	454	0.6
Cedar Hill Lakes village	Jefferson	700		
Center city	Ralls	669	588	1.4
Centertown town	Cole	304	277	9.7
Centerview town	Johnson	223	234	4.7
Centerville city	Reynolds	241	209	15.3
Centralia city	Audrain - Boone	3,537	3,623	2.4
Chaffee city	Scott	3,241	2,793	16.0
Chain O Lakes village	Barry	76		
Chamois city	Osage	546	615	11.2
Champ village	St. Louis	28	19	47.4
Charlack city	St. Louis	1,537	1,872	17.9
Charleston city	Mississippi	5,230	5,131	1.9
Chillicothe town	Johnson	349	297	17.5
Chilhowee city	Lexington	9,089	9,519	4.5
Chula city	Lexington	244	244	0.0
Circle City village	Stoddard	154		
Clarence city	Shelby	1,147	1,050	9.2
Clark city	Randolph	304	271	12.2
Clarksburg city	Moniteau	352	343	2.6
Clarksdale town	DeKalb	278	248	12.1
Clarkson Valley village	St. Louis	1,435	157	814.0
Clarksville city	Pike	585	668	12.4
Clarkton city	Dunklin	1,228	1,177	4.3
Clearmont village	Clay	1,671	1,841	9.2
Clayton city	St. Louis	14,273	16,100	11.7
Clearmont town	Nodaway	261	226	15.5
Cleveland town	Cass	485	256	89.5
Clever city	Christian	551	430	28.1
Cliff Village village	Newton	24	39	38.5
Clifton Hill city	Randolph	152	174	12.6
Clinton Springs village	Camden	87	104	16.3
Clinton city	Henry	8,366	7,504	11.5
Clyde village	Nodaway	61	158	61.4
Coatsville City village	Mercer	272	238	14.3
Colley town	Daviess	165	157	5.1
Cole Camp city	Benton	1,022	1,038	1.5
Collins town	St. Clair	145	150	3.3
Columbia city	Boone	62,061	58,812	5.5
Commerce town	Scott	199	234	15.0
Conception Junction town	Nodaway	252	237	6.3
Concord (U)	St. Louis	20,896	21,217	0.15

Place	County	1980	1970	Percent change
Oregon city	Holt	901	789	14.2
Orrington city	Jasper	525	492	6.7
Orrick city	Ray	922	883	4.4
Osage Beach city	Camden—Miller	1,992	1,091	82.6
Osborn city	Clinton—DeKalb	381	339	12.7
Osceola city	St. Clair	841	874	3.8
Osgood town	Sullivan	93	108	13.9
Otterville city	Cooper	472	440	7.3
Overland city	St. Louis	19,620	24,819	20.9
Owensville city	Gasconade	2,241	2,416	7.2
Ozark city	Christian	2,980	2,384	25.0
Pacific city	Franklin—St. Louis	4,410	3,247	35.8
Pagedale city	St. Louis	4,542	5,044	10.0
Palmyra city	Marion	3,469	3,188	8.8
Paris city	Monroe	1,598	1,442	10.8
Parkdale town	Jefferson	270	836	67.7
Parkville city	Platte	1,997	1,253	59.4
Parkway village	Franklin	254	233	9.0
Parma city	New Madrid	1,081	1,051	2.9
Parnell city	Nodaway	223	232	3.9
Pasadena Hills village	St. Louis	1,221	1,337	8.7
Pasadena Park village	St. Louis	531	760	30.1
Pascola town	Pemiscot	211	180	17.2
Passaic town	Bates	53	56	5.4
Pattonsburg city	Daviess	502	540	7.0
Paynesville town	Pike	85	90	5.6
Peculiar city	Cass	1,571	705	122.8
Peerless Park village	St. Louis	79	51	54.9
Penermon village	Stoddard	136		
Perry city	Ralls	836	839	0.4

Place	County	1980	1970	Percent change
Prairie Home city	Cooper	279	231	20.8
Prairieville town	Clay	141	153	7.8
Prathersville village	Henry	149	132	12.9
Preston town	Mercer	1,264	1,328	4.8
Princeton city	Jasper	322	325	0.9
Purcell city	Linn	243	236	3.0
Purdin city	Barry	928	588	57.8
Purdy city	Stoddard	833	759	9.7
Putnam city	Schuyler	783	588	33.2
Queen City city	Nodaway	66	95	30.5
Quitman town	Butler	545	496	9.9
Quitman town	Clay	91	106	14.2
Randolph village	Nodaway	436	336	29.8
Ravenwood town	Texas	388	284	36.6
Raymondville town	Cass	3,154	587	437.3
Raymore city	Jackson	31,759	33,306	4.6
Raytown city	Ray	197	202	2.5
Rayville town	Andrew	78	54	44.4
Rea town	Newton	222	179	24.0
Redings Mill village	Jasper	105	122	13.9
Reeds town	Stone	461	286	61.2
Reeds Spring city	Randolph	195	188	3.7
Renick town	Greene	4,485	2,411	86.0
Republic city	Clark	191	184	3.8
Revere town	Montgomery	172	190	9.5
Rhineland town	Vernon	117	105	11.4
Richards town	Bates	1,471	1,661	-11.4
Rich Hill city	Camden—Laclede			
Richland city	Pulaski	1,992	1,793	7.8

Place	County	1980	1970	Percent change
Richmond city	Ray	5,499	4,948	11.1
Richmond Heights city	St. Louis	11,516	13,802	16.6
Ridgely town	Platte	78	53	47.2
Ridgeway city	Harrison	516	469	10.0
Rieck city	New Madrid	446	412	8.3
Richey town	Newton	126	101	24.8
Rivermines village	St. Francois	414	402	3.0
Riverside city	Platte	3,206	2,123	51.0
Riverview village	St. Louis	3,367	3,741	10.0
Rocheport city	Boone	272	307	11.4
Rockaway Beach town	Taney	292	195	49.7
Rock Hill city	St. Louis	5,702	6,815	16.3
Rock Port city	Atchison	1,511	1,575	4.1
Rockville city	Bates	281	203	38.4
Rocky Ridge village	Ste. Genevieve	281		
Rogersville town	Greene - Webster	741	595	24.5
Rolla city	Phelps	13,303	13,571	2.0
Rosebud town	St. Clair	91	137	33.6
Rosehud city	Gasconade	326	305	6.9
Rosendale town	Andrew	223	245	9.0
Rothville village	Chariton	118	131	9.9
Rush Hill town	Audrain	140	151	7.3
Rushville town	Buchanan	271	300	9.7
Russellville city	Cole	667	557	19.7
Rutledge town	Scotland	128	139	7.9
Sarcoxie village	Newton	293	224	30.8
St. Ann city	St. Louis	16,721	18,215	14.8
St. Charles city	St. Charles	40,927	31,834	28.6
St. Clair city	Franklin	3,485	2,978	17.0
St. Cloud village	Crawford	40	34	17.6
St. Elizabeth town	Miller	312	287	8.7
St. George city	St. Louis	1,545	2,033	24.0
St. James city	Phelps	3,328	2,929	13.6
St. John city	St. Louis	7,854	8,960	12.3
St. Joseph city	Buchanan	76,691	72,748	5.4
St. Louis city		452,801	622,236	27.2
St. Martins city	Cole	739		
St. Mary city	Ste. Genevieve	565	645	12.4
St. Paul village	St. Charles	607		
St. Peters city	St. Charles	15,700	486	1000+
St. Robert city	Pulaski	1,735	1,465	18.4
St. Thomas town	Cole	337	195	72.8
Ste. Genevieve city	Ste. Genevieve	4,481	4,468	0.3
Salem city	Dent	4,454	4,363	2.1
Salisbury city	Chariton	1,975	1,960	0.8
Sappington (U)	St. Louis	11,388	10,603	7.4
Sarcoxie city	Jasper	1,381	1,175	17.5
Savannah city	Andrew	4,184	3,324	25.9
Schell City city	Vernon	327	367	10.9
Schuermann Heights village	St. Louis	234	290	19.3
Scotsdale town	Jefferson	183		
Scott City city	Scott	3,262	2,464	32.4
Sedalia city	Pettis	20,927	22,847	8.4
Sedgewickville village	Bollinger	115	92	25.0

Place	County	1980	1970	Percent change
Seligman city	Barry	508	424	19.8
Senath city	Dunklin	1,728	1,484	16.4
Seneca city	Newton	1,853	1,577	17.5
Seymour city	Webster	1,535	1,208	27.1
Shelbina city	Shelby	2,169	2,060	5.3
Shelbyville city	Shelby	645	601	7.3
Sheldon city	Vernon	491	498	-1.4
Sheridan town	Worth	220	251	12.4
Shoal Creek Drive village	Newton	374	329	13.7
Shoal Creek Estates town	Newton	89		
Shrewsbury city	St. Louis	5,077	5,896	13.9
Sibley village	Jackson	382	279	36.9
Sikeston city	New Madrid—Scott	17,431	14,699	18.6
Siloa village	Lincoln	287	306	6.2
Silver Creek village	Newton	519	381	36.2
Skidmore city	Nodaway	437	440	0.7
Slater city	Saline	2,492	2,576	3.3
Smithton city	Pettis	559	402	39.1
Smithville city	Clay	1,873	1,785	4.9
South Gifford village	Macon	98	64	53.1
South Gorin town	Scotland	212	220	-3.6
South Greenfield village	Dade	110	144	23.6
South Lineville town	Mercer	55	52	5.8
South West City city	McDonald	550	483	13.9
Spanish Lake (U)	St. Louis	20,632	15,647	31.8
Sparta city	Christian	743	380	95.5
Spickard city	Grundy	389	408	4.7
Springfield city	Greene	133,116	120,096	10.8
Spring Valley village	McDonald	67	60	11.7
Stanberry city	Gentry	1,387	1,479	6.2
Stark City town	Newton	132	122	8.2
Steele city	Pemiscot	2,419	2,107	14.8
Steelville city	Crawford	1,470	1,392	5.6
Stella town	Newton	230	197	16.8
Stewartsville city	DeKalb	832	634	31.2
Stockton city	Cedar	1,432	1,063	34.7
Stoutsburg town	Vernon	48	35	37.1
Stotts City city	Lawrence	232	203	14.3
Stoutland village	Camden—Laclede	286	205	39.5
Strasburg village	Monroe	34	61	-44.3
Stover city	Morgan	1,041	849	22.6
Strafford city	Greene	1,121	491	128.3
Strasburg town	Cass	170	181	-6.1
Sturgeon city	Boone	901	787	14.5
Sugar Creek city	Clay—Jackson	4,305	4,756	-9.5
Sullivan city	Crawford—Franklin	5,461	5,111	6.8
Summersville city	Shannon—Texas	551	435	26.7
Sumner town	Chariton	182	178	2.2
Sunrise town village	Ozark	39		
Sunnyvale town	Jasper—Newton	439	311	41.1
Sunset Beach village	Camden—Morgan	148	126	17.5
Sunset Hills city	St. Louis	4,363	4,126	5.7
Sweet Springs city	Saline	1,694	1,716	-1.3
Sycamore Hills village	St. Louis	741	821	-9.7
Syracuse city	Morgan	222	214	3.7

V

WESTLAKE LDF
MOD079900932

August 29, 1988

Site: Westlake Ldfl
ID #: MoD079900932
Break: 17.9
Other:

DRAFT RESOLUTION
of the
St. Louis County Municipal League to
Expedite the Removal of the Radioactive
Wastes Located in St. Louis County

WHEREAS radioactive wastes are contaminating the air, water and soil in North St. Louis County -- at the Airport Site, Latty Avenue in Hazelwood, and West Lake Landfill in Bridgeton -- and were deposited as a result of the federal government's atom bomb research and development program; and

WHEREAS the United States Department of Energy (DOE) now proposes to expand the 22-acre Airport Site to at least 82 acres, and possibly even more once the total volume of waste is known, in order to establish a permanent bunker to accomodate the wastes from the Mallinckrodt plant downtown (where the radioactive materials were originally processed) and those wastes currently at the Airport, Latty Avenue, the Berkeley Athletic Complex, in the Coldwater Creek sediment, and along the haul routes contaminated during the trucking of all these wastes; but not the wastes from West Lake Landfill for which the DOE has not yet accepted responsibility; and

WHEREAS the establishment of a North County radioactive waste bunker would adversely affect property values of nearby municipalities; and

WHEREAS a half-million people live within a 10-mile radius of the Airport Site and many thousands work in the immediate area; and

WHEREAS any exposure to radiation increases the risk of birth defects, genetic damage, immune system disorders, cancer, and other life-shortening diseases; and

WHEREAS the radioactive wastes proposed for the bunker will continue releasing radioactivity for literally billions of years and must therefore be kept isolated from the human environment, but no technology exists that guarantees the perpetual integrity of any containment structure; and

WHEREAS the cost of producing atomic weapons should include the full cost of cleaning up the resulting radioactive wastes and should therefore be borne by the federal government; and

WHEREAS precedents exist elsewhere, as in Salt Lake City, Utah, for the federal government to fund the removal of weapons wastes from a densely populated area to a remote site;

NOW THEREFORE, BE IT RESOLVED THAT THE ST. LOUIS COUNTY MUNICIPAL LEAGUE urges the Missouri Congressional Delegation to introduce legislation that will direct the United States Department of Energy to find a site more geologically and demographically suited for a permanent, above-ground disposal structure, and to appropriate the requisite funding for the removal of the wastes to that location.

EPA C118

Category 17.10

Ref. 4

Site: Westlake LSI
ID #: MO D079900932
Break: 17.10
Other:

Rules of
Department of Natural Resources
Division 20—Clean Water Commission

10 CSR 20-7.031
MISSOURI WATER QUALITY STANDARDS

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Missouri Department of Natural Resources
Division of Environmental Quality
Water Pollution Control Program
P.O. Box 176
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TO WHOM IT MAY CONCERN

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Title 10—DEPARTMENT OF NATURAL RESOURCES

Division 20—Clean Water Commission
Chapter 7—Water Quality

10 CSR 20-7.031 Water Quality Standards

PURPOSE: This rule identifies beneficial uses of waters of the state, criteria to protect those uses and defines the antidegradation policy. It is developed in response to the Missouri Clean Water Law and the federal Clean Water Act, section 303(c)(1) and (2), which requires that state water quality standards be reviewed at least once every three years. Such revisions are pursuant to the national goal of protection of fish, shellfish and wildlife to and recreation in and on the water as outlined in section 101(a)(2) of the Act.

Editor's Note: The secretary of state has determined that the publication of this rule in its entirety would be unduly cumbersome or expensive. The entire text of the rule has been filed with the secretary of state. The entire text of the rule may be found at the headquarters of the agency and is available to any interested person at a cost not more than the actual cost of reproduction.

(1) Definitions.

(A) Acute Toxicity. Conditions producing adverse effects or lethality in a short time.

(B) Aquifer. A subsurface water-bearing bed or stratum of sand, gravel or bedrock which stores or transmits water in recoverable quantities that is currently being used or could be used as a water source for private or public use.

(C) Beneficial Water Uses.

1. Irrigation. Application of water to cropland or directly to plants that may be used for human or livestock consumption. Occasional supplemental irrigation, rather than continuous irrigation, is assumed.

2. Livestock watering and wildlife watering. Maintenance of conditions to support health in livestock and wildlife.

3. Cold-water fishery. Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a naturally reproducing or stocked trout fishery and other naturally reproducing populations of recreationally important fish species.

4. Cool-water fishery. Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a sensitive, high quality sport fishery (including smallmouth bass and rock bass) and other naturally reproducing populations of recreationally important fish species.

5. Protection of aquatic life—General warm-water fishery. Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a wide variety of warm-water biota, including naturally reproducing populations of recreationally important fish species. It includes compliance with state and federal limits for fish consumption. This includes all Class P and P1 streams and all classes of lakes.

6. Protection of aquatic life—Limited warm-water fishery. Waters in which natural water quality and/or habitat conditions prevent the maintenance of naturally reproducing populations of recreationally important fish species. It includes compliance with state and federal limits for fish consumption. This includes Class C streams which receive permitted discharges.

7. Whole-body contact recreation. Activities in which there is direct human contact with the raw surface water to the point of complete body submergence. The raw water may be ingested accidentally and certain sensitive body organs, such as the eyes, ears and the nose, will be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. Water so designated is intended to be used for swimming, water skiing or skin diving.

8. Boating and canoeing. Activities in which limited contact with water is assumed.

9. Drinking water supply. Maintenance of a raw water supply which will yield potable water after treatment by public water treatment facilities.

10. Industrial process water and industrial cooling water. Water to support various industrial uses; since quality needs will vary by industry, no specific criteria are set in these standards.

(D) Chronic Toxicity. Conditions producing adverse effects over a long duration, but having no effect over a short time period.

(E) Classified Waters. All waters listed as L1, L2, and L3 in Table G and P, P1, and C in Table H. During normal flow periods, some rivers back water into tributaries which are not otherwise classified. These permanent backwater areas are considered to have the same classification as the water body into which the tributary flows.

1. Class L1. Lakes used primarily for public drinking water supply.

2. Class L2. Major reservoirs.

3. Class L3. Other lakes.

4. Class P. Streams that maintain permanent flow even in drought periods.

5. Class P1. Standing-water reaches of Class P streams.

6. Class C. Streams that may cease flow in dry periods, but maintain permanent pools which support aquatic life.

(F) Epilimnion. Zone of atmospheric mixing in a thermostratified lake.

(G) Fecal Coliform Bacteria. A group of bacteria originating in intestines of warm-blooded animals which indicates the possible presence of pathogenic organisms in water.

(H) Hypolimnion. Zone beneath the zone of atmospheric mixing in a thermostratified lake.

(I) Losing Streams. A stream which distributes thirty percent (30%) or more of its flow through natural processes, such as through permeable subsoil and or cavernous bedrock, into an aquifer. Flow measurements to determine percentage of water loss must be corrected to approximate the seven (7)-day Q10 stream flow. If a stream bed or drainage way has an intermittent flow or a flow insufficient to measure in accordance with this rule, it may be determined to be a losing stream on the basis of channel development, valley configuration, vegetation development, dye tracing studies, bedrock characteristics, geographical data and other geological factors. A list of known losing streams is available from the Water Pollution Control Program. Other streams may be determined to be losing by the Division of Geology and Land Survey.

(J) Mixing Zone. An area of dilution of effluent in the receiving water.

(K) Ninety-six (96)-Hour LC50 (TLm). Concentration of a toxicant which would be expected to kill fifty percent (50%) of the individuals of the test species in ninety-six (96) hours.

(L) Outstanding National Resource Waters. Waters which have outstanding national recreational and ecological significance. These waters shall receive special protection against any degradation in quality. Congressionally designated rivers, including those in the Ozark National Scenic Riverways and the Wild and Scenic Rivers system, are so designated (see Table D).

(M) Outstanding State Resource Waters. Waters having characteristics identified in section (8) and listed in Table E.

(N) Regulated-Flow Streams. A stream that derives a majority of its flow from an impounded area with a flow-regulating device.

(O) Low-Flow Conditions.

1. Seven (7)-day, one-in-ten (10)-year low flow (7-day, Q10). The average minimum flow for seven (7)-consecutive days that has a recurrence interval of once-in-ten (10) years.

2. Sixty (60)-day, one-in-two (2)-year low flow (60-day, Q2). The average minimum flow for sixty (60)-consecutive days that has a recurrence interval of once-in-two (2) years.

(P) Water Quality Criteria. Chemical, physical and biological properties of water that are necessary to protect beneficial water uses.

(Q) Waters of the State. All rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common and includes water of the United States lying within the state.

R) Zone of Passage. A continuous water ate necessary to allow passage of organisms th no acutely toxic effects produced on their pulations.

(S) Other definitions as set forth in the issouri Clean Water Law and 10 CSR 20-010 shall apply to terms used in this rule.

) Antidegradation.

(A) Where water quality exceeds levels ecessary to protect beneficial uses, that uality shall be fully maintained and protected. Water quality may be lowered only if e state finds, after full satisfaction of the ntergovernmental coordination and public articipation provisions of 10 CSR 20-6.020, hat such lowered water quality is necessary allow important economic and social evelopment. The state shall assure that there hall be achieved the highest statutory and egulatory requirements for all new and xisting point sources and all cost-effective nd reasonable best management practices for onpoint source control before allowing any owering of water quality. Such lowered water uality would only be allowable provided hat—

1. Existing instream uses are fully maintained and protected;

2. No public health hazard is created; and

3. There is no lowered water quality in utstanding national resource waters or utstanding state resource waters.

(3) General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from being—

(A) Free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;

(B) Free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

(C) Free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses; and

(D) Free from substances or conditions in sufficient amounts to have a harmful effect on human, animal or aquatic life.

(4) Specific Criteria. The specific criteria shall apply to classified waters, except that limitations for pollutants identified in paragraphs (4)(B)2. and 3. shall apply to all waters of the state.

(A) The maximum limits in Tables A and B shall apply to waters designated for the indicated uses given in Table G and H. Water contaminants shall not cause or contribute to concentrations in excess of these values. However, exceptions may be granted in the following cases:

1. Permanent flow streams when the stream flow is less than seven (7)-day, once-in-ten (10)-year low flow;

2. Regulated flow streams if the flow is less than the minimum release flow agreed upon by the regulating agencies;

3. When the stream or lake is subjected to degradation due to nonpoint sources of pollution above the level of control which can be achieved through the use of feasible and cost-effective best management practices as defined by the Missouri Water Quality Management Plan;

4. For the unavoidable chemical and physical changes that occur in the hypolimnion of lakes. Streams below impoundments shall meet applicable specific criteria; and

5. For mixing zones.

A. The mixing zone shall be exempted from the specific criteria for those components of waste that are rendered non-toxic by dilution, dissipation or rapid chemical transformation. Acutely toxic concentrations of substances are not allowed in the mixing zone. The mixing zone shall not overlap another mixing zone in such a manner that the maintenance of aquatic life in the body of water in the overlapping area would be further adversely affected.

B. In determining the size and location of the mixing zone for any discharge, the following characteristics must be considered:

(I) The size of the river, the volume of discharge, the stream bank configuration, the mixing velocities and other hydrologic or physiographic characteristics;

(II) The designated uses of the water, including type of aquatic life supported; and

(III) The dilution ratio, that is, the ratio of the seven (7)-day once-in-ten (10)-year flow of the receiving stream to the average dry weather flow of the discharge.

C. Zones of passage must be provided wherever mixing zones are allowed. As a guideline at least three (3) quarters of the cross-sectional area or volume of a stream shall be left free as a zone of passage.

(B) Toxic Substances.

1. Water contaminants shall not cause the limits in Tables A and B for the toxic form of metals and other toxic substances to be exceeded. Concentrations of such substances in bottom sediments or waters shall not harm benthic organisms and shall not accumulate through the food chain in harmful concentrations, nor shall state and federal maximum fish tissue levels for fish consumption be exceeded. More stringent criteria may be imposed if there is evidence of additive or synergistic effects. Effluent toxicity studies or site-specific instream biological studies may be used to develop alternative effluent limits not based on Table A values.

2. Other potentially toxic substances for which sufficient toxicity data are not available may not be released to waters of the state until safe levels are demonstrated through adequate bioassay studies.

(C) Fecal Coliform Bacteria. For periods when the stream or lake is not affected by stormwater runoff, the fecal coliform count shall not exceed a geometric mean of two hundred (200) colonies per one hundred milliliters (100 ml) during the recreational season from April 1 to October 31 in waters designated for whole-body-contact recreation or at any time in losing streams.

(D) Temperature.

1. For general and limited warm-water fisheries, beyond the mixing zone, water contaminant sources shall not raise or lower the temperature of a stream more than five degrees Fahrenheit (5° F). Water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90° F). However, site-specific ambient temperature data and requirements of sensitive resident aquatic species will be considered, when data are available, to establish alternative maxima or deviations from ambient temperatures.

2. For cool-water fisheries, beyond the mixing zone, water contaminant sources shall not raise or lower the temperature of a stream more than five degrees Fahrenheit (5° F). Water contaminant sources shall not cause or contribute to stream temperature in excess of eighty-four degrees Fahrenheit (84° F).

3. For cold-water fisheries, beyond the mixing zone, water contaminant sources shall not raise or lower the temperature of the water body more than two degrees Fahrenheit (2° F). Water contaminant sources shall not cause or contribute to temperatures above sixty-eight degrees Fahrenheit (68° F).

4. Water contaminant sources shall not cause any measurable rise in the temperature of lakes. An increase is allowable for Lake Springfield, Thomas Hill Reservoir and Montrose Lake; however, discharges from these lakes must comply with temperature limits for streams.

5. For the Mississippi River, Zones 1A and 2, the water temperature outside the mixing zone shall exceed the maximum limits indicated in the following list during more than one percent (1%) of the time in any calendar year. In Zone 1B, limits may not be exceeded more than five percent (5%) of the time in a calendar year. At no time shall the river water temperature outside of a mixing zone of twenty-five percent (25%) of the cross-sectional area or volume of the river exceed the listed limits by more than three degrees Fahrenheit (3° F).

A = Zone 1A—Des Moines River to Lock and Dam No. 25

B = Zone 1B—Lock and Dam No. 25 to Lock and Dam No. 26

C = Zone 2—Lock and Dam No. 26 to the Missouri Arkansas state line

	A, B (F)	C (F)
January	45	50
February	45	50
March	57	60
April	68	70
May	78	80
June	86	87
July	88	89
August	88	89
September	86	87
October	75	78
November	65	70
December	52	57

(E) pH. Water contaminants shall not cause pH to be outside of the range of 6.5—9.0.

(F) Taste- and Odor-Producing Substances. Taste- and odor-producing substances shall be limited to concentrations in the streams or lakes that will not interfere with beneficial uses of the water. For those streams and lakes designated for drinking water supply use, the taste- and odor-producing substances shall be limited to concentrations that will not interfere with the production of potable water by reasonable water treatment processes.

(G) Turbidity and Color. Water contaminants shall not cause or contribute to turbidity or color that will cause substantial visible contrast with the natural appearance of the stream or lake, or interfere with beneficial uses.

(H) Solids. Water contaminants shall not cause or contribute to solids in excess of a level that will interfere with beneficial uses. The stream or lake bottom shall be free of materials which will adversely alter the composition of the benthos, interfere with the spawning of fish or development of their eggs or adversely change the physical or chemical nature of the bottom.

(I) Radioactive Materials. All streams and lakes shall conform with state and federal limits for radionuclides established for drinking water supply.

(J) Dissolved Oxygen. Water contaminants shall not cause the dissolved oxygen to be lower than the levels described in Table A.

(K) Total Dissolved Gases. Operation of impoundments shall not cause the total dissolved gas concentrations to exceed one hundred and ten percent (110%) of the saturation value for gases at the existing atmospheric and hydrostatic pressures.

(L) Sulfate and Chloride Limit for Protection of Aquatic Life

1. Streams with seven (7)-day Q10 low flow of less than one (1) cubic foot per second. The concentration of chloride plus sulfate shall not exceed one thousand (1,000) milligrams per liter at the seven (7)-day Q10 low flow.

2. Class P1, L1, L2, and L3 waters and streams with seven (7)-day Q10 low flow of more than one (1) cubic foot per second. The total chloride plus sulfate concentration shall not exceed the estimated natural background concentration by more than twenty percent (20%) at the sixty (60)-day Q2 low flow.

3. If higher concentrations can be demonstrated through bioassays or studies not to be detrimental to indigenous aquatic life, then an appropriate higher concentration shall be allowed.

(M) All methods of sample collection, preservation and analysis used in applying criteria in these standards shall be in accord with those prescribed in the latest edition of *Standard Methods for the Examination of Water and Wastewater* or other procedures approved by the Environmental Protection Agency and the Missouri Department of Natural Resources.

(N) Criteria to protect designated uses are based on current technical literature, especially the Environmental Protection Agency's publication, *Quality Criteria for Water*. Criteria may be modified or expanded as additional information is developed or as needed to define narrative criteria for particular situations or locations.

(5) Ground Water. Water contaminants shall not cause or contribute to exceedence of the following concentrations in aquifers and caves:

(A) The limits in column VI of Table A shall apply if aquifer recharge has an effect on surface water designated for aquatic life protection. Other substances will be limited such that aquatic life, drinking water, livestock watering and irrigation uses are protected; and

(B) The limits in column VII of Table A shall apply if aquifer recharge has a negligible effect on surface water designated for aquatic life protection. Recharge rates to surface water and surface water dilution shall be considered in determining the degree of effect. Other substances will be limited such that beneficial uses are not impaired.

(6) No water contaminant except uncontaminated cooling water, permitted stormwater discharges in compliance with permit conditions and excess wet-weather bypass discharges not interfering with beneficial uses, shall be discharged to streams listed in Table F. Existing interim discharges may be allowed until interceptors are available.

(7) Outstanding National Resource Waters. Pursuant to section (2), antidegradation section of this rule, new releases to outstanding national resource waters from any source other than publicly-owned waste treatment facilities and mine dewatering water are prohibited and releases from allowed facilities are subject to special effluent limitations as required in 10 CSR 20-7.015(6)(B)3. Table D contains a list of outstanding national resource waters.

(8) Outstanding State Resource Waters.

(A) The commission wishes to recognize certain high-quality waters that may require exceptionally stringent water-quality management requirements to assure conformance with the antidegradation policy. The degree of management requirements will be decided on an individual basis. To qualify for inclusion, all of the following criteria must be met. The waters listed in Table E must—

1. Have a high level of aesthetic or scientific value;

2. Have an undeveloped watershed; and

3. Be located on or pass through state- or federally-owned lands.

(9) Severance. If a section, subsection, paragraph, sentence, clause, phrase or any part of this rule be declared unconstitutional or invalid for any reason, the remainder of this rule shall not be affected and shall remain in full force and effect.

(10) Effective Date. This rule becomes effective immediately upon adoption and compliance with the requirements of subsection 644.036.3 of the Missouri Clean Water Law and chapter 536 of RSMo.

Auth: sections 644.021 and 644.026, RSMo (1986). Original rule filed May 13, 1977, effective Dec. 11, 1977. Amended: Filed Oct. 15, 1980, effective April 11, 1981. Amended: Filed July 12, 1984, effective Dec. 13, 1984. Rescinded and readopted: Filed Aug. 4, 1987, effective Dec. 12, 1987.

WATERBODY	BASIN	CLASS	MILES	FROM	TO	COUNTIES	IRR	LWW	AQL	CLF	CDF	WBC	BTG	DWS	IND
Missouri R	15	P	125	Chariton R	Kansas R	Chariton-Jackson	x	x	x				x	x	x
Missouri R	25	P	129	Gasconade R	Chariton R	Gasconade-Chariton	x	x	x				x	x	x
Missouri R	47	P	100	Mouth	Gasconade R	St Louis-Gasconade	x	x	x				x	x	x
Trib to Missouri R	15	C	2.5	Mouth	15 52N 20W	Saline		x	x						
Trib to Missouri R	47	C	1.5	Mouth	35 44N 1E	Franklin		x	x						
Mistaken Cr	45	P	6	Mouth	20 42N 7W	Osage		x	x						
Mistaken Cr	45	C	1.5	20 42N 7W	30 42N 7W	Osage		x	x						
Moccasin Cr	18	C	2	Mouth	26 63N 33W	Gentry		x	x						
Monegaw Cr	34	C	10	21 38N 27W	9 39N 28W	St. Clair		x	x				x		
Monegaw Cr	34	P	2	Mouth	21 38N 27W	St. Clair		x	x			x	x		
Moniteau Cr	25	P	17	Mouth	16 46N 15W	Cole-Moniteau		x	x				x		
Moniteau Cr	25	C	15.5	16 46N 15W	21 46N 15W	Moniteau-Cooper		x	x						
Moniteau Cr	25	P	20.5	Mouth	Hwy 124	Howard		x	x						
Moniteau Cr	25	C	13.5	Hwy 124	16 52N 14W	Howard-Randolph		x	x						
Montgomery Br	34	C	8	15 38N 23W	6 37N 22W	Hickory		x	x						
Mooney Br	46	C	1	Mouth	3 33N 10W	Texas		x	x						
Mooney Cr	46	C	2	Mouth	3 33N 10W	Texas		x	x						
Moore Br	37	C	5	Mouth	28 35N 31W	Vernon		x	x						
Moores Br	37	P	2.5	Mouth	34 35N 33W	Vernon		x	x						
Moores Br	37	C	2.5	34 35N 33W	33 35N 33W	Vernon		x	x						
Moreau R	28	P	33	Mouth	1 43N 13W	Cole		x	x			x	x		
Morgan Cr	28	C	1.5	Mouth	17 43N 14W	Cole		x	x						
Mormon Fk	35	C	13.5	Mouth	19 42N 32W	Bates		x	x						
Moss Cr	15	P	23	Mouth	7 50N 25W	Carroll		x	x						
Moss Hollow	48	C	1	Mouth	26 42N 5E	Jefferson		x	x						
Mound Br	37	C	10	Mouth	13 40N 31W	Bates		x	x						
Mound Cr	20	C	4	Mouth	Hwy 65	Livingston		x	x						
Mozingo Cr	13	C	8.5	Mouth	36 65N 35W	Nodaway		x	x						
Mud Cr	7	C	9	Mouth	20 55N 13W	Monroe-Randolph		x	x						
Trib to Mud Cr	18	C	2	Mouth	24 55N 26W	Caldwell		x	x						
Mud Cr	18	P	8.5	Mouth	23 55N 26W	Livingston-Caldwell		x	x						
Mud Cr	18	C	7.5	23 55N 26W	18 54N 26W	Caldwell-Ray		x	x						
Mud Cr	25	C	1.5	Mouth	5 45N 13W	Cole		x	x						
Mud Cr	25	C	1.5	Mouth	6 51N 18W	Howard		x	x						
Mud Cr	68	C	3	Mouth	22 26N 7E	Butler		x	x						
Mud Ditch	70	C	5	Mouth	11 23N 15E	New Madrid		x	x						
Muddy Cr	12	C	3.5	Mouth	Hwy 71	Nodaway		x	x						
Muddy Cr	18	C	3.5	Mouth	21 59N 26W	Daviess		x	x						
Muddy Cr	18	C	2	Mouth	26 60N 30W	Daviess-Dekalb		x	x						
Muddy Cr	19	P	36.5	Mouth	22 66N 23W	Grundy-Mercer		x	x						
Trib to Muddy Cr	20	C	2	Mouth	29 60N 22W	Grundy		x	x						
Muddy Cr	20	C	10	Mouth	5 58N 20W	Linn		x	x						
Muddy Cr	20	C	27	Mouth	14 61N 22W	Livingston-Sullivan		x	x						
Muddy Cr	26	P	29	Mouth	9 46N 21W	Pettis		x	x				x		
Muddy Cr	26	C	33	9 46N 21W	3 44N 24W	Pettis-Johnson		x	x						
Muddy Cr	27	C	9	Mouth	22 52N 21W	Saline		x	x						
Muddy Cr	37	C	21	Mouth	19 38N 30W	Vernon-Bates		x	x						
Muddy Cr	48	C	1	Mouth	Sur 3017 39N 7E	Jefferson		x	x						
Muddy Fk	15	C	8	Mouth	35 54N 31E	Clay		x	x						
Muddy Shawnee Cr	48	P	3	8 33N 13E	19 33N 13E	Cape Girardeau		x	x						

IRR—Irrigation
LWW—Livestock & Wildlife Watering
AQL—Protection of Warm Water Aquatic Life
CLF—Cool Water Fishery
CDF—Cold Water Fishery
WBC—Whole Body Contact Recreation
BTG—Boating and Canoeing
DWS—Drinking Water Supply
IND—Industrial

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Research and Development

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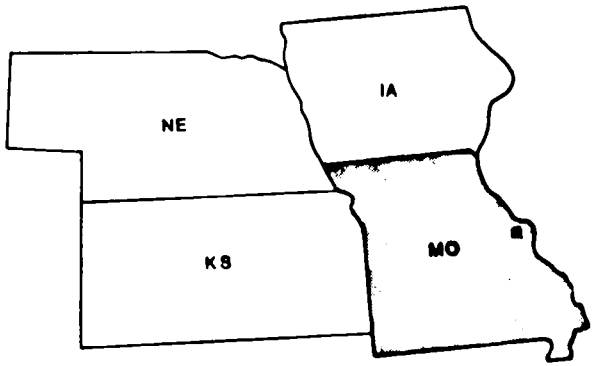

TS-PIC-89787
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AERIAL PHOTOGRAPHIC ANALYSIS OF THE WESTLAKE LANDFILL SITE

Bridgeton, Missouri

by

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NOTICE

This document has undergone a technical and quality control/assurance review and approval by personnel of the EPA/ORD Environmental Monitoring Systems Laboratory at Las Vegas (EMSL LV), and is for internal Agency use and distribution only.

