U-003-302.3

3474

RADON MEASUREMENT OF WASTE PITS AND CLEARWELL

DOCUMENT DATE 06-25-92

Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

3474

JUN 2 5 1992
DOE-834-92

Mr. James A. Saric, Remedial Project Director
United States Environmental Protection Agency
Region V-HRE-8J
77 West Jackson Street
Chicago, Illinois 60604-3590

Mr. Graham E. Mitchell, Project Manager
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402-2086

Dear Mr. Saric and Mr. Mitchell:

RADON MEASUREMENT OF WASTE PITS AND CLEARWELL

This confirms teleconferences between you and my staff on March 27, 1992, and May 27, 1992, on the status of radon flux measurements of the Waste Pits and Clearwell. With the exception of Waste Pits 4 and 5 and the Clearwell, flux measurements began in November 1991 and were taken directly from the surfaces of Waste Pits 1, 2 and 3. The results were sent to you on March 3, 1992. The average flux for all three pits was well under 20 pCi/m^2-sec.

Paragraph 26 of the Federal Facilities Agreement (FFA) requires the Department of Energy (DOE) to directly measure radon flux from Waste Pits 1, 2, 3, 4, 5 and the Clearwell. DOE proposes that we modify this requirement, if appropriate, or that the United States Environmental Protection Agency (U.S. EPA) clarify the use of Method 115 to directly measure radon flux from Waste Pits 4 and 5 considering the information provided in our teleconferences and below. DOE also requests confirmation that direct measurements of the Clearwell are not required under Method 115 and the FFA since the Clearwell is a water-covered area (with no beaches) and, under Method 115, radon flux is assumed to be zero for water-covered areas.

Pit 4

Waste Pit 4 has a surface area of 83,799 square feet. It contains approximately 53,706 cubic yards of buried waste. Pit 4 is covered by a two-foot layer of compacted clay and clean backfill material overlaid by a 45-mil thick Hypalon, chlorosulfinated polyethylene liner. A diagram of Pit 4's cover is enclosed. The Radium-226 content of Pit 4 is 5 to 50 pCi/g. On the basis of measurements from a similar waste pile at the Middlesex, New Jersey Sampling plant, DOE believes that it is reasonable to conclude that the radon flux from Pit 4 is less than 20 pCi/m^2-sec.

Recycled and Recyclable

The Middlesex data is enclosed for your evaluation. The Middlesex landfill contains between 2 and 55 pCi/g Radium-226. It does not have a clay cap barrier like that on Pit 4. Pit 4's liner is similar to the 36-mil thick Hypalon liner covering the Middlesex landfill. Radon flux measured from the Middlesex material was 0.03 pCi/m^2-sec.

DOE concurs with U.S. EPA's suggestion that direct measurements be made at selected points from Pit 4 and from the vent pipe to confirm the above conclusion. For the vent pipe, U.S. EPA suggested monitoring methods similar to those in Method 115 for measuring emissions from underground uranium mine vents. DOE will prepare a plan for your review for confirmatory measurements at selected points from Pit 4 and the vent pipe.

Pit 5

Waste Pit 5 has a surface area of 161,103 square feet. It contains an estimated 98,841 cubic yards of material. Because waste materials were slurried into Pit 5, they contain a relatively high water content. Approximately two-thirds of the pit is typically covered with 748,060 gallons of water. During November 1991, all surface water was removed to facilitate repairs to the pit liner. This was done after receiving U.S. EPA's approval of the Work Plan. Historical photographs documenting the extent of the water cover for this pit are enclosed.

On the basis of the known content of Radium-226 in Pit 5, DOE estimates that, without a water cover, the radon flux emissions would exceed the 20 pCi/m^2-s level. However, with the exception of the drained condition (which was temporary), a water cover is normally maintained over two-thirds of the surface of the pit. At present, the water cover has been partially replaced and DOE received the approval of the Ohio Environmental Protection Agency (Ohio EPA) under a Consent Decree for complete replacement of the water cover. As further discussed below, Pit 5 will be 100% water covered by February 1993.

DOE proposed a Removal Action under the Amended Consent Agreement that will control air emissions from the surface of Waste Pit 5. The Work Plan for this Removal Action was submitted to the U.S. EPA on March 30, 1992. The recommended alternative is redistribution of the exposed waste completely under the water. The commencement date for the Removal Action is September 23, 1992, and completion is anticipated in February 1993.

A more detailed schedule for the Pit 5 Removal Action was included with the Work Plan submitted to you on March 30, 1992. At the time the FFA was negotiated, Pit 5 did not have 100% water-cover. Once the Removal Action is successfully completed, radon flux emissions from Waste Pit 5 may be assumed to be zero since the entire surface will be covered with water.

Pending completion of the Removal Action, however, U.S. EPA suggested that direct measurements be made in the event the Removal Action does not proceed on schedule. DOE suggests September 23, 1992, as a cutoff date for proceeding with direct measurements in the event the Removal Action is not on schedule. The Action Memorandum for this Removal Action was signed on March 27, 1992. Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the National Contingency Plan, removal actions are considered time-critical if they commence within six months. DOE considers the Pit 5 Control of Exposed Material Removal Action to be time-critical, and therefore, the response is set to begin by September 23, 1992.

In the meantime, per your suggestion, we have calculated the flux from the entire surface of Pit 5. The estimated flux is 31.3 pCi/m^2-sec, based on 94 pCi/m^2-sec from the uncovered portion of Pit 5 as reported in the Work Plan submitted to U.S. EPA on March 30, 1992.

If you or your staff have any questions, please contact Behram Shroff at FTS/Commercial (513) 738-6003.

Sincerely,

R.E. Tiller

R. E. Tiller
Manager

FN:Shroff

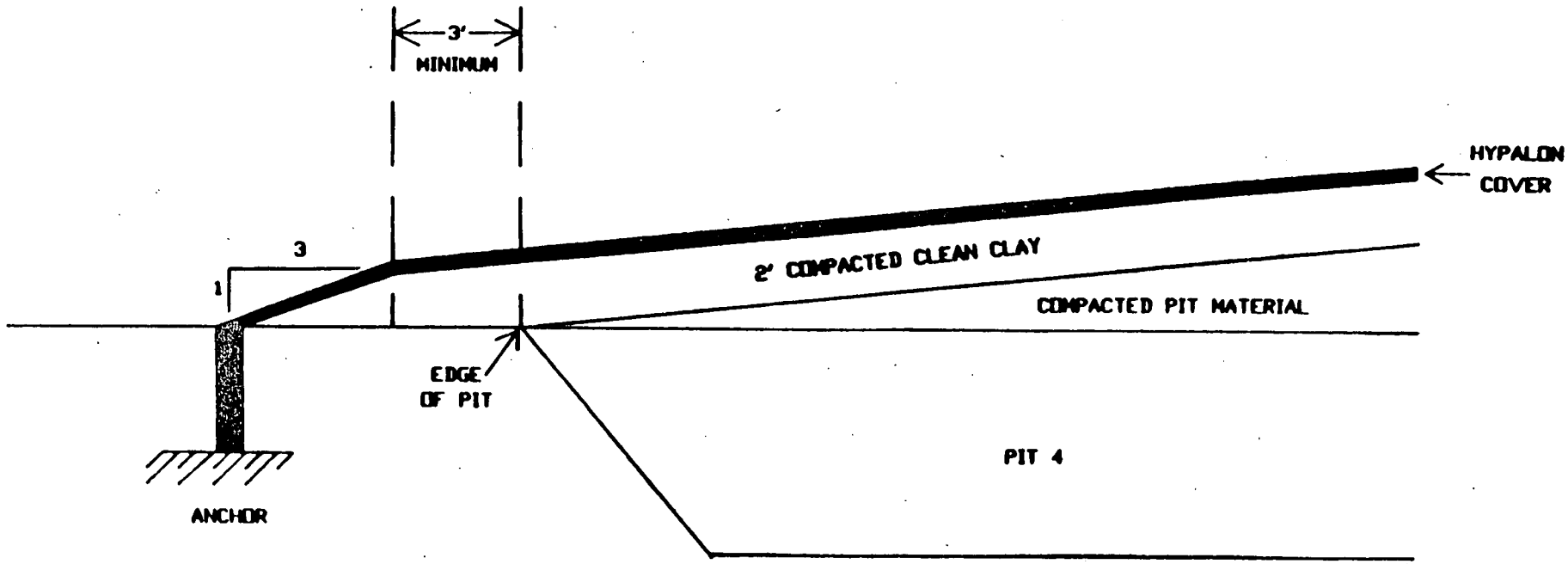
Enclosures: As Stated

cc w/encs.:

J. Benetti, USEPA-V, 5AR-26
AR Coordinator, WEMCO

cc w/o encs.:

J. J. Fiore, EM-42, TREV
K. A. Hayes, EM-424, TREV
M. Butler, USEPA-V, 5CS-TUB-3
J. Kwasniewski, OEPA-Columbus
P. Harris, OEPA-Dayton
M. Proffitt, OEPA-Dayton
T. Schneider, OEPA-Dayton
T. W. Hahne, PRC
L. August, GeoTrans
R. L. Glenn, Parsons
D. J. Carr, WEMCO
L. S. Farmer, WEMCO
J. P. Hopper, WEMCO
J. D. Wood, ASI/IT
J. E. Razor, ASI/IT



PIT 4 CROSS SECTION - INTERIM CLOSURE

085190

3474

MEMO FROM

MIKE REDMON

TO: Oba Vincent **DATE:** February 3, 1992

SUBJECT: NESHAPS DATA FROM FUSRAP'S MIDDLESEX SAMPLING PLANT

Per our discussion of last week (and your discussion with Susan Cange of DOE-OR), here is the NESHAPS data. I have enclosed some background on the Middlesex Sampling Plant (MSP) in New Jersey, average concentrations of uranium-238, radium-226, and thorium-232 in each of the two storage piles, and correspondence with EPA Region II (including the 1991 report) dealing with FUSRAP's NESHAPS compliance. When we first started the NESHAPS compliance, we got approval from EPA Region VII to use commercially available 4 inch charcoal canisters; Region II required us to use the 10 inch canisters as required by the regulation for uranium mill tailing piles - TMA/Eberline in Oak Ridge made these 10 inch canisters for us since we could not find a commercial distributor.

I know we discussed Maywood, but I felt that the Middlesex data would be more appropriate for your argument since Middlesex used uranium ores (similar to Fernald) and Maywood used thorium ores. The annual report contains data from all sites in Region II; it may provide even more backup for you. If you need additional information, please don't hesitate to call me at (615) 576-4718 or FTS 626-4718.

BECHTEL

Mike

3474

MEMO FROM

MIKE REDMON

TO: OBA VINCENT **DATE: February 5, 1992**

Per your request, I have found the following information regarding the construction of the interim storage piles at the Middlesex Sampling Plant in New Jersey.