ABSTRACT

This report presents an intensive analysis of the Westlake Landfill site, located near Bridgeton, Missouri. Twelve selected dates of black and white panchromatic, color infrared, and conventional color aerial photography acquired over a 49-year period (1941 1989) were used to perform the analysis.

The Westlake Landfill was a limestone extraction and processing facility from prior to 1941 through 1989. Waste disposal was first observed in 1953 and was observed through 1989. Large amounts of solid waste and sludge were disposed of in large unlined cells or in landfills. Numerous stains and pools of liquid throughout the site also indicated that extensive liquid waste disposal was also done. Some of this waste was noted outside the site in 1958. Discolored soil, contaminated standing liquid, and leachate breakouts were also observed.

The U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, prepared this report for the Agency's Region 7 Environmental Services Division in Kansas City, Missouri and the Office of Emergency and Remedial Response in Washington D.C.

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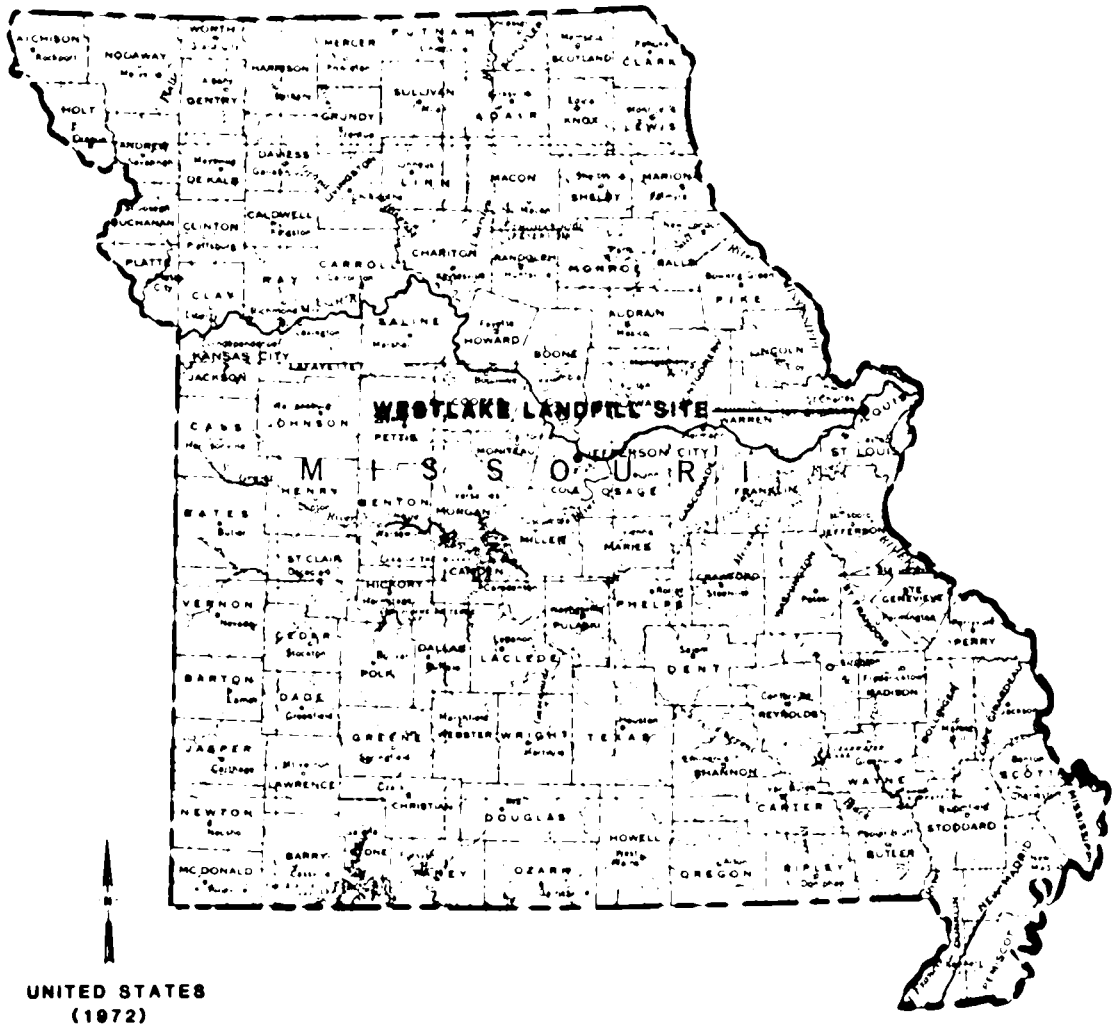

Figure 1. Site location map, Missouri. Scale 1:2,500,000.

INTRODUCTION

This report presents an intensive analysis of the Westlake Landfill site located along the south side of State Route 115 in Bridgeton, Missouri (Figures 1 and 2). The report was prepared to document physical conditions and potential environmental hazards at the site through time. Twelve selected dates of black-and-white panchromatic, color infrared, and conventional color aerial photography acquired over a 49 year period (1941-1989) were used to perform the analysis.

The Westlake Landfill site was a limestone extraction and processing facility throughout the analysis period. Beginning in 1953 waste disposal was also practiced at the site. By 1968 this appeared to be the main activity at the site. The focus of this analysis was on examining the nature and extent of potential environmental hazards at the site and tracing them through time.

The U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, prepared this report for the Agency's Region 7 Environmental Services Division in Kansas City, Missouri and the Office of Emergency and Remedial Response in Washington D.C.

METHODOLOGY

Stereoscopic pairs of current and historical aerial photographs are used to perform the analysis. Stereo viewing enhances the interpretation because it allows the analyst to observe the vertical as well as horizontal spatial relationships of natural and cultural features. Stereoscopy is also an aid in distinguishing between various shapes, tones, textures, and colors that can be found within the study area.

Evidence of waste burial is a prime consideration when conducting a hazardous waste analysis. Leachate or seepage resulting from burial and dumping of hazardous materials might threaten existing surface or ground water sources. Pools of unexplained liquid are routinely noted because they can indicate seepage from buried wastes that may enter drainage channels and allow contaminants to move off the site. An excellent indicator of how well hazardous materials are being handled at a site is the presence or absence of spills, spill stains, and vegetation damage. Trees and other forms of vegetation that exhibit a marked color difference from surrounding members of the same species are labeled "dead," "stressed," or "damaged" based upon the degree of noticeable variation. Vegetation is so labeled only after consideration of the season in which the photographs were acquired.

The U.S. Environmental Protection Agency's Statement of Procedures on Floodplain Management and Wetlands Protection (Executive Orders 11988 and 11990, respectively) requires EPA to determine if removal or remedial actions at hazardous waste sites will affect wetlands or floodplains and to avoid or minimize adverse impacts on those areas. To aid in compliance with these orders, significant wetland areas located within and adjacent to the sites have been identified and delineated. However, the sites have not been visited to verify the accuracy of wetland identification.

Drainage analysis determines the direction a spill or surface runoff would follow. Direction of drainage is determined from analysis of the photographs and from U.S. Geological Survey topographic maps. Whenever they are available, 7.5-minute quadrangle maps (scale 1:24,000) are used to show site location and to provide geographic and topographic information.

Recall[illegible]
photos. The
report:

Site name, [illegible]
location, an[illegible]
geographic
coordinates

Westlake Lan[illegible]
Bridgeton, M[illegible]
38°46'12"N
090°26'43"W
SSIDs MO-16

†Film type [illegible]
B&W: Black-[illegible]
CIR: Color [illegible]
CC: Co[illegible]

§Photo source[illegible]
ASCS: U.S. [illegible]
EROS: U.S. [illegible]
SURD: [illegible]
EMSL: U.S. [illegible]

Results of the analysis are shown on annotated overlays attached to the photos. The following table provides documentation of the photographs used in this report:

TABLE 1. DOCUMENTATION OF AERIAL PHOTOGRAPHY

Site name, SSID, location, and geographic coordinates	Figures	Date of acquisition	Original scale	Film type†	Photo source‡	Photo I.D.	Frames
Westlake Landfill	3	07-30-41	1:20,000	B&W	ASCS	TQ 8B	121
Bridgeton, MO	4	08-14-53	1:20,000	B&W	ASCS	TQ-2K	91
38°46'12"N	5	05 13-58	1:20,000	B&W	ASCS	TQ-2T	50
090°26'43"W	6	10-10-65	1:20,000	B&W	ASCS	TQ-1FF	173
SSID# MO-14	7	03-07-68	1:24,000	B&W	EROS	VBZG	3-245
	8	05-04-71	1:20,000	B&W	ASCS	TQ-2MM	175
	9	05-06-74	1:30,000	B&W	EROS	VDMT	1-193
	10	04-08-77	1:24,000	B&W	SURD		154
	11	07-26-79	1:7,800	CIR	EMSL	7964	219
	12	03-07-82	1:24,000	CC	EMSL	82040	211
	13-14	04-16-85	1:24,000	B&W	EROS	VFJK	2-131
	15	04-20-89	1:19,700	CC	EMSL	89787	4

†Film type identification:

B&W: Black-and-White Panchromatic

CIR: Color Infrared

CC: Conventional Color

‡Photo source identification:

ASCS: U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Salt Lake City, Utah.

EROS: U.S. Department of the Interior, Geological Survey, Earth Resources Observation Systems Data center, Sioux Falls, South Dakota.

SURD: Surdex Corporation, Chesterfield, Missouri.

EMSL: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

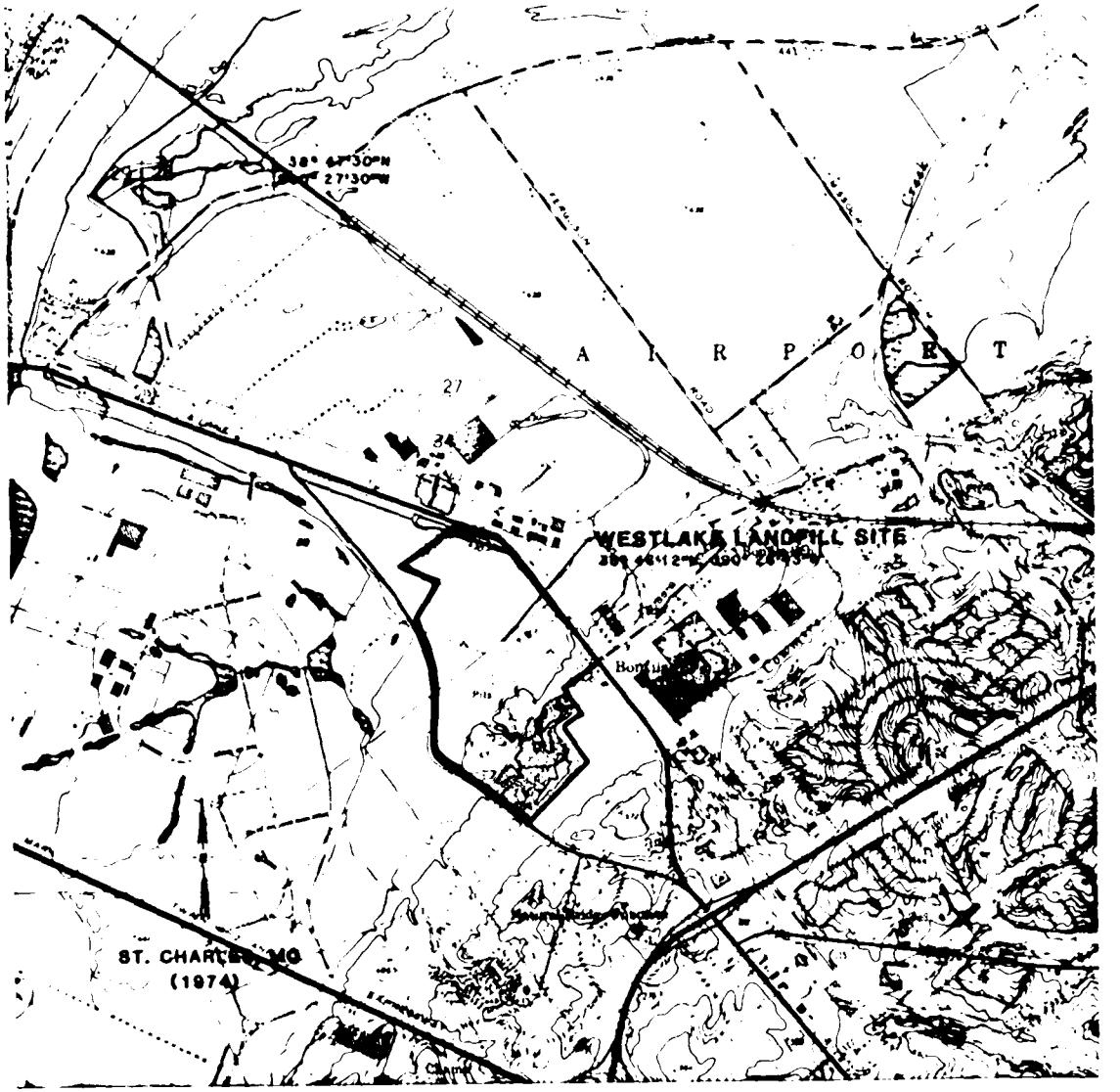

Figure 2. Local site location map, Bridgeton, Missouri. Scale 1:24,000.

ANALYSIS SUMMARY

The Westlake Landfill site is located immediately south of State Route 115 in Bridgeton, Missouri. The site occupied 220 acres at its greatest extent (1989). Historical and current aerial photography acquired in 1941, 1953, 1958, 1965, 1968, 1971, 1974, 1977, 1979, 1982, 1985, and 1989 was used to perform the analysis.

Terrain at the site was generally flat prior to development with some drainage to the southwest. As the site developed, large extraction pits were dug in the southern section of the site, while filling and landfilling were practiced in the northwestern sections. The waste burial activity in this area resulted in a complex terrain with large mounds and enclosed basins. Surface runoff was generally allowed to flow off the mounded areas toward the site perimeter; however, a major drainage channel carried runoff south, off the property, eventually to a pond west of the site. In the north a channel paralleled Route 115, eventually leading to a pond on the edge of the site. The site lies within the floodplain of the Missouri River. Although levees are present in the area, it is likely that the site would be impacted by a 100-year flood event. No wetland habitats are located within or adjacent to the site.

The Westlake Landfill site began operation as a limestone extraction facility. Extensive quarry pits were located in the southern corner of the site from 1941 through 1989. From 1941 through 1953 it appeared that limestone extraction was the prime activity at the facility; however, as time passed the focus of activity appeared to shift to waste disposal. By 1989 no active quarries remained open but some lime processing was still being done. From 1953 through 1989 most of the waste disposal activity was concentrated on the west side of the site. **A total of 18 waste disposal areas were identified.** From 1953 through 1968 these primarily consisted of diked "cells" in which large amounts of sludge and some liquid waste were deposited. From 1971 through 1989 the waste disposal areas were mostly landfills where what appeared to be municipal waste was buried in large mounded areas. A total of 23 solid waste deposits and 9 sludge deposits were associated

with the waste disposal areas and in scattered locations throughout the site. A total of 25 significant stains were noted within the site. Most of these were the result of liquid waste dumping in pits or on the ground surface. Some of this liquid was noted outside the site in 1958. Liquid waste was also disposed of in an unlined lagoon from 1965 through 1974. Between 1979 and 1982 a liquid waste treatment complex was constructed in the southern part of the site. A white residue was associated with this complex. Discolored soil areas were noted in 1982 and 1989. Pools of suspected contaminated standing liquid were also present in 1989. Leachate breakouts were visible in 1974 and 1989. Throughout the analysis period drainage from the site was unmanaged and ponds north and west of the site were vulnerable to contamination.

PHOTO ANALYSIS

JULY 30, 1941

Figure 3 shows that limestone extraction is underway at the future landfill site. The east side of the site is where the pit is located and sorting and stockpiling is taking place on the west side of the property. No waste disposal is visible at this time, and no potential environmental hazards are present.

INTERPRETATION CODE

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- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
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- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
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Figure 3. Westlake Landfill site, July 30, 1941. Approximate scale 1:20,000.

MAY 13, 1958

The 1958 photography (Figure 5) shows continued expansion of the site. The amount of waste disposal activity present has also increased. Potential environmental hazards are:

WD-2: This area is located immediately east of WD-1 and is also the scene of sludge/solid waste disposal. The area is located in a depression; however, it appears that some liquid from this area has escaped and accumulated along the west side of the site.

WD-3: This waste disposal area is a landfill where waste has been buried. Staining on the landfill surface (ST-4), is the result of liquid dumping on the fill surface.

Liquid Waste-1: This is a pool of dark liquid waste material that has been dumped on the ground. Staining at (ST-3) is associated with this liquid dumping.

Liquid Waste-2: Extensive amounts of liquid at this point appear to have been spread on the ground surface. Runoff from this area is to the southwest corner of the site.

Liquid Waste-3: A small amount of waste is visible at this point. It is very similar in appearance to the waste at liquid waste-2. It is located on the opposite side of a large mound of sand/gravel. The position of these two waste accumulations suggests that the gravel has been deposited on a larger liquid waste pool that includes numbers 2 and 3.

Annotation A: These are pools of liquid that have collected at the foot of the fill areas at the edge of the site. The northern pools contain liquid from WD-2.

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Figure 5. Westlake Landfill site, May 13, 1958. Approximate scale 1:10,000.

OCTOBER 10, 1965

Expansion of the site to the northwest is noted on the 1965 photograph (Figure 6). A new extraction area is now present along State Route 115. Activity at the site is increasingly devoted to waste disposal, primarily on the west side. Potential environmental hazards are:

WD-4 7: These are unlined sludge/solid waste disposal cells which are surrounded by dikes. Numerous mounds of solid material are present in each of the cells. Pools of liquid waste (liquid waste 5) are also visible in two of the cells (WD-4 and WD-5). Mounds of a lighter toned solid waste material (SW-1) are also located in WD-4.

WD-8: This extensive area is the scene of sludge/solid waste disposal. The area is uncontained and liquid from this area flows north to a depression near the edge of the site.

WD-9: This is a landfill. An accumulation of solid waste (SW-3) is visible at the north end of the area.

Liquid Waste-4: Three pools of liquid are visible among the solid waste at SW-2. These pools are on bare ground.

Liquid Waste-6: A pool of dark liquid is noted at this point.

SW-2: This is probably the same material that is noted at SW-1.

Annotation B: This is a deep liquid waste disposal pit. It does not appear to be lined and significant amounts of liquid are present.

LG-1 & 2: Two new waste lagoons have been added to the site at this point. These are unlined and large amounts of liquid are present.

ST-5 & 6: These are probably fuel or oil stains and are located in the main processing areas of the facility.

Annotation C: These are sections of roadway which have been oiled for dust suppression.

In addition, the settling ponds now present near the center of the site are associated with limestone processing and no waste disposal is evident.

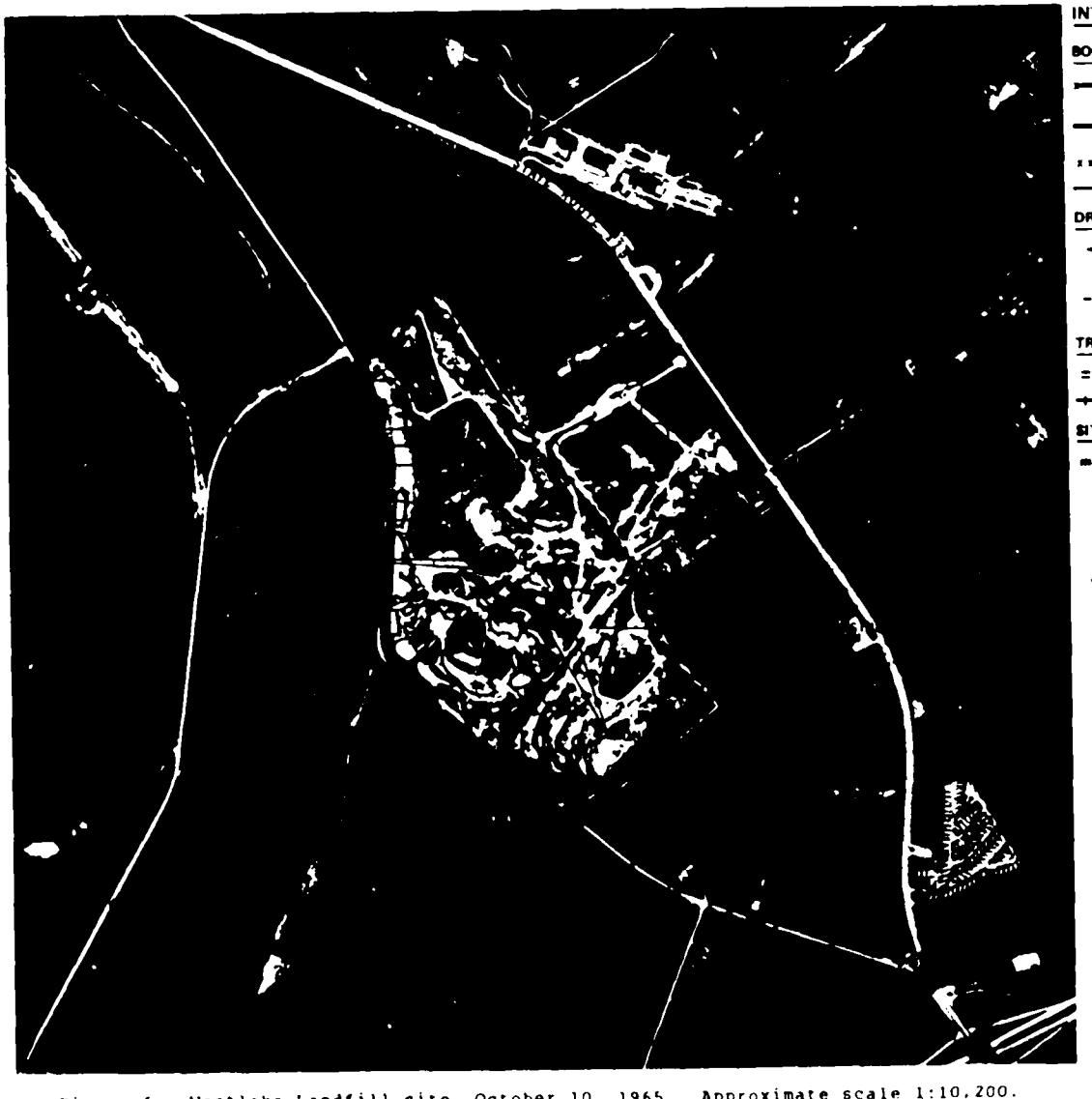

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Figure 6. Westlake Landfill site, October 10, 1965. Approximate scale 1:10,200.

MARCH 7, 1968

Figure 7 shows a consolidation of waste disposal areas in the northwest part of the site, with only three waste disposal areas remaining active. Increased depth and extent of the extraction pits are also noted. Potential environmental hazards are:

WD-8: The appearance of this area has not changed significantly since 1965. A stream of unidentified liquid flows through this area.

WD-9: This area has been expanded both to the north and to the south. Two large deposits of solid waste (SW-5 and 6) are present near the edge of this landfill. The waste in these two deposits shows a dark tone, suggesting that it is different than the waste that was previously observed at this area.

WD-10: This is an extensive new landfill which covers the area where WD-4 through 7 were located. Three deposits of solid waste (SW-4), are noted near the working face of this landfill. This waste shows a lighter tone similar to the tone shown at SW-1 and 2.

Annotation B: The deep pit previously noted at this point is still an active liquid waste disposal point. Staining at ST-8 is associated with this disposal process.

LG-1: The two unlined lagoons previously noted have been combined into one larger lagoon. A dark slick is visible on the surface.

ST-7: Three dark stains in this area are the result of liquid waste dumping.

ST-9: These dark stains are associated with the liquid disposal at LG-1.

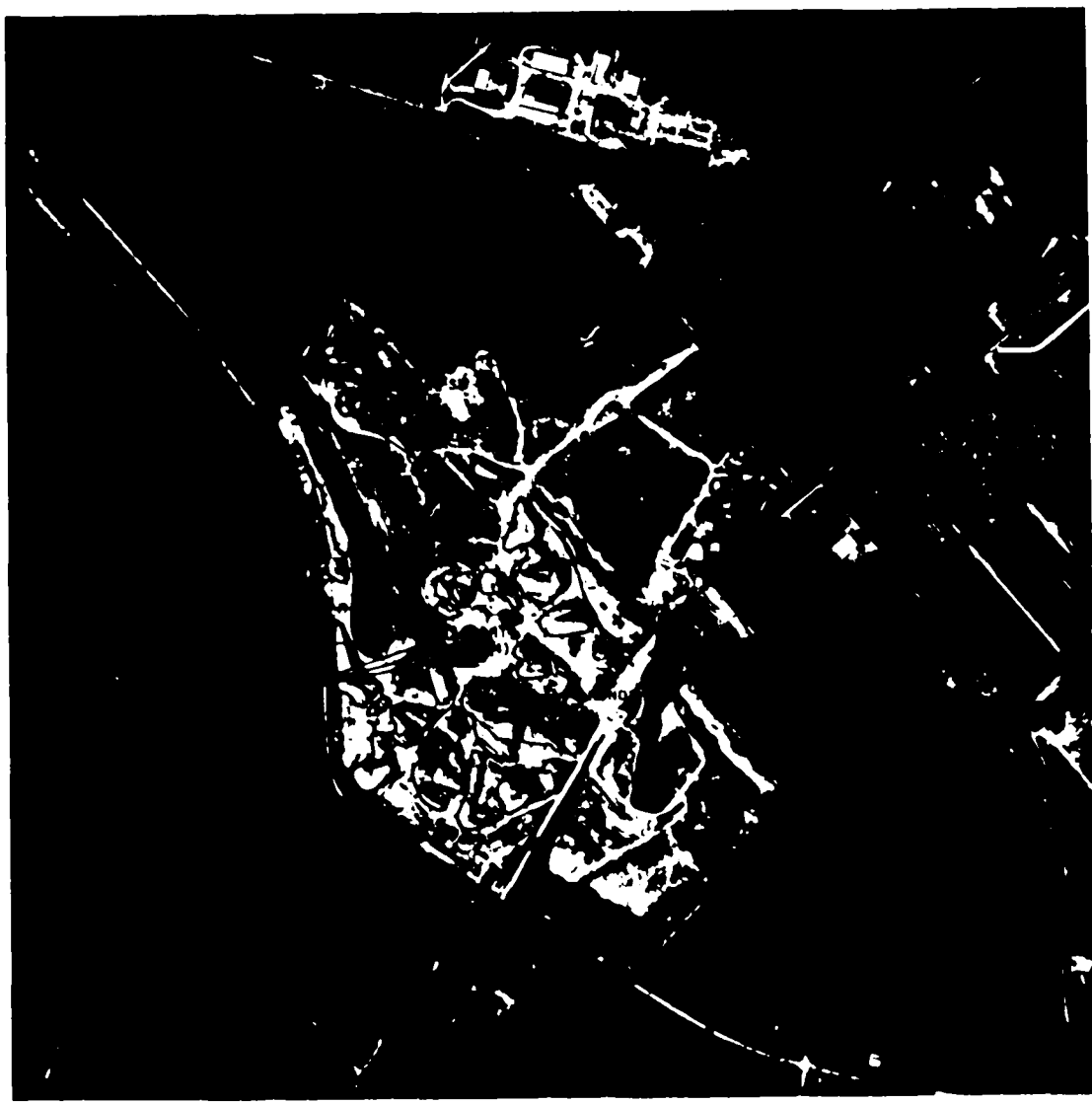

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Figure 7. Westlake Landfill site, March 7, 1968. Approximate scale 1:7,800.

MAY 4, 1971

Figure 8 shows continued expansion of the site to the northwest along State Route 115. Large amounts of fill have been deposited in this area. Part of the southern entrance to the site has been fenced. Potential environmental hazards are:

WD-10: This area remains active and the topography has not changed significantly since 1968; however, increased amounts of liquid waste and staining are visible (liquid waste-7 and 8, and ST-7). The material at liquid waste-7 has a thick viscous appearance. Material at the western pool of liquid waste-8 is the result of numerous small disposals while the source of the liquid in the eastern pool is not apparent. ST-7 is also associated with numerous small liquid spills.

WD-11: This is a very large deposit of lighter-toned solid waste which is being used to fill in a low area adjacent to WD-10. A pool of liquid at the foot of this landfill (liquid waste-10) may also contain accumulated precipitation.

WD-12: This disposal area shows a light tone. The solid waste in this area is also light toned. ST-10 is a dark-toned feature which is the result of one liquid dumping event.

LG-1: The liquid in this lagoon is clearer than in 1968.

ST-9: The extent of this staining is greater that in 1968.

SW-8: A mound of mixed solid waste is located on the ground at this point.

ST-11 & 12: These stains are the result of isolated liquid material spills in the fill areas along the adjacent road.

In addition, a large pit can be seen east of WD-12. A crane is visible at this pit which contains a significant amount of liquid; however, no waste disposal activity can be identified. Drainage along the northern edge of the site has been altered such that a pond of accumulated runoff has formed. The locations of ST-11 and 12, and SW-8 along with fill activity in the northern part of the site suggest that this area is an old landfill.

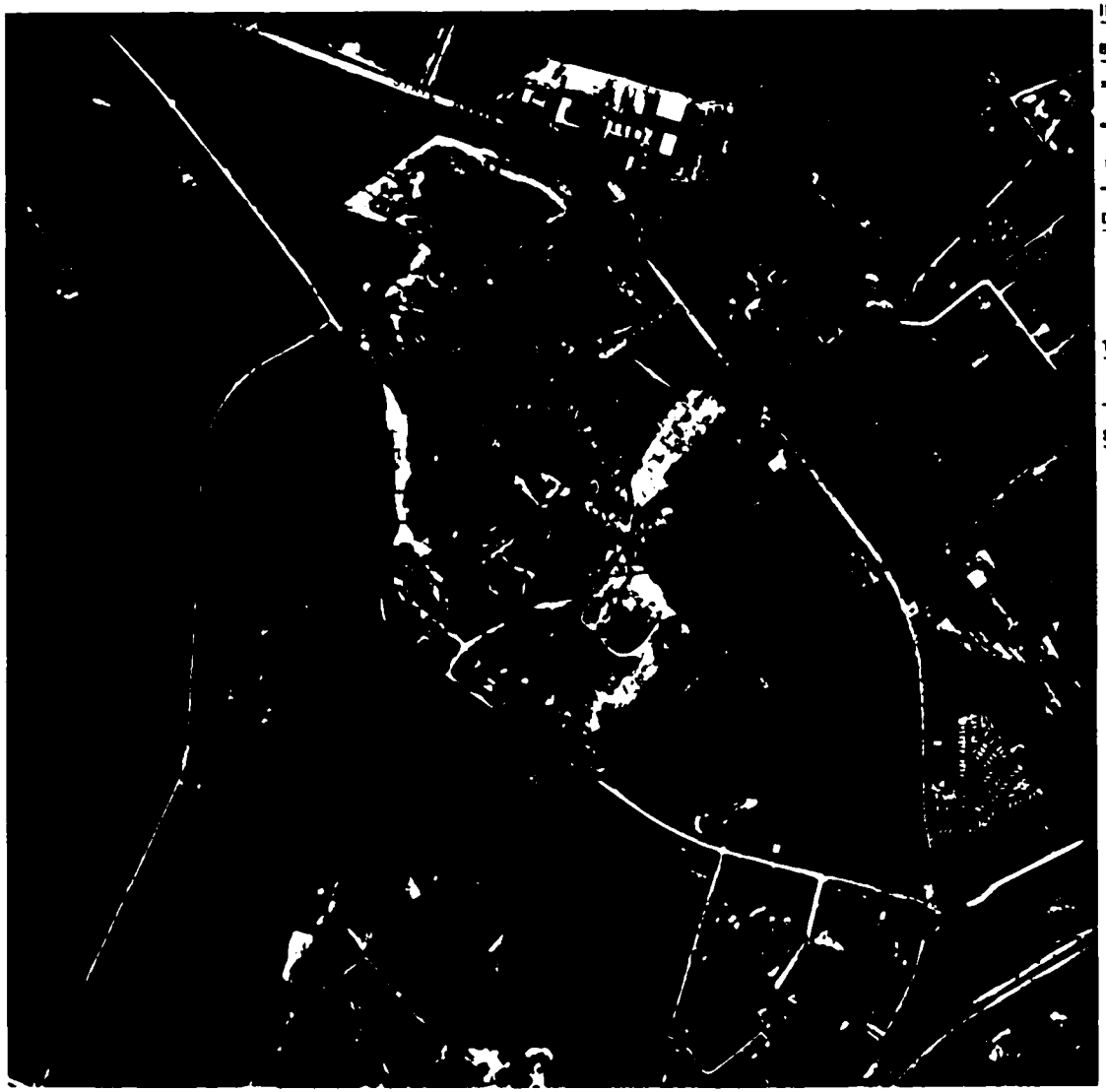

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Figure 8. Westlake Landfill site, May 4, 1971. Approximate scale 1:10,400.

MAY 6, 1974

Figure 9 shows relatively little change in the site. A significant area southeast of the northern access road has been filled in. Potential environmental hazards are:

WD-11: This waste burial area has increased slightly in size and height. Two deposits of solid waste are noted on the landfill surface (SW-9). These show a medium tone.

WD-12: Light toned waste and fill are visible in this area. Some liquid disposal may have occurred in the pit which is located in the northern corner.

LG-1: The liquid in this lagoon continues to show a light tone. It does not appear to be the scene of waste disposal at this time.

TR-1: This trench does not appear to be for waste burial.

SW-10: Numerous mounds of solid waste are stored on the ground surface at this location.

ST-13: These dark-toned stains probably remain from waste burial in this area.

ST-14: This appears to be sludge or another dark material which is being spread on the ground.

ST-15: Dark liquid stains are visible on the surface of this fill area.

Leachate Breakout: Dark liquid is flowing out from the slope of this fill area at this point. This liquid drains into the low area immediately to the southwest.

In addition, a suspected slick is visible on standing water in the extraction pit on the southeast side of the site.

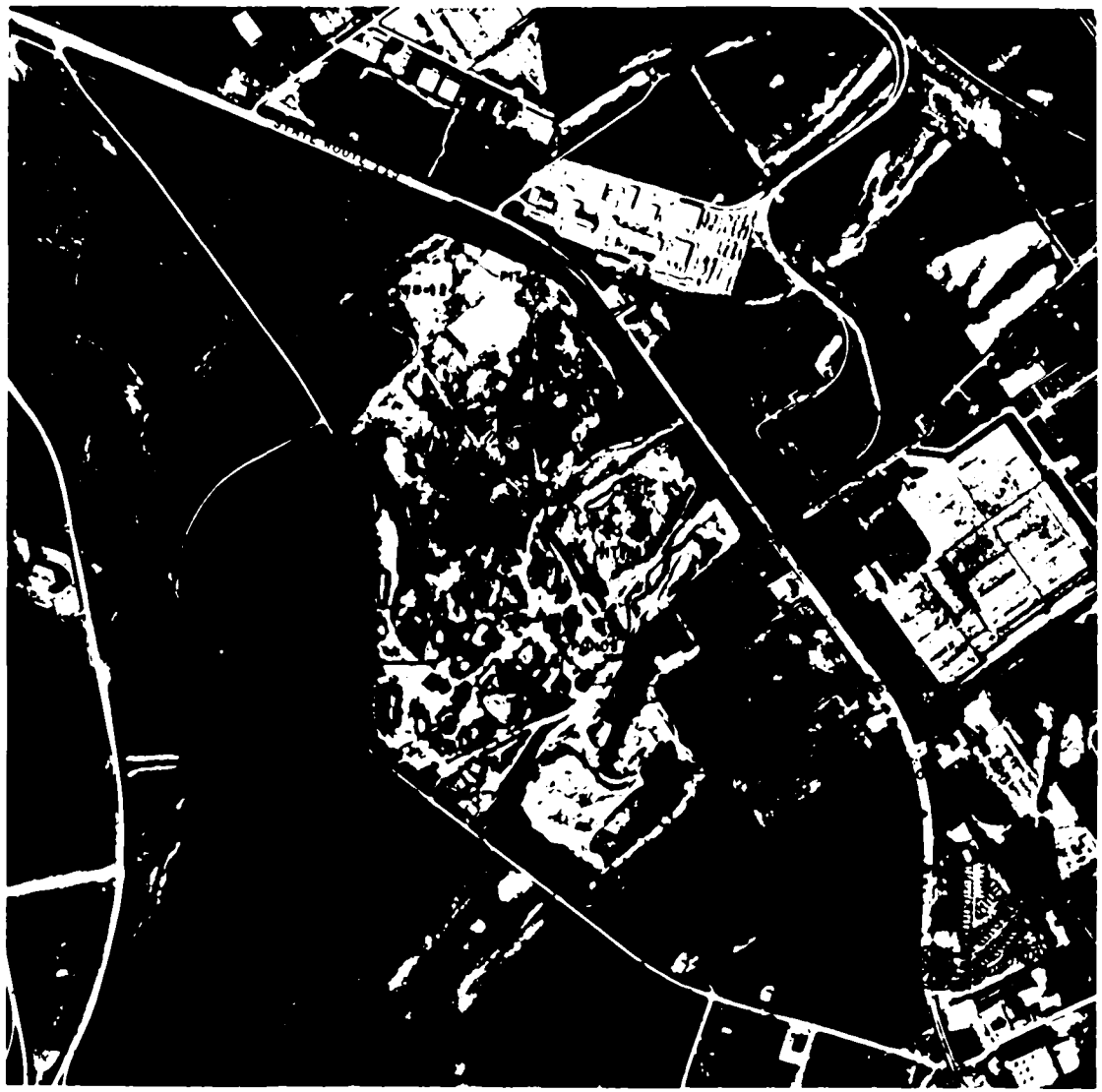

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Figure 9. Westlake Landfill site, May 6, 1974. Approximate scale 1:9,900.

APRIL 8, 1977

Figure 10 shows some change at the site. Potential environmental hazards are:

WD-11: The active portion of this disposal area has shifted to the west. Deposits of solid waste (SW-11) and sludge are present. Significant amounts of dark sludge (SD-2) have been spread into a low area nearby.

WD-13: This new landfill disposal area contains both solid waste (SW-12), and sludge (SD-1). The sludge in this area is spread in a very thin layer over the landfill surface and the solid waste lies at the foot of the slope.

WD-14: This is another new waste disposal area. Deposits of solid waste and sludge (SW-13 and SD-3) are being bulldozed into a pit at the foot of the large fill area.

LG-1: No significant change is noted at this lagoon.

SD-4: Three deposits of dark-toned sludge are located on the top of a large mound at this point.

ST-16: Five dark stains are noted on the ground surface within WD-11.

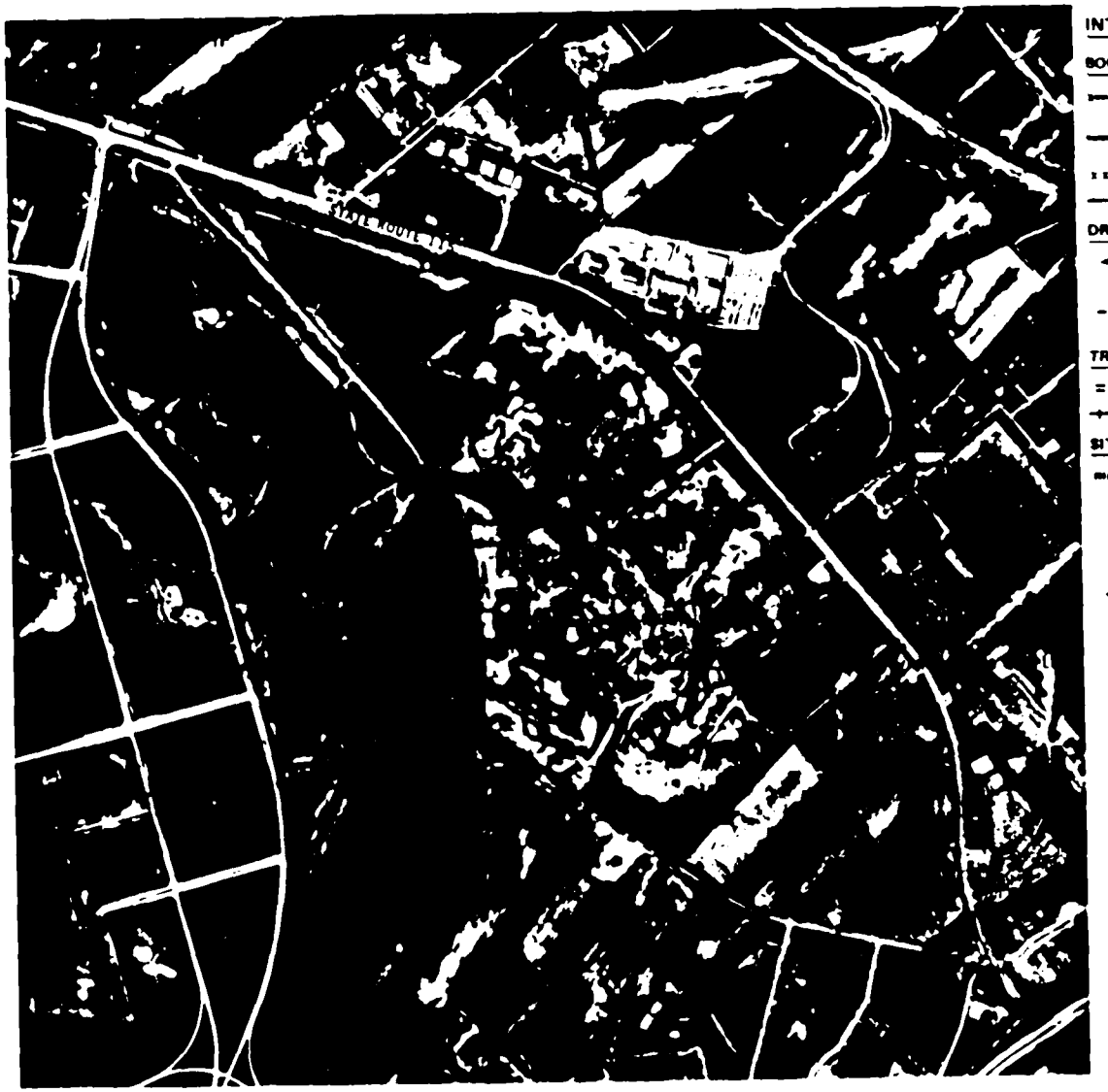

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Figure 10. Westlake Landfill site, April 8, 1977. Approximate scale 1:11,500.

Figure 11 provides color infrared coverage of part of the site. Potential environmental hazards are:

WD-11: This area remains active. Three deposits of solid waste (SW-14 and 15) are present as well as two deposits of dark sludge (SD-5). There appears to be some mixing of the sludge and waste as part of the disposal process.

WD-15: Large amounts of solid waste (SW-16) are being buried in an old extraction pit at this location.

WD-16: Deposits of mixed sludge and solid waste (SW/SD-6, SD-7, and SW-17) are being buried at this area. It appears that most of this material is to be buried at a low area in the west part of the disposal area.

SD-8: The sludge at this point shows a light bluish hue and appears to be a result of limestone processing.

ST-17: This dark staining may be the result of a fuel or oil spill in this section of the site.

Annotation C: These are sections of roadway that have been oiled for dust suppression.

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Figure 11. Westlake Landfill site, July 26, 1979. Approximate scale 1:7,800.

MARCH 7, 1982

Figure 12 provides the first conventional color photography of the site. Waste disposal activity appears to have decreased. An extended section of the southeast boundary has been fenced since 1979. A new liquid waste treatment facility has also been constructed in the southern part of the site. Potential environmental hazards are:

SW-15: These deposits of solid waste are located in the same area as deposits observed in 1979.

ST-18: These dark stains are located in an area of cement sludge disposal. They may be related to vehicle activity in this area.

LG-3 & 4: These are two liquid waste treatment lagoons. No liner is visible at either of them. These treatment lagoons are associated with an aeration pond and a processing plant. An apparent by-product of this processing is a white residue which has been allowed to accumulate nearby on the surface of the mound where they are located.

Annotation D: These are two areas of discolored ground which show a rust color. The nature or cause of this discoloration is not apparent.

LG-5: This large treatment lagoon is located outside the main site area; however, it appears to be part of the treatment complex which also contains LG-3 and 4. No liner is visible at this lagoon and no discharge is visible.

LG-6: This new lagoon appears to have been constructed such that it would receive material dumped from the nearby access road. It is unlined.

In addition, extensive new excavations are observed south of the site. They do not appear to be part of the main landfill site area.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 12. Westlake Landfill site, March 7, 1982. Approximate scale 1:9,200.

Figure 13 shows the northern part of the site. Waste handling and disposal continues to be visible. Potential environmental hazards are:

SW-15: These two deposits of solid waste remain largely unchanged since 1982.

SW-18 & 19: These deposits of waste are similar in appearance to the material at SW-15.

SW-20: This solid waste is being prepared for burial in an old extraction area.

ST-19: A dark-toned stain at this point appears to be the result of a liquid material being spread on the soil surface.

ST-20: This is an area of dark stained soil. Standing water is also present in this area. The source of this discoloration is not apparent.

ST-21: Staining at this point is probably the result of small spills from heavy equipment which is stored in the area.

ST- 22 & 23: These are dark liquid waste disposal stains.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 13. Westlake Landfill site, April 16, 1985 (1 of 2). Approximate scale 1:8,400.

Figure 14 shows the southern part of the site. Little change is evident in this area since 1982. Potential environmental hazards are:

LG-3 & 4: No change is visible.

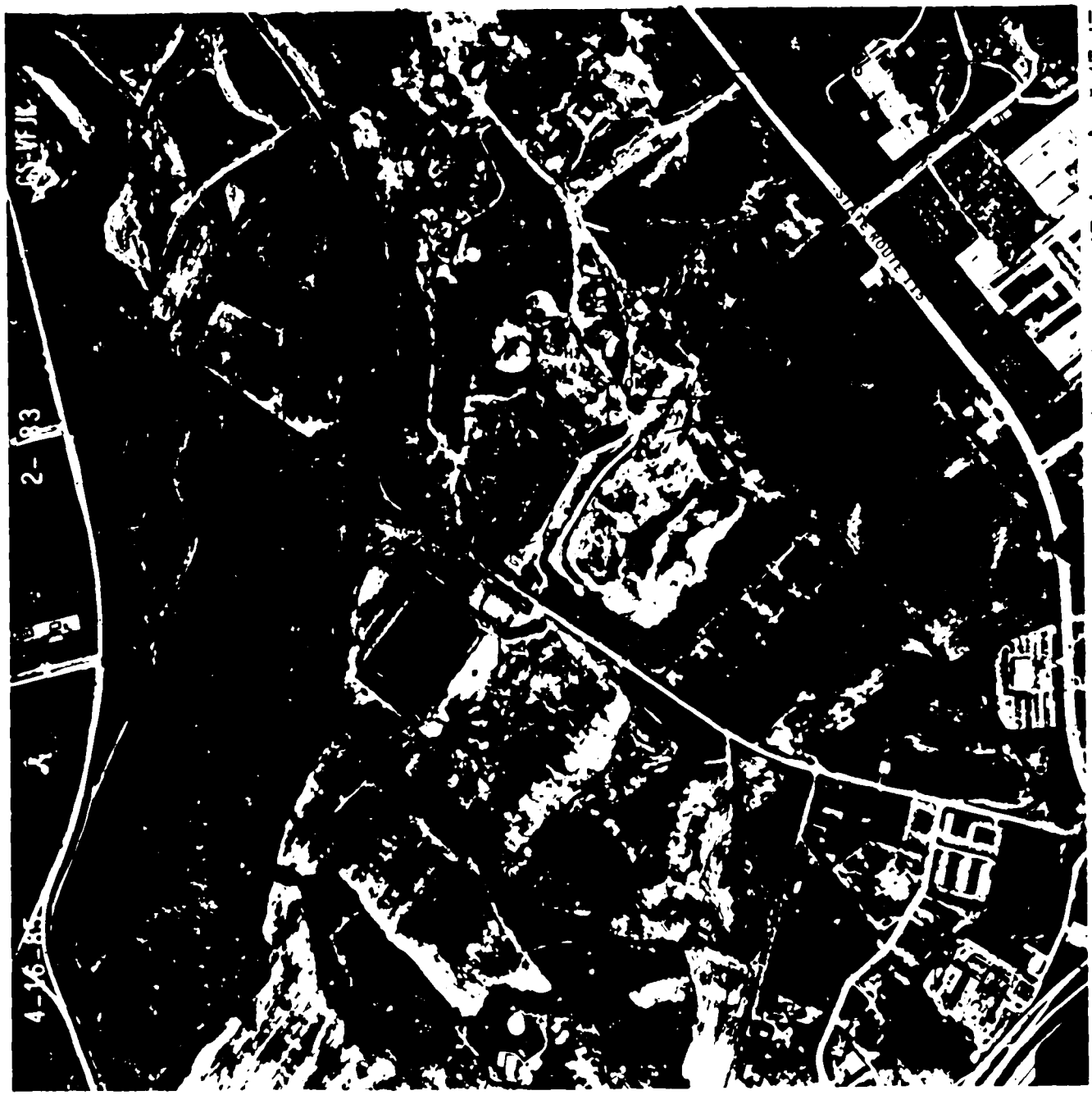
LG-5: The level of liquid in this lagoon is slightly lower than in 1982.

Residue: The amount of this material present appears to be less than in 1982.

SD-9: A mixture of sludge and solid waste has been spread over a fairly extensive area since 1982. Runoff from this point is toward the perimeter of the site and a nearby stream.

LG-6: No change is noted.

The aeration pond located at the treatment complex is currently empty and is probably undergoing some maintenance activity.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 14. Westlake Landfill site, April 16, 1985 (2 of 2). Approximate scale 1:8,400.

APRIL 20, 1989

Figure 15 shows continued waste disposal activity in the north and south parts of the site. Potential environmental hazards are:

WD-18: Solid waste (SW-21) is being buried at the northern edge of this mounded landfill area. The lack of vegetation on the landfill surface suggests recent activity throughout this disposal area.

SW-20: Increased amounts of solid waste are being buried in the old extraction pit since 1985. A heavy dark stain (ST-24) in this same location is the result of liquid waste disposal.

LG-3-5: No significant change is noted.

ST-25: This dark stain appears to be the result of liquid waste disposal and not any leakage from the nearby lagoons.

Annotation D: These are areas of discolored soil. The ground in these areas shows a strong rust hue. The source of this discoloration is not apparent.

Annotation E: These are pools of dark liquid. They probably consist largely of standing water; however, their color suggests that there may be some contamination present also.

LG-6: Most of the diking around this lagoon has been broken down since 1985 although liquid remains present.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 15. Westlake Landfill site, April 20, 1989. Approximate scale 1:9,900.

Category 17.6

40-8811
P8R

Rock Road Industries, Inc.
13570 St. Charles Rock Rd.
Bridgeton, MO 63044

DOCKETED
USNRC
NOV 16 1988
NRC
MAIL SECTION
DOCKET CLERK

November 9, 1988

RECEIVED
NOV 16 1988
U.S. NUCLEAR REGULATORY COMMISSION
NRC
Mail Section

Mr. Jerry Swift
U. S. Nuclear Regulatory Commission
Mail Stop 68H3
Washington, D.C. 20555

Dear Jerry:

Enclosed is a copy of a survey of the uncontrolled hazardous waste sites at our Bridgeton location as per your request.

If I can be of any further assistance, please call. See you on November 28th.

Very truly yours,

ROCK ROAD INDUSTRIES, INC.

Bill

W. E. Whitaker
President

WEW:gc

Enclosure

additional information

SEP 15 1989

Docket Nos. 40-8035
40-8801

Edward J. McGrath, Esq.
Holme Roberts & Owen
1700 Lincoln, Suite 4100
Denver, Colorado 80203

Dear Mr. McGrath:

As you requested at our meeting on September 13, 1989, here are copies of the eight documents which you selected from our files.

Sincerely,

Original Signed by
Jerry J. Swift

Jerry J. Swift, Section Leader
Advanced Fuel and Special Facilities Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosures:
See attached list

Distribution

Docket Nos. 40-8035	NRC File Center	PDR	NMSS R/F
40-8801	IMSB R/F	IMAF R/F	RBernero
IMNS Central File	GSjoblom	LCRouse	RBangart
RFonner	BMallett, RIII	JSwift	FBrown

OFC:IMAF:	IMIF:
NAME:JJSwift:mh	FBrown:
DATE:9/15/89	9/15/89

OFFICIAL RECORD COPY

Enclosures

1. Document (meeting summary) dated November 25, 1988, Subject: Meeting in Jefferson City, Missouri, with Missouri State Officials to Discuss the Status of the Former Cotter Site.

2. Photocopy of St. Louis Post - Dispatch article of May 30, 1976, titled "Confusion Over Dumping of Radioactive Wastes in County"

3. Photocopy of St. Louis Post - Dispatch article of June 1, 1976, titled "Radioactive Material Checks Called Faulty"

4. Eleven invoices, from B&K Construction Company, Inc. to Cotter Corporation, for shipment from the jobsite designated Latty Avenue, St. Louis County, in the period 7/31/73 through 10/12/73, also labeled Exhibit C, 1 of 11, through 11 of 11.

5. Letter of November 13, 1974, from the U.S. Atomic Energy Commission to Cotter Corporation, terminating license.

6. Document dated December 1973, by the U.S. Atomic Energy Commission, Directorate of Licensing, Materials Branch, Washington, DC 20545, titled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material"

7. Memorandum dated May 17, 1974, from James M. Allan, Atomic Energy Commission Region III to H.D. Thornburg, Atomic Energy Commission, headquarters, subject Cotter Corporation, Golden, Colorado, License No. SUB-1022 (Hazelwood, Missouri Site), forwarding for enforcement, RO Inspection Report No. 040-8035/74-01, dated May 16, 1974.

8. Letter dated January 7, 1971, from David P. Marcott, Cotter Corporation, to the U.S. Atomic Energy Commission, Att'n Mr. Boyce H. Grier, RE: Cotter Corporation, SUB-1022 (408035)

SEP 06 1989

Edward McGrath

Docket No. 40-8801

Edward McGrath, Esq.
Holme, Roberts & Owen
1700 Lincoln Street
Denver, Colorado 80203

Dear Mr. McGrath:

Per our phone conversation of September 1, 1989, enclosed are some background materials on the West Lake Landfill:

1. "Radioactive Material in the West Lake Landfill, Summary Report", NUREG-1308, Rev. 1, U.S. Nuclear Regulatory Commission, June 1988

2. "Site Characterization and Remedial Action Concepts for the West Lake Landfill," U.S. Nuclear Regulatory Commission, July 1989

3. "Radiological Survey of the West Lake Landfill St. Louis County, Missouri," NUREG/CR-2722, U.S. Nuclear Regulatory Commission, May 1982

4. Letter of June 11, 1976, from James M. Allan, U.S. Nuclear Regulatory Commission (USNRC) to Cotter Corporation, ATTN: Mr. David P. Marcott, enclosing copies of;

   (a) a letter dated November 1, 1974, to Cotter Corporation from John G. Davis, U.S. Atomic Energy Commission, and

   (b) Atomic Energy Commission, Region III RO Inspection Report No. 040-8035/74-01, dated May 17, 1974, and

   (c) a letter dated December 4, 1970, to Cotter Corporation from Boyce Grier, Atomic Energy Commission, transmitting a report of non-compliance originating with an inspection of November 17, 1970.

5. Letter of June 10, 1977, to Mrs. Carolyn Ashford, Director, Missouri Department of Natural Resources, from James Keppler, USNRC, cc to Cotter Corporation, enclosing USNRC Region III IE Investigation Report No. 76-01.

Sincerely,

Original Signed by
Jerry J. Swift

Jerry J. Swift, Section Leader
Advanced Fuel and Special
Facilities Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Distribution:

NRC File Center	IMNS Central File	IMAF R/F	NMSS R/F
IMSB R/F	[redacted]	JSwift	FBrown

C	:IMAF	:IMAF	:OGC	:IMSB	:	:	:

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

MOS 000 000 151

A Person Required to Notify:
Enter the name and address of the person or organization required to notify.

Name Browning-Ferris Industries of St. Louis, Inc.
Street 11506 Bowling Green
City Creve Coeur State Mo. Zip Code 63146

B Site Location:
Enter the common name (if known) and actual location of the site.

Name of Site West Lake
Street St. Charles
City Maryland Heights County St. Louis State Mo. Zip Code 63042

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) WILLS, Tom - District Manager
Phone (314) 567-3330

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) 1948 To (Year) Present

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category

1. ☒ Organics
2. ☒ Inorganics
3. ☒ Solvents
4. ☒ Pesticides
5. ☒ Heavy metals
6. ☒ Acids
7. ☒ Bases
8. ☐ PCBs
9. * ☒ ~~Mixed Municipal Waste~~
10. ** ☐ ~~Unknown~~
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☒ Construction
3. ☒ Textiles
4. ☒ Fertilizer
5. ☒ Paper/Printing
6. ☒ Leather Tanning
7. ☒ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☒ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

* Sanitary sewage sludge with small quantities of unknown hazardous waste.

** Small quantities of unknown hazardous wastes mixed with industrial/commercial/municipal/household wastes.

Option 2: This option is available to persons familiar with t Resource Conservation and Recovery Act (RCRA) Section 3(regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous w listed in the regulations under Section 3001 of RCRA. Ente appropriate four-digit number in the boxes provided. A copy the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the s located.

JUN 12 1981

Region VII K.C., MO

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

Notification of Hazardous Waste Site — Side Two

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet: unknown

gallons: _____

Total Facility Area

square feet: unknown

acres: _____

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☒ ~~Suspected~~ Unknown ☐ Likely ☐

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and asse hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

*J "The information contained herein is based upon the personal knowledge or recollection of the individual compiling the information or upon records or other informational sources reasonably available to him (see item C). The information herein is accurate and complete to the best of the knowledge and belief of the submittor. The indication in Item E, numbers 9 and 10 does not constitute an admission that such wastes, if they exist, are in fact hazardous. The indication in Item G that a release is "known" or "likely" does not constitute an admission that such release is either continuing or, if it is, that it poses a threat to human health or the environment."

***J Signature and Title:**

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name: Stephen L. Thomas, Vice President

Street: _____

City: _____ State: _____ Zip Code: _____

Signature: Stephen L Thomas Date: 6/9/81

☐ Owner, Present
☐ Owner, Past
☒ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

Browning-Ferris Industries

Browning-Ferris Industries of St. Louis, Inc.
11506 Bowling Green
Creve Coeur, MO 63141

June 9, 1981

US EPA Region 7
Sites Notification
Kansas City, MO 64106

JUN 12 1981

Dear Gentlemen:

Pursuant to Section 103(c) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Browning-Ferris Industries of St. Louis, Inc. (hereinafter, together with its predecessors, is referred to as the "Company") hereby submits notifications (EPA Form 8900-1) for facilities it owns(ed) or operates(ed) and which are located at the following addresses:

1)	Highway 21	Jefferson Co., MO

In addition, Company submits such notifications for the following facilities, which were never owned or operated by the Company, but which were selected by Company for the disposal of hazardous wastes.

1)	Marine and Kelvey Streets	Maryland Heights, MO
2)	Jefferson Barracks Landfill	St. Louis, MO
3)	Highway 21 E. of Highway 141	Arnold, MO
4)	Aide Road	Maryland Heights, MO
5)	Sands Landfill (Marine & Kelvey)	Maryland Heights, MO
6)	St. Charles St.	Bridgeton, MO
7)	Vance Road	Valley Park, MO
8)	Marshall Road	Valley Park, MO
9)	Festus Landfill	Festus, MO

Please be advised that while EPA Form 8900-1 is being utilized by the Company for purposes of complying with the Section 103(c) notification requirement, some revisions to the form have been made which we believe more appropriately reflect the type of information being submitted. Also, please be advised that some of the facilities listed above are [were] operated as sanitary landfills which generally receive(d) commercial, industrial wastes as well as household wastes. Company procedures are designed to

preclude the receipt of identifiable hazardous wastes at those sanitary landfills it owns or operates. Similarly, the Company has instituted procedures designed to preclude the transportation of such wastes to third party (i.e., third party or municipally owned/ operated) sanitary landfills.

However, several factors have made, and continue to make, it impossible to know for certain whether any wastes, now deemed by regulation to be hazardous inherently or by virtue of their quantity, have ever been unknowingly received at any of the sanitary landfills owned or operated by the Company. Nor is it possible to know for certain whether the Company has unknowingly transported such wastes to any of these facilities.

- Several of the Company facilities listed above were acquired from individuals or companies who may not have instituted the same operating procedures as the Company.

- Prior to November 19, 1980, few states or local governments required generators of hazardous wastes to determine if their wastes were hazardous. Nor were they required to inform off-site commercial transporters or landfill owners/operators such as the Company of the type or quantity of such wastes received for off-site disposal.

- After November 19, 1980, only large generators of hazardous wastes were required to notify off-site commercial transporters and landfill owners/operators of the type and quantity of hazardous wastes received for off-site disposal.

- Both before and after November 19, 1980, federal and state law have permitted the disposal of small quantities of hazardous wastes at sanitary landfills.

Therefore, the Company has submitted notification forms for sanitary landfills it owns(ed) or operates(ed) only if the Company has any actual knowledge or a reasonable basis to believe that some of the wastes received at the facility contained substances now classified as hazardous. Similarly, the Company has reported third party owned/operated sanitary landfills which the Company selected and to which it transported commercial, industrial or residential wastes, only if the Company has actual knowledge or a reasonable basis to believe that some of such wastes contained substances which would now be classified as hazardous.

We are not reporting sanitary landfills owned or operated by the Company which are or were permitted to receive residential, commercial and industrial solid wastes if, after reasonable inquiry, we were unable to obtain information that wastes received contained substances which, unknown to us, are now classified as hazardous. However, for your information, we are listing these sanitary landfills below. Since the Company has no reason to believe such hazardous wastes were ever received at these facilities, and, therefore, it is not required to report them under section 103 of CERCLA, the Company

believes that these facilities cannot be included in any list published by U.S. EPA as having received hazardous wastes.

1) Redbird Landfill Arnold, MO

In accordance with the public notice of the availability of Form 8900-1, 46 Fed. Reg. 22144 (April 15, 1981), the Company has not included facilities for which there has been previously filed a notification of hazardous waste activities and/or a "Part A" permit application as required by Sections 3005 and 3010 of the Resource Conservation and Recovery Act (RCRA).

Should you have any questions, please do not hesitate to contact the undersigned or Jim Scheline at (713) 870-8100.

Sincerely,

Stephen L. Thomas
Vice President

SLT/mbe

EPA Notification Hazardous Waste Si

United States
Environmental Protection
Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

MOS 000 000 148 required

810605 MOS166

Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name Zykan Bros. Inc.
Street 3350 N. HWY 67
City Florissant State MO Zip Code 63033

Site Location:

Enter the common name (if known) and actual location of the site.

MOD079900932
~~MOD000283358~~

Name of Site West Lake Landfill
Street St. Charles Rock Rd.
City County St Louis State MO Zip Code 63044

Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Zykan, Donald J. - V. P.
Phone 314-837-3333

Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) 1972 To (Year) 1975

Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☒ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☒ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☒ Unknown
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

Form Approved
OMB No. 2000-0138

Notification of Hazardous Waste — **Side Two**

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet _____

gallons _____

Total Facility Area

square feet _____

acres _____

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ Non

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessir hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

map attached

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Zykan, Donald J. - V.P.

Street 3350 N. HWY 67

City Florissant State MO Zip Code 63033

Signature Yes on original Date 6/4/81

☐ Owner, Present
☐ Owner, Past
☒ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

EARTH CITY EXP
RIVER GLEN
LAKE FRONT
RIDGE TRAIL
WEST LAKE
LANDFILL
QUARRY
FOERSTER
TAUSSIG
OLD ST CHARLES ROCK
INTERCHANGE IMPROVEMENTS
UNDER CONSTRUCTION
INTERSTATE
DE HELVET
ST CHARLES ROCK
BRIDGETON SQUARE
NATURAL BRIDGE
CARROLLTON
BALLATIN
STRATFORD
PHELPS
BELLS
BARGATON
WOODFORD
FORT
BOMFILS
BRITTANY CIRCLE
PENNSTOCK
CELBURNE
BRADLEY
BRANDIN
HEWET
BASKIN
LONSDALE
WESTAR
TURNER
PAGE 168

Zykan
BROS., INC.
Solid Waste Disposal Service

COMMERCIAL
INDUSTRIAL
RESIDENTIAL

If Nobody Can. Zykan

3350 NORTH HIGHWAY 67 • FLORISSANT, MISSOURI 63033

837 3333

June 4, 1981

US, EPA Region 7
Sites Notification
Kansas City, Mo. 64106

Ref: Notification of Hazardous Waste Site
Attachment to form: OMBNo. 2000 0138

Zykan Bros. Inc. and its Officers to the best of our knowledge, all facilities to which this company has at any time transported for disposal material that could have included material now defined as hazardous waste by EPA. Unless expressly stated other wise, such listing does not represent that this firm has transported any particular type or quantity of hazardous waste. Nor does such listing in any way represent or imply that this firm has at any time transported or delivered for disposal any hazardous waste in any manner not fully consistent with all federal , state or local requirements applicable at the relevent time.

Donald J. Zykan, Jr. (V.P.)

Donald J Zykan, V.P.
6/4/81

JUN 08 1981

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies

NOT IN GNU

A Person Required to Notify

Enter the name and address of the person or organization required to notify

Name: Donald J. Zykan, Jr. (V.P.)
Street: 3350 No. Hiway 67
City: Florissant State: Mo. Zip Code: 63033

B Site Location:

Enter the common name (if known) and actual location of the site

Name of Site: Zykan Bros. Inc. (transporter)
Street: 3350 No. Hiway 67
City: Florissant County: St. Louis State: Mo. Zip Code: 63033

C Person to Contact:

Enter the name, title (if applicable) and business telephone number of the person to contact regarding information submitted on this form

Name (Last, First and Title): Zykan, Donald J. (V.P.)
Phone: 314-837-3333

D Dates of Waste Handling

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site

From (Year): 1972 To (Year): 1975

(approximate)

E Waste Type: Choose the option you prefer to complete

Option 1 Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site

General Type of Waste
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category

1 ☐ Organics
2 ☐ Inorganics
3 ☒ Solvents
4 ☐ Pesticides
5 ☐ Heavy metals
6 ☐ Acids
7 ☐ Bases
8 ☐ PCBs
9 ☐ Mixed Municipal Waste
10 ☒ Unknown
11 ☐ Other (Specify)

Source of Waste
Place an X in the appropriate boxes

1 ☐ Mining
2 ☐ Construction
3 ☐ Textiles
4 ☐ Fertilizer
5 ☒ Paper/Printing
6 ☐ Leather Tanning
7 ☐ Iron/Steel Foundry
8 ☐ Chemical General
9 ☐ Plating/Polishing
10 ☐ Military/Ammunition
11 ☐ Electrical Conductors
12 ☐ Transformers
13 ☐ Utility Companies
14 ☐ Sanitary Refuse
15 ☐ Photofinish
16 ☐ Lab/Hospital
17 ☒ Unknown
18 ☐ Other (Specify)

Option 2 This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261)

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located

MG

JUN 08 1981

Form Approved
OMB No. 2000-0138

Notification of Hazardous Waste Site — Side Two

F Waste Quantity

Place an X in the appropriate box(s) to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1 [ ] Piles
2 [ ] Land Treatment
3 [X] Landfill
4 [ ] Tanks
5 [ ] Impoundment
6 [ ] Underground Injection
7 [ ] Drums, Above Ground
8 [ ] Drums, Below Ground
9 [ ] Other (Specify) _____

Total Facility Waste Amount

Cubic feet: unknown

Gallons: unknown

Total Facility Area

Square feet: unknown

Acres: unknown

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None

unknown

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

West Lake Landfill
St. Charles Rock Rd.
St. Louis County
Missouri

West County Landfill
Sulpher Road
St. Louis County
Missouri

(see maps attached)

I Description of Site: (Optional)

Describe the past, future, and present conditions of the site. Give direction to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

unknown

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other."

Name: Donald J. Zykan, Jr.(V.P.)
Zykan Bros. Inc. (transporter)

Street: 3350 No. Hiway 67

City: Florissant State: Mo. Zip Code: 63033

Signature: [signature] Date: 6/18/81

☐ Owner, Present
☐ Owner, Past
☒ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

[FR Doc. 81-11981 Filed 4-14-81; 8:45 am]

BILLING CODE 6560-20-C

JUN 18 1981

RESPONDENT CONTACT RECORD (RCR)

FACILITY ID NUMBER	COMPANY NAME
	Browning-Ferris Industries of St Louis

COMPANY ADDRESS	CITY	STATE ABBREV.	ZIP CODE
11506 Bowling Green	Creve Coeur	MO	63141

CONTACT PERSON'S NAME/TITLE	TELEPHONE NUMBER (INCLUDE AREA CODE)
Randy Holcomb Dist Manager	314 567-3330

CONTACT RECORD

DATE	CONTRACTOR'S INITIALS	ITEMS DISCUSSED/RESOLUTION
6-26	DRR	After several calls concerning ~~[illegible]~~ site locations he has given us all available information on them. He also stated there are two forms for Sands Landfill due to the fact that two people which he called operators took Hazardous Waste there on different dates. He reassured me they were transporters for our purposes not operators. Tom Wells as listed on form has changed districts so Randy Holcomb is our current contact

RESPONDENT CONTACT RECORD (RCR)

FACILITY ID NUMBER	COMPANY NAME

COMPANY ADDRESS	CITY	STATE ABBREV.	ZIP CODE

CONTACT PERSON'S NAME/TITLE	TELEPHONE NUMBER (INCLUDE AREA CODE)
	[illegible]

CONTACT RECORD

DATE	CONTRACTOR'S INITIALS	ITEMS DISCUSSED/RESOLUTION
7-29	DRK	Called to make sure they handled to both sides
		on Block H. Had of all blocks on 1 side and
		both forms [illegible] the both, All are the same

RESPONDENT CONTACT RECORD (RCR)

FACILITY ID NUMBER	COMPANY NAME
	Borden Inc.

COMPANY ADDRESS	CITY	STATE ABBREV.	ZIP CODE
180 E. Broad St	Columbus	OH	43215

CONTACT PERSON'S NAME/TITLE	TELEPHONE NUMBER (INCLUDE AREA CODE)
Thomas R. Heaton Environmental Specialist	614 225-4860

CONTACT RECORD

DATE	CONTRACTOR'S INITIALS	ITEMS DISCUSSED/RESOLUTION
6-9	DRR	I called to make sure that a confidential
		claim was being requested.
		I spoke with Thomas R. Heaton who signed
		the attached letter at 12:18.
		He assured me that they do wish it to
		be processed as a confidential.

RESPONDENT CONTACT RECORD (RCR)

FACILITY ID NUMBER	COMPANY NAME
	Borden, Inc.

COMPANY ADDRESS	CITY	STATE ABBREV.	ZIP CODE
180 East Broad St.	Columbus	OH	43215

CONTACT PERSON'S NAME/TITLE	TELEPHONE NUMBER (INCLUDE AREA CODE)
Thomas R Heaton Environmental Specialist	614 225-4860

CONTACT RECORD

DATE	CONTRACTOR'S INITIALS	ITEMS DISCUSSED/RESOLUTION
		Called to find out if he had filed these Ill.
		sites with both regions. He had not, so
		we will forward for him

MOS049 MOS048

RESPONDENT CONTACT RECORD (RCR)

FACILITY ID NUMBER	COMPANY NAME
	Borden, Inc

COMPANY ADDRESS	CITY	STATE ABBREV.	ZIP CODE

CONTACT PERSON'S NAME/TITLE	TELEPHONE NUMBER (INCLUDE AREA CODE)
Thomas Heaton Environ. Specialist	614 255-4860

CONTACT RECORD

FTS - 943-6600

DATE	CONTRACTOR'S INITIALS	ITEMS DISCUSSED/RESOLUTION
8-17	DRR	Called for "D" end date and to make sure Westlake
		is at 13570 St. Charles Rock Rd, Bridgeton MO.
		Mr Heaton is out of town till Friday his secretary
		told me to call the plant manager in St. Louis Mr
		Beltowski at 314-991-2544.
		Mr Betowski said that is the address for West
		Lake and he will call back with the stop dates
8-19	DRR	He called back and said 1979 end date for this.

EPA

POTENTIAL HAZARDOUS WASTE SITE
TENTATIVE DISPOSITION

REGION	SITE NUMBER
VII	MOD079900932

File this form in the regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EN-335); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET	
Westlake Landfill	13570 St. Charles Rock Rd.	
C. CITY	**D. STATE**	**E. ZIP CODE**
Bridgeton	Mo.	63044

II. TENTATIVE DISPOSITION

Indicate the recommended action(s) and agency(ies) that should be involved by marking 'X' in the appropriate boxes.