The "Landfill Pile" has a 36-mil DuPont Hypalon cover. Hypalon is a rubber material made of chlorosulfonated polyethlylene (CSP). The "Vicinity Property Pile" has a 60-mil EPDM (ethylene propylene diene monomer) cover. Neither pile had a sand or clay layer placed on top of the waste prior to placement of the liners.

FAX # FTS-774-6650
PHONE FTS-774-6937

Table 3-1

Radionuclide Concentrations in Subsurface Soil at the MML Pile

Borehole No.[a,b]	Coordinates West	Coordinates North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
M8	210	873	0.0 - 10.0	<6.6	8.7 ± 0.4	<1.7
M9	198	863	0.0 - 12.0	12.9 ± 8.6	9.5 ± 0.7	<1.6
M10	187	858	0.0 - 12.0	45.3 ± 15.3	14.3 ± 1.4	<2.0
M14	220	861	0.0 - 10.0	16.0 ± 7.9	8.7 ± 0.9	<2.0
M15	208	851	0.0 - 11.1	40.0 ± 27.3	55.1 ± 4.5	<3.3
M16	196	841	0.0 - 12.0	<28.0	42.3 ± 1.9	1.4 ± 1.0
M20	230	849	0.0 - 12.0	17.8 ± 5.8	22.4 ± 1.4	<1.9
M21	218	840	0.0 - 12.1	9.3 ± 5.1	15.0 ± 2.8	<1.8
M22	206	830	0.0 - 13.0	10.6 ± 5.6	11.3 ± 1.1	<1.6
M23	195	820	0.0 - 10.1	<8.8	1.9 ± 0.2	1.4 ± 0.3
Average values				19.5	18.9	1.9

[a]Samples taken over entire depth of borehole and homogenized.

[b]Sampling locations are shown in Figure 2-2.

085190

3474

Waste from Middlesex Muncipal Landfill.

Table 3-2

Radionuclide Concentrations in Subsurface Soil at the VP Pile

Borehole No.[a,b]	Coordinates West	Coordinates North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
V8	274	821	0.0 - 8.0	9.6 ± 7.9	7.2 ± 0.5	2.3 ± 0.7
V9	262	811	0.0 - 8.0	12.2 ± 4.0	5.4 ± 0.5	1.4 ± 0.2
V10	250	802	0.0 - 8.0	29.3 ± 15.4	16.1 ± 1.0	2.2 ± 0.5
V11	239	792	0.0 - 8.0	24.9 ± 9.7	13.0 ± 0.9	<1.8
V12	227	782	0.0 - 8.0	30.5 ± 9.2	14.3 ± 1.0	2.2 ± 1.0
V15	283	810	0.0 - 8.0	17.6 ± 11.4	9.4 ± 0.7	<1.9
V16	272	800	0.0 - 8.0	20.0 ± 12.1	12.3 ± 0.7	2.6 ± 2.5
V17	260	790	0.0 - 8.0	15.3 ± 8.6	7.6 ± 1.3	<1.6
V18	240	780	0.0 - 8.0	8.0 ± 6.2	7.6 ± 1.0	1.9 ± 0.6
V19	237	770	0.0 - 8.0	18.1 ± 10.3	13.8 ± 2.8	2.2 ± 1.7
V22	293	798	0.0 - 8.0	12.6 ± 9.8	12.6 ± 0.5	2.2 ± 1.3
V23	282	788	0.0 - 8.0	21.2 ± 10.8	18.4 ± 1.2	1.9 ± 0.5
V24	270	778	0.0 - 8.0	13.7 ± 8.2	16.9 ± 0.3	1.6 ± 0.2
V25	258	769	0.0 - 8.0	25.7 ± 13.9	10.6 ± 0.8	<1.9
V26	247	759	0.0 - 8.0	21.9 ± 8.5	9.1 ± 0.2	<1.6
V29	303	786	0.0 - 8.0	13.6 ± 7.9	8.1 ± 0.6	<1.6
V30	291	777	0.0 - 8.0	29.8 ± 0.3	23.0 ± 0.3	2.8 ± 2.3
V31	280	767	0.0 - 8.0	14.3 ± 10.2	6.5 ± 1.0	<1.9
V32	268	757	0.0 - 8.0	13.4 ± 5.9	6.3 ± 1.5	1.7 ± 0.7
V33	257	747	0.0 - 8.0	14.6 ± 8.9	7.9 ± 0.5	2.1 ± 1.7
Average values				18.3	11.3	2.0

[a]Samples taken over entire depth of borehole and homogenized.

[b]Sampling locations are shown in Figure 2-2.

Waste from MSP vicinity properties.

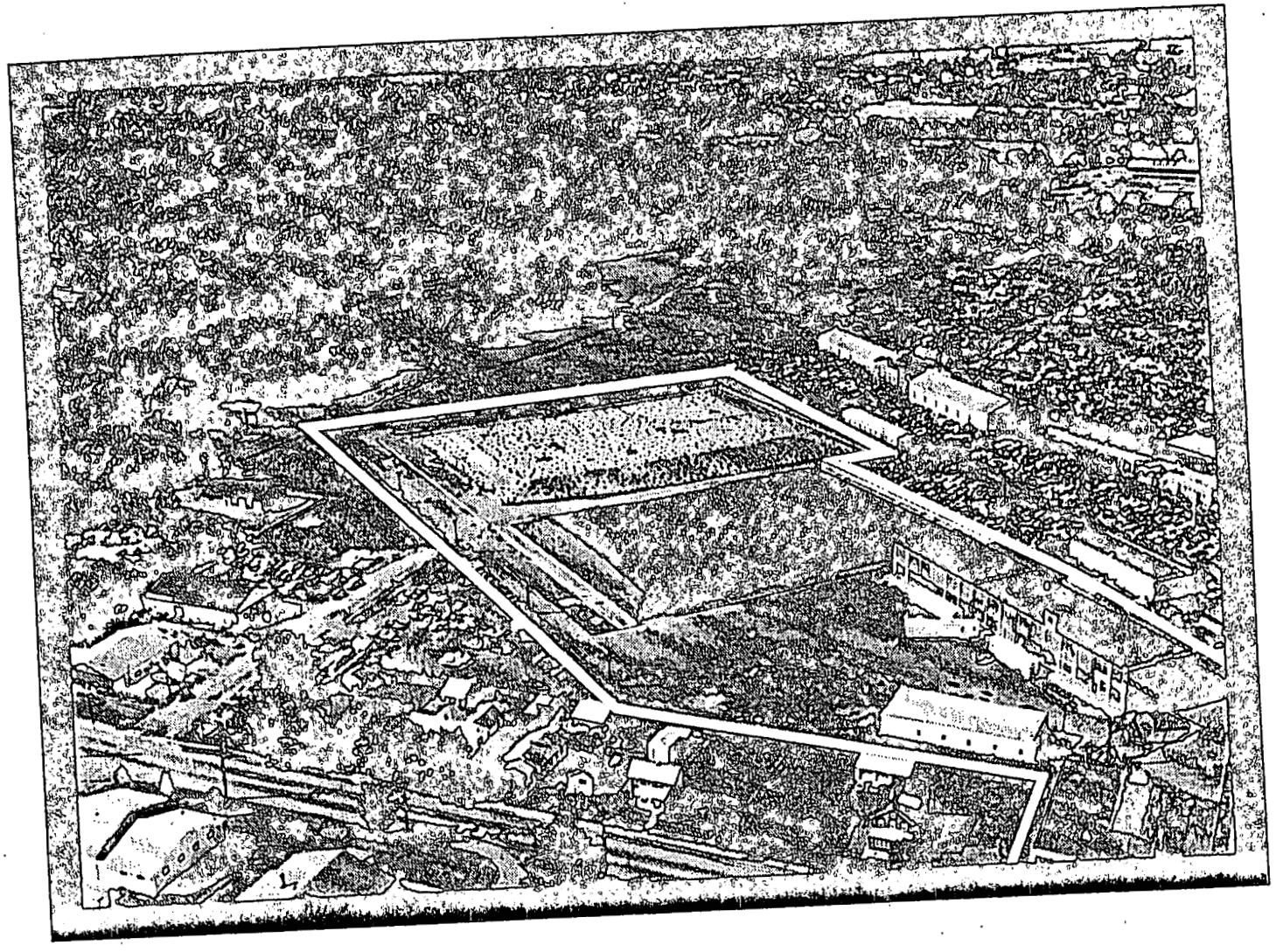


Figure 1-3 Aerial View of MSP

085190 3474

1.3 SITE DESCRIPTION

The MSP site occupies 3.9 ha (9.6 acres). There are four buildings on the site, which is surrounded by a 2.1-m (7-ft) high

chain-link fence (Figure 1-4). Most of the site is paved with asphalt. Samples will be taken in the vicinity of the four structures although, based on historical information, there is no reason to suspect the structures as sources of chemical contamination. Building A was used as administrative offices for the site during active operation. Building B was a garage, and samples are being taken along the perimeter of the building to check for possible contamination from petroleum products. Building C was the process building where the ore was weighed, assayed, and sampled. The boiler house (Building D) was at one time the source of steam for the process building.

MSP is currently used for interim storage of radioactively contaminated soils excavated from vicinity properties, including the Middlesex Municipal Landfill (MML). Figure 1-5 is an aerial photograph of the site. At the completion of remedial action at MML in 1986, approximately 51,000 m^3 (67,000 yd^3) of contaminated soil was stored at MSP. The interim storage pad constructed at MSP for the soil excavated from vicinity properties during the 1984 and 1986 remedial action activities includes a leachate collection system to preclude release of contaminants from the stored material to waters in the area. Leachate water is pumped into a storage tank where it is sampled and disposed of per a contractual agreement with a licensed waste hauler.

The site slopes gently from approximately 18 m (60 ft) above mean sea level (msl) on the northern side to 15 m (50 ft) above msl on the southern side. Soils at MSP are silty to sandy loams, with thickness over bedrock ranging from 0.46 to 2.4 m (1.5 to 8.0 ft). All on-site surface water is conveyed via an underground drainage system to a settling basin and then to the easement ditch south of the site that discharges into a small brook known as Main Stream.

The Brunswick formation is the predominant bedrock unit in the vicinity of MSP; it is a major aquifer in the western part of Middlesex County and adjoining Essex County. Numerous private water supply wells are located within 1.6 km (1 mi) of MSP. A public well field, Sebrings Mill well field, lies 2.1 km (1.3 mi) northwest of MSP.