RECOMMENDATION	MARK 'X'	ACTION AGENCY: EPA	STATE	LOCAL	PRIVATE
A. NO ACTION NEEDED -- NO HAZARD					
B. INVESTIGATIVE ACTION(S) NEEDED (If yes, complete Section III.)		X			
C. REMEDIAL ACTION NEEDED (If yes, complete Section IV.)					
D. ENFORCEMENT ACTION NEEDED (If yes, specify in Part E whether the case will be primarily managed by the EPA or the State and what type of enforcement action is anticipated.)					

E. RATIONALE FOR DISPOSITION

Dioxin has not been discovered at this site in any of the sampling efforts, nor does there appear to be a problem with any of the 'standard' hazardous wastes. There is strong evidence of radioactive components above acceptable limits in the landfill. No off-site migration of these components is apparent. Strategy for this site is uncertain.

F. INDICATE THE ESTIMATED DATE OF FINAL DISPOSITION (mo., day, & yr.)	G. IF A CASE DEVELOPMENT PLAN IS NECESSARY, INDICATE THE ESTIMATED DATE ON WHICH THE PLAN WILL BE DEVELOPED (mo., day, & yr.)

H. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Steven Kinser	913-236-2856	11-06-85

III. INVESTIGATIVE ACTIVITY NEEDED

A. IDENTIFY ADDITIONAL INFORMATION NEEDED TO ACHIEVE A FINAL DISPOSITION.

See Above.

B. PROPOSED INVESTIGATIVE ACTIVITY (Detailed Information)

1. METHOD FOR OBTAINING NEEDED ADDITIONAL INFO.	2. SCHEDULED DATE OF ACTION (mo., day, & yr)	3. TO BE PERFORMED BY (EPA, Contractor, State, etc.)	4. ESTIMATED MANHOURS	5. REMARKS
a. TYPE OF SITE INSPECTION (1)				
(2)				
(3)				SUPERFUND
b. TYPE OF MONITORING (1)				NOV 7 1985
(2)				SITE LOG
c. TYPE OF SAMPLING (1)				
(2)				

85 NOV Rec'd

EPA Form T2070-4 (10-79)

Continue On Reverse

CENTRAL FILES

JUN 10 1977

Site: Westlake Ldfl
ID #: MOD079900932
Block: 16
Other:

Mrs. Carolyn Ashford
Director, Missouri Department
of Natural Resources
P.O. Box 1368
Jefferson City, MO 65101

Dear Mrs. Ashford:

This refers to a special investigation conducted by this office to obtain information pertaining to the disposal of natural uranium ore residues in a St. Louis County landfill area by the Cotter Corporation during 1973. This also refers to the discussions held with Messrs. K. V. Miller and G. MacNutt of the State of Missouri Bureau of Radiological Health in St. Louis on June 6 and 7, 1977, at which time a copy of our investigation report was furnished to them. Although there were no items of noncompliance with NRC requirements found during this investigation, the NRC believes that a more detailed environmental evaluation of these sites should be conducted.

As discussed with Messrs. Miller and MacNutt, the Nuclear Regulatory Commission has arranged for the Oak Ridge National Laboratory to perform such a survey at the St. Louis landfill site, as well as at the property formerly occupied by the Cotter Corporation. You will be kept fully informed of the results of that survey.

Sincerely,

James G. Keppler
Director

cc: Jarboe Realty and
Investment Company
Norfolk and Western Railroad

cc w/IE Investigation Report No. 76-01
Cotter Corporation
Central Files
Reproduction Unit NRC 20b
PDR
NSIC

OFFICE	RIII	RIII	RIII	RIII		
SURNAME	Pagliaro/bk	Allan	Norelius	Keppler	EPA	OIBI
DATE	6/10/77					

Rec'd 5-14-74

40-8035

LAW OFFICES
EDWARD J. MCGRATH
201 NORTH FREDERICK AVENUE
GAITHERSBURG, MARYLAND 20760
(301) 948-2480

40-8035

May 10, 1974

RECEIVED
MAY 24 1974
U.S. ATOMIC ENERGY COMMISSION

W. Burkhardt, Senior Chemical Engineer
Fuels Fabrication & Reprocessing Branch
Licensing, Regulatory
Room 435, East-West Towers
UNITED STATES ATOMIC ENERGY COMMISSION
Washington, D. C. 20545

Re: Cotter Corporation, Source Materials License No. SUB—1022

Dear Mr. Burkhardt:

We enclose four copies of the Certification of Status with respect to the source materials license of Cotter Corporation and constituting notification that the corporation no longer possesses any radioactive material subject to United States Atomic Energy Commission licensing requirements.

Submitted in connection with the certification is a letter from Phillip K. Feeney, P.E., of the firm of Ryckman, Edgerley, Tomlinson & Associates, Inc., consulting environmental engineers, to which are attached plats of the Latty Avenue storage site where the licensed material formerly held by Cotter Corporation was deposited. The plat which we have marked "Attachment A" indicates the locations of the buildings and of the materials which were stored on the site. The plat which we have marked "Attachment B" contains the results of a radiological survey conducted by Ryckman, Edgerley, Tomlinson & Associates, Inc. subsequent to removal of all materials stored on the sight.

Based upon the work performed by Cotter Corporation, the work of contractors hired by Cotter Corporation in connection with removal and cleanup, and upon the monitoring of Rychman, Edgerley, Tomlinson & Associates, Inc., we are of the opinion that the Latty Avenue storage site and all appurtenances have been decontaminated. Cotter Corporation has removed to its mill in Colorado all materials with radioactivity levels meeting or exceeding that which subjects holders to license requirements.

Since all source materials now owned or held by Cotter Corporation are situated in Colorado, and subject to the license issued to the corporation by the State of Colorado, we request at this time that the United States Atomic Energy Commission source materials license issued to Cotter Corporation be terminated.

Please contact me should you wish further information.

Sincerely yours,

Reference 1 (4 pages)

Edward J. McGrath
Attorney for Cotter Corporation

DOCKETED
USAEC
JUL 08 1974
REGULATORY
MAIL SECTION
DOCKET CLERK

EJMcG/jmc
Copy to: David P. Marcott
Cotter Corporation

EFA 0136

WASHINGTON, D.C. 20545

CERTIFICATION OF STATUS OF SOURCE MATERIAL ACTIVITIES
UNITED STATES ATOMIC ENERGY COMMISSION

LICENSE NUMBER
SUB—1022

LICENSEE: Cotter Corporation

ADDRESS: P. O. Box 352, 11011 W. 6th Avenue, Suite 302, Lakewood, Colorado

The licensee and any individual executing this certification on behalf of the licensee certify that (check appropriate item(s) below):

_____ No source materials have been procured and/or possessed by licensee.

X All source materials procured and/or possessed by licensee under Source Material License No. _____

_____ (1) have or will be prior to expiration of the above license transferred to _____
(Institution, firm, hospital, person, etc.)

_____
which has Source Material License No.

X (2) have been or will be disposed of in compliance with 10 CFR 20 prior to expiration of this license.

Certifying Official
EDWARD J. McGRATH, Attorney for Cotter Corporat
Date: May 9, 1974

Please return 4 copies to:
U. S. Atomic Energy Commission
Materials Branch, Directorate of Licensing
Washington, D. C. 20545

NOV 13 1974

DISTRIBUTION:
PDR
LPDR
State Health Official
L:FM R/F
L:FFRB#1 R/F
LCRouse
WTCrow
HWerner
ACabell
BBrooks
RO:HQ (2)
LNUnderwood
RGPage

L:FFRB:WTC
40-8035
SUB-1022

Cotter Corporation
ATTN: Mr. David P. Marcott
Executive Vice President
P. O. Box 366
Golden, Colorado 80401

Gentlemen:

In accordance with your application dated May 10, 1974 and pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License No. SUB-1022, is hereby terminated.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
Leland C. Rouse

L. C. Rouse, Chief
Fuel Fabrication and Reprocessing
Branch No. 1
Directorate of Licensing

cc: Law Offices
Edward J. McGrath
201 North Frederick Avenue
Gaithersburg, Maryland 20760

Reference 2 (1 page)

Cable: RETA STL

ckman/Edgerley/Tomlinson & Associates, Inc.

Offices:
McLean, Virginia (Washington, D.C.)
Dayton, Ohio
Memphis, Tennessee
Denver, Colorado
Tampa, Florida
New Orleans, Louisiana
Arlington, Texas (Dallas-Ft. Worth)
Houston, Texas
Casper, Wyoming
Chicago, Illinois
Northumberland, England
Rome, Italy

May 1, 1974
RETA-780

Mr. David P. Marcott
Executive Vice President
Cotter Corporation
Post Office Box 352
Golden, Colorado 80401

Dear Dave:

Attached are two (2) sketches of the Latty Avenue Storage Site. The first depicts the original placement of the residues and buildings. Building "D" was the only building used for the actual drying operation.

The second sketch shows level of activity (MR/hr.) on April 29, 1974, after decontamination had been completed. As you can see, all of the locations fall below the allowable 0.6 MR/hr. (approximately 2,000 counts per minute) level.

If you have any questions or comments, or require additional information, please contact me.

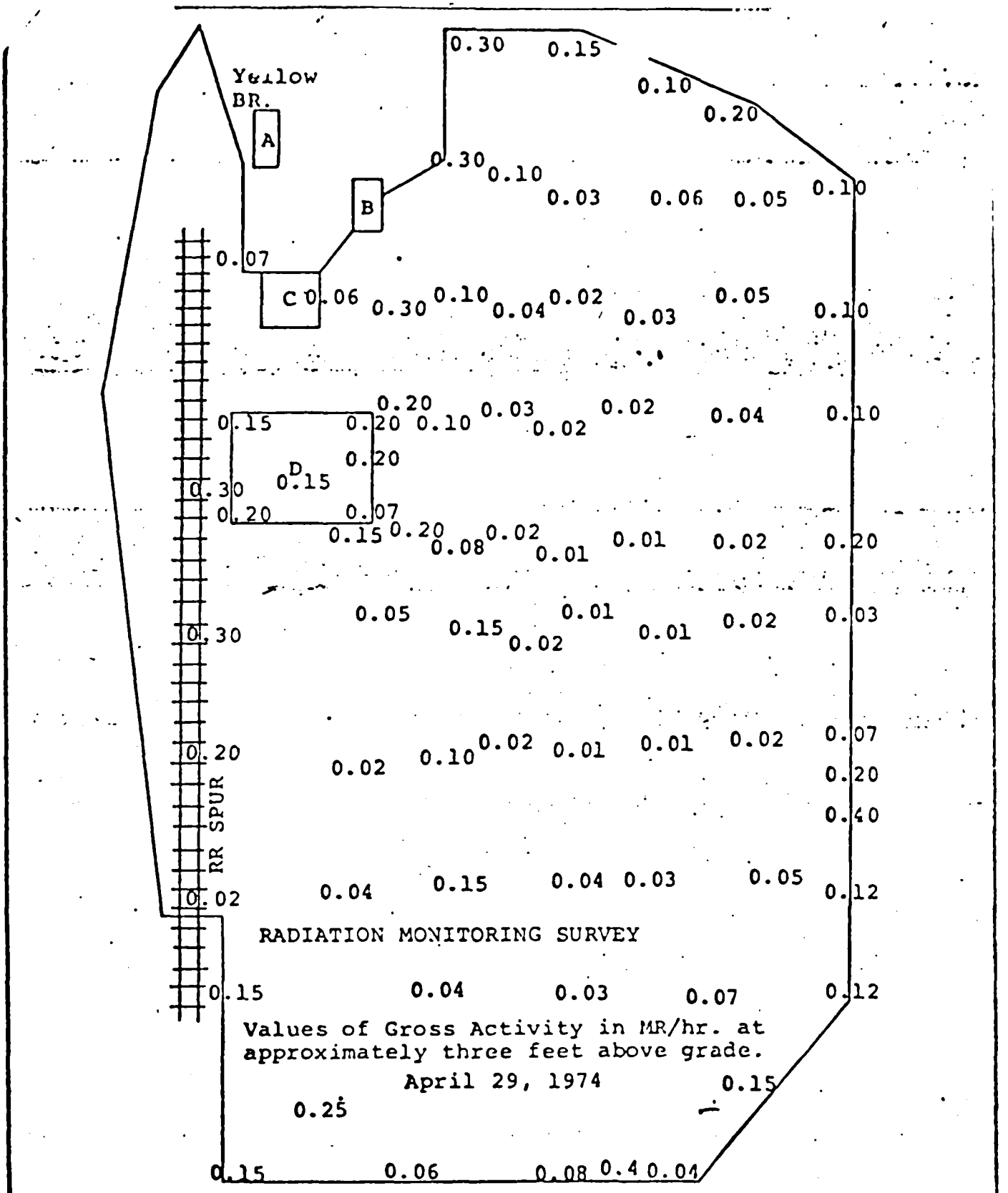
Very truly yours,

Phillip K. Feeney/pac

Phillip K. Feeney, P.E.
Associate

Enclosures

PKF:pac

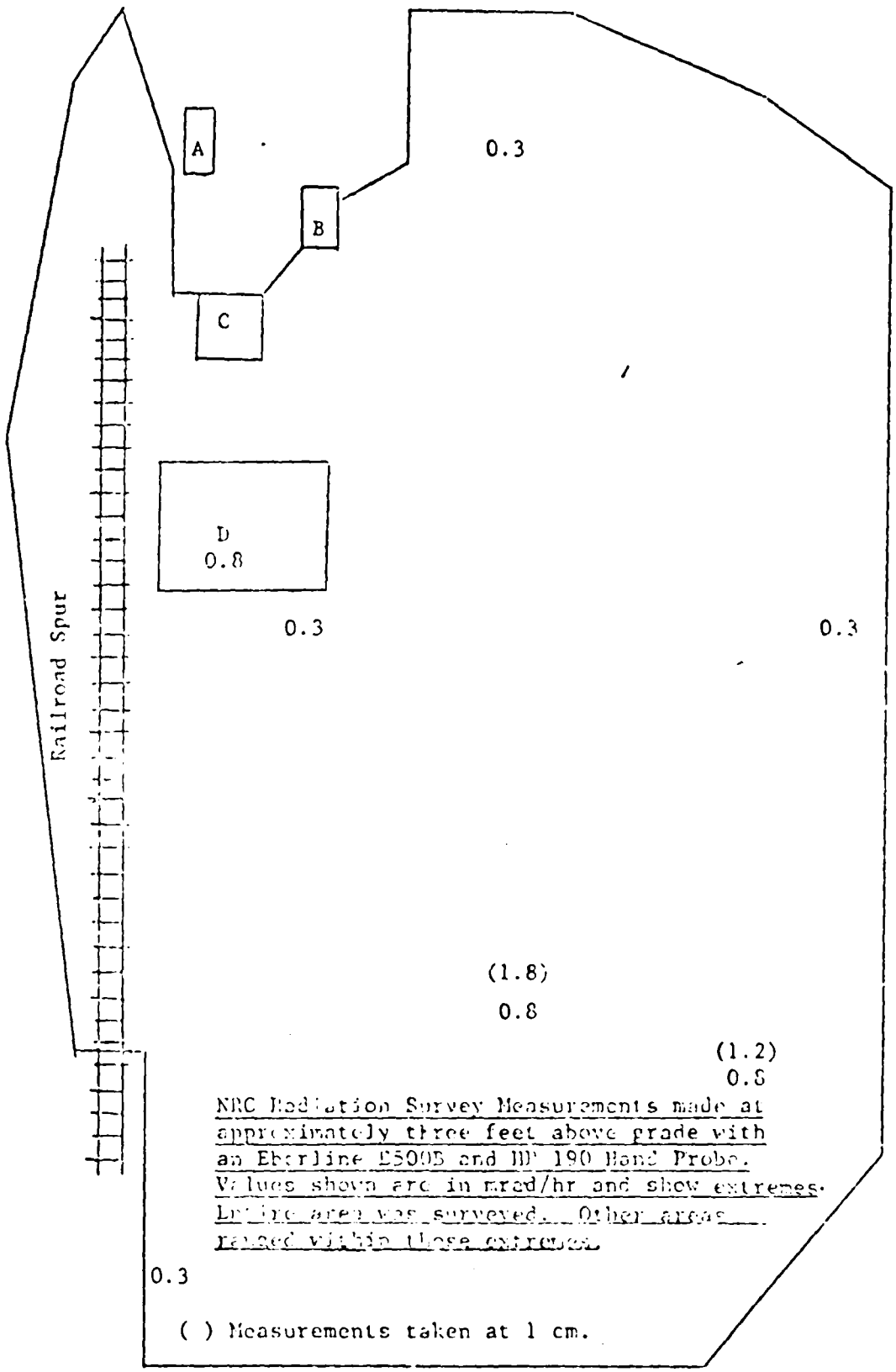


RETA

Sketch not to scale.

COTTER CORPORATION
LATTY AVENUE STORAGE SITE
HAZLEWOOD, MISSOURI

Latty Avenue 8/11/76



NRC Radiation Survey Measurements made at approximately three feet above grade with an Eberline E500B and HP 190 Hand Probe. Values shown are in mrad/hr and show extremes. Entire area was surveyed. Other areas ranged within those extremes.

( ) Measurements taken at 1 cm.

Cotter Corporation
Latty Avenue Storage Site
Hazelwood, Missouri

(Not to exact scale)

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL

U. S. Atomic Energy Commission
Directorate of Licensing
Materials Branch
Washington, D.C. 20545

December, 1973

Reference 4 (4 pages)

EPA 0137

The instructions in this guide in conjunction with Tables I and II specify the radioactivity and radiation exposure rate limits which should be used in accomplishing the decontamination and survey of surfaces of premises and equipment prior to abandonment or release for unrestricted use. The limits in Tables I and II do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control will be considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Tables I or II prior to applying the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Tables I or II. A copy of the survey report shall be filed with the Director, Materials Branch, Directorate of Licensing, USAEC, Washington, D.C. 20545, and also the Director of the Regional Office of the Directorate of Regulatory Operations, USAEC, having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

   c. Describe the scope of the survey and general procedures followed.

   d. State the findings of the surevey in units specified in the instruction.

Following review of the report, the AEC will consider visiting the facilities to confirm the survey.

SURFACE CONTAMINATION LEVELS[1]

ISOTOPE[2]	TABLE I TOTAL[3]	TABLE I REMOVABLE[3][4]	TABLE II TOTAL[3]	TABLE II REMOVABLE[3][4]
U-nat, U-235, U-238, Th-nat, Th-232, and associated decay products	10,000 dpm α/100 cm²	1,000 dpm α/100 cm²	Average[6] 5,000 dpm α/100 cm² Maximum 25,000 dpm α/100 cm²	1,000 dpm α/100 cm²
Other isotopes which decay by alpha emission or by spontaneous fission	1,000 dpm α/100 cm²	100 dpm α/100 cm²	Average[6] 500 dpm α/100 cm² Maximum 2,500 dpm α/100 cm²	100 dpm α/100 cm²
Beta-gamma emitters (isotopes with decay modes other than alpha emission or spontaneous fission)	0.4 mrad/hr at 1 cm[5]	1,000 dpm β-γ/100 cm²	Average[6] 0.2 mrad/hr at 1 cm[5] Maximum 1.0 mrad/hr at 1 cm[5]	1,000 dpm β-γ/100 cm²

(1) Either Table I or Table II may be used. For example, if all beta-gamma readings were less than 0.4 mrad/hr at 1 cm, Table I could be used; but if the maximum reading were 0.8 mrad/hr, material could be released under Table II providing the average was less than 0.2 mrad/hr.

(2) Where surface contamination by both alpha and beta-gamma emitting isotopes exists, the limits established for alpha and beta-gamma emitting isotopes shall apply independently.

(3) As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector and count rate meter for background, efficiency, and geometric factors associated with the instrumentation.

(4) The amount of removable radioactive material per 100 cm² of surface area shall be determined by wiping that area with dry filter or soft absorbent paper and with the application of moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. In determining removable contamination on objects of lesser surface area, the pertinent levels shall be reduced proportionally, and the entire surface shall be wiped.

(5) Measured through not more than 7 milligrams per square centimeter of total absorber.

(6) Measurements of total contaminant shall not be averaged over more than 10 square meters. For objects of lesser surface area, the average shall be derived for each such object.

CHRISTOPHER S. BOND
GOVERNOR

JAMES L. WILSON
DIRECTOR

missouri department of natural resources

P.O. Box 1368 Jefferson City, Missouri 65101 314/751-2815

June 2, 1976

Mr. James G. Keppler
Regional Director
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr. Keppler:

In articles published May 30 and June 1 (copies enclosed) St. Louis Post-Dispatch reporter Margaret W. Freivogel presented evidence that some seven tons of uranium were dumped in 1973 at the West Lake Landfill in St. Louis County by an Atomic Energy Commission subcontractor removing radioactive waste material from a site in Hazelwood, Missouri. The area was closed as an industrial and sanitary landfill by this Department in 1974 (a new sanitary landfill in an adjacent area protected from groundwater contact now operates under DNR permit). The closed area where the dumping allegedly occurred may be in direct contact with groundwater. It has no monitoring wells to permit evaluation of groundwater contamination.

In your letter to me of February 19, 1976 you stated that "a review by the then AEC showed there was no significant health or environmental hazard associated with the burial". The letter to Cotter Corporation from John G. Davis you enclosed stated, "It is our understanding from your contractor that the material was then deposited under about 100 feet of refuse and earth at St. Louis County sanitary landfill No. 1." The investigation by the Post-Dispatch indicates that AEC did not know the correct location of the dumping, the local geology, nor the actual concentration of uranium dumped. The depth cited must also be incorrect since no landfills in the St. Louis area contain 100 feet of fill. I must therefore question the validity of the AEC "review" of the burial operation.

I respectfully request that in view of the concerns of this Department and the people of the St. Louis area, that the Nuclear Regulatory Commission takes steps to:

1. Provide me with all documents which might assist me in verifying the Post-Dispatch report, and in establishing the exact amount and chemical form of radioactive materials allegedly dumped at West Lake.

EFA 0138

Exhibit A

2. Require the Energy Research and Development Administration, as successor to AEC's source material operations, to

   a) Include the West Lake Landfill in the areas it has selected for intensive aerial and ground level radiation monitoring.

   b) Locate the uranium precisely within the landfill, both as to position and depth.

   c) Install appropriate groundwater monitoring wells and implement a monitoring program to determine the extent, if any, of groundwater contamination.

   d) Recommend actions to be taken to protect landfill workers and the public from any potential hazards associated with this material.

3. a) Advise me on who would be liable in the event that cleanup costs are involved.

   b) Ascertain whether federal laws or regulations were violated by either the Atomic Energy Commission or its subcontractor in the disposal of source material at an unlicensed site.

In a related matter, I was disappointed to learn that you do not maintain records of radioactive waste burials carried out by licensees under authority of Section 20.304 of Title 10 CFR. I hereby respectfully request that your office obtain such records from all Missouri licensees who have made such burials and make these records available to me.

Sincerely,

Kenneth M. Karch
Director
Division of Environmental Quality

KMK:JE:jhb
cc: Robert J. Koke, EPA Region VII
Enclosure

ST-DISPATCH

AY, MAY 30, 1976 282 PAGES ••••• 30¢

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In addition to being wrong about the volume of the waste, federal records are wrong also about its location. The AEC report said the material had been deposited at "St. Louis County Landfill No. 1 on Old Bridge Road." No such place exists.

The B & K vice president, Davis, confirmed that the material had gone to the West Lake Landfill on St. Charles Rock Road. St. Louis County Landfill No. 1 is on Dorsett and Adie Roads, more than four miles away.

The West Lake Landfill was closed temporarily in 1971 for improvements because state officials found that certain pollutants were leaking from it into the surrounding flood plain soil. No test for radioactivity was made because officials were unaware that any radioactive materials were in the landfill.

Before the improvements were made, it would have been "irresponsible" to put any hazardous waste at West Lake, said Joseph Elgner, who runs the Missouri hazardous waste program.

The problem at West Lake may have been compounded by using the radioactive material as a daily cover for trash, Elgner said. That would subject the waste to rainwater and the possibility of runoff.

State officials said the radioactive waste posed no immediate health hazard because it was relatively weak and would be extremely diluted by the Missouri River water even if it were to reach the river. There is no evidence that the radioactive waste did reach the river.

The waste material, according to AEC records, consisted of seven tons of natural uranium mixed with about 5[illegible] tons of barium sulfate, a powdery white substance. This waste and other waste products were generated at a nuclear processing plant, now closed, that Mallinckrodt Inc. operated on Destrehan Street, on St. Louis's near North Side.

The barium sulfate and other waste products originally were stored at Lambert Field. Later, some of them were moved to a site at 9200 Latty Road, Hazelwood, in preparation for reprocess-

See DUMPING, Page 4

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samples of the truckloads being sent to the landfill, but he acknowledged that they, too, could have been inaccurate.

Federal authorities made no independent measurements of the strength of material and normally do not in a case like this, a spokesman for the Nuclear Regulatory Commission said. Relying on Cotter's records, a federal inspector concluded that the concentration of uranium in the material being dumped was .0021 per cent—well below the .05 per cent limit set in the regulations.

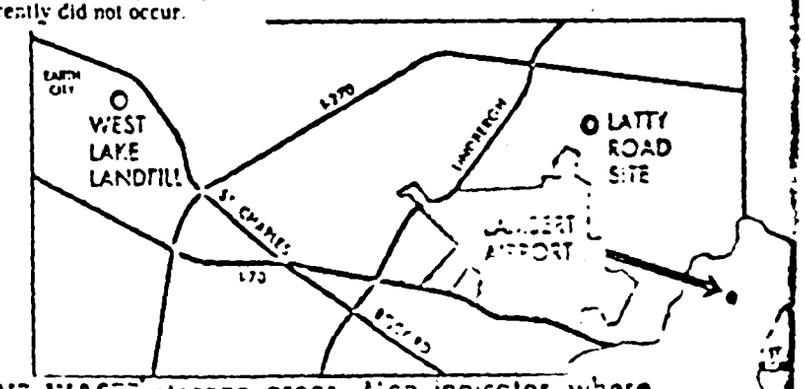
A St. Louis environmental engineering firm, Dickman, Edgerley, Tomlinson and Associates, had been hired to monitor radiation levels at the site. But it also made no independent tests of the truckloads being sent to the landfill said Phillip Feeney, who worked on the project.

Therefore, although Mallinckrodt officially contended that all activities had been closely watched by his company, the engineering firm and the AEC, none of the three actually saw or tested the material [illegible] to the landfill.

the Hazelwood site for radiation and found it clean.

AEC investigators did find fault with one aspect of the waste disposal. The agency reprimanded Cotter Corp. in a letter for diluting the waste with the 30,000 tons of soil—ironically, the practice that apparently did not occur.

Federal regulations prohibit the dilution of radioactive material to reduce the concentration so that the material will fall outside the .05 per cent limit set for more stringent handling of the waste, the letter said.



RADIOACTIVE WASTE storage areas. Map indicates where the barium sulfate was originally stored, the site at 9200 Latty Road, and where it was moved, the West Lake Landfill at St.

Radioactive Materials Checks Called Fault

By MARGARET W. FREIVOGEL
Of the Post-Dispatch Staff 2-1-76

No one adequately monitors radioactive materials in Missouri and the state is unprepared to handle accidental releases of radiation, two state officials familiar with the situation say.

The dumping of several thousand tons of low-level radioactive waste at the West Lake Landfill in St. Louis County, disclosed Sunday in the Post-Dispatch — is only one of several nuclear-related problems, said Kenneth M. Karch and Martin Nodiff.

Karch is director of environmental quality for the state Department of Natural Resources; Nodiff is the department's director of planning and policy development.

There is no evidence that the West Lake dumping caused a health hazard, but it apparently confused federal authorities who were supposed to be keeping track of the material.

False business records of the transaction caused federal officials to have incorrect records about the strength, volume and location of the material, the Post-Dispatch found.

[illegible] of a firm being monitored in connection with the dumping criticized the way monitoring is done.

"I'm one of the Atomic Energy Commission's most outspoken critics," said David P. Marcott, executive vice president of Cotter Corp., which had purchased the waste material to extract valuable ores it contained.

"Ninety-nine per cent of the time they (federal authorities) don't know what's going on even when they have someone standing there . . . As a citizen and as a member of this industry, I'd like to see them do a better job," Marcott said.

Nodiff and Karch said they were disturbed by the West Lake incident because it was, in their opinion, indicative of serious gaps that exist in the monitoring of low-level waste.

The federal Nuclear Regulatory Commission, which replaced the now defunct Atomic Energy Commission is too shorthanded to investigate comprehensively, the officials said. State officials have no authority to fill in for the federal agency, they said.

They listed several problems, including:

(1) Inadequate monitoring of a disposal site at Sinclair Farms near Columbia, Mo., where low-level radioactive waste is buried in plastic bags.

(2) Inadequate preparations for possible accidents at two nuclear power plants situated near enough to Missouri to cause injury in the state and from Union Electric Company's Callaway County plant now under construction.

(3) Inadequate attention to the transportation of radioactive materials through the state. Tri-State Motor Co., the largest transporter of nuclear materials in the nation is based in Joplin, Mo. However, most of its cargo does not pass through Missouri, a study by the Department of Natural Resources found.

Karch and Nodiff failed to convince the Legislature to enact a radiation protection act during the last session. It would have empowered state officials to monitor more effectively waste disposal and transportation. The state officials plan to urge enactment of the legislation again next session.

"The federal agencies just aren't manned to do a thorough and comprehensive job," Nodiff said. "They're forced to set priorities on what they inspect. They start with Mallinckrodt (which manufactures large amounts of radiopharmaceuticals), and they're taking care of that. But when you get down to the bottom of the list they might be hitting someone only once every 20 years."

A federal atomic safety official said he thought the monitoring program was comprehensive enough.

"It's disturbing that we might have got incorrect information (about the West Lake disposal)," said James Allen, chief of the fuel facility and material safety branch at the Nuclear Regulatory Commission's regional office in Glen Ellyn, Ill. "But when there's no health hazard involved in a situation, strict monitoring of it would be taking people away from more important health issues."

Allen said he was not concerned about the agency being duped. The West Lake episode was an isolated incident, he said.

In that case, B&K Construction Co., Inc., apparently submitted false invoices tok Cotter Corp. [illegible] that it had moved nearly 40,[illegible] tons of waste and soil in 19[illegible] to the [illegible] situated at St. Charles Rock Road and [illegible] Road.

In fact, a B&K officer admitted recently [illegible] firm actually had moved less than [illegible]. Relying on the incorrect invoices, an [illegible] safety inspector concluded that the [illegible] been diluted with soil to reduce its radioa[illegible].

Consequently, the inspector's report [illegible] error on the strength, volume and location [illegible] waste. Despite the errors, federal and [illegible] officials said the material posed no [illegible] hazard.

Safety chief Allen added that he w[illegible] worried about the waste burial site at Si[illegible] Farms near Columbia, Mo., the site [illegible] established in 19[illegible] save the cost of s[illegible] the low-level waste material to a fe[illegible] disposal area in Sheffield, Ill.

Allen said the material, originating [illegible] research projects at the University of M[illegible] was very low in radioactivity and its [illegible] governed by federal regulations.

But Karch said he was [illegible] that Sinclair Farms had not been the [illegible] site [illegible] burial was started. He was [illegible] federal officials relied too heavily on [illegible] instead of independent [illegible] or k[illegible] track of activities there.

The Nuclear Regulatory Commission [illegible] Karch in a letter that [illegible] was [illegible]

Exhibit A
4 of 4

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

JUN 17 1976

Mr. Kenneth M. Karch
Director, Division of
Environmental Quality
Missouri Department of
Natural Resources
P. O. Box 1368
Jefferson City, Missouri 65101

License No. SUB-1022

Dear Mr. Karch:

This is in response to your letter dated June 2, 1976, requesting additional information and follow-up action relative to the burial of some seven tons of natural uranium in a St. Louis County landfill in 1973.

The information published in the St. Louis Post-Dispatch on May 30 and June 1, 1976, which was enclosed with your letter of June 2, 1976, is new to this Office and, as you pointed out, conflicts with the information obtained by our inspectors in 1974. Based on this apparent discrepancy, the NRC plans to initiate a full investigation into this matter during the week beginning June 20, 1976. The findings from this investigation, which will be made available to you, will determine the need for further NRC action. At the conclusion of the investigation, all documents relative to this burial will be provided to your Office.

With respect to your June 2, 1976 letter, I would like to clarify one apparent misconception at this time. The Cotter Corporation, which was responsible for this burial, was an AEC licensee — not an AEC subcontractor. Consequently, the Energy Research and Development Administration has no responsibility with regard to this material. As a former licensee, the NRC will look to Cotter Corporation to correct any safety or environmental related problems identified through our investigation.

Regarding your other request that this office obtain from materials licensees in the State of Missouri records of low level radioactive waste burials under 10 CFR 20.304, I must reiterate that there is no NRC regulation that requires reporting waste burials under 20.304. Therefore, there is no

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

basis for such a request to the licensees. If you believe that the NRC's current regulations concerning such burials are inadequate, you may petition the NRC for consideration of a change of the regulations. This rulemaking petition should be submitted under the provisions of 10 CFR 2.802, a copy of which is enclosed.

If you have any questions concerning the above, please let me know.

Sincerely yours,

James G. Keppler
Regional Director

Enclosure:
10 CFR 2.802

cc w/o encl, w/ltr dtd 6/2/76:
R. J. CokeEPA Region VII
M. W. Freivogel, St. Louis Post-Dispatch
D. P. Marcott, Cotter Corporation

bcc w/o encl, w/ltr dtd 6/2/76:
J. G. Davis, Deputy Director
D. Thompson, IE:HQ
L. Rouse, NMSS
S. Schwartz, SLR
J. Fouchard, PA
Central Files
IE Mail and File Unit
PDR
NSIC

AUG 9 1973

INVOICE

Telephone
HArrison 7-5666

B. & K Construction Company, Inc.

GENERAL PAVING CONTRACTORS
4140 Cypress Road, St. Ann, Missouri
"PAVE THE WAY WITH B & K"

№ 10353

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

Approved 7/31/73

JOBSITE: Latty Avenue, St Louis County

Material trucked to disposal site	4981.85 tons @$
Material shipped by railroad	2341.75 tons @$

THIS INVOICE IS DUE AND PAYABLE WITHIN 10 DAYS AS PER AGREEMENT.

#1319
2102

RECEIVED AUG 8 1973

Exhibit C
1 of 11

Telephone
HArrison 7-5566

INVOICE

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS

4140 Cypress Road, St. Ann, Missouri

"PAVE THE WAY WITH B & K"

№ 1036

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

8/10/73

JOBSITE: Latty Avenue, St. Louis County

Material trucked to disposal site Aug. 1st thru Aug. 9th -8373.75 tons @$

Material shipped by railroad Aug. 1st. thru Aug. 9th- 846.70 tons @$

8373.75 tons @3.02 (scale charge)

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) DAYS

#1314
2162

AUG 21 1973

...on 7-5666

INVOICE

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS
4140 Cypress River, St. Louis, Missouri

"PAVE THE WAY WITH B & K"

Nº 1038

Cotter Corporation
P.O. Box 751
Canon City, Colorado 81212

Sales/Use Tax
Discount
Bill Lists Made
Statement Attached
Bills Rec'd.
Prices Correct
Approved 8/17/73

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING

JOBSITE: Latty Avenue - St. Louis County

August 10 through August 16:

6,304.10 tons hauled to disposal area by truck @$

486.95 tons shipped by rail @ $

6,304.10 tons @ $ scale charge

$

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) days.

1349
2162

AUG 23 1973

Exhibit C
3 of 11

Telephone
Arrison 7-5666

INVOICE

AUG 21 1973

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS
4140 Cypress Road, St. Ann, Missouri
"PAVE THE WAY WITH B & K"

№ 1037

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

Price Correct
Approved 8/24/73

JOBSITE: Latty Avenue

AUG 21

August 17 through August 23:

5,895.40 tosn hauled to disposal area by truck @ $

1,674.80 tons shipped by rail @ $

5,895.40 tons @$ scale charge

OK

KEY PUNCH

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) DAYS.