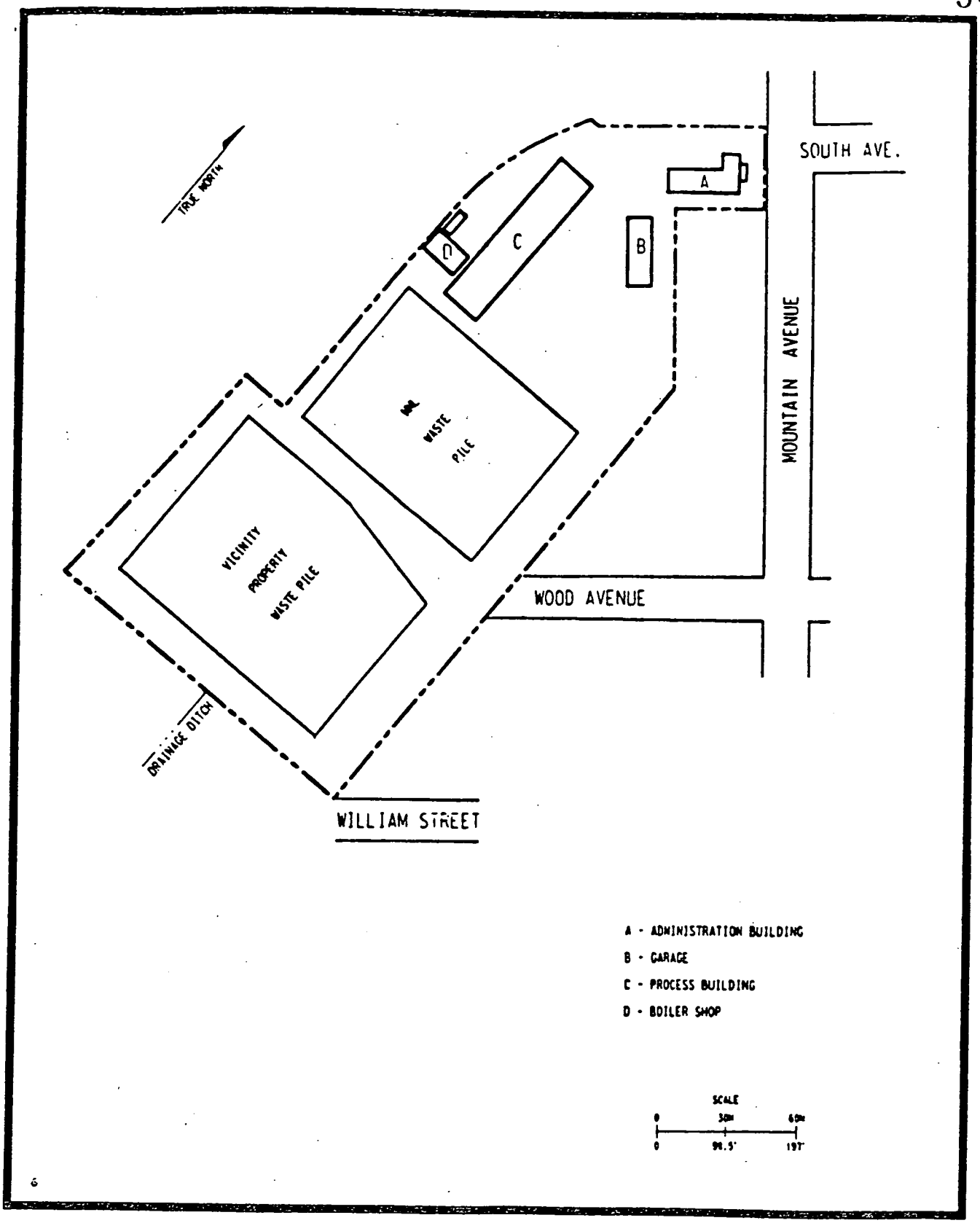


FIGURE 1-4 MAP OF MSP

The average annual daily maximum temperature for the Middlesex area is 16.9°C (62.5°F), and the average daily minimum is 7.33°C (45.2°F). The highest average monthly temperature is 29.8°C (85.6°F) (July), and the lowest is -4.3°C (24.3°F) (January). Average annual precipitation is 107 cm (42.1 in.) with an average annual snowfall of 69.9 cm (27.5 in.) (Gale 1985).

Approximately 15 million people reside within 80 km (50 mi) of Middlesex. The 1990 populations of Middlesex and Piscataway were 13,000 and 46,298, respectively; they are expected to increase over the next 10 to 15 years (BNI 1990).

1.4 SITE HISTORY

MSP was established as part of the Manhattan Engineer District (MED) in 1943. The facility was used by MED for sampling, storage, and/or shipment of uranium, thorium, and beryllium ores. All ores received at the facility were handled in a similar manner, including thawing (if necessary), drying, crushing, and screening. Samples were taken for assay from collection hoppers beneath the screens. The ores were subsequently packaged, weighed, and shipped to processing facilities.

Operation of MSP was terminated in 1955 by AEC, successor to MED. Later, AEC used the site for storage and limited sampling of thorium residues. All AEC activities at MSP ended in 1967. On-site structures were decontaminated, and the site was certified for unrestricted use under radiological release criteria in effect at that time.

In 1968, AEC returned the MSP site to the General Services Administration, which transferred the property to the Department of the Navy. The site served as a U.S. Marine Corps reserve training center from 1969 to 1979. MSP was returned to DOE custody in 1980. That same year DOE initiated remedial action to clean up properties in the vicinity of MSP, and the cleanup continued into 1981. A total of approximately 27,000 m^3 (35,000 yd^3) of contaminated soil from these remedial actions were transported to MSP, where an asphalt pad was constructed as a base for an interim storage area.

Operations at MML began in the mid-1940s. In 1948, dirt contaminated with pitchblende (high-grade uranium ore) was removed from MSP and placed on top of the existing fill at MML. Subsequent landfill operations resulted in varying depths of cover material being placed over the contaminated material. The landfill has not been used for solid waste disposal since 1974.

Two radiological surveys had indicated that the portion of the MML site requiring remedial action covered about 0.2 ha (0.5 acre) (AEC 1974; ORNL 1980). Results indicated contamination primarily in surface soils and in soils at shallow depths; the greatest depth at which contamination was found was 1.5 m (5 ft). Excavation of radioactively contaminated material from MML began in 1984; approximately 12,000 m^3 (16,000 yd^3) of contaminated soils were transported to MSP for interim storage. This initial excavation and subsequent investigation indicated that the contaminated area had covered approximately 1.2 ha (3 acres).

A second storage pad at MSP was constructed in 1984 to accommodate the materials excavated from MML during that year. Table 1-1 lists the volumes and sources of the materials placed on the storage pads by year of emplacement and indicates the total volume of contaminated material presently stored at MSP.

During 1985, site preparation work was conducted at MSP and MML in preparation for resuming remedial actions initiated in 1984. Work at MSP included the construction of a further extension to the storage area to accommodate material to be excavated from MML during 1986.

In 1986, remedial actions at MML were completed with the removal of the last 12,000 m^3 (16,000 yd^3) of contaminated soil. The excavation was backfilled with clean soil, and the area was seeded. Independent verification activities performed by the ORAU Radiological Site Assessment Program included document reviews, confirmatory laboratory analysis, and independent direct measurements and sample analysis. A letter was provided to DOE in 1987 indicating that the documentation supporting the remedial action process was adequate and accurate and that the remedial action process itself was effective in satisfying DOE criteria. The

TABLE 1-1

APPROXIMATE VOLUMES OF CONTAMINATED SOIL

IN MSP INTERIM STORAGE PILES

Date and Source	Approximate Volume (m^3)	Approximate Volume (yd^3)
1980 (Phase I) MSP cleanup	7,000	9,000
1981 (Phase II) MSP cleanup	20,000	26,000[a]
1984 MML cleanup (Second storage pile)	12,000	16,000
1986 MML Cleanup (Extended second storage pile)	12,000	16,000
Total in interim storage piles	51,000	67,000

MSP → 9.6 acres

VP – ~ 35K yd^3

LF – ~ 32K yd^3

environmental monitoring program at MML was then terminated and returned to the Borough of Middlesex in December 1987.

There are no continuing commercial, industrial, or remedial activities at MSP; therefore, there are no airborne or waterborne operational effluents leaving the site.

2.0 SUMMARY OF ENVIRONMENTAL COMPLIANCE

Throughout its history, MSP has been subject to evolving federal and state environmental regulations. The primary regulatory guidelines and limits are given in the DOE orders and authorized under six federal acts [the Clean Air Act (CAA); the Clean Water Act (CWA); the Resource Conservation and Recovery Act (RCRA); the Toxic Substances Control Act (TSCA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the National Environmental Policy Act (NEPA)]. The following summaries describe compliance requirements as they existed in 1990, as well as anticipated regulatory requirements that may affect the site.

2.1 PRIMARY REGULATORY GUIDELINES

DOE Orders for Radionuclide Releases

Site releases must comply with specific DOE orders [5400 series and DOE Order 5820.2A, "Radioactive Waste Management" (DOE 1988)] that establish quantitative limits, derived concentration guidelines (DCGs), and dose limits for radiological releases from DOE facilities. The applicable guidelines and dose limits are presented in Appendix C. For Environmental Protection Agency (EPA) permitting purposes, DOE orders are treated as legal requirements, and remedial action activities conducted by DOE at its facilities are considered "federally permitted actions" [54 Federal Register (FR) 22524].

A review of environmental monitoring results for calendar year 1990 shows that MSP was in compliance with all applicable radionuclide release standards in DOE orders. Detailed monitoring results for radionuclides are presented in Section 4.0.

Clean Air Act and National Emission Standards for Hazardous Air Pollutants

The primary federal statute governing air emissions is the CAA [42 United States Code (USC) 7401 et seq.], as amended. Federal regulations governing air emissions are contained in 40 Code of Federal Regulations (CFR) Parts 50 through 87. New Jersey is a delegated state for implementation of National Emission Standards for Hazardous Air Pollutants (NESHAPs), per 40 CFR Section 61.04(AA); state requirements are codified in New Jersey Air Pollution Control Laws, Title 26, New Jersey Revised Statutes (NJRS), Chapter 2C, Air Pollution Control. However, New Jersey is not yet authorized to implement Subpart Q in lieu of EPA Region II.

The only potential sources of air emissions from MSP are radionuclide emissions from the waste piles. MSP does not have or require any state or federal air permits. Because it is a nonoperating facility, Subpart Q of NESHAPs is applicable (DOE 1990a). If the waste storage areas are modified in 1991, Subpart A will be applicable. A strategy for determining compliance with the radon flux standard in Subpart Q was approved by EPA in July 1990, and compliance with the EPA-approved strategy was attained and maintained in 1990.

Radionuclide emissions have been modeled using the EPA-approved computer model AIRDOS, and the effective dose to members of the public has been calculated. NESHAPs Subpart M contains the National Asbestos Emission Standards. Asbestos is present in pipes in the process building, and when the asbestos is removed, implementation of standards in Subpart M will be required.

Because EPA Region II has determined that the requirements imposed by the radionuclide NESHAPs are applicable during remedial actions, procedures for complying with Subpart Q will continue to be implemented when remedial action activities begin.

Clean Water Act

Waters discharged to navigable waters of the United States are regulated under the federal CWA, as amended (33 USC 1251 et seq.)

and its associated EPA regulations (40 CFR Parts 122, 136, 403, and 405 through 471). New Jersey requirements are codified in New Jersey Water Pollution Control Laws, Title 58, New Jersey Statutes Annotated (NJSA), Chapters 6A and 10.

A formal application for a stormwater discharge permit for a point-source discharge was submitted to the New Jersey Department of Environmental Protection (NJDEP) on January 19, 1990; the permit has not yet been issued to DOE.

On November 16, 1990, EPA promulgated changes to its stormwater regulations. Although these provisions did not affect reporting obligations for 1990, significant changes in compliance monitoring and reporting may occur in 1991.

Resource Conservation and Recovery Act

RCRA (40 USC 6901 et seq.) is the principal federal statute governing the management of hazardous waste. EPA regulations for implementing RCRA are contained in 40 CFR Parts 260 through 271. New Jersey is an authorized state for implementation of the RCRA program, and state RCRA requirements can be found in New Jersey Solid and Hazardous Waste Management Regulations, Title 7, New Jersey Administrative Code (NJAC), Chapter 26.

Neither RCRA-regulated wastes nor radioactive wastes containing RCRA-regulated wastes are known to be present at MSP. However, September 25, 1990, was the effective date for implementation of the new toxicity characteristic leaching procedure (TCLP) test for determining whether a solid waste exhibits the RCRA characteristic of toxicity. Soil samples taken from the two waste piles at MSP for toxicity analysis are currently being analyzed. Should any samples fail the TCLP or exhibit other RCRA characteristics, the applicability of RCRA will be reevaluated.

Toxic Substances Control Act

The most common toxic substances regulated by TSCA (15 USC 2601 et seq.) are polychlorinated biphenyls (PCBs) and asbestos. EPA

regulations regarding the production, use, storage, handling, and disposal of PCBs are codified in 40 CFR Part 761. New Jersey regulates the generation and disposal of asbestos in the New Jersey Solid and Hazardous Waste Management Regulations, Title 7, NJAC, Chapter 26. Like RCRA requirements, TSCA requirements will have to be met in CERCLA remedial actions where they are applicable or relevant and appropriate.

PCB management involves monitoring of in-service equipment; storage and disposal of equipment removed from service; cleanup and management of spill residues; and recordkeeping and reporting.

A small quantity of asbestos is present at MSP around piping in the process building. Before any asbestos waste is shipped offsite, the notification provisions mandated by New Jersey law will be complied with.

Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA (42 USC 9601 et seq.) is the primary source of statutory authority for response actions to be conducted at MSP. EPA regulations governing cleanup activities are found in 40 CFR Part 300, which is the National Oil and Hazardous Substances Contingency Plan. CERCLA Section 121 mandates that CERCLA remedial actions comply with substantive requirements of environmental laws when they are applicable or relevant and appropriate. CERCLA mandates that applicable or relevant and appropriate requirements (ARARs) be attained during remedial actions and, to the greatest extent practicable considering the exigencies of the situation, during removal actions. ARARs are federal and state environmental statutes and regulations other than CERCLA that provide binding requirements for site-specific actions. There are three types of ARARs: (1) chemical-specific requirements that are usually health- or risk-based numerical values, (2) performance, design, or other action-specific requirements that are usually technology- or activity-based, and (3) location-specific requirements that are restrictions placed on concentrations of hazardous substances or

conduct of activities. ARARs are evaluated for their applicability throughout the CERCLA process. The ARAR identification process for MSP is continuing and will be completed before the final report is issued.

Unless all waste is removed from MSP, remediation of this site will be managed under the authority of CERCLA because wastes containing radionuclides are defined as hazardous substances under CERCLA. Any potential regulatory conflicts regarding removal action decisions will be resolved upon completion of an engineering evaluation/cost analysis (EE/CA) in fiscal year 1994. After the EE/CA is completed, the remedial design will be prepared for the removal action alternative chosen.

National Environmental Policy Act

Preparation of an environmental assessment (EA) may be required to complete remedial action activities for MSP. Documentation to justify a categorical exclusion (CX) for environmental monitoring and surveillance activities is being prepared. A CX is a class of DOE actions that normally does not require the preparation of an EA. An action for which a CX can be established is one that will have no potential for significant impact on human health and the environment. In November 1990, DOE proposed to amend its NEPA guidelines. Among the proposed revisions is an expansion of the list of CXs, including site characterization and environmental monitoring under CERCLA (55 FR 46444, September 7, 1990). The adoption of the amended guidelines will streamline the decision-making process when determining the appropriate level of NEPA documentation.

Other Major Environmental Statutes and Executive Orders

In addition to the aforementioned DOE orders and statutes, several other major environmental statutes have been reviewed for applicability. For example, the Federal Insecticide, Fungicide, and Rodenticide Act; the Endangered Species Act; the Safe Drinking

Water Act; and the National Historic Preservation Act have all been found to impose no current requirements on the MSP site. In addition, Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands") and state laws and regulations have been reviewed for applicability and compliance. MSP is in compliance with, or not subject to, all applicable environmental statutes, regulations, and executive orders.

2.2 APPLICABLE ENVIRONMENTAL PERMITS

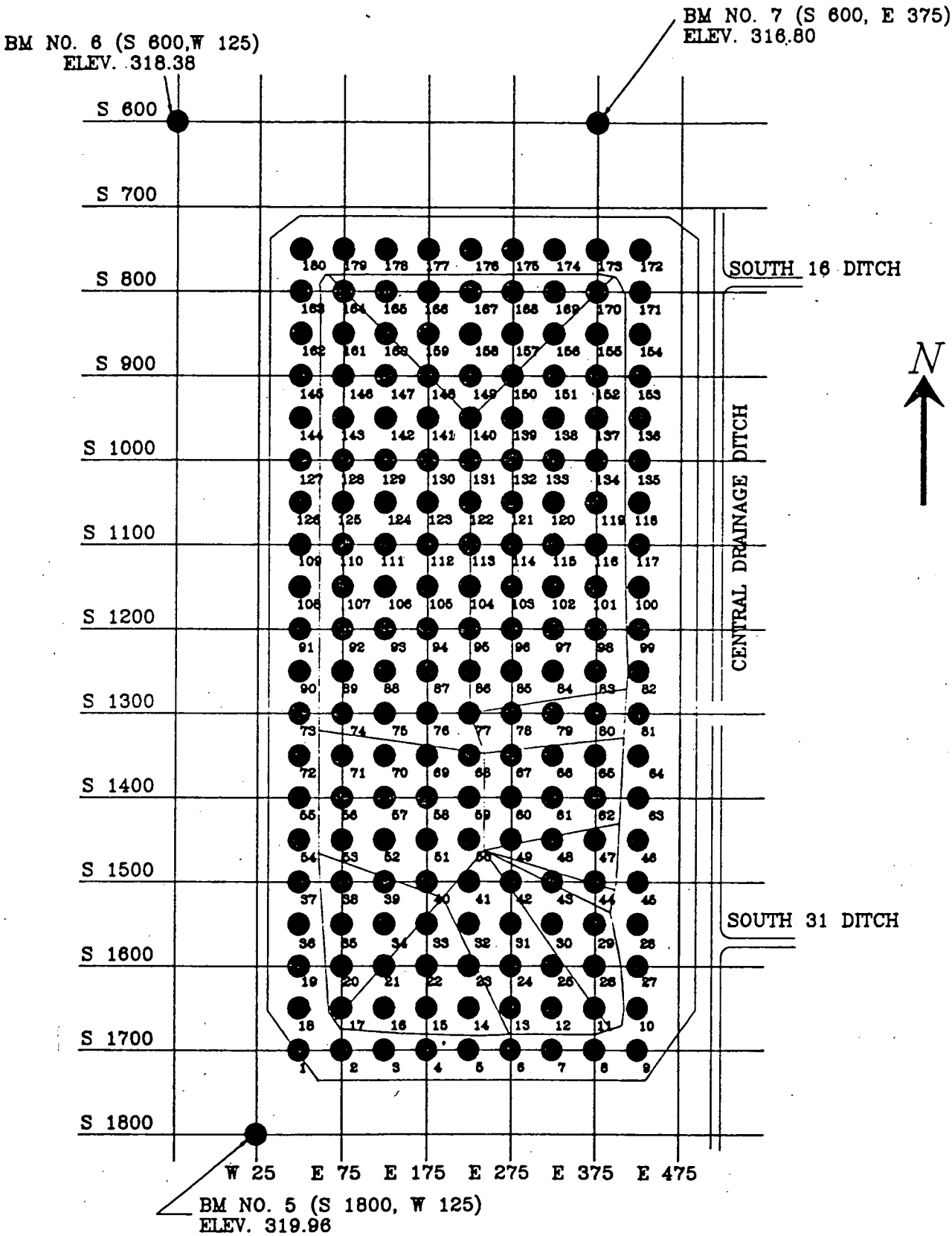
A formal application has been submitted for a point-source stormwater discharge permit for MSP in response to a notice of violation for discharge of stormwater runoff into a stream. The complete application was submitted on January 19, 1990; however, the permit has not yet been issued.

2.3 ENVIRONMENTAL IMPACT STATEMENTS AND ENVIRONMENTAL ASSESSMENTS

As stated, the preparation of an EA may be required to complete remedial action activities at MSP. Documentation to support a CX is being prepared, and the EE/CA is scheduled to be completed by 1994.