7-1319 2102

RECEIVED AUG 2 7 1973

Exhibit C
4 of 11

Telephone
HArrison 7-5666

INVOICE

SEP 6 1973

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS

4100 Express Road, St. Ann, Missouri

"PAYS THE WAY WITH B & K"

№ 10393

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

8/31/73

JOBSITE: Latty Avenue, St. Louis County

Material trucked to disposal site 6421.45 tons @ $

Material shipped by railroad 1231.10 tons @ $

6421.45 tons @ $. (scale charge)

THIS INVOICE IS DUE AND PAYABLE WITHIN 10 DAYS

#-1319
2102

KEY PUNCH

RECEIVED SEP 6 1973

Exhibit C
5 of 11

SEP 12 1973

INVOICE

Telephone
HArrison 7-5666

B. & K. Construction Company, Inc.

PAVING CONTRACTORS
Hill Cypress Road, St. Ann, Missouri
"PAVE THE WAY WITH B & K"

№ 1040

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

9/7/73

KEY PUNCH

JOBSITE: Latty Avenue - St. Louis County

August 31st through Sept. 6, 1973:

5,270.55 tons hauled to disposal area by truck @ $

1,174.95 tons shipped by rail @ $

5,270.55 tons @ $. scale charge

872.10 tons top soil hauled into site @ $

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) DAYS.

#1319

RECEIVED SEP 10 1973

131

Exhibit C
6 of 11

SEP 18 1973

INVOICE

Telephone
HArrison 7-5666

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS

4140 Cypress Road, St. Louis, Missouri

"PAVE THE WAY WITH B & K"

№ 10405

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

Approved 9/24/73

JOBSITE: Latty Avenue - St. Louis County

September 7 through September 13, 1973:

4502.65 tons residue trucked to disposal area @$

1026.46 tons residue shipped by rail @$

4502.65 tons @$. scale charge

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) DAYS

#1316

RECEIVED SEP 17 1973

KEY PUNCH

Date: Job Trucks: 9-21-73

Exhibit C
7 of 11

Telephone
HArrison 7-5666

INVOICE

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS

Location 4140 Cypress Road St. Ann, Missouri

Date Inv. Posted 9/24/73

"PAVE THE WAY WITH 'B & K'"

Footings and Ent. BEB

Sales/Use Tax BEB

Discounts

A/C Disb. Made ☑

Collection Allowed ☑

Goods/Svc Rec'd. BEB

Prices Correct BEB

Approved HL 9/21/73

№ 1041

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

JOBSITE: Latty Avenue - St Louis County

Sept. 14th through Sept. 20, 1973:

KEY PUNCH

1602.90 tons residue hauled to disposal area by truck @$

1602.90 tons @$. scale charge

1335.65 tons shipped by rail @ $

Dismantling dryer and loading on rail cars

Labor working inside buildings on restoration

#1316

THIS INVOICE DUE AND PAYABLE WITHIN TEN(10) DAYS.

Exhibit C
8 of 11

Telephone
HArrison 7-5666

INVOICE

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS
4140 Cypress Road St. Ann, Missouri

Nº 10445

"PAVE THE WAY WITH B & K"

Cotter Corporation
P.O. Box 751
Cannon City, Colorada 81212

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Prices Correct 9/28/73

KEY PUNCH

JOBSITE: Latty Ave., St. Louis County

Sept. 21 through Sept. 27, 1973:

2783.65 tons residue hauled by trucks @ $

2783.65 tons scale charge @$

400.15 tons shipped by rail @ $

5390 tons soil trucked into jobsite @ $

Labor & equipment dismantling equipment and building restoration

THIS INVOICE DUE AND PAYABLE WITHIN TEN (10) DAYS.

1316

RECEIVED OCT

Exhibit C
9 of 11

Telephone
HArrison 7-5666

INVOICE

OCT 15 1973

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS
4140 Cypress Road, St. Ann, Missouri
"PAVE THE WAY WITH B & K"

№ 1045

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Cannon City, Colorado 81212

10/5/73

JOBSITE: Latty Ave., St. Louis County

Sept. 28th thru Oct. 4th, 1973:

1807.75 tons residue hauled to disposal area by truck @$

1807.75 tons @ $ scale charge

244.90 tons shipped by rail @ $

4491.00 tons top soil hauled onto jobsite @ $

KEY PUNCH

1316

RECEIVED OCT 1 1 1973

Exhibit C
10 of 11

HArrison 7-5566

INVOICE

B. & K. Construction Company, Inc.

GENERAL PAVING CONTRACTORS

4140 Cypress Road, St. Ann, Missouri

"PAVE THE WAY WITH B & K"

№ 1045

- DRIVEWAYS
- STREETS
- SUBDIVISIONS
- FACTORY FLOORS
- PARKING LOTS

Cotter Corporation
P.O. Box 751
Canon City, Colorado 81212

10/12/73

JOBSITE: Latty Avenue, St. Louis County

KEY PUNCH

Oct. 5th thru Oct. 11, 1973:

600.65 tons residue hauled by truck from jobsite @ $

600.65 tons @ $ - scale charge

977 Hilift 5 days working inside building - grading, removing equipment, loading debris

2 Laborers 3 days

#1316

RECEIVED OCT 15 '73

Exhibit C
11 of 11

12161 Lackland Road
St. Louis, Missouri 63141
(314) 434-6060
Cable: RETA STL

yckman/Edgerley/Tomlinson & Associates, Inc.

Offices:
McLean, Virginia (Washington, D.
Dayton, Ohio
Memphis, Tennessee
Denver, Colorado
Tampa, Florida
New Orleans, Louisiana
Arlington, Texas (Dallas-Ft. Worth
Houston, Texas
Casper, Wyoming
Chicago, Illinois
Northumberland, England
Rome, Italy

May 1, 1974
RETA-780

Mr. David P. Marcott
Executive Vice President
Cotter Corporation
Post Office Box 352
Golden, Colorado 80401

Dear Dave:

Attached are two (2) sketches of the Latty Avenue Storage Site. The first depicts the original placement of the residues and buildings. Building "D" was the only building used for the actual drying operation.

The second sketch shows level of activity (MR/hr.) on April 29, 1974, after decontamination had been completed. As you can see, all of the locations fall below the allowable 0.6 MR/hr. (approximately 2,000 counts per minute) level.

If you have any questions or comments, or require additional information, please contact me.

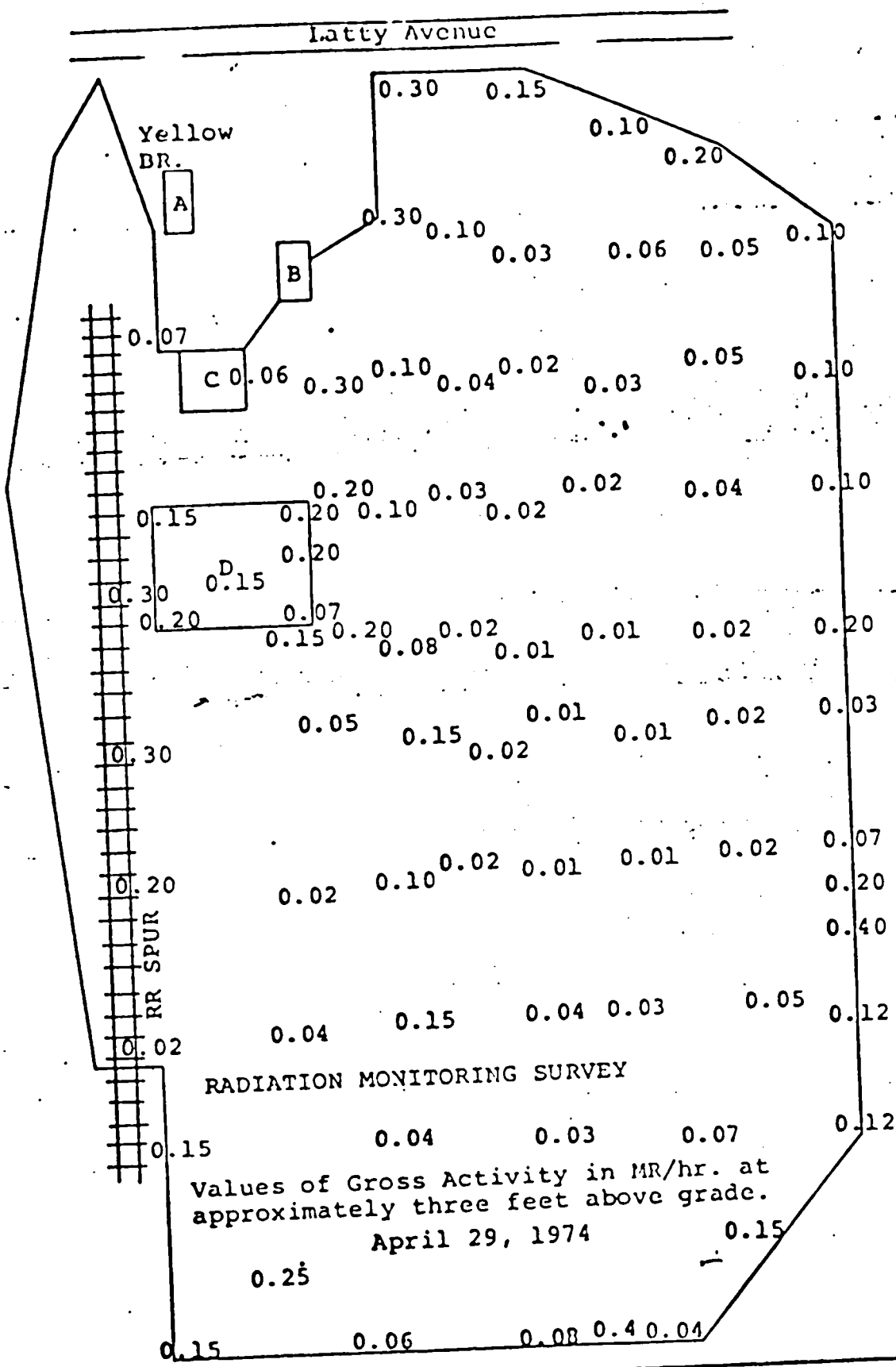
Very truly yours,

Phillip K. Feeney/pac

Phillip K. Feeney, P.E.
Associate

Enclosures

PKF:pac



RETA

Sketch not to scale.

COTTER CORPORATION
LATTY AVENUE STORAGE SITE
HAZLEWOOD, MISSOURI

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

NOV 1 1974

Cotter Corporation
ATTN: Mr. David P. Marcott
Executive Vice President
P. O. Box 356
Golden, Colorado 80401

Gentlemen:

This refers to the inspection conducted by Mr. W. D. Grant of our Region III Office on April 10 and 24, 1974, at your Hazelwood, Missouri site and on April 23, 1974, at your Canon City, Colorado Office of activities authorized by AEC Source Material License No. SUB-1024. Reference is also made to the discussions of our findings with you by Mr. Grant on April 26, 1974.

The inspection was an examination of the decommissioning operations at the Hazelwood, Missouri site and consisted of interviews with personnel of B-K Construction Company; consultants of Ryckman, Edgerly, Tomlinson and Associates; and, an examination of records at the Canon City, Colorado Office.

The inspection findings showed that during the period of July - October 1973, about 8700 tons of leached barium sulfate containing about seven tons or averaging about 0.06% natural uranium was scooped up for disposal with approximately 39,000 tons of soil, and the resulting uranium concentration was about .0001%. It is our understanding from your contractor that the material was then deposited under about 100 feet of refuse and earth at St. Louis, Missouri County sanitary landfill area No. 1.

The disposal does not appear to be within the intent of the Commission's regulation, 10 CFR Part 40, to allow alteration of the physical nature of Source material (i.e. dilution of solids with nonradioactive source material) in order to obtain a physical mixture which would no longer be subjected to licensing by the Commission.

Exhibit E
1 of 2

We have been advised that the Directorate of Licensing is in receipt of your request for license termination, which included the results of the radiation surveys performed at the Hazelwood site. You will receive separate correspondence concerning that request from the Directorate of Licensing.

Sincerely,

John G. Davis, Deputy Director
for Field Operations
Directorate of Regulatory Operations

Ref. k.

Dangerous Properties of Industrial Materials

Seventh Edition

Volume III

N. IRVING SAX

and

RICHARD J. LEWIS, SR.

VAN NOSTRAND REINHOLD
NEW YORK

EPA 0139

SYNS

2,4-DIHYDROXYPYRIMIDINE
2,4-DIOXOPYRIMIDINE
HYBAR X
PIROD
2,4-PYRIMIDINEDIOL
2,4-PYRIMIDINEDIONE
2,4-(1H,3H)-PYRIMIDINEDIONE (9CI)
PYROD

TOXICITY DATA	CODEN
pic-esc 1 g/L	ZAPOAK 12,583,72
cyt-mus-ipr 15 mg/kg	NULSAK 19,40,76
orl-rat TDLo 18 g/kg (17-22D preg 21D post) REP	OYYAA2 22,109,81
orl-rat TDLo 616 mg/kg (7-17D preg) REP	OYYAA2 22,85,81
orl-rat TDLo 378 g/kg 30W-C ETA	CNREA8 46,2062,86
ipr-mus LD50 1513 mg/kg	JPETAB 207,504,78

EPA Genetic Toxicology Program. Reported in EPA TSCA Inventory.

THR: Moderately toxic by intraperitoneal route. An experimental teratogen. Experimental reproductive effects. Mutagenic data. When heated to decomposition it emits toxic fumes of NO_x.

UNJ510 *HR: 3*

URACIL, mixture with TEGAFUR (4:1)

CAS: 74578-38-4 NIOSH: YR 0450000

mf: $C_8H_9FN_2O_3 \cdot 4C_4H_4N_2O_2$ mw: 648.59

SYNS

[illegible]
TEGAFUR-URACIL (1:4)
1-(2-TETRAHYDROFURYL)-5-FLUOROURACIL-URACIL (1:4)
UFT
[illegible]
[illegible]
[illegible]
URACIL (1:4)

TOXICITY DATA	CODEN
orl-rat TDLo 213 mg/kg (7-17D preg) TER	OYYAA2 22,85,81
orl-rat TDLo 591 mg/kg (7-17D preg) REP	OYYAA2 22,85,81
orl-rat TDLo 2563 mg/kg (7-22D preg 21D post) TER	OYYAA2 22,109,81
orl-rat LD50 1550 mg/kg	OYYAA2 20,1009,80
orl-mus LD50 1275 mg/kg	OYYAA2 20,1009,80
orl-dog LD50 150 mg/kg	OYYAA2 20,1009,80
orl-rbt LD50 242 mg/kg	OYYAA2 20,1005,80

THR: Poison by ingestion. An experimental teratogen. Experimental reproductive effects. When heated to decomposition it emits toxic fumes of F^- and NO_x. See also URACIL.

UNS000 *HR: 3*

URANIUM

CAS: 7440-61-1 NIOSH: YR 3490000

DOT: 2979

af: U aw: 238.00

PROP: A heavy, silvery-white, malleable, ductile, softer-than-steel, metallic element. Mp: 1132°, bp: 3818°, d: 18.95 (ca). Radioactive material.

SYN: URANIUM METAL, PYROPHORIC (DOT)

Reported in EPA TSCA Inventory.

OSHA PEL: TWA 0.25 mg(U)/m³
ACGIH TLV: TWA 0.2 mg(U)/m³, STEL 0.6 mg(U)/m³
DFG MAK: 0.25 mg/m³

DOT Classification: Radioactive Material; Label: Radioactive and Flammable.

THR: A highly toxic element on an acute basis. The permissible levels for soluble compounds are based on chemical toxicity, while the permissible body level for insoluble compounds is based on radiotoxicity. The high chemical toxicity of uranium and its salts is largely shown in kidney damage which may not be reversible. Acute arterial lesions may occur after acute exposures. The most soluble uranium compounds are UF_6, $UO_2(NO_3)_2$, UO_2Cl_2, UO_2F_2, and uranyl acetates, sulfates, and carbonates. Some moderately soluble compounds are UF_4, UO_2, UO_3, $(NH_4)_2U_2O_7$, UO_4, and uranyl nitrates. The rapid passage of soluble uranium compounds through the body tends to allow relatively large amounts to be taken in. Soluble uranium compounds may be absorbed through the skin. The least soluble compounds are high-fired UO_2, U_3O_8, and uranium hydrides and carbides. The high toxicity effect of insoluble compounds is largely due to lung irradiation by inhaled particles. This material is transferred from the lungs of animals quite slowly.

A very dangerous fire hazard in the form of a solid or dust when exposed to heat or flame. It can react violently with air, Cl_2, F_2, HNO_3, NO, Se, S, water, NH_3, BrF_3, trichloroethylene, nitryl fluoride. During storage it may form a pyrophoric surface due to effects of air and moisture. Depleted uranium (the ^{238}U-by-product of the uranium enrichment process, with relatively low radioactivity) is used in armor-piercing shells, ship or aircraft ballast, and counterbalances. Uranium is also used in making colored ceramic glazes.

UO4000 *HR: 3*

URANIUM AZIDE PENTACHLORIDE

CAS: 55042-15-4

mf: Cl_5N_3U mw: 457.32

THR: A radioactive material. An explosive. When heated to decomposition it emits very toxic fumes of Cl^- and NO_x. See also URANIUM and AZIDES.

UOB100 *HR: 3*

URANIUM CARBIDE

CAS: 12070-09-6

mf: UC mw: 250.04

THR: A radioactive material. The powdered carbide ignites spontaneously in air. See also URANIUM.

Ref. 8

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Official Manual

STATE OF MISSOURI

87-88

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EPA 0140

Place	County	1980	1970	Percent change
Albany town	Daviess	192	223	[illegible]
Albemarle city	Perry	280	277	1.1
Alden city	Oregon	721	715	0.8
Alexandria town	Andrew	314	326	3.7
Amity town	DeKalb	74	86	14.0
Anderson city	Ripley	238	219	8.7
Annapolis city	Iron	231	120	92.5
Anniston city	McDonald	1,217	1,045	16.2
Annsville town	Pike	70	109	35.8
Anselmo town	Iron	320	381	12.1
Antioch city	Mississippi	320	515	37.9
Appleton City city	St. Clair	1,257	1,058	18.8
Arbela town	Scotland	67	70	4.3
Arbyrd city	Dunklin	704	575	22.4
Arcadia city	Iron	681	627	8.9
Archie city	Cass	753	525	43.4
Ardenia city	Dade	146	90	70.0
Argyle town	Moniteau	216	262	17.6
Arkoe town	Nodaway	61	49	28.6
Armstrong city	Howard	360	354	1.7
Arnold city	Jefferson	19,111		
Arrow Rock town	Saline	92	81	1.2
Asbury city	Jasper	210	201	4.5
Ashburn town	Pike	99		
Ash Grove city	Greene	1,157	938	23.9
Ashland city	Boone	1,021	769	32.8
Atlanta city	Macon	443	377	17.0
Augusta city	St. Charles	108	195	52.9
Auldair town	Lafayette	92	108	14.8
Aurora city	Lawrence	6,437	5,359	20.1
Auxvasse city	Callaway	858	808	6.2
Avoca city	Dunklin	2,763	2,508	10.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bell City city	Stoddard			
Belle city	Maries - Osage	1,233	1,133	[illegible]
Bellerive Neighbors city	St. Louis	12,092	14,084	14.2
Bellerive village	St. Louis	255	417	41.6
Bellflower town	Montgomery	403	360	11.9
Bel-Nor village	St. Louis	2,047	2,247	8.9
Bel-Ridge village	St. Louis	3,682	5,214	29.4
Belton city	Cass	12,708	12,270	3.6
Benton city	Scott	674	680	5.3
Benton City town	Andrew	155	121	28.1
Bernie city	Dunklin	214	226	5.3
Berkeley city	St. Louis	15,922	19,743	19.6
Bernie city	Stoddard	1,935	1,681	20.4
Bertrand city	Mississippi	688	604	13.9
Bethany city	Harrison	3,195	2,914	6.2
Bethel town	Shelby	132	143	7.7
Beverly Hills city	St. Louis	712	846	15.8
Bevier city	Macon	733	806	9.1
Bigelow village	Holt	67	84	20.2
Big Lake village	Holt	187		
Billings city	Christian	911	760	19.9
Birch Tree city	Shannon	622	573	8.6
Birmingham village	Clay	240	266	9.8
Bismarck city	St. Francois	1,625	1,387	17.2
Blackburn city	Saline	314	294	6.8
Black Jack city	St. Louis	5,293		
Blackwater city	Cooper	290	249	16.5
Blairstown city	Henry	144	161	10.6
Blanchard city	Gentry	662	621	6.6
Blackburn town	Scott	255	220	15.9
Bloomfield city	Stoddard	1,795	1,584	13.3
Bloomsdale city	Ste. Genevieve	397	411	3.4
Blue Eye town	Stone	98	91	7.7
Blue Springs city	Jackson	25,022	6,279	282.5
Bolckow town	Harrison	219	213	2.8
Bogard town	Carroll	295	294	0.3
Bolivar town	Andrew	245	225	8.9
Bolivar city	Polk	5,919	4,769	24.1
Bonne Terre city	St. Francois	1,592	3,622	4.8
Boonville city	Cooper	6,959	7,514	7.4
Bosworth city	Carroll	394	346	2.1
Bourbon city	Crawford	1,259	955	31.8
Bowling Green city	Pike	3,022	2,946	2.9
Boyd City town	Pettiscot	280	230	4.8
Braddyville city	Howell	133	145	8.3
Brainerd city	Taney	2,550	2,175	17.2
Brashear city	Adair	332	316	5.1
Braymer city	Caldwell	1,096	919	2.3
Breckenridge city	Caldwell	521	508	12.5
Breckenridge Hills village	St. Louis	5,666	7,011	19.2
Brentwood city	St. Louis	8,709	11,298	22.0
Bridgeton city	St. Louis	18,445	19,992	7.7
Brighton Terrace city	St. Louis	338	337	0.6
Brimson town	Grundy	104	103	1.0
Brookfield city	Vernon	3,89	2,81	3.0
Brookline city	Lewis	5,555	5,491	1.2
Brookline village	Greene	211	247	14.6
Brookside Heights village	Jasper	126	128	1.6
Brookfield city	Linn, Sullivan	368	412	10.7
Brumley town	Henry	112	95	17.9
Brunswick city	Miller	109	87	25.3
Buckner city	Clarkton	1,272	1,370	7.2
Buffalo city	Linn	713	654	9.0
Bucklin city	Linn	2,868	1,695	68.0
Bunceton city	Dallas	2,277	1,915	15.8
Burlington city	Cooper	419	417	4.1
Burlington city	Clay, Raytown	673	447	50.6
Burgess town	Barton	98	69	42.0
Burlington Junction city	Nodaway	657	634	3.6
Butler city	Bates	4,107	3,984	3.1
Butler Hill village	Barry	234	128	82.8
Cabool city	Texas	2,030	1,848	13.1
Cainsville city	Harrison	406	454	9.3
Cairo village	Randolph	315	248	27.0
Calhoun village	Washington	162	113	43.4
Callaway city	Henry	422	360	18.6
California city	Moniteau	3,381	3,105	8.9
Callao city	Macon	336	373	12.6
Calverton Park village	St. Louis	1,717	2,025	15.2
Camdenton city	Ray	219	246	21.4
Camdenton City city	Pulaski	263	264	0.4
Cameron city	Caldwell	2,911	1,636	40.8
Campbell city	Clarkton, DeKalb	4,519	3,963	14.1
Campbell city	Dunklin	2,134	1,979	7.8
Canalou city	New Madrid	369	358	3.1
Canton city	Lewis	2,435	2,680	9.1
Cape Girardeau city	Cape Girardeau	34,361	31,292	9.8
Carbondale city	Dunklin	830	859	3.3
Carl Junction city	Jasper	3,917	1,661	137.0
Carrollton city	Carroll	4,703	4,847	3.0
Carterville city	Jasper	1,973	1,716	15.0
Carthage city	Jasper	11,104	11,035	0.6
Caruthersville city	Pemiscot	7,998	7,350	8.1
Carytown city	Jasper	150		
Cassville city	Barry	2,091	1,910	9.5
Catron town	New Madrid	180	122	47.5
Center City city	Callaway	427	454	0.6
Center Hill Lakes village	Jefferson	200		
Centerville city	Reynolds	669	588	1.4
Centerville town	Cole	304	277	9.7
Centerville town	Johnson	223	234	4.7
Centerville city	Reynolds	241	209	15.3
Centralia city	Audrain, Boone	3,532	3,623	2.4
Chaffee city	Scott	3,241	2,793	16.0
Chain O' Lakes village	Barry	76		
Chamois city	Osage	546	615	11.2
Champ village	St. Louis	28	19	47.4
Charlack city	St. Louis	1,532	1,872	17.9
Charleston city	Mississippi	5,280	5,131	1.9
Chillicothe town	Johnson	389	297	17.5
Chillicothe city	Livingston	9,089	9,519	4.5
Chula city	Livingston	244	244	0.0
Circle City village	Stoddard	154		
Clarence city	Shelby	1,147	1,050	9.2
Clarksville city	Pike	304	271	12.2
Clarksburg city	Moniteau	352	343	2.6
Clarksville town	DeKalb	278	248	12.1
Clarkson Valley village	St. Louis	1,635	157	814.0
Clarksville city	Pike	585	668	12.4
Clarkton city	Dunklin	1,228	1,177	4.3
Clarmore village	Clay	1,671	1,841	9.2
Clayton city	St. Louis	14,273	16,100	11.7
Cleatwood town	Nodaway	261	226	15.5
Cleveland town	Cass	485	256	89.5
Clever city	Christian	551	430	28.1
Cliff Village village	Newton	24	39	38.5
Clifton Hill city	Randolph	152	134	12.6
Clinton Springs village	Camden	87	104	16.3
Clinton city	Henry	8,366	7,504	11.5
Clock village	Nodaway	61	158	61.4
Cobalt City village	Madison	272	238	14.3
Colony town	Daviess	165	157	5.1
Cole Camp city	Benton	1,022	1,038	1.5
Collins town	St. Clair	145	150	3.3
Columbia city	Boone	62,061	58,812	5.5
Commerce town	Scott	199	234	15.0
Concordia town	Nodaway	292	237	6.3
Creve Coeur (U)	St. Louis	20,906	21,217	0.15

Place	County	1980	1970	Percent change
Olivette city	St Louis	724	[illegible]	[illegible]
Olympian Village city	Jefferson	1,266	1,226	3.3
Oran city	Scott	901	789	14.2
Oregon city	Holt	525	492	6.7
Orrington city	Jasper	922	883	4.4
Orrick city	Ray	1,992	1,091	82.6
Osage Beach city	Camden – Miller	381	338	12.7
Osborn city	Clinton – DeKalb	841	874	3.8
Osceola city	St Clair	93	108	13.9
Osgood town	Sullivan	472	440	7.3
Otterville city	Cooper	19,620	24,819	20.9
Overland city	St Louis	2,241	2,416	7.2
Owensville city	Gasconade	2,980	2,384	25.0
Ozark city	Christian	4,410	3,247	35.8
Pacific city	Franklin – St Louis	4,547	5,044	10.0
Paginton city	St Louis	3,469	3,188	8.8
Palmyra city	Marion	1,598	1,442	10.8
Paris city	Monroe	270	816	67.7
Parkdale town	Jefferson	1,947	1,253	55.4
Parkville city	Platte	254	233	9.0
Parkway village	Franklin	1,081	1,051	2.9
Parma city	New Madrid	223	232	3.9
Parnell city	Nodaway	1,223	1,337	8.7
Pasadena Hills village	St Louis	531	780	30.1
Pasadena Park village	St Louis	211	180	17.2
Pascola town	Pemiscot	53	56	5.4
Passaic town	Bates	502	540	7.0
Pattonsburg city	Daviess	85	90	5.6
Paynesville town	Pike	1,571	705	122.8
Pecatonica city	Cass	79	51	54.9
Peerless Park village	St Louis	136		
Pennsville village	Scotland	836	839	0.4
Perry city	Ralls			

Place	County	1980	1970	Percent change
Potosi city	[illegible]	[illegible]	[illegible]	[illegible]
Powersville town	Putnam	116	[illegible]	[illegible]
Prairie Home city	Cooper	279	231	20.8
Prathersville village	Clay	141	153	7.8
Preston town	Hickory	149	132	12.9
Princeton city	Mercer	1,264	1,328	4.8
Purcell city	Jasper	322	325	0.9
Purdin city	Linn	243	236	3.0
Purdy city	Barry	928	588	57.8
Puxico city	Stoddard	833	759	9.7
Queen City city	Schuyler	783	588	33.2
Quitman town	Nodaway	66	95	30.5
Quitman town	Bates	545	496	9.9
Randolph village	Clay	91	106	14.2
Ravenwood town	Nodaway	436	336	29.8
Raymondville town	Texas	398	294	36.6
Raymore city	Cass	3,154	587	437.3
Raytown city	Jackson	31,759	33,836	4.6
Rayville town	Ray	197	202	2.5
Rea town	Andrew	78	54	44.4
Redings Mill village	Newton	272	179	24.0
Reeds town	Jasper	105	122	13.9
Reeds Spring city	Stone	461	286	61.2
Renick town	Randolph	195	188	3.7
Republic city	Greene	4,485	2,411	86.0
Reserve town	Clark	191	184	3.8
Rhineland town	Montgomery	172	190	9.5
Richards town	Vernon	117	105	11.4
Rich Hill city	Bates	1,471	1,661	11.4
Richland city	Camden – Laclede – Pulaski	1,922	1,783	7.8

Place	County	1980	1970	Percent change
Richmond city	Ray	5,499	4,948	11.1
Richmond Heights city	St Louis	13,516	13,812	16.6
Ridgely town	Platte	78	53	47.2
Ridgeway city	Harrison	516	469	10.0
Rives city	New Madrid	446	412	8.3
Richey town	Newton	136	101	24.8
Rivermines village	St Francois	414	402	3.0
Riverside city	Platte	3,206	2,121	51.0
Riverview village	St Louis	3,867	3,741	10.0
Richmond city	Perry	272	307	11.4
Rockaway Beach town	Taney	292	195	49.7
Rock Hill city	St Louis	5,702	6,815	16.3
Rock Port city	Atchison	1,511	1,575	4.1
Rockville city	Bates	281	203	38.4
Rocky Ridge village	Ste Genevieve	281		
Rogersville town	Greene – Webster	741	595	24.5
Rolla city	Phelps	13,303	13,571	2.0
Rome town	St Clair	91	117	33.6
Rosebud city	Gasconade	326	305	6.9
Rosendale town	Andrew	221	245	9.0
Rothville village	Chariton	118	131	9.9
Rush Hill town	Audrain	140	151	7.3
Rushville town	Buchanan	271	300	9.7
Russellville city	Cole	667	557	19.7
Rutledge town	Scotland	128	139	7.9
Sarcoxie village	Newton	293	224	30.8
St Ann city	St Louis	15,721	18,215	14.8
St Charles city	St Charles	40,927	31,834	28.6
St Clair city	Franklin	3,485	2,978	17.0
St Cloud village	Crawford	40	34	17.6
St Elizabeth town	Miller	312	287	8.7
St George city	St Louis	1,545	2,033	24.0
St James city	Phelps	3,378	2,929	11.6
St John city	St Louis	7,954	8,960	12.3
St Joseph city	Buchanan	76,691	72,748	5.4
St Louis city		452,801	622,236	27.2
St Martins city	Cole	789		
St Mary city	Ste Genevieve	569	645	12.4
St Paul village	St Charles	602		
St Peters city	St Charles	15,700	486	1000+
St Robert city	Pulaski	1,735	1,365	18.4
St Thomas town	Cole	337	195	72.8
Ste Genevieve city	Ste Genevieve	4,481	4,468	0.3
Salem city	Dent	4,454	4,363	2.1
Salisbury city	Chariton	1,975	1,960	0.8
Sappington (U)	St Louis	11,398	10,603	7.4
Sarcoxie city	Jasper	1,381	1,175	17.5
Savannah city	Andrew	4,194	3,324	25.9
Schell City city	Vernon	327	367	10.9
Schuermann Heights village	St Louis	234	290	19.3
Scott Lake town	Jefferson	183		
Scott City city	Scott	3,292	2,464	32.4
Sedalia city	Pettis	20,927	22,847	8.4
Sedgewickville village	Bollinger	115	92	25.0

Place	County	1980	1970	Percent change
Seligman city	Barry	508	424	19.8
Senath city	Dunklin	1,728	1,484	16.4
Seneca city	Newton	1,853	1,577	17.5
Seymour city	Webster	1,535	1,208	27.1
Shelbina city	Shelby	2,169	2,060	5.3
Shelbyville city	Shelby	645	601	7.3
Sheldon city	Vernon	491	498	1.4
Sherman town	Worth	220	251	12.4
Shoal Creek Drive village	Newton	374	329	13.7
Shoal Creek Estates town	Newton	89		
Shrewsbury city	St Louis	5,077	5,896	13.9
Sidney village	Jackson	382	279	36.9
Sikeston city	New Madrid – Scott	17,431	14,699	18.6
Silex village	Lincoln	287	306	6.2
Silver Creek village	Newton	519	381	36.2
Skidmore city	Nodaway	437	440	0.7
Slater city	Saline	2,492	2,576	3.3
Smithton city	Pettis	559	402	39.1
Smithville city	Clay	1,873	1,785	4.9
South Gifford village	Macon	98	64	53.1
South Green town	Scotland	212	220	3.6
South Greenfield village	Dade	110	144	23.6
South Lamoille town	Mercer	55	52	5.8
South West City city	McDonald	560	453	13.9
Spanish Lake (U)	St Louis	20,632	15,647	31.8
Sparta city	Christian	743	380	95.5
Spickard city	Grundy	389	408	4.7
Springfield city	Greene	133,116	120,096	10.8
Spring Valley village	McDonald	67	60	11.7
Stanberry city	Gentry	1,387	1,479	6.2
Stark City town	Newton	132	122	8.2
Steele city	Pemiscot	2,419	2,107	14.8
Steelville city	Crawford	1,470	1,392	5.6
Stella town	Newton	230	197	16.8
Stewartsville city	DeKalb	832	634	31.2
Stockton city	Cedar	1,432	1,063	34.7
Stoutsburg town	Vernon	48	35	37.1
Stoutsville city	Monroe	232	203	14.3
Strafford village	Greene – Laclede	286	205	39.5
Strasburg town	Monroe	34	61	44.3
Stover city	Morgan	1,041	849	22.6
Strafford city	Greene	1,121	491	128.3
Strasburg town	Cass	170	181	6.1
Sturgeon city	Boone	901	787	14.5
Sugar Creek city	Clay – Jackson	4,835	4,755	9.5
Sullivan city	Crawford – Franklin	5,461	5,111	6.8
Summersville city	Shannon – Texas	551	435	26.7
Sumner town	Chariton	182	178	2.2
Sunset town village	Ozark	39		
Sunnyside town	Jasper – Newton	439	311	41.1
Sunset Beach village	Camden – Morgan	148	126	17.5
Sunset Hills city	St Louis	4,363	4,126	5.7
Sweet Springs city	Saline	1,444	1,216	1.3
Sycamore Hills village	St Louis	741	821	9.7
Syracuse city	Morgan	222	214	3.7

Ref. 12

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation and Historic Preservation

MEMORANDUM

DATE: June 30, 1989

TO: John Madras, WMP, Superfund Section

FROM: Mike Struckhoff, St. Louis Regional Office, Waste Management Unit

SUBJECT: WEST LAKE, LOCATION OF PRIVATE WELL AND USES

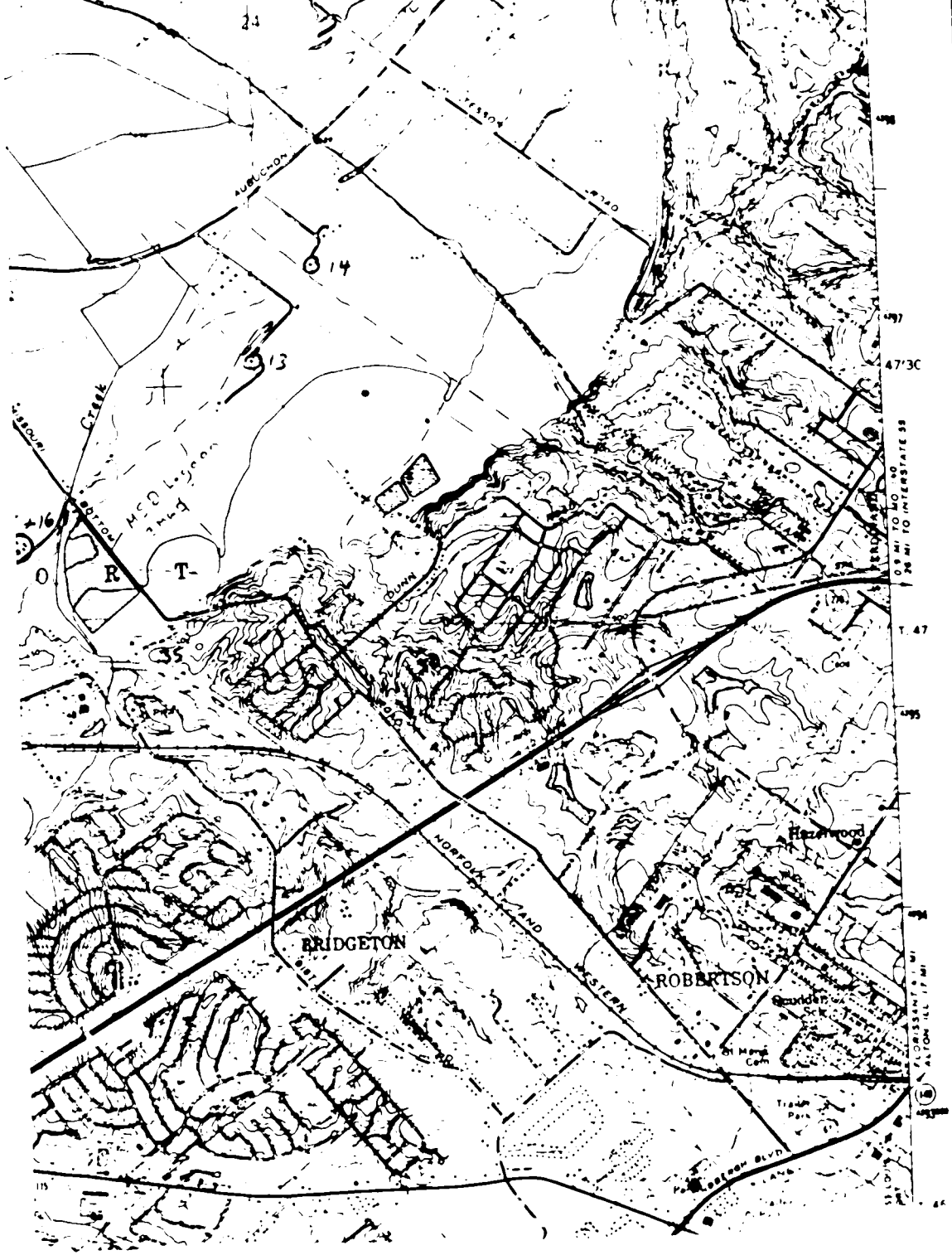
The private water well locations are marked and numbered on the attached topo map. Below is a description of the well uses.