2.4 SUMMARY OF COMPLIANCE IN CALENDAR YEAR 1991 (FIRST QUARTER)

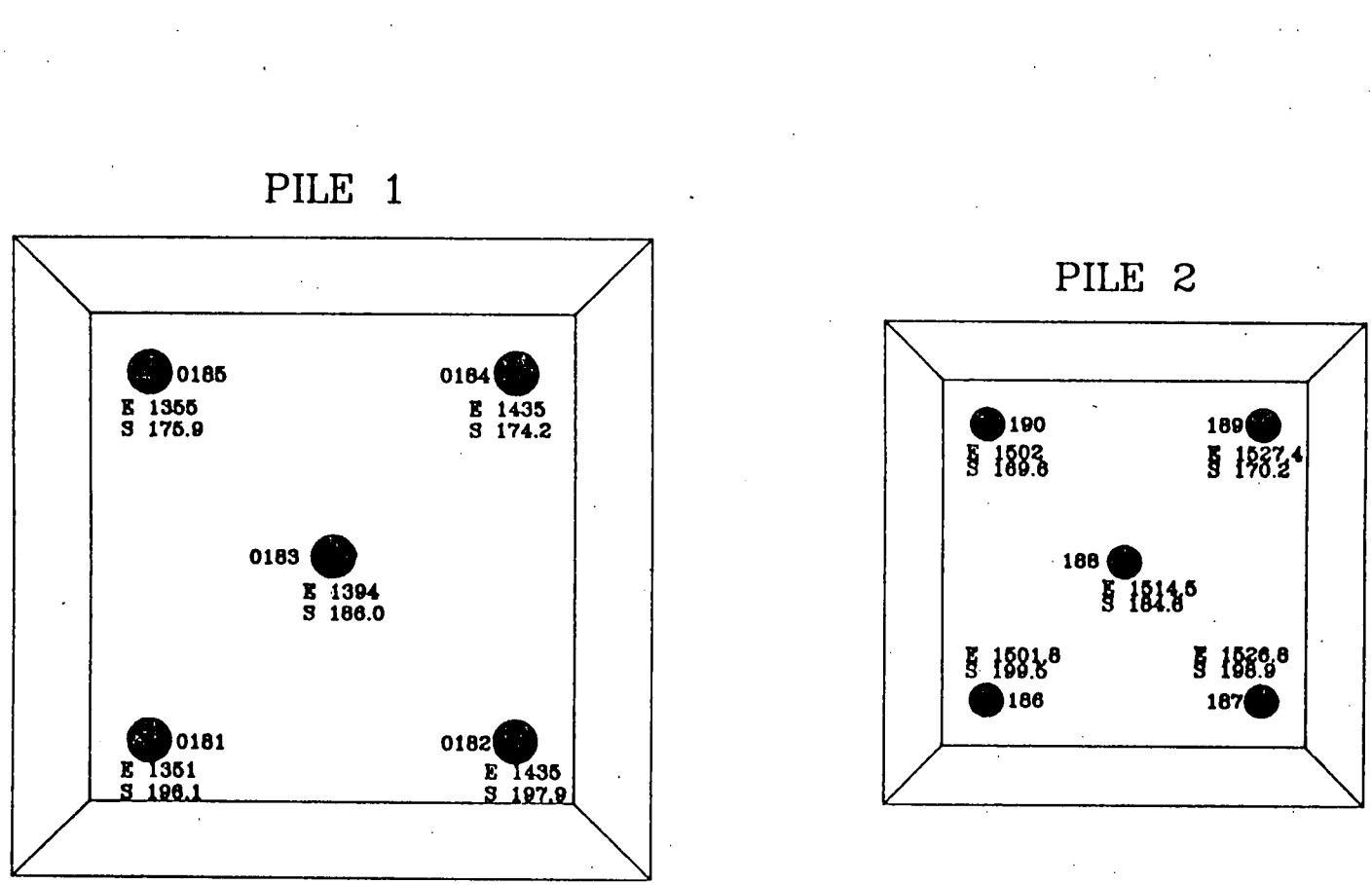
During the first quarter of calendar year 1991, full regulatory compliance continued in the same manner as during 1990 at MSP. Environmental monitoring continues, as does review of potentially applicable regulations for their impact on the site. NJDEP has taken no action on the stormwater permit application mentioned in the CWA section.



SURVEY GRID FOR THE NFSS WASTE CONTAINMENT STRUCTURE

B4:FIG3-4B:V1

NFSS



INTERIM PILES AT NFSS

24

NFSS

B4:FIG3-4A:V1

3474

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-001	4/09-4/10/91	Rn-222	4/15/91	0.06±0.03
202-RF-002	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-003	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-004	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-005	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-006	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-007	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-008	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-009	Sample Lost			
202-RF-010	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-011	Sample Lost			
202-RF-012	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-013	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-014	4/09-4/10/91	Rn-222	4/15/91	<0.04
202-RF-015	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-016	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-017	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-018	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-019	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-020	4/09-4/10/91	Rn-222	4/15/91	<0.05

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 4/24/91 DATE

25 NFSS

3474

CUSTOMER Bechtel National, Inc. - NFSS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS **Radon Flux** CUSTOMER ORDER NUMBER SAMPLES RECEIVED 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-020A	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-021	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-022	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-023	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-024	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-025	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-026	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-027	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-028	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-029	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-030	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-031	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-032	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-033	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-034	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-035	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-036	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-037	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-038	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-039	4/09-4/10/91	Rn-222	4/15/91	<0.05

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols DATE 24/24/91

NFSS

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-040	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-040A	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-041	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-042	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-043	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-044	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-045	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-046	4/09-4/10/91	Rn-222	4/15/91	<0.06
202-RF-047	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-048	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-049	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-050	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-051	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-052	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-053	4/09-4/10/91	Rn-222	4/15/91	<0.05
202-RF-054	4/09-4/10/91	Rn-222	4/16/91	0.05±0.04
202-RF-055	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-056	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-057	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-058	4/09-4/10/91	Rn-222	4/16/91	<0.06

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 27 4/24/91 DATE

NFSS

3474

CUSTOMER Bechtel National, Inc. - NFSS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS **Radon Flux** CUSTOMER ORDER NUMBER SAMPLES RECEIVED 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-059	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-060	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-060A	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-061	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-062	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-063	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-064	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-065	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-066	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-067	4/09-4/10/91	Rn-222	4/16/91	<0.05
202-RF-068	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-069	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-070	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-071	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-072	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-073	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-074	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-075	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-076	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-078	4/09-4/10/91	Rn-222	4/16/91	<0.06

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols DATE 4/24/91

28

NFSS

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

D-C

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-079	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-080	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-080A	4/09-4/10/91	Rn-222	4/16/91	<0.05
202-RF-081	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-082	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-083	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-084	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-085	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-086	4/09-4/10/91	Rn-222	4/16/91	0.07±0.04
202-RF-087	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-088	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-089	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-090	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-091	4/09-4/10/91	Rn-222	4/16/91	0.72±0.05
202-RF-092	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-093	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-094	4/09-4/10/91	Rn-222	4/16/91	<0.05
202-RF-095	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-096	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-097	4/09-4/10/91	Rn-222	4/16/91	<0.06

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 29 4/24/91 DATE

NFSS

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-098	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-099	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-100	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-100A	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-101	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-102	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-103	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-104	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-105	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-106	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-107	4/09-4/10/91	Rn-222	4/16/91	<0.05
202-RF-108	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-109	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-110	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-111	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-112	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-113	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-114	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-115	4/09-4/10/91	Rn-222	4/16/91	<0.06
202-RF-116	4/09-4/10/91	Rn-222	4/17/91	<0.07

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 30 4/24/91 DATE

NFSS

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-117	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-118	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-119	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-120	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-120A	4/09-4/10/91	Rn-222	4/17/91	<0.06
202-RF-121	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-122	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-123	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-124	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-125	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-126	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-127	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-128	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-129	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-130	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-131	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-132	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-133	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-134	4/09-4/10/91	Rn-222	4/17/91	0.06±0.05
202-RF-135	4/09-4/10/91	Rn-222	4/17/91	<0.08

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 31 4/24/91 DATE

NFSS

3474

D-081

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-136	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-137	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-138	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-139	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-140	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-140A	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-141	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-142	4/09-4/10/91	Rn-222	4/17/91	<0.07
202-RF-143	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-144	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-145	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-146	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-147	4/09-4/10/91	Rn-222	4/17/91	0.08±0.05
202-RF-148	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-149	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-150	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-151	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-152	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-153	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-154	4/09-4/10/91	Rn-222	4/17/91	<0.08

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 32 4/24/91 DATE

NFSS

3474

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

D-

REPORT OF ANALYSIS

TYPE OF ANALYSIS: **Radon Flux**

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-155	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-156	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-157	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-158	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-159	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-160	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-160A	4/09-4/10/91	Rn-222	4/17/91	<0.06
202-RF-161	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-162	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-163	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-164	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-165	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-166	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-167	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-168	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-169	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-170	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-171	4/09-4/10/91	Rn-222	4/17/91	<0.08
202-RF-172	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-173	4/09-4/10/91	Rn-222	4/18/91	<0.09

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

33

APPROVED BY Renee Echols 4/24/91 DATE

NFSS

3474

D-08

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-174	4/09-4/10/91	Rn-222	4/18/91	<0.07
202-RF-175	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-176	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-177	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-178	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-179	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-180	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-180A	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-181	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-181A	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-182	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-183	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-184	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-185	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-186	4/09-4/10/91	Rn-222	4/18/91	<0.07
202-RF-187	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-188	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-189	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-190	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-190A	4/09-4/10/91	Rn-222	4/18/91	<0.09

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 34 4/24/91 DATE

NFSS

3474

D-0013

CUSTOMER: Bechtel National, Inc. - NFSS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-32

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 4/23/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
202-RF-002(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-004(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-017(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-025(QA)	4/09-4/10/91	Rn-222	4/18/91	0.09±0.06
202-RF-035(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-042(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-045(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-069(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-071(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.07
202-RF-089(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-105(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-111(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-120A(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-127(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-136(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-147(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-154(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-168(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-172(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09
202-RF-190A(QA)	4/09-4/10/91	Rn-222	4/18/91	<0.09

☐ REPORTED VIA TELEPHONE

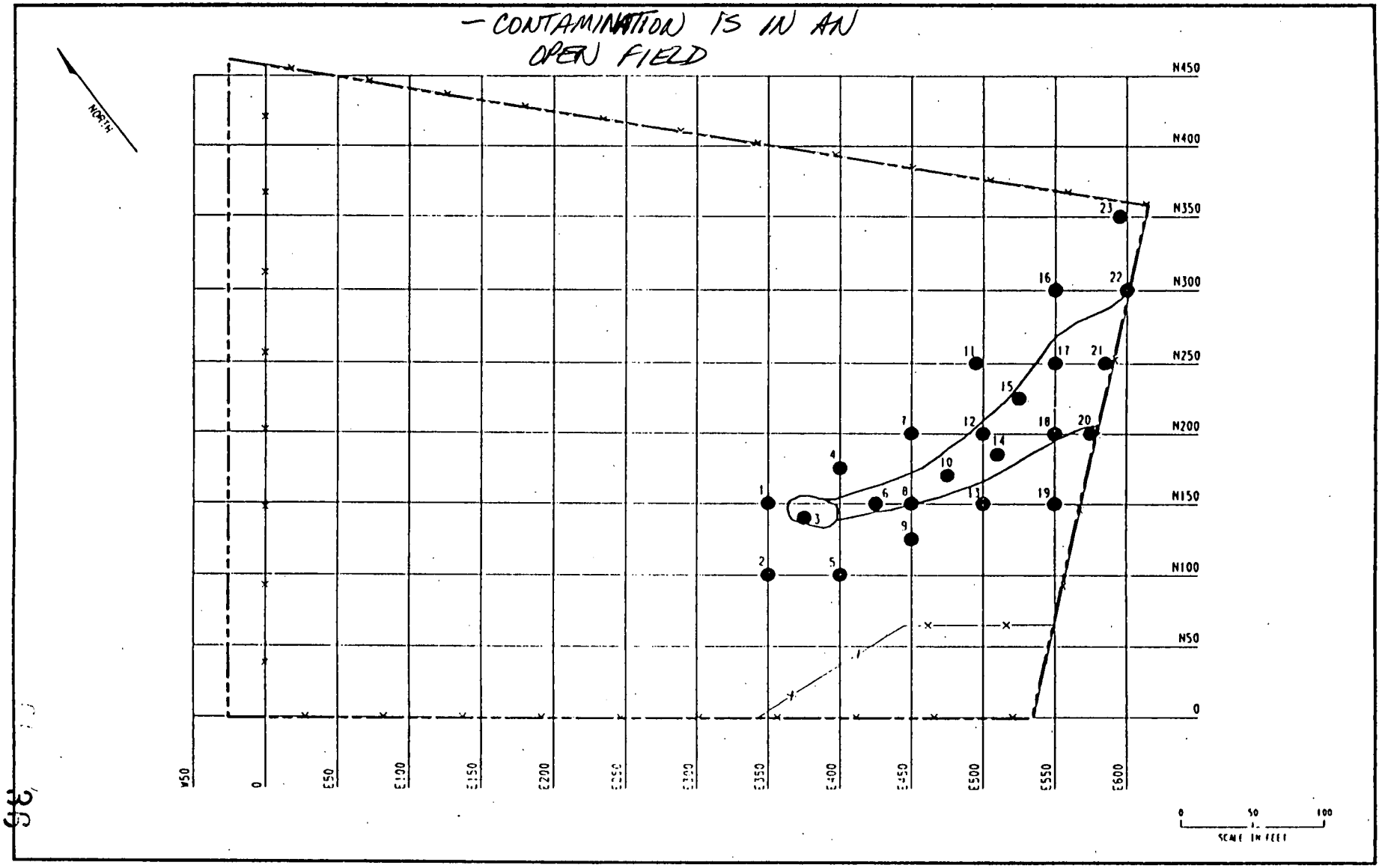
TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Renee Echols 35 4/24/91 DATE