1. Small business use.
2. Home use.
3. Home use.
4. Public use, public fishing area.
5. Home and farm use.
6. Home use.
7. Home and irrigation of sod and produce use.
8. Home use.
9. Home use.
10. Home use.
11. Public use, public shooting club.
12. Home use.
13. Home use.
14. Home use.
15. Irrigation of bedding plants.
16. Irrigation of farm produce.
17. Irrigation of farm produce.

RECEIVED
JUN 3 1989
WASTE MANAGEMENT PROGRAM

Numbers 2, 3, 5, 6 and no one was home but I think they have wells.

MS:ps


AUDUBON
ROAD
14
13
Creek
Lagoon
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BRIDGETON
NORFOLK AND WESTERN
ROBERTSON
Hazelwood
Sounder
47'30
T. 47

Addition to Ref. 12

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

File Westlake Landfill, St. Louis Co. Date July 25, 1989

TELEPHONE

Incoming ( )

Outgoing (XX)

CONFERENCE

Field ( )

Office ( )

SUBJECT Use of wells cited in memo of June 30, 1989

PERSONS INVOLVED

Name	Representing
Mike Struckhoff	MDNR-SLRO
John Madras	MDNR-WMP

SUMMARY OF CONVERSATION

I asked Mike the details of wells identified as wells 15, 16 and 17. He replied that well 15 is used by one of the Prouhet's relatives to grow bedding plants. Wells 16 and 17 are the irrigation wells that are used to irrigate the 80 acres of produce grown on the farm.

ACTION TAKEN

FINAL RESULTS

John Madras
John Madras
Environmental Specialist

Reference 13

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation, and Historic Preservation

MEMORANDUM

DATE: July 14, 1989

TO: Westlake Quarry Landfill File, St. Louis County

FROM: Mr. John Madras, Environmental Specialist
Waste Management Program

SUBJECT: Survey of Groundwater Target Populations

On July 12, 1989 I visited some of the known well locations within the three mile radius of Westlake Landfill in an attempt to define what target populations are present. I visited four of the wells identified in Mr. Mike Struckhoff's memo dated June 30, 1989 (wells numbered 4, 7, 11 and 16). The following conditions were noted.

Well #4: Mr. Brad Smith, the operator of the bait shop at this well said the water is used to make ice, to raise minnows for bait and for wash water. He said there is an outside tap for anyone wishing to fill containers, although he brings bottled water from another location for drinking.

Well #7: Mr. Joe Keeven stated that the well water is used for domestic purposes as well as for watering fifteen horses and irrigating 400 acres of row crop and orchard.

Well #11: Mr. Steve Bernstein stated that the gun club used the well water to satisfy all of the needs of the club, including drinking water. He stated that an average of about one hundred people frequent the club on a daily basis.

Well # 16: Ms. Adelle Prouhet stated that the farm hauls water for drinking and uses the well water to irrigate 80 acres for produce production.

JM:

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation
and Historic Preservation

MEMORANDUM

DATE: June 30, 1989

TO: John Madras, WMP, Superfund Section

FROM: Mike Struckhoff, St. Louis Regional Office, Waste Management Unit

SUBJECT: WEST LAKE, LOCATION OF PRIVATE WELL AND USES

The private water well locations are marked and numbered on the attached topo map. Below is a description of the well uses.

1. Small business use.
2. Home use.
3. Home use.
4. Public use, public fishing area.
5. Home and farm use.
6. Home use.
7. Home and irrigation of sod and produce use.
8. Home use.
9. Home use.
10. Home use.
11. Public use, public shooting club.
12. Home use.
13. Home use.
14. Home use.
15. Irrigation of bedding plants.
16. Irrigation of farm produce.
17. Irrigation of farm produce.

RECEIVED
JUN 3 1989
WASTE MANAGEMENT
PROGRAM

On Numbers 2, 3, 5, 6 and no one was home but I think they have wells.

MS:ps

PRELIMINARY Health Assessment for

WESTLAKE LANDFILL

BRIDGETON, ST. LOUIS COUNTY, MISSOURI

MOD079900932

OCT 26 1990

EPA 01444

WEST LAKE LANDFILL

SUMMARY

The West Lake Landfill, located in the City of Bridgeton, St. Louis County, Missouri, was proposed for the National Priorities List (NPL) in October, 1989. Soil contaminated with radioactive waste from decontamination efforts at the Cotter Corporation's Latty Avenue plant in Hazelwood, Missouri, was dumped at the landfill in 1973. The radioactive soil was used as cover over refuse and in later years the radioactive soil itself was covered with additional soil and debris.

The area around the landfill consists mostly of industrial buildings and business offices with small residential communities to the south and west. Agricultural river bottom land borders to the west, but it is fast being encroached upon by the development of Earth City. The site is considered to be an Indeterminate Public Health Hazard because the limited available data indicate human health is not currently being affected. Exposures of concern could take place if groundwater contamination spreads, exposed radioactive materials on the northwestern edges of the landfill move off-site, or on-site worker exposure increases. Additional environmental data are needed to further assess the on-site and off-site contamination and help predict future activity.

BACKGROUND

A. Site Description and History

The West Lake Landfill is a 200 acre tract located in the City of Bridgeton, St. Louis County, Missouri (Fig. 1). The tract fronts on St. Charles Rock Road on the northeast side and Old St. Charles Rock Road on the southwest. It is northwest of Interstate 270 and about 4 miles west of the St. Louis Lambert Field International Airport. The tract was owned in its entirety by West Lake Properties from 1939 to 1988. In 1988 most of it was sold to Laidlaw Industries; however, West Lake Properties retained the two radioactively contaminated areas through a subsidiary named Rock Road Industries. Laidlaw Industries operates the landfill under a Missouri Department of Natural Resources (MDNR) permit.

From 1939 to 1987 limestone was quarried at the site. In 1962 landfill operations commenced using old quarry pits to receive municipal refuse, industrial waste, and construction debris. Also located on the property is an active industrial complex producing concrete ingredients and aggregates.

The landfill is located on the historical edge of the Missouri River alluvial valley, with about 75 percent of the site being located in the floodplain. Soils at the demarcation line vary from Missouri River alluvium to upland loessal soil. The present channel of the Missouri River lies just under 2 miles west of the landfill. The floodplain area and new businesses being constructed there are protected by a flood control levee.

The groundwater level in the Missouri River floodplain is generally within 10 feet of the surface. The reported flow is to the northwest from the site toward the Missouri River.

In 1973 approximately 43,000 tons of soil contaminated with uranium and its radioactive decay products were placed in the landfill. The radioactive material consists primarily of uranium (U-238), thorium (Th-230), and radium (Ra-226). The soil came from decontamination efforts at the Cotter Corporation's Latty Avenue plant in Hazelwood where the material had been stored.

In 1980-81, The Radiation Management Corporation (RMC), under contract to the NRC, conducted a detailed radiological survey of the West Lake Landfill. Material was found to have been dumped in two areas (Fig. 2). Area 1 is located near the landfill main office and covers approximately 3 acres. It contains about 20,000 cubic yards of contaminated soil buried about 3 to 5 feet deep. It is located over a former quarry pit which was previously filled with debris. Area 2 covers about 13 acres and lies above 16 to 20 feet of debris. The contaminated soil forms a layer from 2 to 15 feet thick

consisting of approximately 130,000 cubic yards. Some of this contaminated soil is at or near the surface, particularly along the face of the northwestern berm.

In 1983-1984, the University of Missouri-Columbia (UMC) Department of Civil Engineering, under contract to the Nuclear Regulatory Commission, further characterized the site and evaluated potential remedial measures. In 1986, Oak Ridge Associated Universities (ORAU) sampled well water on and close to the landfill to determine if radioactive material had migrated into the groundwater.

Based on the reports of these studies the site was proposed for inclusion on the National Priorities List (NPL) in 1989.

B. Site Visit

On March 21, 1990, representatives of the Missouri Department of Health, the Agency for Toxic Substances and Disease Registry (ATSDR), Environmental Protection Agency (EPA), and MDNR visited the West Lake Landfill site. The president of West Lake Properties led a tour of the area. He showed the group the two areas with radioactive contamination and reviewed the history and current operations at the site.

It was noted during the site visit that the entire facility is now fenced, a security project completed in 1989. Before the fencing, employees present during working hours and security guards after working hours helped prevent unauthorized access. The only persons having regular access to the area are the site's work force.

During the time of the visit, the weather was clear and it had not rained for a few days. Area 1 had a few small puddles of standing water and good vegetative ground cover with no obvious erosion problems. Area 2 had no vegetative ground cover, but had a variety of soil and crushed limestone cover. Drainage was good with the ground being dry except in the northernmost end where some water had pooled. Some recent dumping of apparent construction debris was being used to fill in the low area where the water was standing.

Physical hazards at the site consisted of discarded construction equipment and miscellaneous construction debris. After the NPL site visit a driving tour was conducted of the surrounding off-site area to determine possible routes of exposure, demographics of the area, land use, and the possible population at risk.

C. Demographics, Land Use, and Natural Resource Use

The West Lake Landfill is located in the northwestern portion of the City of Bridgeton, in St. Louis County, Missouri. Earth City Industrial Park is located on the floodplain approximately 1 mile northwest of the landfill. Population density on the floodplain is generally less than 26 persons per square mile; and the daytime population (including factory workers) is much greater than the number of full-time residents.

Major highways in the area include Interstate 70 (I-70) and Interstate 270 (I-270), which meet south of the landfill at Natural Bridge Junction. The Earth City Expressway and St. Charles Rock Road lie, respectively, west and east of the landfill. The Norfolk and Western Railroad passes about 1/2 mile from the northern portion of the landfill. Lambert Field International Airport is located approximately 4 miles east of the West Lake Landfill.

In addition to business/industries at Earth City, plants are operated by Ralston-Purina and Hussman Refrigeration across St. Charles Rock Road. The employees of these two plants probably comprise the largest group of individuals in close proximity to the contaminated areas for significant periods of time. Considering that land in this area is relatively inexpensive and that much of it is zoned for manufacturing, industrial development on the floodplain will likely increase in the future.

Two small residential communities are present near the West Lake Landfill. Spanish Lake Village consists of about 90 homes and is located about 1 mile south of the landfill, and a small trailer court lies across St. Charles Rock Road, 1 mile southeast of the site. Subdivisions are presently being developed 2 miles east and southeast of the landfill in the hills above the floodplain. Ten or more houses lie east of the landfill scattered along Taussig Road. The City of St. Charles is located northwest of the Missouri River at a distance of about 2 miles from the landfill.

Areas south of the West Lake Landfill are zoned residential; areas on the other sides are zoned for manufacturing and business. Most of the landfill is zoned for light manufacturing (M-1). However, some of the northern portion of the landfill is zoned for residential use; this includes the contaminated area around the former Butler-type building site. The field northwest of the landfill between Old St. Charles Rock Road and St. Charles Rock Road is under cultivation. Trends indicate that the population of this area will increase, but the land will probably be used primarily for industrial facilities.

No public water supplies are drawn from the alluvial aquifer near the West Lake Landfill. It is believed that only one private well in the vicinity of the landfill is used as a drinking water supply. In 1981, analysis showed water in this well to be fairly hard (natural origins), but otherwise of good quality.

Water supplies are drawn from the Missouri River at mile 29 for the City of St. Charles, and the intake is located on the north bank of the river. Another intake at mile 20.5 is for the St. Louis Water Company's North County plant.

The City of St. Louis takes water from the Mississippi River, which joins the Missouri River downstream from the landfill. In this segment of the river, the two streams have not completely mixed and the water derived from the Missouri River is still flowing as a stream along the west bank of the Mississippi River channel. Reportedly, the intake structures for St. Louis are on the east bank of the river so that the water drawn is derived from the upper Mississippi.

D. State and Local Health Data

The Missouri Department of Health, State Center for Health Statistics, analyzes and consults on health related information collected from several sources. The Center's Bureau of Health Data Analysis has available statistics information, hospital discharge data, and the Multi-Source Birth Defect Registry. The Multi-Source Birth Defect Registry consists of birth outcome data from the following data sources: birth, death, hospital discharge, Crippled Children's Services, and Neonatal Intensive Care Unit records.

For health assessments, cancer mortality rates by age, sex, and cancer site are calculated to determine whether there is a significant difference between the area of concern and the rest of the state. Birth data include fetal deaths, low birth weight births, and frequency of malformations in the area of concern.

For most of the state, the smallest geographic area that can be studied is defined by a zip code. In the St. Louis metropolitan area, census tract information is available that allows further refinement of the potentially exposed population. However, that may still represent a larger area than is actually affected by a site such as West Lake Landfill and the additional people in the study group may well dilute and obscure any adverse health outcomes, if present.

COMMUNITY HEALTH CONCERNS

Community concern around the area seems to be minimal. However, greater public involvement should be encouraged to better ascertain the exact extent and nature of the concern. Some newspaper articles have been published about the site and its possible hazards. The group of concerned citizens involved in the St.Louis Airport/Hazelwood Interim Storage/Futura Coating Company sites could conceivably become involved out of interest in the origination site or for other reasons.

ENVIRONMENTAL CONTAMINATION AND OTHER HAZARDS

A. On-Site Contamination

In 1980-81, a radiological survey of the West Lake Landfill was conducted by the Radiation Management Corporation (RMC) of Chicago, Illinois. External (gamma) radiation levels in microrems per hour (-R/Hr) were measured 1 meter above the ground surface. This survey showed the radioactive contaminants to be located in two areas of the landfill (Fig. 2). Both areas 1 and 2 had places that exceeded 100 -R/Hr with a maximum level as high as 3,000 to 4,000 -R/Hr detected in Area 2 (Fig. 2). The total areas exceeding 20 -R/Hr were about 2 acres in Area 1 and 9 acres in Area 2.

Levels were again measured in May and July of 1981 and found to be significantly lower than the November 1980 sampling, especially in Area 1 where approximately 4 feet of sanitary fill had been added. An equal amount of construction fill was added to most of Area 2. As a result only a few thousand square feet of Area 1 exceeded 20 -R/Hr and the amount of Area 2 exceeding 20 -R/hr had decreased by about 10 percent with a maximum reading of about 1600 -R/hr. 20 -R/hr criterion was derived from the NRC's Branch Technical Position, 46 FR 52061, October 23, 1981, which aims at exposure rates less than 10 -R/hr above background levels. Background radiation in the area is about 10 -R/hr.

<u>Surface Soil Analysis</u>

Surface soil samples were gathered and analyzed on site for gamma activity. In all 61 surface soil samples only uranium and/or thorium decay chain nuclides and K-40 (potassium 40) were detected. On-site samples ranged from about 1-21,000 picocurie per gram (pCi/gram) for Radium 226 (Ra-226) and from less than 10 to 2,100 pCi/gram Uranium 238 (U-238). Off-site background samples were on the order of 2 pCi/gram for Ra-226. In samples in which elevated levels of Ra-226 were detected, the concentrations of U-238 were generally one-half to one-tenth of those of Ra-226. In cases of elevated sample activity, daughter products of both U-238 and U-235 were

found. In general, surface activity was limited to Area 2, with only two small regions in Area 1 showing surface contamination.

Subsurface Soil

Subsurface soil was measured by the drilling of 43 holes, with holes being drilled in known contaminated areas and then additional holes being drilled at intervals in all directions. Concentrations of Ra-226 ranged from less than 1 pCi/gram to 22,000 pCi/gram.

Groundwater

In 1981, 41 water samples were taken and analyzed by RMC, but only 10 were shallow groundwater standing in bore holes. Of these 10 samples only one equaled the EPA gross alpha activity standard for drinking water of 15 picocurie per liter (pCi/L). Four of the groundwater samples exceeded 30 pCi/L gross beta activity, with most of the beta activity coming from naturally occurring K-40 as determined from subsequent isotopic analysis. Background activity is estimated as 1.5 pCi gross alpha activity per liter and 30 pCi gross beta activity per liter.

In 1983 and again in 1984 eleven perimeter wells were sampled for gross alpha and gross beta. In two years of sampling, only 1 well each year exceeded the 15 pCi/L drinking water standard (18.2 pCi/L in 1983 and 20.5 pCi/L in 1984). Only one well in 1983 exceeded 30 pCi/L gross beta activity level at 33.1 pCi/L gross beta.

In 1986 Oak Ridge Associated Universities (ORAU) personnel took water samples from 44 perimeter wells. Only one well with 17 pCi/L of alpha activity exceeded the drinking water standard, and only two wells with 46 and 47 pCi/L gross beta activity exceeded the 30 pCi gross beta activity that was assumed to be the background activity from earlier data.

Vegetative

No elevated radioactivity was found by RMC in vegetation consisting of on-site weed samples and farm crop samples (winter wheat) located near the northwest boundary of the landfill. This crop location was chosen for sampling because water could run off from the fill onto the farm field.

Air

Both gaseous and particulate airborne radioactivity, specifically radon and its daughters, were sampled and analyzed between May and August of 1981. These were sampled because of the known materials that consisted partially or totally of

uranium ore residues. A total of 111 samples from 32 locations were sampled and radon flux levels ranged from 0.2 pico curie (pCi) per square meter-second in low background areas to 865 pCi per square meter-second in areas of surface contamination. A set of 10-minute, high-volume particulate air samples was taken to determine both short-lived radon daughter concentration and long-lived gross alpha activity.

The highest levels (0.031 WL) were detected in November 1980, near and inside the Butler-type building, that has since been removed. These two samples approximately equal NRC's 10 CFR Part 20, Appendix B, alternate concentration limit of one-thirtieth WL for unrestricted areas.

The high ratio of Th-230 to Ra-226 radioactivity indicates that decay of Th-230 will increase the concentration of its product, Ra-226, until the two radionuclides are in equilibrium. It is estimated that the Ra-226 activity will increase by a factor of nine 200 years from now, and by a factor of thirty-five 1000 years from now. All radionuclides in the decay chain after Ra-226 (and the Ra-222 gas flux) will be increased by similar multiples.

Other Contaminants

The site has been a landfill since 1962. Prior to regulation by the DNR, it is believed that the landfill may have accepted such materials as organics and inorganics, heavy metals, solvents, pesticides, paints and pigments, acids, bases, sewage sludge, as well as small quantities of unknown hazardous waste. This is based on notification as required by CERCLA 103(c) in 1981 and may not be an accurate representation of what was actually dumped in the landfill.

The sampling data available for the site have not demonstrated significant contamination of chemicals in the groundwater. Burns and McDonnell, in a 1986 report on the hydrogeology of the site, reported to have found only methylene chloride, bis (2-ethylhexyl) phthalate, and phenol in identifiable quantities in 2 rounds of sampling (December 1985 and May 1986). They also reported that the general distribution of the organic constituents was scattered and irregular. In round 2 of the sampling, the presence of methylene chloride was attributed to the analytical method. In general, the detection of organics and heavy metals was scattered and irregular, leaving inconclusive evidence as to the contamination of the landfill by these materials.

B. Off-Site Contamination

Off-Site contamination from the West Lake NPL site has not been confirmed. The Missouri Department of Health has sampled a number of private wells in the area most likely to be

contaminated. Four private wells were sampled in 1988 and 1989 and no gross alpha activity above the EPA drinking water standard of 15 pCi/l was found.

The haul road from the Latty Avenue site in Hazelwood could possibly have some low level residual contamination, but no data is available at this time and the possibility of obtaining additional data is being investigated.

C. Quality Assurance and Quality Control

In preparing this Preliminary Health Assessment, MDOH relied on the information provided in the referenced documents and assumed adequate quality assurance and quality control measures were followed with regard to chain-of-custody, laboratory procedures, and data reporting. The validity of the analysis and therefore the conclusions drawn for this Preliminary Health Assessment are predicated on this reliance.

D. Physical and Other Hazards

Physical hazards at the site consist of discarded construction equipment and miscellaneous waste construction debris around Area 2. The area is fenced and only workers at the site would be expected to be exposed to possible hazards.

PATHWAYS ANALYSES

As discussed in the Site Description and History Subsection, the dumping of approximately 43,000 tons of soil contaminated with uranium and its radioactive decay products has polluted the West Lake Landfill.

A. Environmental Pathways (Fate and Transport)

Radioactive contaminated soil was used to cover debris and municipal waste at the West Lake Landfill. The contaminated soil has since been covered over with clean soil and remains exposed only in an area on the northwestern berm. Erosion of this soil by surface water run-off would spread radioactive contamination to the farm field west of the site and/or to the Creve Coeur Creek. The creek has no known recreational purposes and is not expected to be used for a water source. Approximately two miles downstream, the creek enters the Missouri River.

Water supplies for the City of St. Charles are drawn from the opposite (north) bank of the river. The next known water intake is the St. Louis Water Company North County Plant, which is approximately 8.5 miles further downstream.

Wind erosion of dust from the berm is not expected to be a pathway of concern except in very dry conditions or during disturbance. The landfill is located on the historical edge of the Missouri River alluvial valley with about 75 percent of the site being located in the floodplain. There are two aquifiers at the site consisting of the Missouri River alluvium and the shallow limestone bedrock. Below the shallow limestone is the relatively impermeable Warsaw shale that acts as a barrier making contamination of the deeper limestone aquifer very unlikely. The shale layer has been reached by quarrying operations but has not been disturbed.

Groundwater flow in the river floodplain varies slightly with conditions and tends to flow northwest toward the river or north under high river conditions, closely paralleling the river. The groundwater level is generally with 10 feet of the floodplain surface. No public water supplies are drawn from the alluvial aquifier near the West Lake Landfill. Any leachate would be expected to become diluted upon reaching the alluvial groundwater.

The air pathway includes ionizing radiation and Rn 222. The ionizing radiation can penetrate air and nominal thickness materials. Radon (Rn 222) is an inert, radioactive gas and migrates easily through air.

Farming of the river bottom was done in the past east of the landfill, but is rapidly declining as the land is being developed for new businesses/industries in the Earth City complex. Fishing in the Missouri River would be the only recreation activity that would be expected to occur in close proximity to the site.

B. Human Exposure Pathways

With the landfill being fenced, direct exposure to the contaminated soil on the northwest berm to the public is not considered a viable route of exposure. If the soil was eroded from the site by either wind or water, exposure to radioactive materials could take place.

Groundwater in the area is not used for municipal purposes, but a few private wells in the area are used for domestic purposes and irrigation. Four of the most adjacent wells to the landfill have been monitored by the MDOH for the last couple of years and have shown no contamination above EPA's gross-alpha activity standard for drinking water. The wells were also analyzed for a number of pesticides and they were below detectable limits.

Surface water from the Missouri River used as a municipal supply for the City of St. Charles is not expected to be affected by the landfill. The city draws its water from the

west bank where mixing has not occurred yet. The City of St. Louis Water Company North County Plant takes its water from the Missouri River at mile 20.5 where significant dilution of any possible contaminants from the landfill has already occurred. Radon (Rn 222) exposure to the public is not expected to be a problem since the area is fenced and there is no public access.

The maximum measured level of 0.031 WL is very close to the NRC alternate concentration limit of one thirtieth (0.033) WL for unrestricted areas, but only on-site workers are expected to be exposed, and then only for a short period of time. The possibility does exist that, in the future, increased levels of radon will be present as the material seeks equilibrium.

Vegetative weeds and crops are not expected to be a pathway of exposure. No elevated radioactivity was detected in on-site weeds or farm crops near the site.

Fish caught from the Missouri River are not expected to be affected by the West Lake Landfill because there has not been a known route of exposure.

PUBLIC HEALTH IMPLICATIONS

As discussed in the Environmental Contamination and Other Hazards and Pathways Analyses Sections, no exposure is known to be occurring to residents around the site. The few private wells in the vicinity have not shown any contamination from the West Lake Landfill; however, on-site monitoring well sampling has revealed migration of uranium into the groundwater.

The majority of the area is served by a public water system with no source wells in the area. Direct exposure of the public to ionizing radiation is not expected because of restricted access to the site. Exposure to on-site workers is expected to be of small concern because the time spent in contaminated areas is brief and can be monitored and controlled to minimize cumulative exposure.

A. Toxicological Implications

Contaminants present at the landfill are Uranium-238 (U-238), Thorium-230 (Th-230), Radium-226 (Ra-226), and Radon-222 (Rn-222) with half-lives of approximately 4.5×10^9 years, 80,000 years, 1600 years, and 3.8 days, respectively. These radionuclides, members of the uranium decay chain, emit alpha particles and gamma rays. At this site, the uranium, thorium and radium are nearly completely covered with clean fill so as to not present a significant direct dust inhalation or ingestion potential. Therefore, the exposures of most interest would be inhalation of radon and its daughters and ingestion of radioactively contaminated groundwater.

Radon gas, produced by the decay of radium, diffuses up through the soil cover and mixes with the air above it where it may be breathed. Rain falling on the soil cover percolates down into and through the contaminated layers, picks up radioactive particles, and delivers them to the groundwater where they may eventually reach drinking water wells. Additionally, rain may erode contaminated soil from the northwest berm area and deposit it in the adjacent field where crop uptake is possible.

Rn-222 has been shown to be carcinogenic, producing lung cancers when inhaled, based principally on studies of uranium miners. Although radon gas itself is inert, some will be absorbed into the blood from the lungs and transported throughout the body, the rest will be exhaled. However, the radon decay products (daughters) are charged particles. When inhaled, either directly or attached to other airborne particulate matter, they deposit on lung surfaces and lodge in the mucosa. As the radon daughters decay, they emit alpha particles, the major health hazard associated with radon gas exposure. The alpha particles are potent ionizers, but do not travel far in tissue due to their relatively large size. (7,8)

The principal health effect of this ionizing radiation in humans is cancer induction and the most important target tissue is the bronchial epithelium. Inhaled radon daughters, due to their short half-life, emit their alpha particles in the lung before they move on to other organs. Radon exposed smokers are at greatly increased risk of respiratory tract cancer due to the multiplicative interaction of the dual exposure. (8)

By convention, radon exposure is measured in terms of working levels (WL) and cumulative exposures over time are measured in working level months (WLM). One WL is defined as any combination of the short-lived radon daughters in 1 liter of air that results in the ultimate release of 1.3×10^5 MeV (million electron volts) of alpha particle energy. This is approximately the amount of alpha energy emitted by the short-half-life daughters in equilibrium with 100 pCi of radon. (8)

Given that the highest level detected on site was 0.031 WL and that that level is very close to the Nuclear Regulatory Commission (NRC) alternate concentration limit of one-thirtieth (0.033) WL for unrestricted areas (2), it does not appear that unacceptably high exposure is occurring at present.

Additionally, the population at risk, on-site workers, would not experience continuous exposure at the highest level. Rather, their actual cumulative exposure would be to the weighted average of their work location levels. This average would be well below the NRC concentration limit. There is insufficient information available on the actual exposure of workers to further characterize the risk.

Since the radioactive material at the site is not a natural undisturbed deposit, the radionuclides are not in equilibrium with each other. It is to be expected that the concentration of radon gas will increase significantly in the future. Therefore, much higher exposure potentials are possible.

Soluble forms of U-238, when ingested, are chemically toxic to the kidney, producing tissue damage in the proximal tubules and consequent functional impairment. The tissue will regenerate and function return if exposure ceases. This chemical toxicity is of much greater significance than the potential for ionizing radiation effects since the soluble forms are excreted from the body rather quickly. Conversely, insoluble forms may be retained in the body for a long time and the radiation effects become paramount. Target organs are principally the bone marrow and lymphatics and exposure may result in radiation-induced cancer. (3,4)

Thorium is relatively inactive chemically and, therefore, is of concern only as a chronic radiation hazard. Little of an ingested dose of thorium is retained in the body; but, once deposited, it remains for a long time. The bones, lungs, and lymphatics are the primary depositories.

Radium is highly radiotoxic. It is handled metabolically the same as calcium and, therefore, is deposited in the skeleton where it serves as a source of alpha radiation of bone and adjacent tissues. Studies of radium dial painters have clearly demonstrated excess bone cancer in heavily exposed groups. However, low exposures have shown relatively much less risk of bone cancer than would be predicted from a simple straight line extrapolation from the high exposure data. (3)

B. Health Outcome Data Evaluation

The MDOH State Center for Health Statistics studied cancer deaths and natality data for the years 1981-1988 for the census tracts most likely to be affected by the West Lake NPL site. (Fig. 3) Using statewide cancer death rates, the expected number of deaths was calculated for the West Lake area. This number was then compared to the actual (observed) number of deaths and a test of statistical significance performed. "Statistical significance" means that any noted difference between the two numbers is probably not due just to chance.

Cancer deaths were looked at by type of cancer for various age groups, for all types combined for age groups, and for total cancer deaths for all age groups combined. Cancer of the kidney in the 45-64 age group was the only comparison that achieved statistical significance. There were 3 observed deaths in this group when less than 1 would have been expected. Small numbers like this, however, may not allow meaningful analysis and it is unknown if these persons actually experienced any exposure.

Fetal deaths and low birth weight (less than 2500 grams) were studied for years 1981-1988. The observed number of fetal deaths was not significant compared to the expected value. The number of observed low birth weights for the site area was significantly lower than expected.

A study of 1981-1986 births did not reveal an observed number of anomalies significantly different from expected, based on the state rate. This study was based upon aggregated birth and death certificates, hospital discharge, Crippled Children's Service, and neonatal intensive care unit data.

These studies neither confirm not deny a health threat to the population potentially at risk from the West Lake Landfill. The census tracts located between the Missouri River and Highway 270 in north St. Louis County which is the smallest definable area for these studies, include a much larger geographical area and larger population than would actually be affected by this site, therefore, any adverse health effects might be obscured.

CONCLUSIONS

From the information reviewed, the West Lake Landfill is judged to be an Indeterminate Public Health Hazard. Emissions of Rn-222 into the air with levels expected to increase in the future, contaminants with an easy route for leaching into the groundwater, exposed radioactive contamination on the berm, and the possibility of off-site haul road contamination, all provide a possible route of exposure to the public in the vicinity of the West Lake Landfill.

RECOMMENDATIONS

Recommendations for the West Lake Landfill include remedial actions to protect public health and the acquisition of additional site characterization information. Recommended remedial actions to prevent public exposure include preventing Rn-222 levels in the air from increasing, and preventing contaminants from entering the groundwater system. Action should be taken to cover the exposed contaminated materials to minimize the possibility of erosion. Additional site characterization should continue with the sampling of the roads used to transport contaminated materials into the West Lake Landfill and continued monitoring of the groundwater.

When indicated by public health needs, and as resources permit, the evaluation of additional relevant health outcome data and community health concerns, if available, is recommended.

This preliminary health assessment is currently being evaluated by ATSDR to determine if follow-up health activities are indicated for the population around the West Lake Landfill site. ATSDR's recommendation will be included in this preliminary health assessment before it is finalized.

PREPARERS OF THE REPORT

Arthur Busch
Environmental Specialist
Missouri Department of Health

ATSDR REGIONAL REPRESENTATIVE

Dan Harper, R.S.
Senior Regional Representative
Region VII

ATSDR TECHNICAL PROJECT OFFICER

William Greim
Environmental Health Scientist
Division of Health Assessment and Consultation
Remedial Programs Branch, State Program Section

REFERENCES

1. Burns & McDonnell. Hydrogeologic Investigation, West Lake Landfill Primary Phase Report. Kansas City, MO. October 1986. Project No. 84-075-4-004.

2. 10 CFR Part 20, App. B Concentrations in Air and Water Above Natural Background

3. Casarett and Doull's Toxicology: The Basic Science of Poisons, 3rd Ed, edited by Curtis D. Klaassen, Mary O. Amdur, and John Doull, Macmillan, NY, NY, 1986

4. Maths Berlin and Bertil Rudell, "Uranium" in Handbook on the Toxicology of Metals, edited by L. Friberg et al. Elsevier/North-Holland Biomedical Press, 1979

5. Missouri Department of Health. Cancer Registry and Natality Data Analysis. Westlake Landfill, Bridgeton, Missouri. 1990.

6. Missouri Department of Health. Private Well Sampling Data, Westlake Landfill, Bridgeton, Missouri. 1989.

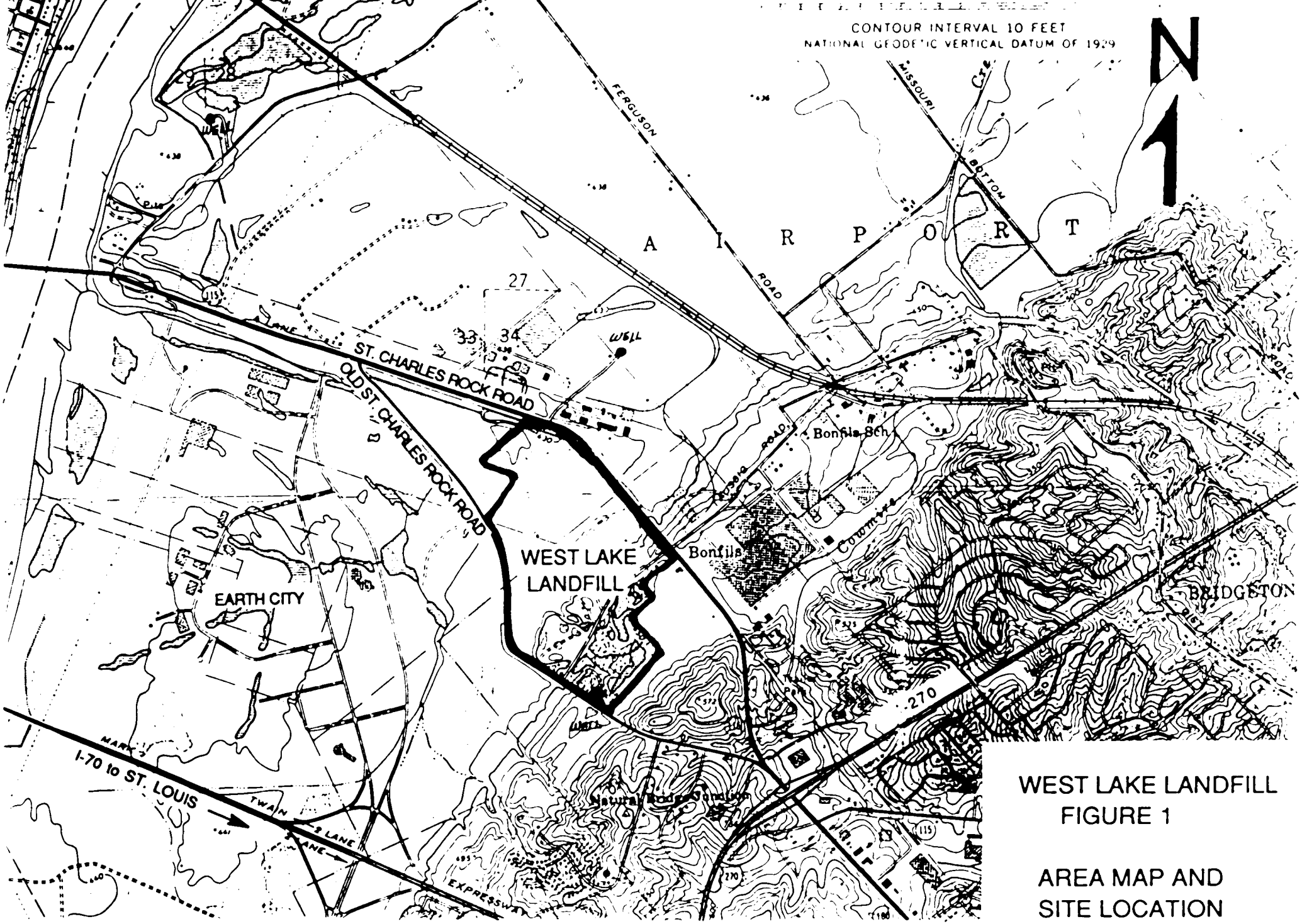
7. Daughter Exposure" in The Risk Assessment of Environmental and Human Health Hazards; A Textbook of Case Studies, Dennis J. Paustenbach, ed., John Wiley & Sons, NY, NY, 1989

8. National Research Council, Committee on the Biological Effects of Ionizing Radiation (BEIR). 1988. Health Risks of RADON and Other Internally Deposited Alpha-Emitters. Washington, DC: National Academy Press.

9. U.S. Nuclear Regulatory Commission Office of Nuclear Material Safety and Safeguards. Site Characterization and Remedial Action Concepts for the Westlake Landfill. Docket No. 40-8801. July 1989.

10. U.S. Nuclear Regulatory Commission. Office of Nuclear Material Safety and Safeguards. Radioactive Material in the Westlake Landfill. NUREG-1308 Rev. 1. June 1988

11. U.S. Nuclear Regulatory Commission. Office of Nuclear Material Safety and Safeguards. Radiological Survey of the Westlake Landfill. St. Louis County, Missouri. NUREG/CR-2722. May 1982.



WEST LAKE LANDFILL
FIGURE 1

AREA MAP AND
SITE LOCATION

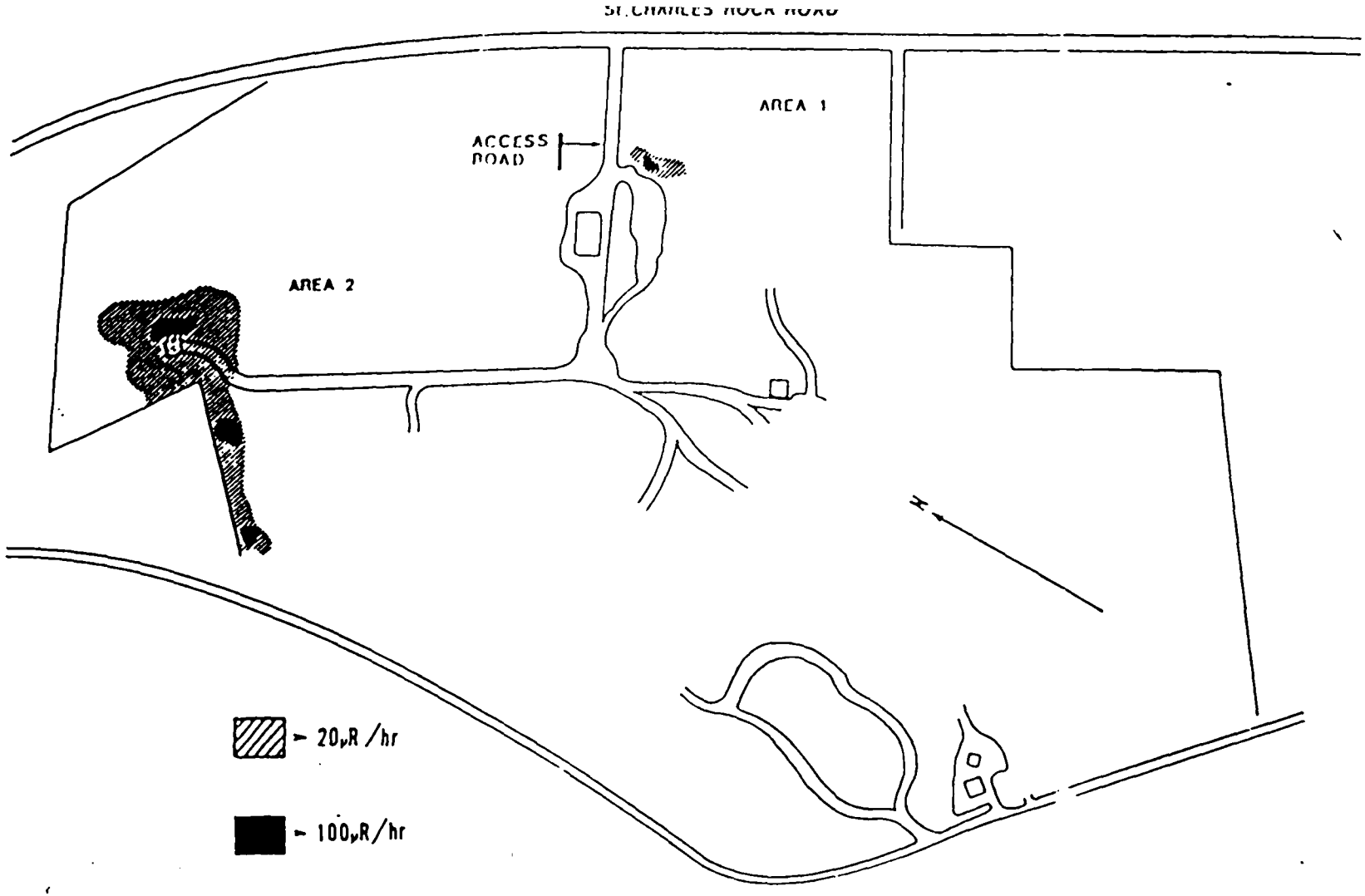


Figure 2 External gamma radiation levels, May, 1981

SOURCE: NRC, Radiological Survey of the Westlake Landfill, St. Louis Co., MO 1982

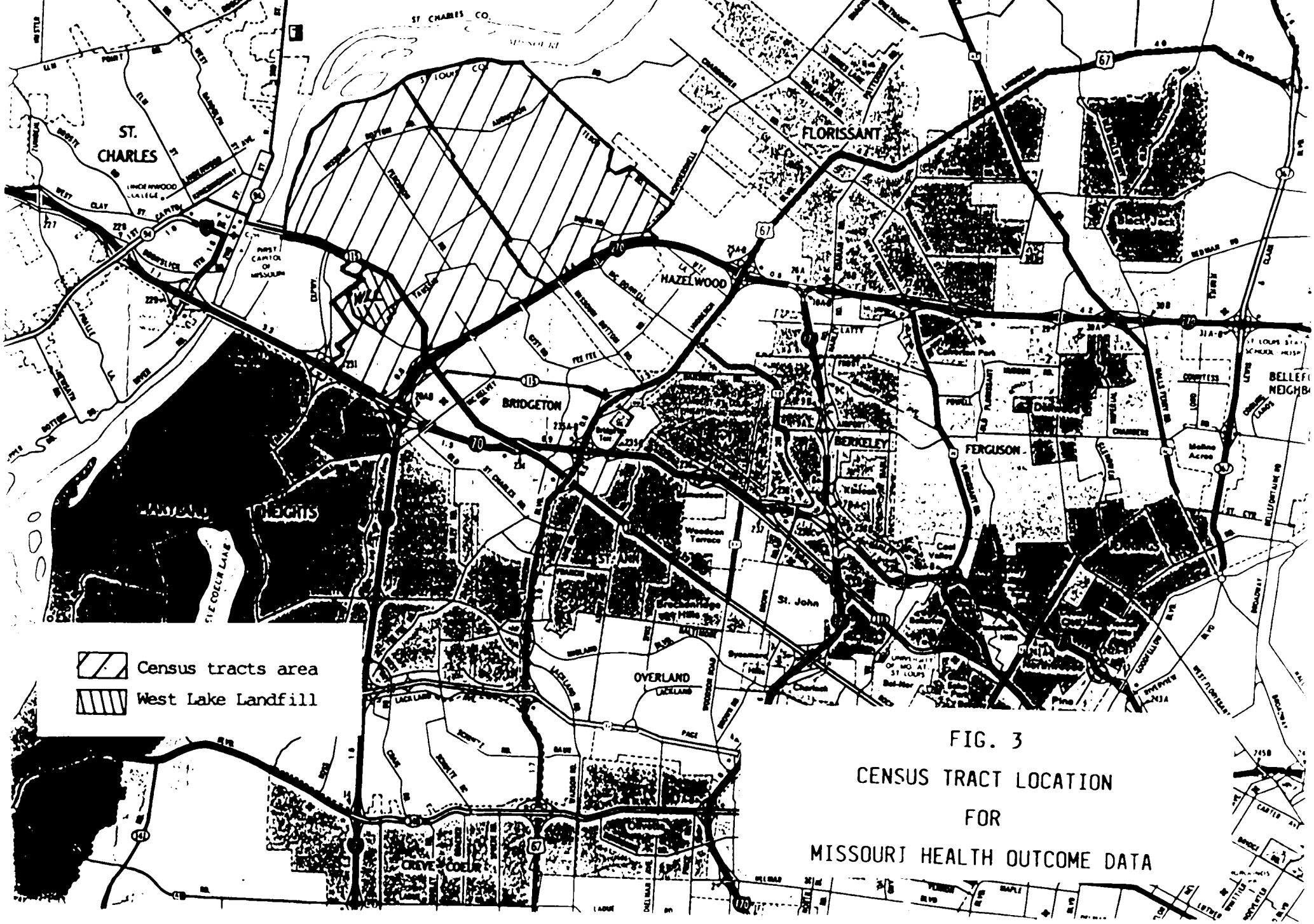


FIG. 3
CENSUS TRACT LOCATION
FOR
MISSOURI HEALTH OUTCOME DATA

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

November 17, 1989

Mr. G. Tracy Mehan, III, Director
Missouri Department of Natural Resources
P. O. Box 176
Jefferson City, Missouri 65102

Dear Mr. Mehan:

I am responding to your letter of October 17, 1989, concerning the West Lake Landfill in Bridgeton, St. Louis County, Missouri. Following the briefing I received during my visit to Missouri in January 1988, several steps have been taken which may lead to remediation of the radioactive material at the West Lake site.

In June 1988, the Nuclear Regulatory Commission (NRC) staff published its evaluation of the situation at the site in a report entitled "Radioactive Material in the West Lake Landfill, Summary Report," NUREG-1308, Rev. 1. This "Summary Report" concluded, in brief, that although it is unlikely that anyone has received significant radiation exposure from the existing situation, remediation is necessary to establish adequate permanent control of the radioactive material and to avoid potential future impacts. In July 1989, the NRC staff published a report entitled "Site Characterization and Remedial Action Concepts for the West Lake Landfill." This document supports the "Summary Report" and provides an environmental characterization of the site. (Copies of the above reports are enclosed.)

On September 13, 1989, Mr. Robert M. Bernero, Director of our Office of Nuclear Material Safety and Safeguards, met with Mr. George Rifakes, President of Cotter Corporation. Mr. Bernero informed him of the circumstances of the radioactive material in the West Lake Landfill and that the NRC staff considers Cotter Corporation responsible for taking whatever remedial measures are necessary for protection of the public health and safety from hazards posed by the radioactive material. A follow-up meeting was held on October 16, 1989, between members of the NRC and Mr. Rifakes. Subsequently, Mr. Bernero expressed the NRC position in an October 25, 1989 letter to Cotter Corporation. In this letter, a copy of which is enclosed, Mr. Bernero requested the Corporation's plans for characterizing the location and concentration of the radionuclides contaminating the site and for evaluating the site for remediation.

RECEIVED

SUPERFUND BRANCH EPA 0145

The NRC staff is seeking a plan for remediation that is consistent with Federal, State, and local requirements and will coordinate with your Department, the EPA, and other authorities toward this end.

If I can be of any further assistance to you in this matter, please contact me.

Sincerely,

Kenneth M. Carr

Kenneth M. Carr

Enclosures:
1. "Summary Report" dated June 1988
2. Report dated July 1989
3. Letter to Cotter Corporation dated October 25, 1989

cc: Jonathan Z. Cannon
Acting Assistant Administrator for
Solid Waste and Emergency Response
U. S. Environmental Protection Agency

Morris Kay, Regional Administrator
Region VII
U. S. Environmental Protection Agency

Ref. 14

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

File Westlake Quarry Landfill Date June 6, 1989

TELEPHONE CONFERENCE

Incoming ( ) Field ( )

Outgoing (XX) Office ( )

SUBJECT Extent of St. Louis County Water Co. Service

PERSONS INVOLVED

Name	Representing
Mr. Dave Pruitt	St. Louis County Water Co.
John Madras	MDNR

SUMMARY OF CONVERSATION

Mr. Pruitt and I discussed the extent of the public water supply availability in the vicinity of Westlake landfill. He stated that the water company served the Earth City area (which is south of Route 115) and had one main that parallel Route 115, but provided no service north of that highway on the Missouri River floodplain. The water company does provide service to residences in the upland east of the floodplain (in the vicinity of Interstate 270). He indicated that maps of water mains could be reviewed in his office.

ACTION TAKEN

FINAL RESULTS

John Madras
John Madras
Environmental Specialist

EPA 0143

Presidential Documents

Executive Order 12580 of January 23, 1987

Superfund Implementation

By the authority vested in me as President of the United States of America by Section 115 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. 9615 *et seq.*) ("the Act"), and by Section 301 of Title 3 of the United States Code, it is hereby ordered as follows:

Section 1. *National Contingency Plan.* (a)(1) The National Contingency Plan ("the NCP"), shall provide for a National Response Team ("the NRT") composed of representatives of appropriate Federal departments and agencies for national planning and coordination of preparedness and response actions, and regional response teams as the regional counterpart to the NRT for planning and coordination of regional preparedness and response actions.

(2) The following agencies (in addition to other appropriate agencies) shall provide representatives to the National and Regional Response Teams to carry out their responsibilities under the NCP: Department of State, Department of Defense, Department of Justice, Department of the Interior, Department of Agriculture, Department of Commerce, Department of Labor, Department of Health and Human Services, Department of Transportation, Department of Energy, Environmental Protection Agency, Federal Emergency Management Agency, United States Coast Guard, and the Nuclear Regulatory Commission.

(3) Except for periods of activation because of a response action, the representative of the Environmental Protection Agency ("EPA") shall be the chairman and the representative of the United States Coast Guard shall be the vice chairman of the NRT and these agencies' representatives shall be co-chairs of the Regional Response Teams ("the RRTs"). When the NRT or an RRT is activated for a response action, the chairman shall be the EPA or United States Coast Guard representative, based on whether the release or threatened release occurs in the inland or coastal zone, unless otherwise agreed upon by the EPA and United States Coast Guard representatives.

(4) The RRTs may include representatives from State governments, local governments (as agreed upon by the States), and Indian tribal governments. Subject to the functions and authorities delegated to Executive departments and agencies in other sections of this Order, the NRT shall provide policy and program direction to the RRTs.

(b)(1) The responsibility for the revision of the NCP and all of the other functions vested in the President by Sections 105(a), (b), (c), and (g), 125, and 301(f) of the Act is delegated to the Administrator of the Environmental Protection Agency ("the Administrator").

(2) The function vested in the President by Section 118(p) of the Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) ("SARA") is delegated to the Administrator.

(c) In accord with Section 107(f)(2)(A) of the Act and Section 311(f)(5) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1321(f)(5)), the following shall be among those designated in the NCP as Federal trustees for natural resources:

(1) Secretary of Defense;

EPA 0146

(2) Secretary of the Interior;

(3) Secretary of Agriculture,

(4) Secretary of Commerce;

(5) Secretary of Energy.

(d) Revisions to the NCP shall be made in consultation with members of the NRT prior to publication for notice and comment. Revisions shall also be made in consultation with the Director of the Federal Emergency Management Agency and the Nuclear Regulatory Commission in order to avoid inconsistent or duplicative requirements in the emergency planning responsibilities of those agencies.

(e) All revisions to the NCP, whether in proposed or final form, shall be subject to review and approval by the Director of the Office of Management and Budget ("OMB").

Sec. 2. *Response and Related Authorities.* (a) The functions vested in the President by the first sentence of Section 104(b)(1) of the Act relating to "illness, disease, or complaints thereof" are delegated to the Secretary of Health and Human Services who shall, in accord with Section 104(i) of the Act, perform those functions through the Public Health Service.

(b) The functions vested in the President by Sections 104(e)(7)(C), 113(k)(2), 119(c)(7), and 121(f)(1) of the Act, relating to promulgation of regulations and guidelines, are delegated to the Administrator, to be exercised in consultation with the NRT.

(c)(1) The functions vested in the President by Sections 104(a) and the second sentence of 126(b) of the Act, to the extent they require permanent relocation of residents, businesses, and community facilities or temporary evacuation and housing of threatened individuals not otherwise provided for, are delegated to the Director of the Federal Emergency Management Agency.

(2) Subject to subsection (b) of this Section, the functions vested in the President by Sections 117(a) and (c), and 119 of the Act, to the extent such authority is needed to carry out the functions delegated under paragraph (1) of this subsection, are delegated to the Director of the Federal Emergency Management Agency.

(d) Subject to subsections (a), (b) and (c) of this Section, the functions vested in the President by Sections 104(a), (b) and (c)(4), 113(k), 117(a) and (c), 119, and 121 of the Act are delegated to the Secretaries of Defense and Energy, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of their departments, respectively, including vessels bare-boat chartered and operated. These functions must be exercised consistent with the requirements of Section 120 of the Act.

(e)(1) Subject to subsections (a), (b), (c), and (d) of this Section, the functions vested in the President by Sections 104(a), (b), and (c)(4), and 121 of the Act are delegated to the heads of Executive departments and agencies, with respect to remedial actions for releases or threatened releases which are not on the National Priorities List ("the NPL") and removal actions other than emergencies, where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of those departments and agencies, including vessels bare-boat chartered and operated. The Administrator shall define the term "emergency", solely for the purposes of this subsection, either by regulation or by a memorandum of understanding with the head of an Executive department or agency.

(2) Subject to subsections (b), (c), and (d) of this Section, the functions vested in the President by Sections 104(b)(2), 113(k), 117(a) and (c), and 119 of the Act are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction,

custody or control of those departments and agencies, including vessels bareboat chartered and operated.

(f) Subject to subsections (a), (b), (c), (d), and (e) of this Section, the functions vested in the President by Sections 104(a), (b) and (c)(4), 113(k), 117(a) and (c), 119, and 121 of the Act are delegated to the Secretary of the Department in which the Coast Guard is operating ("the Coast Guard"), with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(g) Subject to subsections (a), (b), (c), (d), (e), and (f) of this Section, the functions vested in the President by Sections 101(24), 104(a), (b), (c)(4) and (c)(9), 113(k), 117(a) and (c), 119, 121, and 126(b) of the Act are delegated to the Administrator. The Administrator's authority under Section 119 of the Act is retroactive to the date of enactment of SARA.

(h) The functions vested in the President by Section 104(c)(3) of the Act are delegated to the Administrator, with respect to providing assurances for Indian tribes, to be exercised in consultation with the Secretary of the Interior.

(i) Subject to subsections (d), (e), (f), (g) and (h) of this Section, the functions vested in the President by Section 104(c) and (d) of the Act are delegated to the Coast Guard, the Secretary of Health and Human Services, the Director of the Federal Emergency Management Agency, and the Administrator in order to carry out the functions delegated to them by this Section.

(j)(1) The functions vested in the President by Section 104(e)(5)(A) are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody or control of those departments and agencies, to be exercised with the concurrence of the Attorney General.

(2) Subject to subsection (b) of this Section and paragraph (1) of this subsection, the functions vested in the President by Section 104(e) are delegated to the heads of Executive departments and agencies in order to carry out their functions under this Order or the Act.

(k) The functions vested in the President by Section 104(f), (g), (h), (i)(11), and (j) of the Act are delegated to the heads of Executive departments and agencies in order to carry out the functions delegated to them by this Section. The exercise of authority under Section 104(h) of the Act shall be subject to the approval of the Administrator of the Office of Federal Procurement Policy.

Sec. 3. *Cleanup Schedules.* (a) The functions vested in the President by Sections 116(a) and the first two sentences of 105(d) of the Act are delegated to the heads of Executive departments and agencies with respect to facilities under the jurisdiction, custody or control of those departments and agencies.

(b) Subject to subsection (a) of this Section, the functions vested in the President by Sections 116 and 105(d) are delegated to the Administrator.

Sec. 4. *Enforcement.* (a) The functions vested in the President by Sections 109(d) and 122(e)(3)(A) of the Act, relating to development of regulations and guidelines, are delegated to the Administrator, to be exercised in consultation with the Attorney General.

(b)(1) Subject to subsection (a) of this Section, the functions vested in the President by Section 122 (except subsection (b)(1)) are delegated to the heads of Executive departments and agencies, with respect to releases or threatened releases not on the NPL where either the release is on or the sole source of the release is from any facility under the jurisdiction, custody or control of those Executive departments and agencies. These functions may be exercised only with the concurrence of the Attorney General.

(2) Subject to subsection (a) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Section 122 of the Act, are delegated to the heads of Executive departments and agencies, with

respect to releases or threatened releases not on the NPL where either the release is on or the sole source of the release is from any facility under the jurisdiction, custody or control of those Executive departments and agencies. These functions may be exercised only with the concurrence of the Attorney General.

(c)(1) Subject to subsection (a) and (b)(1) of this Section, the functions vested in the President by Sections 106(a) and 122 of the Act are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(2) Subject to subsection (a) and (b)(2) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Sections 103 (a) and (b), and 122 of the Act, are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(d)(1) Subject to subsections (a), (b)(1), and (c)(1) of this Section, the functions vested in the President by Sections 106 and 122 of the Act are delegated to the Administrator.

(2) Subject to subsections (a), (b)(2), and (c)(2) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Sections 103 and 122 of the Act, are delegated to the Administrator.

(e) Notwithstanding any other provision of this Order, the authority under Sections 104(e)(5)(A) and 106(a) of the Act to seek information, entry, inspection, samples, or response actions from Executive departments and agencies may be exercised only with the concurrence of the Attorney General.

Sec. 5. *Liability.* (a) The function vested in the President by Section 107(c)(1)(C) of the Act is delegated to the Secretary of Transportation.

(b) The functions vested in the President by Section 107(c)(3) of the Act are delegated to the Coast Guard with respect to any release or threatened release involving the coastal zone, Great Lakes waters, ports, and harbors.

(c) Subject to subsection (b) of this Section, the functions vested in the President by Section 107(c)(3) of the Act are delegated to the Administrator.

(d) The functions vested in the President by Section 107(f)(1) of the Act are delegated to each of the Federal trustees for natural resources designated in the NCP for resources under their trusteeship.

(e) The functions vested in the President by Section 107(f)(2)(B) of the Act, to receive notification of the state natural resource trustee designations, are delegated to the Administrator.

Sec. 6. *Litigation.* (a) Notwithstanding any other provision of this Order, any representation pursuant to or under this Order in any judicial proceedings shall be by or through the Attorney General. The conduct and control of all litigation arising under the Act shall be the responsibility of the Attorney General.

(b) Notwithstanding any other provision of this Order, the authority under the Act to require the Attorney General to commence litigation is retained by the President.

(c) The functions vested in the President by Section 113(g) of the Act, to receive notification of a natural resource trustee's intent to file suit, are delegated to the heads of Executive departments and agencies with respect to response actions for which they have been delegated authority under Section 2 of this Order. The Administrator shall promulgate procedural regulations for providing such notification.

(d) The functions vested in the President by Sections 310 (d) and (e) of the Act, relating to promulgation of regulations, are delegated to the Administrator.

Sec. 7. *Financial Responsibility.* (a) The functions vested in the President by Section 107(k)(4)(B) of the Act are delegated to the Secretary of the Treasury.

The Administrator will provide the Secretary with such technical information and assistance as the Administrator may have available.

(b)(1) The functions vested in the President by Section 108(a)(1) of the Act are delegated to the Coast Guard.

(2) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(a)(1) of the Act, are delegated to the Coast Guard.

(c)(1) The functions vested in the President by Section 108(b) of the Act are delegated to the Secretary of Transportation with respect to all transportation related facilities, including any pipeline, motor vehicle, rolling stock, or aircraft.

(2) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(a)(3) of the Act, are delegated to the Secretary of Transportation.

(3) Subject to Section 4(a) of this Order, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108(b) of the Act, are delegated to the Secretary of Transportation with respect to all transportation related facilities, including any pipeline, motor vehicle, rolling stock, or aircraft.

(d)(1) Subject to subsection (c)(1) of this Section, the functions vested in the President by Section 108 (a)(4) and (b) of the Act are delegated to the Administrator.

(2) Subject to Section 4(a) of this Order and subsection (c)(3) of this Section, the functions vested in the President by Section 109 of the Act, relating to violations of Section 108 (a)(4) and (b) of the Act, are delegated to the Administrator.

Sec. 8. *Employee Protection and Notice to Injured.* (a) The functions vested in the President by Section 110(e) of the Act are delegated to the Adminstrator.

(b) The functions vested in the President by Section 111(g) of the Act are delegated to the Secretaries of Defense and Energy with respect to releases from facilities or vessels under the jurisdiction, custody or control of their departments, respectively, including vessels bare-boat chartered and operated.

(c) Subject to subsection (b) of this Section, the functions vested in the President by Section 111(g) of the Act are delegated to the Administrator.

Sec. 9. *Management of the Hazardous Substance Superfund and Claims.* (a) The functions vested in the President by Section 111(a) of the Act are delegated to the Administrator, subject to the provisions of this Section and other applicable provisions of this Order.

(b) The Administrator shall transfer to other agencies, from the Hazardous Substance Superfund out of sums appropriated, such amounts as the Administrator may determine necessary to carry out the purposes of the Act. These amounts shall be consistent with the President's Budget, within the total approved by the Congress, unless a revised amount is approved by OMB. Funds appropriated specifically for the Agency for Toxic Substances and Disease Registry ("ATSDR"), shall be directly transferred to ATSDR, consistent with fiscally responsible investment of trust fund money.

(c) The Administrator shall chair a budget task force composed of representatives of Executive departments and agencies having responsibilities under this Order or the Act. The Administrator shall also, as part of the budget request for the Environmental Protection Agency, submit to OMB a budget for the Hazardous Substance Superfund which is based on recommended levels developed by the budget task force. The Administrator may prescribe reporting and other forms, procedures, and guidelines to be used by the agencies of the Task Force in preparing the budget request, consistent with budgetary reporting requirements issued by OMB. The Administrator shall prescribe

forms to agency task force members for reporting the expenditure of funds on a site specific basis.

(d) The Administrator and each department and agency head to whom funds are provided pursuant to this Section, with respect to funds provided to them, are authorized in accordance with Section 111(f) of the Act to designate Federal officials who may obligate such funds.

(e) The functions vested in the President by Section 112 of the Act are delegated to the Administrator for all claims presented pursuant to Section 111 of the Act.

(f) The functions vested in the President by Section 111(o) of the Act are delegated to the Administrator.

(g) The functions vested in the President by Section 117(e) of the Act are delegated to the Administrator, to be exercised in consultation with the Attorney General.

(h) The functions vested in the President by Section 123 of the Act are delegated to the Administrator.

(i) Funds from the Hazardous Substance Superfund may be used, at the discretion of the Administrator or the Coast Guard, to pay for removal actions for releases or threatened releases from facilities or vessels under the jurisdiction, custody or control of Executive departments and agencies but must be reimbursed to the Hazardous Substance Superfund by such Executive department or agency.

Sec. 10. *Federal Facilities.* (a) When necessary, prior to selection of a remedial action by the Administrator under Section 120(e)(4)(A) of the Act, Executive agencies shall have the opportunity to present their views to the Administrator after using the procedures under Section 1-6 of Executive Order No. 12088 of October 13, 1978, or any other mutually acceptable process. Notwithstanding subsection 1-602 of Executive Order No. 12088, the Director of the Office of Management and Budget shall facilitate resolution of any issues.

(b) Executive Order No. 12088 of October 13, 1978, is amended by renumbering the current Section 1-802 as Section 1-803 and inserting the following new Section 1-802:

"1-802. Nothing in this Order shall create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person."

Sec. 11. *General Provisions.* (a) The function vested in the President by Section 101(37) of the Act is delegated to the Administrator.

(b)(1) The function vested in the President by Section 105(f) of the Act, relating to reporting on minority participation in contracts, is delegated to the Administrator.

(2) Subject to paragraph 1 of this subsection, the functions vested in the President by Section 105(f) of the Act are delegated to the heads of Executive departments and agencies in order to carry out the functions delegated to them by this Order. Each Executive department and agency shall provide to the Administrator any requested information on minority contracting for inclusion in the Section 105(f) annual report.

(c) The functions vested in the President by Section 126(c) of the Act are delegated to the Administrator, to be exercised in consultation with the Secretary of the Interior.

(d) The functions vested in the President by Section 301(c) of the Act are delegated to the Secretary of the Interior.

(e) Each agency shall have authority to issue such regulations as may be necessary to carry out the functions delegated to them by this Order.

(f) The performance of any function under this Order shall be done in consultation with interested Federal departments and agencies represented on the NRT, as well as with any other interested Federal agency.

(g) The following functions vested in the President by the Act which have been delegated or assigned by this Order may be redelegated to the head of any Executive department or agency with his consent: functions set forth in Sections 2 (except subsection (b)), 3, 4(b), 4(c), 4(d), 5(b), 5(c), and 8(c) of this Order.

(h) Executive Order No. 12316 of August 14, 1981, is revoked.

Ronald Reagan

THE WHITE HOUSE,
January 23, 1987.

[FR Doc. 87-1842
Filed 1-27-87, 2:35 pm]
Billing code 3195-01-M

[illegible]

[illegible]	EPA [illegible]	(913) 551-7595 FTS [illegible] - 7545
[illegible]	EPA/SPFD	FTS [illegible] (913) 551-7887
LON SRENIAWSKI	USNRC /RIII	FTS 388-5611
Charles Norelius	USNRC/RIII	FTS 388-5510
JAMES [illegible] WARNER II	USDOE-HQ	FTS 233-4937
David Adler	US DOE-Oak Ridge	FTS 626-9634
Greg [illegible]	EPA/SPFD	FTS 276-7709 (913) 551-7709
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DAVID O'Brien	MDNR/DEQ	314-751-4533

EPA 0149

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

Mr. Robert Morby
Chief, Superfund Remedial Branch
Waste Management Division
U.S. Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Mr. Morby:

Enclosed is a Draft Preliminary Health Assessment for the Westlake Landfill site (CERCLIS NO. MOD079900932), prepared by the Missouri Department of Health (MDH) under a cooperative agreement with ATSDR. This draft represents an evaluation of all the data which the State or ATSDR has on this site at this time. Please review this document to determine if it accurately characterizes the site and whether there is more recent or complete data available.

Your written comments will be included in the administrative record for this site. Comments from your reviewer should be approved or at least acknowledged by EPA management. Please provide these comments to the senior ATSDR regional representative in your office within 30 days of receipt of this draft. Should you have problems meeting this schedule, please advise the regional representative. Your comments will be forwarded to ATSDR, Division of Health Assessment and Consultation and the State where the health assessment will be completed.

We look forward to responding to your concerns and to making this health assessment a helpful and useful document.

Sincerely yours,

Daniel M. Harper
Senior Regional Representative
Regional Services, Region VII
Office of the Assistant Administrator

Enclosure

cc:
Daryl W. Roberts, MDH
Jose Irizzary, RIMB/DHAC
File

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date

From Senior Regional Representative, ATSDR Region VII

Subject Draft Preliminary Health Assessment, Westlake Landfill site in Bridgeton, St. Louis County, Missouri

To Juan J. Reyes
Chief, State Programs Section, RPB, DHAC, ATSDR (E32)

( ) 1. Attached are my comments on the Draft Preliminary Health Assessment for the above site. There are significant technical errors/omissions in the document that must be addressed before transmittal to EPA. These deficiencies were discussed with the ATSDR project officer, _____ on _____.

( ) 2. Attached are EPA and my comments on the Draft/Final Preliminary Health Assessment for the above site. The EPA reviewer, _____ _____ was given a copy of the draft on _____.

Louise Fabinski

Attachments

cc:
Daryl W. Roberts, MDH
Jose Irizzary, RIMB/DHAC
File

EPA 058

LEE MOORE & ASSOC., INC.
5436-B South Mingo
Tulsa, Ok. 74145
P.O. Box 35605/Tulsa 74153
(918) 665-1724

fax: 918-665-1726

TO: Diana Newman

FAX #: (913) 551-7063

COMPANY: United States Environmental Protection Agency

Dept/Flor Loc:

FROM: Lee Moore

Total Number of Pages Transmitted Two (2)
(Includes This Page)

Re: Westlake Landfill Superfund

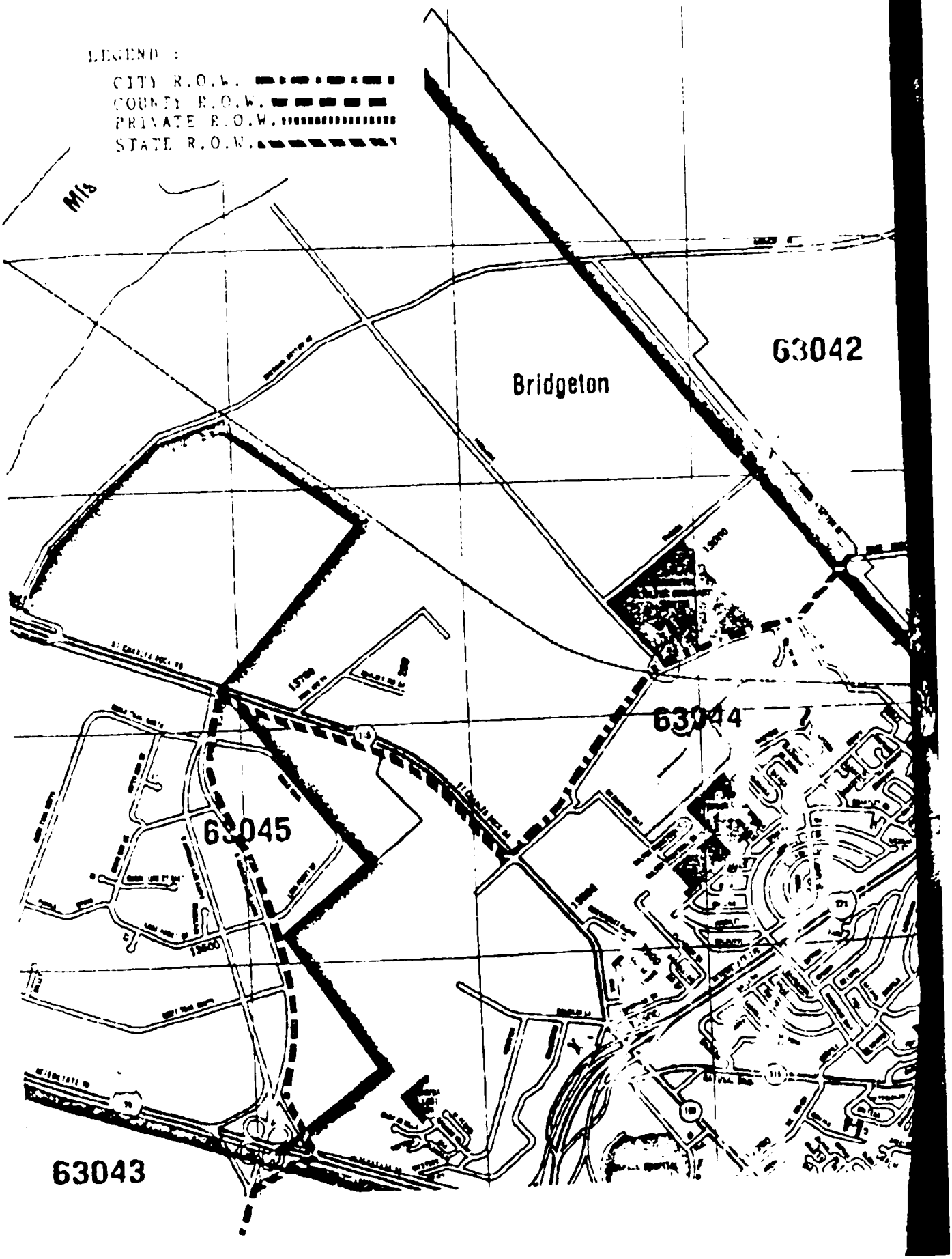
Diana:

I hope you can tell something by this map. We would like to be on the South side of St. Charles Rock Road and on the easterly side of Earth City Expressway.