NRSS

NOTE: ONLY KNOWN AREA OF CONTAMINATION - CONTAMINATED W/ URANIUM PITCHBLENDE ORES

- CONTAMINATION IS IN AN OPEN FIELD



144F006.DGN 11

RADON FLUX MONITORING STATIONS
AT THE NEW BRUNSWICK SITE

NBL
Former New Brunswick Laboratory

3474

3474

CUSTOMER: Bechtel National, Inc. - NBL
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-35

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/11/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
144-RF-001	5/29-5/30/91	Rn-222	5/31/91	0.34±0.02
144-RF-002	5/29-5/30/91	Rn-222	5/31/91	0.07±0.02
144-RF-003	5/29-5/30/91	Rn-222	5/31/91	0.14±0.02
144-RF-004	5/29-5/30/91	Rn-222	5/31/91	0.19±0.02
144-RF-005	5/29-5/30/91	Rn-222	5/31/91	0.31±0.02
144-RF-006	5/29-5/30/91	Rn-222	5/31/91	0.22±0.02
144-RF-007	5/29-5/30/91	Rn-222	5/31/91	0.72±0.02
144-RF-008	5/29-5/30/91	Rn-222	5/31/91	0.10±0.02
144-RF-009	5/29-5/30/91	Rn-222	5/31/91	0.34±0.02
144-RF-010	5/29-5/30/91	Rn-222	5/31/91	0.62±0.02
144-RF-011	5/29-5/30/91	Rn-222	5/31/91	0.10±0.02
144-RF-012	5/29-5/30/91	Rn-222	5/31/91	3.86±0.04
144-RF-013	5/29-5/30/91	Rn-222	5/31/91	0.14±0.02
144-RF-014	5/29-5/30/91	Rn-222	5/31/91	0.29±0.02
144-RF-015	5/29-5/30/91	Rn-222	5/31/91	2.01±0.03
144-RF-016	5/29-5/30/91	Rn-222	5/31/91	0.51±0.02
144-RF-017	5/29-5/30/91	Rn-222	5/31/91	0.22±0.02
144-RF-018	5/29-5/30/91	Rn-222	5/31/91	0.08±0.02
144-RF-019	5/29-5/30/91	Rn-222	5/31/91	0.10±0.02
144-RF-020	5/29-5/30/91	Rn-222	5/31/91	0.15±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

OK
WB
6/11/91

APPROVED BY

DATE

37

NBL

3474

CUSTOMER: Bechtel National, Inc. - NBL
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-35

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/11/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
144-RF-021	5/29-5/30/91	Rn-222	5/31/91	0.11±0.02	
144-RF-022	5/29-5/30/91	Rn-222	5/31/91	0.12±0.02	
144-RF-023	5/29-5/30/91	Rn-222	5/31/91	0.10±0.02	
144-RF-003	5/29-5/30/91	Rn-222	5/31/91	0.16±0.02	FQC
144-RF-008	5/29-5/30/91	Rn-222	5/31/91	0.15±0.02	FQC
144-RF-012	5/29-5/30/91	Rn-222	5/31/91	3.79±0.04	LQC
144-RF-015	5/29-5/30/91	Rn-222	5/31/91	2.00±0.03	LQC
144-RF-016	5/29-5/30/91	Rn-222	5/31/91	0.50±0.02	LQC
144-RF-023	5/29-5/30/91	Rn-222	5/31/91	0.05±0.02	FQC

FQC = Duplicate "Field Quality Control" Sample at Same Location.
LQC = Duplicate "Laboratory Quality Control" Analyses.

☐ REPORTED VIA TELEPHONE

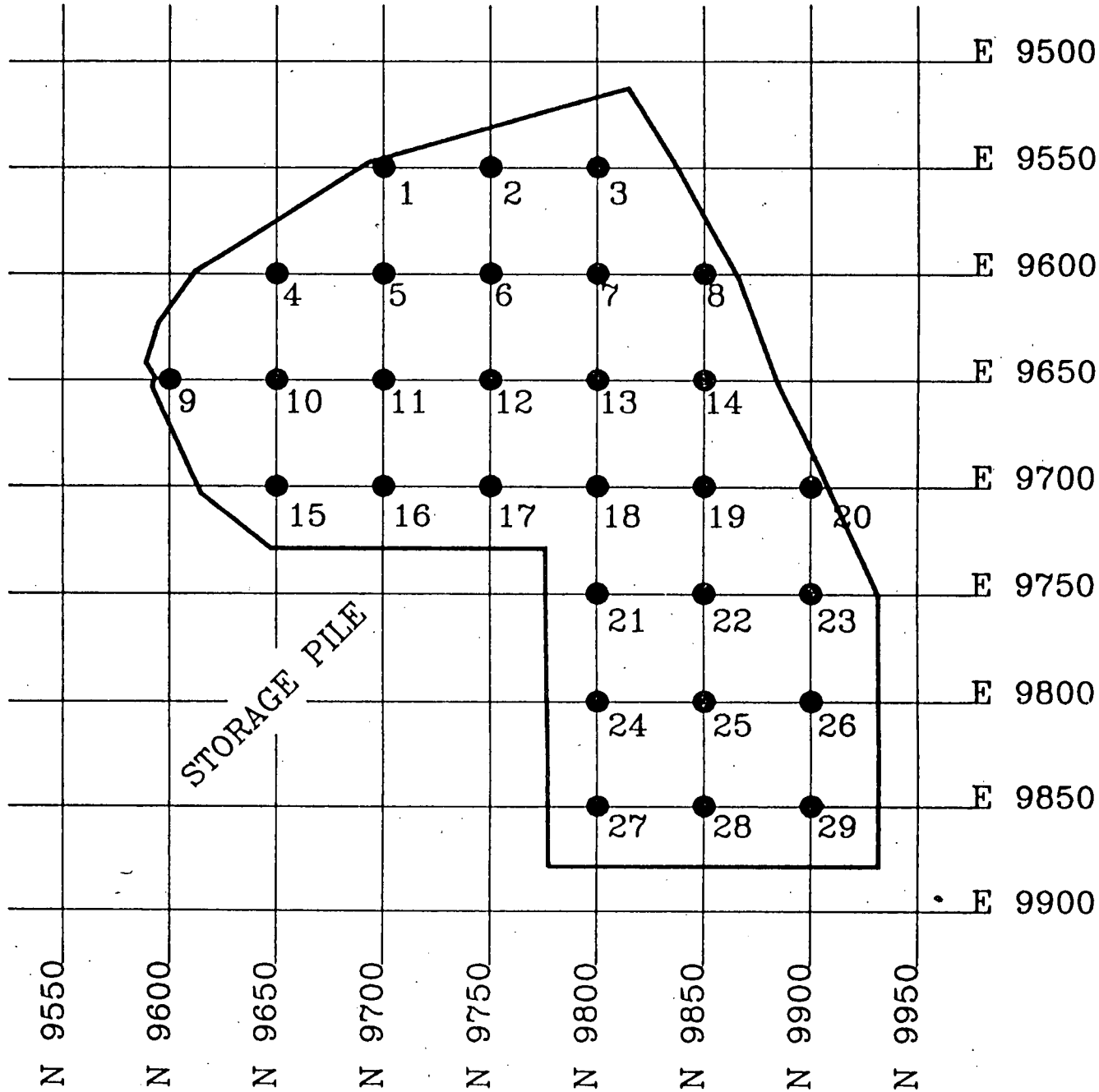
TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

ok
mmB
6/11/91

APPROVED BY

38

DATE



MAYWOOD INTERIM STORAGE PILE

Maywood

3474

CUSTOMER: Bechtel National, Inc. - MISS Storage Pile
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/7/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-01	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-02	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-03	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-04	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-05	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-06	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-07	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-08	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-09	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-010	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-011	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-012	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-013	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-014	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-015	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-016	5/28-5/29/91	Rn-222	5/30/91	1.76±0.03
138-RF-017	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-018	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-019	5/28-5/29/91	Rn-222	5/30/91	<0.03
138-RF-020	5/28-5/29/91	Rn-222	5/30/91	1.04±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

ok
mi
6/12/91

APPROVED BY

Pile 40

DATE

3474

CUSTOMER
ATTENTION
ADDRESS
CITY
W.O. NO.

Bechtel National, Inc. - MISS Storage Pile
Michael McDougall
P.O. Box 350
Oak Ridge, TN. 37831-0350

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/7/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
138-RF-021	5/28-5/29/91	Rn-222	5/30/91	0.02±0.02	
138-RF-022	5/28-5/29/91	Rn-222	5/30/91	<0.03	
138-RF-023	5/28-5/29/91	Rn-222	5/30/91	<0.03	
138-RF-024	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-025	5/28-5/29/91	Rn-222	5/30/91	0.02±0.01	
138-RF-026	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-027	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-028	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-029	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-030	5/28-5/29/91	Rn-222	5/30/91	<0.02	
138-RF-03	5/28-5/29/91	Rn-222	5/30/91	<0.03	FQC
138-RF-03	5/28-5/29/91	Rn-222	5/30/91	<0.03	LQC
138-RF-010	5/28-5/29/91	Rn-222	5/30/91	<0.03	FQC
138-RF-016	5/28-5/29/91	Rn-222	5/30/91	1.76±0.03	LQC
138-RF-021	5/28-5/29/91	Rn-222	5/30/91	0.02±0.01	LQC
138-RF-021	5/28-5/29/91	Rn-222	5/30/91	<0.03	FQC

FQC = Duplicate "Field Quality Control" Measurement At The Same Location.
LQC = Duplicate "Laboratory Quality Control" Analyses.