I will be looking forward to hearing from you.

Lee Moore

IF YOU DID NOT RECEIVE ALL PAGES SENT TO YOU, PLEASE CONTACT PERSON SENDING FAX AT THE ABOVE NUMBER.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ST. LOUIS POST-DISPATCH

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Nuclear Commission Wants Cleanup Here

By Tom Uhlenbrock
Of the Post-Dispatch Staff

The Nuclear Regulatory Commission has included Westlake landfill in St. Louis County on a list of radioactive sites nationwide where contamination is serious and cleanup efforts have been lagging.

The commission issued a list of 46 such locations Wednesday and called for a cleanup of the sites, hopefully within three years.

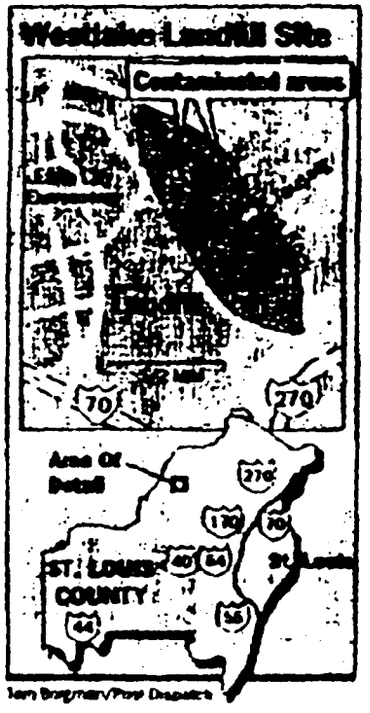
Local environmentalists said the commission's action could force the Energy Department to include Westlake in its plan to clean up other radioactively contaminated sites in the St. Louis area.

Kay Drey, a University City environmentalist, has argued all along that Westlake should be included in the department's plans.

"It's an illegal site," she said. "It never has been licensed, therefore, they've sort of ignored it. This is certainly a step in the right direction for them to come out and say this is a site to be cleaned up."

Drey pointed out that the 200 acre landfill at 13570 St.

See CLEANUP, Page 7



Tom Bringman/Post-Dispatch

Cleanup

From page one

Charles Rock Road is a former limestone quarry in the flood plain of the Missouri River. She said it also was upstream of the public water intake for Florissant.

However, she was skeptical of the commission's goal of a three-year timetable for the cleanup. The Energy Department has estimated it will take five years just to come up with a plan for cleaning up the other St. Louis sites.

"It's pretty incredible to say it will happen in three years," Drey said.

The Energy Department, under orders from Congress, is managing the cleanup of other radioactively contaminated sites in the St. Louis area. The sites were contaminated by wastes produced by the old Mallinckrodt Chemical Works, which had a government contract to process uranium.

The cleanup sites here include the Mallinckrodt Inc. complex north of downtown St. Louis, the abandoned Weldon Spring chemical plant in St. Charles County, a site near Lambert Field where radioactive wastes were stored and a second storage site on Latty Avenue in Hazelwood.

The government in the 1960s had sold some of the contaminated material at the airport site to a private company, which secretly dumped about 41,000 tons of radioactive residue at two areas of the Westlake landfill in Bridgeton.

David Adler, an Energy Department official managing the cleanup of the St. Louis sites, said Westlake was not included because the government had sold the waste to a private party.

The Westlake landfill is on the federal Superfund list, and Adler said the government could be designated a "potentially responsible party" in determining who must pay for its cleanup.

"As the Superfund Environmental Prote the authority to desig use to the problem responsible party," he

"You can trace it eramical by contracts the government's sta upon selling the ma party, that organizat agement responsibil

The company tha the radioactive resi Mining & Milling Co went bankrupt and s Cotter Corp. Cotter s to Colorado, where tract minerals from trucking firms hired also took a portion o

The Nuclear Reg sion's concern over t was announced by director of the com Nuclear Materi Safeguards

EPA 1068

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n the waste. But the
ed to haul the waste
to Westlake.
Regulatory Commis-
the cleanup delays
by Robert Bernero,
mission's Office of
rial Safety and

UMKC

The Nuclear Almanac, 1984
Compiled by the faculty MIT.
Addison Wesley Publishing Co.

3. Government and the Atom

U.S. involvement in the development of atomic weapons began with the Einstein letter of October 1939. After a slow start came the crash effort of the Manhattan Project. John Lamperti traces the growth of the organizations, both governmental and private, which over the years came to operate the network of facilities that design and manufacture nuclear warheads. The story includes the role of the Atomic Energy Commission and its successors through the present Department of Energy.

A major part of its workload, the Department of Energy, like its predecessors, rests heavily on its contractors, both business firms and not for profit labs of universities. The reorganization of the civilian nuclear power industry is also sketched, with comments on future trends.

This conjunction of an immense military establishment and a large arms industry is new in the American experience . . .

In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military industrial complex.

President Dwight D. Eisenhower
January 17, 1961

THE DISCOVERY OF nuclear fission led directly to a new weapon of unprecedented horror and, in time, to an extensive civilian industry as well. It also led to new institutions of government in the United States and to new types of interaction between government, private industry, science, and the universities. Today it is difficult to recall that major government involvement in scientific research and development has not always been part of our public life; above all, the technology of the atomic nucleus brought this about. This chapter will outline the changing arrangements with which the U.S. government has managed the development of nuclear weapons and energy.

The Beginnings

The U.S. government first really took note of nuclear physics on October 11, 1939. On this day the "Einstein letter," explaining the military possibilities of nuclear fission, was presented to President Franklin D. Roosevelt. Roosevelt appointed an Advisory Committee on Uranium to deal with the issue, and this committee made the first appropriation of money by transferring $6,000 from the army and navy budgets to purchase experimental materials.

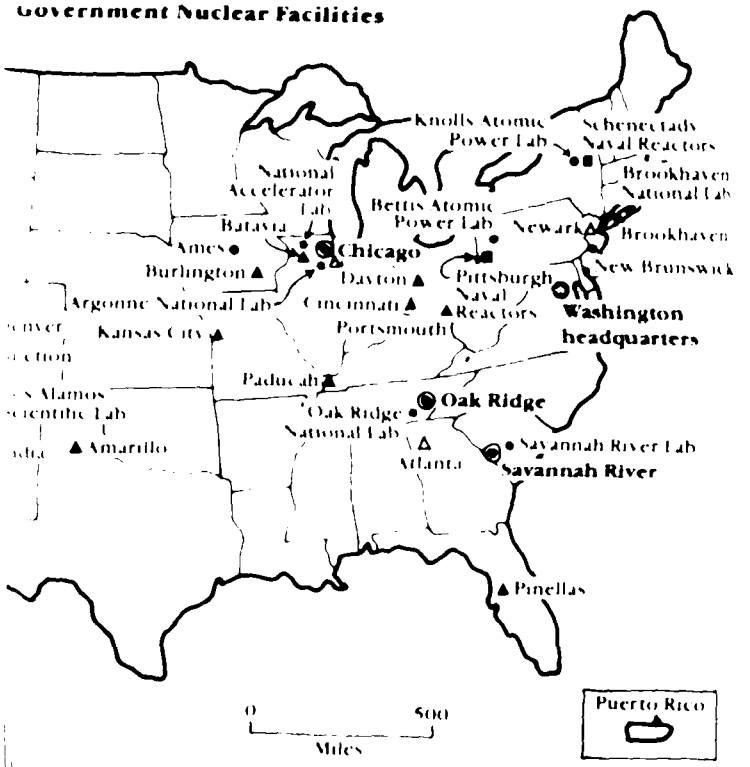
A variety of ad hoc arrangements carried the nuclear work forward during the next two and a half years, slowly at first but with gathering momentum as the war developed. In August 1942, efforts to build the atomic bomb were organized under the U.S. Army Corps of Engineers into the Manhattan Project. A month later, General Leslie R. Groves became its commanding officer, and the project received top priorities

John Lamperti

Lamperti is a professor of mathematics at Dartmouth College and an experienced consultant on the nuclear industry.

EPA 0170

Government Nuclear Facilities



Atomic En- tractors were included, the map would be unreadable across the Today's map of DOE facilities would look much the of AEC con- same

S race for given to making Los Alamos a military labora-
tory is told tory, but this idea was rejected, and the Los Ala-
mos laboratory was put under the management
by the Man- of the University of California. The pattern was
has contin- established: contractors would perform the work
lear work for the government, in government-owned facil-
a selected ities sometimes built by the same contractors,
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The Han- expenses plus a fee for services rendered.
d during (Some of the wartime contractors waived the
nan Com- management fee temporarily.) This system of or-
and the ganization has proved extremely durable—un-
for most like the military control under which the first
ought was plants and laboratories were developed.

Civilian Rule: The Atomic Energy Commission

In August 1945, the American public and Congress discovered the existence of the secret $2.2 billion, government-owned empire in which the first nuclear weapons had been created. The future of this huge program immediately became controversial. Legislation to implement continuing military control was drafted with the help of the War Department and introduced in Congress in the fall of 1945. This measure, known as the May-Johnson Bill, soon encountered heavy opposition, and an alternative plan for civilian direction emerged from a special joint House and Senate committee chaired by Senator Brian McMahon. American scientists, organizing politically for the first time, played an important part in the struggle for civilian management of the atomic program.[1]

Congress decided for civilian control, and on August 1, 1946, President Harry S. Truman signed into law a bill from McMahon's committee which became the Atomic Energy Act of 1946. The act established a complete government monopoly over nearly all aspects of nuclear technology, including ownership of materials and facilities. Control was placed in the hands of a five-member civilian board called the Atomic Energy Commission (AEC), the commissioners and a general manager would be appointed by the President subject to Senate confirmation. The AEC's Division of Military Application was to manage the weapons work; other divisions included Production (of nuclear materials), Biology and Medicine, and Research. A Military Liaison Committee of six senior officers would express the military's interests, and a nine-member General Advisory Committee (GAC) of scientists was established to assist the commissioners, who would not necessarily have technical training.

The "McMahon Act," as the Atomic Energy Act was also known, also set up a permanent Joint Committee on Atomic Energy (JCAE), one of the few congressional committees to be established by law rather than by congressional rule. The JCAE had authority over all aspects of the atomic energy program except appropriations and was supposed to be kept "fully and currently informed" by the AEC. In addition, the act prohibited most forms of international cooperation in the nuclear field, required FBI clearances for everybody who was to work for the AEC or (in many cases) for one of its contractors, and provided the death penalty for disclosing restricted data "with intent to injure the United States."

The new commission took over the atomic program on January 1, 1947. The AEC's first chairman was David E. Lilienthal, who had directed the Tennessee Valley Authority (TVA) during the New Deal era. Lilienthal later wrote of his hopes that nuclear energy would lead to a far-reaching civilian industry to benefit the nation.[2] His actual service, however, was almost entirely devoted to revitalizing and enlarging the wartime facilities for producing nuclear bombs. During Lilienthal's term as AEC chairman (1947–50) and that of his successor Gordon Dean (1950–53), facilities at Los Alamos, Hanford, and Oak Ridge were restored and enlarged, important new ones were planned and constructed, and a great many new nuclear weapons were designed, built, and tested.

During the early years of the commission, especially the years after the first Soviet atomic test explosion in 1949, major steps were taken which together constituted a great escalation of the U.S. nuclear weapons effort. The most dramatic of these was the decision to build the "super" or H-bomb. The first superbomb was tested on November 1, 1952, at Enewetak Atoll, and it produced an explosion nearly 1,000 times more powerful than that which destroyed Hiroshima. But other developments were also of great importance. The Savannah River plant was built—"the biggest single construction job in history"[3]—in order to produce more plutonium and other materials for both fission and fusion bombs. The Rocky Flats plant near Denver and

a new weapons lab at Livermore, California, were established; other facilities were expanded and upgraded (see Chapter 11). A United States uranium mining and milling industry was created and two more gas-diffusion uranium enrichment plants were planned and built (see Chapter 20). The variety of nuclear fission weapons multiplied; they became both larger, approaching the megaton range, and smaller, intended for "theater" or tactical use. Altogether, in a few years an awesome advance in destructive power was achieved.

"Atoms for Peace": The Atomic Energy Act of 1954

The Atomic Energy Act of 1946 went a long way to try to preserve a U.S. government monopoly on nuclear technology, but for many reasons this proved impossible. The Soviet bomb, the British nuclear program, and domestic pressures for a commercial nuclear technology all pushed the Republican administration of 1953 toward a changed policy. President Dwight D. Eisenhower's dramatic "Atoms for Peace" speech at the United Nations in December 1953, and the revised Atomic Energy Act of 1954, were the U.S. government's response to these forces.

The purpose of the 1954 act, which was a major rewrite of the original McMahon Act, was to open the door both for international nuclear cooperation and for the development of nuclear power by private industry in alliance with the AEC. Privately owned nuclear reactors would be licensed by the commission. The government would retain ownership of all nuclear fuel but would permit its use in private power stations. Bilateral agreements with other countries for the peaceful development of atomic energy were authorized. The 1954 act also contained liberalized patent and secrecy provisions.

The main issue in dispute during the debate on the revised act was the question of public versus private development of nuclear power, and the decision was made in favor of private industry. The AEC itself would not be permitted to enter the electricity supply business, so the vision of a nuclear-power TVA was rejected and replaced by one calling for private capital and initiative. According to one analyst, "The passage of the 1954 act truly represented the birth of a new era in atomic energy development. Its enactment brought the JCAE squarely into the middle of the AEC reactor program, where it has remained since."[1]

Although the 1954 revision made possible the growth of a civilian nuclear industry, it hardly had any effect on the development and manufacture of nuclear weapons by the AEC. Despite hopes that "atoms for peace" could mean turning swords into plowshares, the production of atomic "swords" continued with little change under the new law.

The Boom Years

After the 1954 revision of the Atomic Energy Act, the entire nuclear program, military and civilian, continued for twenty more years under essentially the same system of government control. The AEC encouraged the growth of uranium mining and milling, and the United States became the world's largest producer of yellowcake. The nuclear weapons stockpile continued to expand in both numbers and variety, and by the mid-sixties it had reached roughly the level (around 30,000 weapons) at which it would remain throughout the seventies. All the major nuclear warhead production facilities date back to the fifties. And with much help and prodding from the government, the nuclear power industry was born and began its rapid expansion which continued into the seventies.

In September 1954 at Shippingport, Pennsylvania, ground was broken for the nation's first nuclear power station. Although the Shippingport plant's electrical output was for civilian use, its origin was military. The reactor design was based on the naval power plants that Westinghouse had been building for nuclear submarines, and Admiral Hyman G. Rickover and his navy group were in charge of construction. A

civilian firm would build, own, and operate the electrical generating equipment, but the nuclear reactor would remain the property of the AEC. The plant went into operation at the end of 1957 as a technically successful, but very expensive, demonstration project.

Revision of the Atomic Energy Act and the start of construction at Shippingport did not immediately result in large investments of private capital in nuclear power development. An important additional boost was provided in 1957 with the passage of the Price-Anderson amendment to the Atomic Energy Act. This measure put a ceiling on the possible liability of any nuclear power licensee in the event of an accident—one far below the possible costs; it also set up a system of federal government indemnity to supplement the limited private insurance that was available. The amendment removed a major obstacle to private nuclear power development, and it has been bitterly attacked by critics of the industry.* The Price-Anderson Act was extended by Congress in 1965 and again, in modified form, in 1975.

Electrical utilities soon began to build and operate their own nuclear plants. Five privately owned nuclear power reactors, all of the light-water type, were in operation by the end of 1962 and were capable of generating somewhat under 800 megawatts of electricity. Fourteen years later, sixty reactors with a total capacity of 43,000 megawatts were on line, and 146 more were under construction or on order. Power reactor sales throughout the nonsocialist world were dominated by two U.S. companies—Westinghouse and General Electric. The nuclear power boom had apparently matured and seemed to be here to stay.

In 1964 another change in the law further increased the role of the private sector. For the first time, utilities were permitted to own the nuclear fuel for their power reactors, and after 1970, private ownership was to become the norm for the industry. Privately owned uranium would be enriched for a fee in the U.S. gas diffusion plants for both domestic and foreign customers.

One major governmental change during this period cannot be found in the statute books: the congressional Joint Committee (JCAE) assumed a much more active role as developer and promoter of the multifaceted nuclear enterprise. In the process, the traditional separation of powers between the executive (the AEC) and the legislative (JCAE) branches of government was badly strained. Critics plausibly charged that when the committee opted to become a nuclear promoter, its assigned role as critical "watchdog" and guardian of the public interest was left vacant. Examples of its neglect include the public health dangers from the testing of nuclear weapons and the needless deaths of many of the early uranium miners.* Observers friendly to the JCAE and the AEC have described the situation as follows:

> The paternalism of the Joint Committee—its fatherly concern for the atomic energy program—has never been more clearly revealed than in the committee's response to criticism from environmentalists. Witnesses who appeared before the Joint Committee during hearings on the issues of thermal pollution and the hazards of power plant radiation were heard to complain that some JCAE members were unabashed advocates of nuclear power, whereas the witnesses had expected legislative objectivity.*

The JCAE also promoted a number of projects, such as the nuclear-powered airplane, which outside experts (and sometimes insiders, too) regarded as ill-conceived and undesirable.

During these years, the AEC continued to use industrial and university contractors to operate the facilities it owned, which included all the laboratories and plants for designing and making nuclear weapons, the facilities for producing nuclear materials such as plutonium and tritium, and the uranium-enrichment plants. The bulk of the AEC contracts continued to go to the same firms, many of them with involvements dating back to the Manhattan Project. The largest re-

cipients have included Union Carbide, General Electric, Bendix, Sandia (a subsidiary of Western Electric and the American Telephone and Telegraph Company), Du Pont, the University of Chicago, and the University of California. Most of the contracts have been on a cost-plus-fee basis. In addition to the direct advantages to the company holding such contracts gave firms the opportunity to develop nuclear expertise that could later be put to commercial use. In many cases the experience could be gained in no other way, since the technology was a secret government monopoly. For example, AEC-sponsored work on naval nuclear propulsion unquestionably gave General Electric and Westinghouse their early lead in power-reactor technology and helped the two become the giants of this field for the entire Western world.

Almost from the beginning, the AEC's operational work was managed through field and area offices. The system set up by the AEC's first general manager had its "Operations Offices" in New York, Chicago, Richland (in Washington, close to Hanford), Los Alamos, and Oak Ridge. The Los Alamos office, later moved to Albuquerque, was responsible for the actual manufacture of nuclear weapons. Subsequently, additional offices were added in Las Vegas (responsible for the Nevada Test Site), Idaho Falls, San Francisco, and Savannah River, while the New York office which had been responsible for uranium procurement was eventually closed. Area offices reporting to these Operations Offices are responsible for, and often located at, individual facilities.

In 1971 these field offices employed about 4,000 people, with another 2,000 in Washington, D.C. The AEC's regulatory side involved 2,000 more, four-fifths of them in the D.C. area. Most of the actual nuclear work was done by over 100,000 employees of the AEC's 200-odd contractors.

Reorganization: ERDA and the NRC

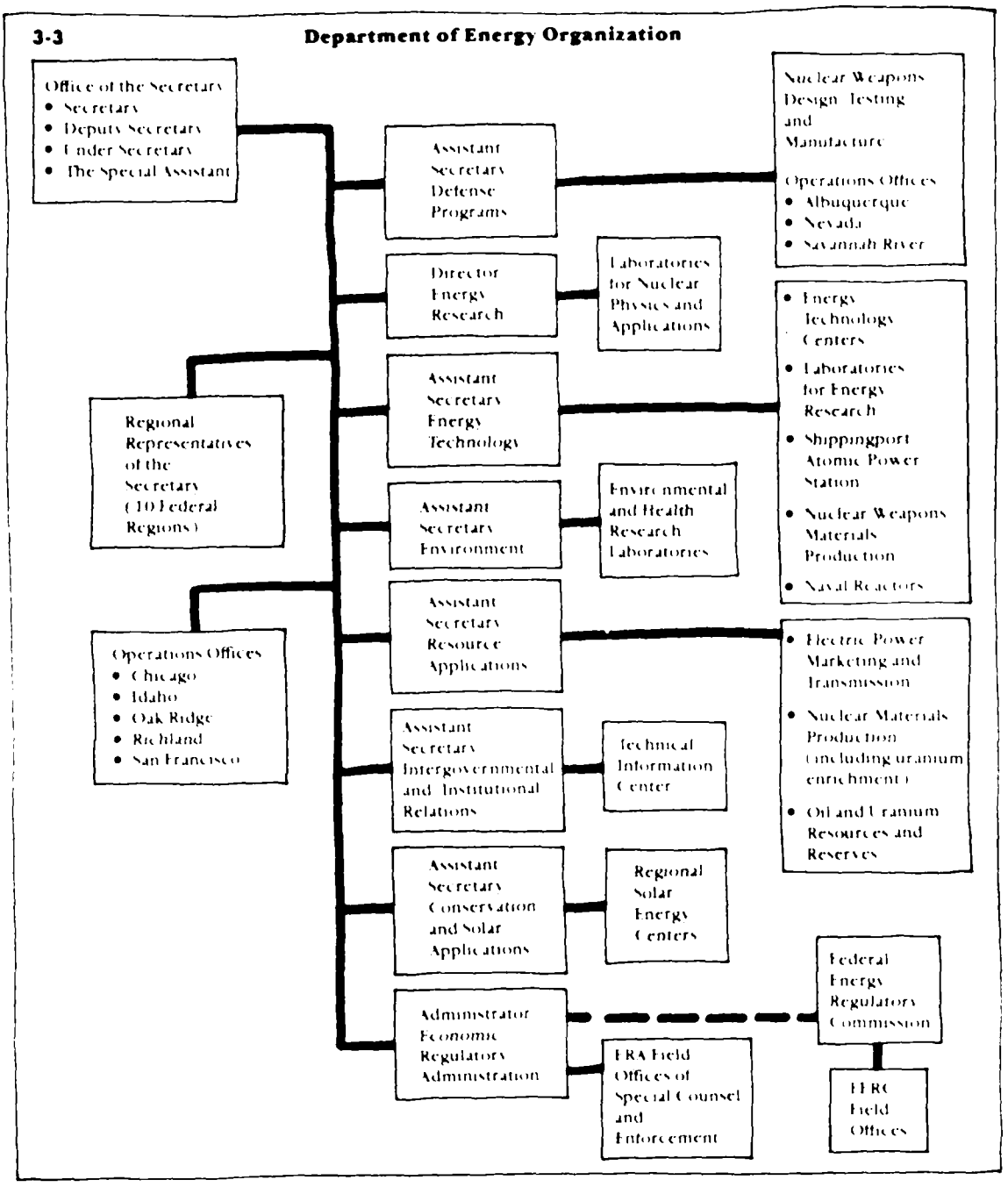
One source of trouble in the AEC's management of nuclear power was the unfortunate combination of the functions of regulator and promoter within one organization. Licensing nuclear power stations and supervising their operation demands a conservative, safety-first approach which can conflict with a promoter's zeal to entice new investment and to see the industry grow. As in the case of the JCAE, outsiders such as environmentalists, public-interest groups, or local governments often felt that their concerns did not receive an adequate hearing within an organization responsible for development.[8]

The Energy Reorganization Act of 1974 was in part a response to this problem. In this act the nonregulatory parts of the AEC—including weapons design and manufacture, production of nuclear materials, reactor design and development, and related physical research—were separated from the licensing and regulatory functions. The former became the responsibility of a new body called the Energy Research and Development Administration (ERDA), while the latter were reorganized into an independent agency called the Nuclear Regulatory Commission (NRC). ERDA was to be directed by a single administrator appointed by the President, while the NRC was composed of five appointed commissioners.

At the same time that Congress separated the regulatory functions of the AEC, it transferred into the new ERDA a number of nonnuclear federal energy programs so that it became a central agency for energy planning and development. The oil embargo and "energy crisis" of 1973 had made it clear that the era of cheap and plentiful fossil fuels could not last indefinitely and that planning and preparation for a transition to other sources was essential. ERDA was established in part to help meet this need, although about one-third of its budget was to be spent on nuclear weapons—an activity of doubtful help to our energy future.

Creating an independent regulatory body was widely seen as a constructive step, but there is some doubt as to how effective the change has

3-3 Department of Energy Organization



This elaborate bureaucracy administers the ramified operations of the Department of Energy. The major activities are the production of nuclear materials and weapons, the strategic petroleum reserve, and research and regulation for the energy industry.

seen. As one NRC commissioner recently commented: "I still think it [the NRC] is fundamentally geared to trying to nurture a growing industry." The Kemeny Commission, created by President Jimmy Carter to investigate the accident at the Three Mile Island nuclear plant in March 1979, states in its report: "We find that the NRC is so preoccupied with the licensing of plants that it has not given primary consideration to overall safety issues." The report concludes that "with its present organization, staff and attitudes, the NRC is unable to fulfill its responsibility for providing an acceptable level of safety for nuclear power plants."[10]

The End of the Joint Committee

The Joint Committee on Atomic Energy (JCAE) was once considered the most powerful committee in Congress. It was created at a time when the new technology possessed glamour and prestige, and service on the JCAE was a sought-after plum. It was the only permanent joint committee ever to receive continuing authority to report legislation, and it usually reported identical bills to each chamber of Congress. If its bills were amended, the JCAE itself acted as the House-Senate conference committee and could restore the measures to their original form. The long tenure of some of the JCAE's early stalwarts, and its close relationship with the AEC (especially after 1958), added to its domination of nuclear-related legislation.

However, the JCAE did not long survive the end of the AEC. The committee's first major setbacks came in 1976. Most important was its inability to implement a Ford administration proposal that would have opened the uranium-enrichment step in the nuclear fuel cycle to private investment. Opponents defeated an attempt to have a veteran committee staffer appointed to the NRC. Retirements and electoral defeats left the JCAE weakened, and a caucus of House Democrats voted to strip it of most of its extraordinary legislative powers. At the opening of the Ninety-fifth Congress, the House voted rules changes assigning nuclear concerns to five other committees, thus giving greatly increased access to outsiders. The Senate soon passed a similar measure, and it was then little surprise when the Joint Committee on Atomic Energy was abolished on August 7, 1977.

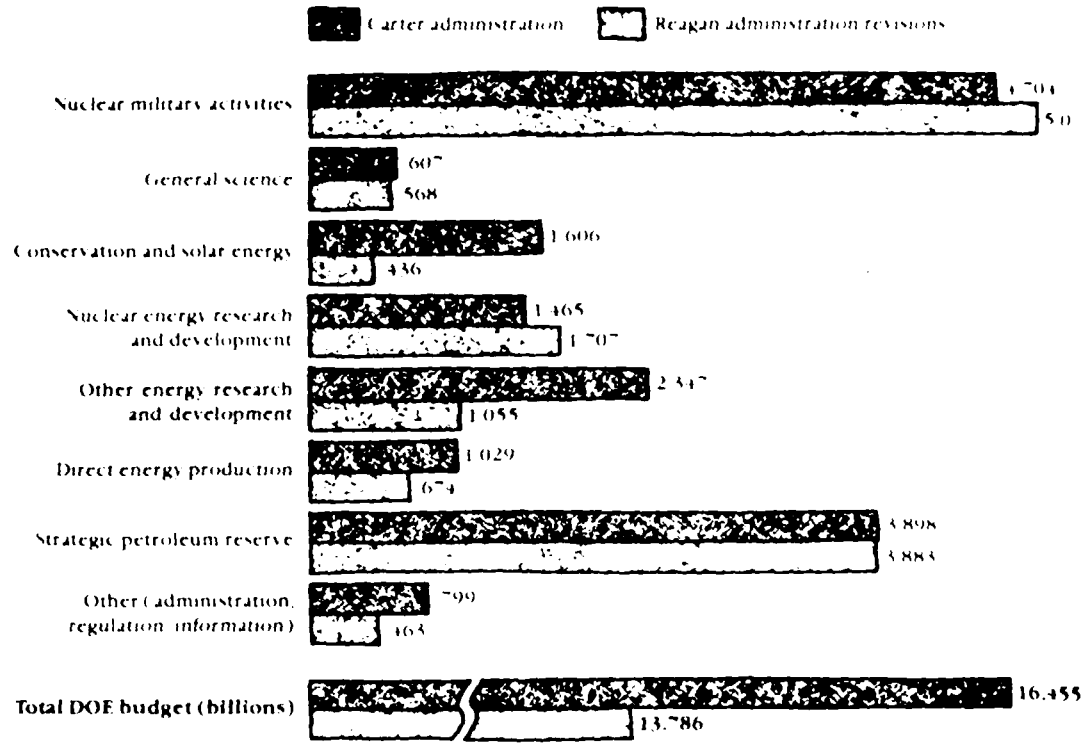
The Department of Energy

ERDA did not prove to be a long-lived organization. On August 4, 1977, President Carter signed a bill creating the Department of Energy (DOE) as the twelfth cabinet-level department in the executive branch of the federal government. The new department was charged with giving "... a clear direction and focus to America's energy future by providing the framework for carrying out a comprehensive, balanced national energy policy."[11] Despite the peaceful sound of this statement, the DOE has spent over one-third of its funds (excluding oil purchases for the Strategic Petroleum Reserve) for military activities, mostly nuclear bombs and warheads. The Reagan administration plans to increase these expenditures from about $3 billion to $5 billion per year.

At its creation, the DOE was entrusted with all the functions formerly assigned to ERDA, as well as those of the Federal Energy Administration and the Federal Power Commission. The DOE also took on certain energy-related functions of five other cabinet departments. It has continued to carry out most of the AEC/ERDA production and development functions through the already existing network of field offices and contractors. The NRC, which was not affected by the reorganization, retained the responsibility for licensing and supervising the civilian nuclear power industry.

The first secretary of the DOE was James Schlesinger. Schlesinger, who has a Ph.D. in economics from Harvard, previously served in government as chairman of the AEC, director of the CIA, and Secretary of Defense. This background suggests a military and nuclear bias for the new department, and the DOE's budget for fiscal

3-4 Department of Energy Budget Estimates, 1982



Note that nuclear military activities and the strategic petroleum reserve account for 64 percent of President Reagan's budget. Portions of the budget categories "General Science" and "Nuclear Energy Research and Development" are also attributable to military activities. In comparison, the Department of Energy spent $15 billion in 1980, of which $5 billion was for military nuclear activities.

year 1978 confirms that these were the main priorities. Three programs dominate the figures: nuclear weapons, Energy Supply R & D (largely nuclear) plus uranium enrichment, and the Strategic Petroleum Reserve. Although many analysts believe that the most important energy resources to be developed in the near future are conservation and solar energy,[12] these areas account for a relatively small, and shrinking, fraction of the DOE's expenditures.

The legislation establishing the DOE provided for eight assistant secretaries, an Office of Energy Research, an Economic Regulatory Administration, an Energy Information Administration, and the Federal Energy Regulatory Commission (which deals only with nonnuclear matters). The DOE has roughly 20,000 employees—about 12,000 work in the field and the remainder work in the Washington, D.C., area.

The DOE, like its predecessors, carries out most of its program by contracting with private firms and universities, and its activities involve some 120,000 contractor employees. Many of the largest DOE contractors, including the top

3.5 SOME MAJOR U.S. NUCLEAR CONTRACTORS: THEN (1965) AND NOW (1980)

Contractor Name	*Rank (1965)*	*Dollars in 1965 (millions)*	*Rank (1980)*	*Dollars in 1980 (millions)*
[illegible]versity of California	—	at least $257	1	$902
[illegible]on Carbide	1	218	2	684
[illegible] (Western Electric)	2	218	3	560
[illegible]stinghouse Electric	9	61	4	486
[illegible] du Pont de Nemours	6	89	5	388
[illegible]ohlx	4	100	6	295
[illegible]nnessee Valley Authority	—	—	7	293
[illegible] University of Chicago	—	at least 79	8	283
[illegible] Valley Electric Co	—	—	9	264
[illegible]CO	15	26	10	263
[illegible]kwell International	8	62	11	242
[illegible]neral Electric	3	196	12	237
[illegible]ociated Universities	—	at least 52	13	203
[illegible]nolds Electrical and Engineering	5	97	16	153
[illegible]dvear Atomic	7	63	20	90
[illegible]ver General	10	44	Not listed among top eighty DOE contractors for 1980	
[illegible]ps Petroleum	11	40		
[illegible] Chemical	12	38		

[illegible] a total of 11,494 contractors includ[illegible] colleges and universities did business with the Department of Energy. The contracts totaled $9.47[illegible] billion.

[illegible] are heavily engaged in nuclear weapons work, and many (but not all) of these firms are also large contractors with the Pentagon. Several large companies and the University of California have persisted for many years as major recipients of government contracts for nuclear weapons and energy work.

Concluding Remarks

We have examined a variety of arrangements that have been used to manage and develop nuclear technology in the United States. Underneath the complexity, some clear evolutionary trends can be described. The technology originated as a secret government-military monopoly during World War II, and many wished it to remain so after the war. But political and commercial pressures acted in a different direction, and civilian nuclear power was born. This industry has grown unevenly, with a boom period during the sixties and early seventies followed by a major slowdown. The scope of the private sector has also expanded and now includes most of the "front end" of the fuel cycle except for uranium enrichment. The government has not failed to nurture the nuclear power industry. Estimates of the dollar value of government support for nuclear energy vary widely, but all agree that the industry has enjoyed assistance worth tens of billions of dollars.[13]

The organization of nuclear weapons produc-

tion still has much in common with the system that developed during the forties. The work is done in a network of labs and plants which are owned by the government but operated by contractors. This network, although much expanded, includes the major Manhattan Project facilities: Hanford, Oak Ridge, and Los Alamos. Many of the contractors, such as Du Pont, General Electric, and the University of California, have been deeply involved since the beginning. Government control is exercised through a chain of field offices which were set up under the AEC in the forties and which have been retained (and others added) by the AEC's successors. Additional major facilities have been added to the system, including the "national laboratories" (in addition to the weapons-development labs) which contribute to knowledge of nuclear physics and its applications, including nuclear power technology.

It was pointed out long ago that the relationships between government, the universities, science, and industry which have characterized nuclear technology were a new development in U.S. political life. "What we are trying to do," said David Lilienthal in 1950, "... is develop a new kind of set-up in American industrial affairs which is a hybrid of public and private."[14] Another commentator described the system as suggesting a "missing link between capitalism and socialism."[15] Although time and familiarity have dulled the sense that there is anything surprising or controversial about such a hybrid, nothing quite like it was around before the discovery of nuclear fission in 1938.

The future of the current government organization responsible for nuclear technology—the Department of Energy—is uncertain.[16] It seems highly likely, however, that many features of the present system, such as contractor operation of government-owned facilities, will persist even if there are changes at the top. The great corporations such as General Electric, Du Pont, Union Carbide, Westinghouse, and Bendix (among many others) will undoubtedly retain their commanding positions in the industry. The exchange of high-level personnel between industry and government is also likely to continue, as will the basic similarity of outlook between leaders within the industry and the government officials who supervise and regulate it.[17] Continued governmental tenderness toward nuclear power is probably to be expected, whether or not the DOE is replaced by some other form of organization.

It is wise to recall President Eisenhower's warning. The United States does have a "military-industrial complex" with great influence and power. Within its orbit, it is commonly assumed that the national interests of our country are closely identified with the well-being of the nuclear weapons complex and the nuclear power industry. It is essential that this assumption be questioned and that vital decisions about weapons and energy are made in the interest of the nation as a whole—and of the human race.

Suggested Readings

Allardice and Trapnell give in *The Atomic Energy Commission* an admiring account of the evolution of the nuclear industry and the government institutions associated with it, up to about 1973. *Light Water: How the Nuclear Dream Dissolved*, *Nuclear Power: Development and Management of a Technology*, and *The Menace of Atomic Energy* concentrate on the nuclear power industry. *Light Water* and *The Menace of Atomic Energy* are in quite different ways critical of it. York in *The Advisors: Oppenheimer, Teller and the Superbomb* describes the decision to proceed with a crash program for the hydrogen bomb, and also outlines the general development of both the U.S. and Soviet nuclear weapons programs. Metzger in *The Atomic Establishment* is severely critical of the Atomic Energy Commission and the Joint Committee, charging them with mismanagement and the coverup of major mistakes. In *Contracting for Atoms* Orlans focuses on the question of operation by contract, including a discussion of why that method was chosen and how it has worked. The DOE document, *DOE Research and Development and Field Facilities*, gives an extensive description of the offices,