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

ok
mcB
6/12/91

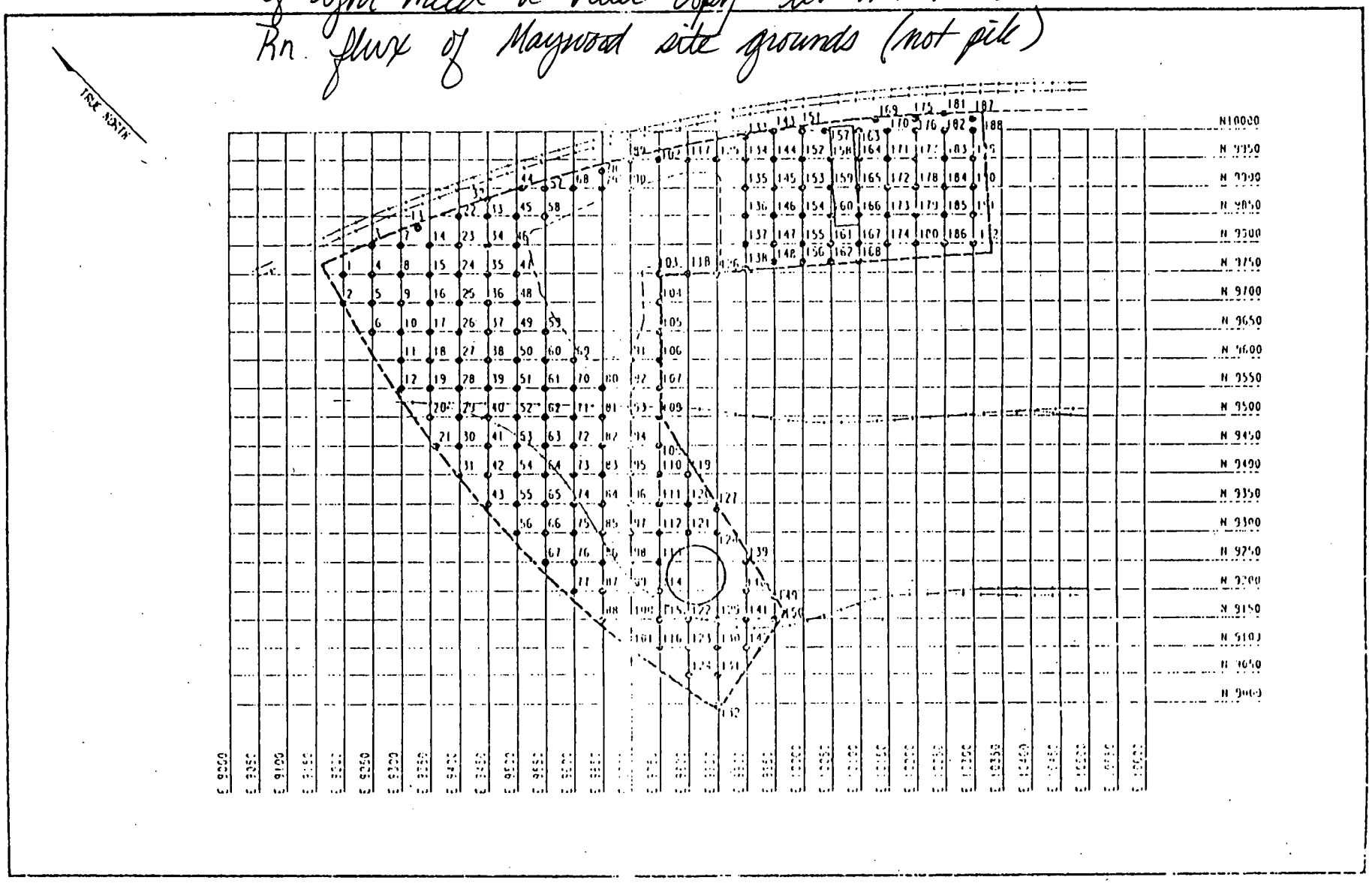
APPROVED BY

Rile

41

Maynard

If you need a better copy - let me know
Rn. flux of Maywood site grounds (not pile)



RADON FLUX MONITORING STATIONS
AT THE MAYWOOD INTERIM STORAGE SITE

0767786

42

Maywood

3474

Maywood RADON FLUX Locations

1	9200	9750
2	9200	9700
3	9250	9800
4	9250	9750
5	9250	9700
6	9250	9650
7	9300	9800
8	9300	9750
9	9300	9700
10	9300	9650
11	9300	9600
12	9300	9550
13	9330	9530
14	9350	9600
15	9350	9750
16	9350	9700
17	9350	9650
18	9350	9600
19	9350	9550
20	9350	9500
21	9360	9450
22	9400	9650
23	9400	9600
24	9400	9750
25	9400	9700
26	9400	9650
27	9400	9600
28	9400	9550
29	9400	9500
30	9400	9450
31	9400	9400
32	9450	9650
33	9450	9600
34	9450	9600
35	9450	9750
36	9450	9700
37	9450	9650
38	9450	9600
39	9450	9550
40	9450	9500
41	9450	9450
42	9450	9400
43	9450	9350
44	9510	9600
45	9500	9850
46	9500	9800
47	9500	9750
48	9500	9700
49	9500	9650
50	9500	9600
51	9500	9550
52	9500	9500
53	9500	9450
54	9500	9400
55	9500	9350
56	9500	9300
57	9550	9900
58	9550	9850
59	9550	9450
60	9550	9400
61	9550	9350
62	9550	9300
63	9550	9450
64	9550	9400
65	9550	9350
66	9550	9300
67	9550	9250
68	9600	9900
69	9600	9800
70	9600	9650
71	9600	9500
72	9600	9450
73	9600	9400
74	9600	9350
75	9600	9300
76	9600	9250
77	9600	9200
78	9650	9900
79	9650	9900
80	9650	9650
81	9650	9600
82	9650	9450
83	9650	9400
84	9650	9350
85	9650	9300
86	9650	9250
87	9650	9200
88	9650	9150
89	9700	9950
90	9700	9900
91	9700	9600
92	9700	9550
93	9700	9500
94	9700	9450
95	9700	9400
96	9700	9350
97	9700	9300
98	9700	9250
99	9700	9200
100	9700	9150
101	9700	9100
102	9750	9850
103	9750	9750
104	9750	9700
105	9750	9650
106	9750	9600
107	9750	9550
108	9750	9500
109	9750	9450
110	9750	9400
111	9750	9350
112	9750	9300
113	9750	9250
114	9750	9200
115	9750	9150
116	9750	9100
117	9800	9950
118	9800	9750
119	9800	9400
120	9800	9350
121	9800	9300
122	9800	9150
123	9800	9100
124	9800	9050
125	9850	9950
126	9850	9750
127	9850	9040
128	9850	9300
129	9850	9150
130	9850	9100
131	9850	9050
132	9850	9000
133	9900	9990
134	9900	9950
135	9900	9900
136	9900	9850
137	9900	9800
138	9900	9750
139	9900	9250
140	9900	9200
141	9900	9150
142	9900	9100
143	9950	10000
144	9950	9950
145	9950	9900
146	9950	9850
147	9950	9800
148	9950	9770
149	9950	9190
150	9950	9150
151	10000	10000
152	10000	9950
153	10000	9900
154	10000	9850
155	10000	9800
156	10000	9770
157	10050	10000
158	10050	9950
159	10050	9900
160	10050	9850
161	10050	9800
162	10050	9770
163	10100	10000
164	10100	9950
165	10100	9900
166	10100	9850
167	10100	9800
168	10100	9770
169	10150	10020
170	10150	10000
171	10150	9950
172	10150	9900
173	10150	9850
174	10150	9800
175	10200	10020
176	10200	10000
177	10200	9950
178	10200	9900
179	10200	9850
180	10200	9800
181	10250	10000
182	10250	10000
183	10250	9950
184	10250	9900
185	10250	9850
186	10250	9800
187	10300	10020
188	10300	10000
189	10300	9950
190	10300	9900
191	10300	9850
192	10300	9800

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-001	6/3-6/4/91	Rn-222	6/5/91	0.07±0.02
138-RF-002	6/3-6/4/91	Rn-222	6/5/91	0.21±0.02
138-RF-003	6/3-6/4/91	Rn-222	6/5/91	0.31±0.02
138-RF-004	6/3-6/4/91	Rn-222	6/5/91	0.35±0.02
138-RF-005	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-006	6/3-6/4/91	Rn-222	6/5/91	0.14±0.02
138-RF-007	6/3-6/4/91	Rn-222	6/5/91	0.09±0.02
138-RF-008	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-009	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-010	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01
138-RF-011	6/3-6/4/91	Rn-222	6/5/91	0.03±0.01
138-RF-012	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01
138-RF-013	6/3-6/4/91	Rn-222	6/5/91	0.08±0.02
138-RF-014	6/3-6/4/91	Rn-222	6/5/91	0.15±0.02
138-RF-015	6/3-6/4/91	Rn-222	6/5/91	0.05±0.01
138-RF-016	6/3-6/4/91	Rn-222	6/5/91	0.02±0.01
138-RF-017	6/3-6/4/91	Rn-222	6/5/91	0.07±0.02
138-RF-018	6/3-6/4/91	Rn-222	6/5/91	0.19±0.02
138-RF-019	6/3-6/4/91	Rn-222	6/5/91	0.21±0.02
138-RF-020	6/3-6/4/91	Rn-222	6/5/91	0.08±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

44

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-021	6/3-6/4/91	Rn-222	6/5/91	0.14±0.02
138-RF-022	6/3-6/4/91	Rn-222	6/5/91	0.49±0.02
138-RF-023	6/3-6/4/91	Rn-222	6/5/91	0.08±0.01
138-RF-024	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-025	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-026	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-027	6/3-6/4/91	Rn-222	6/5/91	0.11±0.01
138-RF-028	6/3-6/4/91	Rn-222	6/5/91	0.16±0.02
138-RF-029	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01
138-RF-030	6/3-6/4/91	Rn-222	6/5/91	0.08±0.01
138-RF-031	6/3-6/4/91	Rn-222	6/5/91	0.19±0.02
138-RF-032	6/3-6/4/91	Rn-222	6/5/91	0.51±0.02
138-RF-033	6/3-6/4/91	Rn-222	6/5/91	0.75±0.02
138-RF-034	6/3-6/4/91	Rn-222	6/5/91	0.02±0.01
138-RF-035	6/3-6/4/91	Rn-222	6/5/91	<0.02
138-RF-036	6/3-6/4/91	Rn-222	6/5/91	0.03±0.01
138-RF-037	6/3-6/4/91	Rn-222	6/5/91	0.32±0.02
138-RF-038	6/3-6/4/91	Rn-222	6/5/91	0.13±0.01
138-RF-039	6/3-6/4/91	Rn-222	6/5/91	0.10±0.01
138-RF-040	6/3-6/4/91	Rn-222	6/5/91	0.20±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

3474

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-041	6/3-6/4/91	Rn-222	6/5/91	0.11±0.01
138-RF-042	6/3-6/4/91	Rn-222	6/5/91	0.51±0.02
138-RF-043	6/3-6/4/91	Rn-222	6/5/91	0.24±0.02
138-RF-044	6/3-6/4/91	Rn-222	6/5/91	0.09±0.01
138-RF-045	6/3-6/4/91	Rn-222	6/5/91	0.20±0.02
138-RF-046	6/3-6/4/91	Rn-222	6/5/91	0.15±0.02
138-RF-047	6/3-6/4/91	Rn-222	6/5/91	0.20±0.02
138-RF-048	6/3-6/4/91	Rn-222	6/5/91	0.03±0.01
138-RF-049	6/3-6/4/91	Rn-222	6/5/91	0.02±0.01
138-RF-050	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01
138-RF-051	6/5-6/6/91	Rn-222	6/7/91	2.42±0.03
138-RF-052	6/5-6/6/91	Rn-222	6/7/91	0.19±0.02
138-RF-053	6/5-6/6/91	Rn-222	6/7/91	0.20±0.02
138-RF-054	6/5-6/6/91	Rn-222	6/7/91	0.13±0.02
138-RF-055	6/5-6/6/91	Rn-222	6/7/91	1.70±0.03
138-RF-056	6/5-6/6/91	Rn-222	6/7/91	0.26±0.02
138-RF-057	6/6-6/7/91	Rn-222	6/10/91	0.14±0.02
138-RF-058	6/6-6/7/91	Rn-222	6/10/91	0.52±0.03
138-RF-059	6/5-6/6/91	Rn-222	6/7/91	0.03±0.01
138-RF-060	6/5-6/6/91	Rn-222	6/7/91	0.86±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

46

DATE

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS
3474

TYPE OF ANALYSIS **Radon Flux** CUSTOMER ORDER NUMBER SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-061	6/5-6/6/91	Rn-222	6/7/91	0.22±0.02
138-RF-062	6/5-6/6/91	Rn-222	6/7/91	2.53±0.03
138-RF-063	6/5-6/6/91	Rn-222	6/7/91	0.02±0.02
138-RF-064	6/5-6/6/91	Rn-222	6/7/91	0.05±0.02
138-RF-065	6/5-6/6/91	Rn-222	6/7/91	0.22±0.02
138-RF-066	6/5-6/6/91	Rn-222	6/7/91	1.26±0.02
138-RF-067	6/5-6/6/91	Rn-222	6/7/91	0.16±0.02
138-RF-068	6/6-6/7/91	Rn-222	6/10/91	<0.04
138-RF-069	6/5-6/6/91	Rn-222	6/7/91	0.29±0.02
138-RF-070	6/5-6/6/91	Rn-222	6/7/91	0.22±0.02
138-RF-071	6/5-6/6/91	Rn-222	6/7/91	0.06±0.02
138-RF-072	6/5-6/6/91	Rn-222	6/7/91	<0.02
138-RF-073	6/5-6/6/91	Rn-222	6/7/91	0.03±0.01
138-RF-074	6/5-6/6/91	Rn-222	6/7/91	0.16±0.02
138-RF-075	6/5-6/6/91	Rn-222	6/7/91	0.62±0.02
138-RF-076	6/5-6/6/91	Rn-222	6/7/91	<0.03
138-RF-077	6/5-6/6/91	Rn-222	6/7/91	0.12±0.02
138-RF-078	6/6-6/7/91	Rn-222	6/10/91	<0.04
138-RF-079	6/6-6/7/91	Rn-222	6/10/91	0.17±0.02
138-RF-080	6/5-6/6/91	Rn-222	6/7/91	0.20±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

47

DATE

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-081	6/5-6/6/91	Rn-222	6/7/91	0.49±0.02
138-RF-082	6/5-6/6/91	Rn-222	6/7/91	0.03±0.02
138-RF-083	6/5-6/6/91	Rn-222	6/7/91	<0.02
138-RF-084	6/5-6/6/91	Rn-222	6/7/91	0.03±0.02
138-RF-085	6/5-6/6/91	Rn-222	6/7/91	0.37±0.02
138-RF-086	6/5-6/6/91	Rn-222	6/7/91	0.04±0.01
138-RF-087	6/5-6/6/91	Rn-222	6/7/91	<0.02
138-RF-088	6/5-6/6/91	Rn-222	6/7/91	0.07±0.02
138-RF-089	6/6-6/7/91	Rn-222	6/10/91	0.07±0.02
138-RF-090	6/6-6/7/91	Rn-222	6/10/91	1.73±0.04
138-RF-091	6/5-6/6/91	Rn-222	6/7/91	0.08±0.02
138-RF-092	6/5-6/6/91	Rn-222	6/7/91	0.07±0.02
138-RF-093	6/5-6/6/91	Rn-222	6/7/91	0.06±0.02
138-RF-094	6/5-6/6/91	Rn-222	6/7/91	0.15±0.02
138-RF-095	6/5-6/6/91	Rn-222	6/7/91	0.23±0.02
138-RF-096	6/5-6/6/91	Rn-222	6/7/91	0.10±0.02
138-RF-097	6/5-6/6/91	Rn-222	6/7/91	0.15±0.02
138-RF-098	6/5-6/6/91	Rn-222	6/7/91	0.06±0.02
138-RF-099	6/5-6/6/91	Rn-222	6/7/91	0.05±0.02
138-RF-100	6/5-6/6/91	Rn-222	6/7/91	0.32±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

48

DATE

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-101	6/11-6/12/91	Rn-222	6/13/91	0.37±0.02
138-RF-102	6/11-6/12/91	Rn-222	6/13/91	0.19±0.02
138-RF-103	6/11-6/12/91	Rn-222	6/13/91	0.13±0.02
138-RF-104	6/11-6/12/91	Rn-222	6/13/91	<0.03
138-RF-105	6/11-6/12/91	Rn-222	6/13/91	0.05±0.02
138-RF-106	6/11-6/12/91	Rn-222	6/13/91	0.14±0.02
138-RF-107	6/11-6/12/91	Rn-222	6/13/91	<0.03
138-RF-108	6/11-6/12/91	Rn-222	6/13/91	0.20±0.02
138-RF-109	6/11-6/12/91	Rn-222	6/13/91	0.19±0.02
138-RF-110	6/11-6/12/91	Rn-222	6/13/91	0.44±0.02
138-RF-111	6/11-6/12/91	Rn-222	6/13/91	0.27±0.02
138-RF-112	6/11-6/12/91	Rn-222	6/13/91	<0.03
138-RF-113	6/11-6/12/91	Rn-222	6/13/91	0.14±0.02
138-RF-114	6/11-6/12/91	Rn-222	6/13/91	0.04±0.02
138-RF-115	6/11-6/12/91	Rn-222	6/13/91	1.65±0.03
138-RF-116	6/11-6/12/91	Rn-222	6/13/91	0.45±0.02
138-RF-117	6/11-6/12/91	Rn-222	6/13/91	0.12±0.02
138-RF-118	6/11-6/12/91	Rn-222	6/13/91	0.02±0.02
138-RF-119	6/11-6/12/91	Rn-222	6/13/91	0.08±0.01
138-RF-120	6/11-6/12/91	Rn-222	6/13/91	0.11±0.01

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-121	6/11-6/12/91	Rn-222	6/13/91	<0.03
138-RF-122	6/11-6/12/91	Rn-222	6/13/91	0.25±0.02
138-RF-123	6/11-6/12/91	Rn-222	6/13/91	7.85±0.05
138-RF-124	6/11-6/12/91	Rn-222	6/13/91	2.24±0.03
138-RF-125	6/11-6/12/91	Rn-222	6/13/91	0.29±0.02
138-RF-126	6/11-6/12/91	Rn-222	6/13/91	0.05±0.02
138-RF-127	6/11-6/12/91	Rn-222	6/13/91	0.06±0.01
138-RF-128	6/11-6/12/91	Rn-222	6/13/91	0.07±0.02
138-RF-129	6/11-6/12/91	Rn-222	6/13/91	0.15±0.02
138-RF-130	Sample Was Lost			
138-RF-131	6/11-6/12/91	Rn-222	6/13/91	0.13±0.02
138-RF-132	6/11-6/12/91	Rn-222	6/13/91	0.14±0.02
138-RF-133	5/30-5/31/91	Rn-222	6/3/91	0.12±0.02
138-RF-134	5/30-5/31/91	Rn-222	6/3/91	0.03±0.02
138-RF-135	6/11-6/12/91	Rn-222	6/13/91	0.05±0.02
138-RF-136	6/11-6/12/91	Rn-222	6/13/91	0.46±0.02
138-RF-137	6/11-6/12/91	Rn-222	6/13/91	0.08±0.02
138-RF-138	6/11-6/12/91	Rn-222	6/13/91	0.09±0.02
138-RF-139	6/11-6/12/91	Rn-222	6/13/91	0.16±0.02
138-RF-140	6/11-6/12/91	Rn-222	6/13/91	0.05±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

ALBUQUERQUE LABORATORY

CUSTOMER: Bechtel National, Inc. - MISS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-141	6/11-6/12/91	Rn-222	6/13/91	0.09±0.02
138-RF-142	6/11-6/12/91	Rn-222	6/13/91	0.03±0.01
138-RF-143	5/30-5/31/91	Rn-222	6/3/91	0.07±0.02
138-RF-144	5/30-5/31/91	Rn-222	6/3/91	<0.03
138-RF-145	5/30-5/31/91	Rn-222	6/3/91	<0.03
138-RF-146	5/30-5/31/91	Rn-222	6/3/91	0.04±0.02
138-RF-147	5/30-5/31/91	Rn-222	6/3/91	<0.3
138-RF-148	5/30-5/31/91	Rn-222	6/3/91	0.03±0.02
138-RF-149	6/11-6/12/91	Rn-222	6/13/91	0.27±0.02
138-RF-150	6/11-6/12/91	Rn-222	6/13/91	0.21±0.02
138-RF-151	5/30-5/31/91	Rn-222	6/3/91	0.13±0.02
138-RF-152	5/30-5/31/91	Rn-222	6/3/91	0.15±0.02
138-RF-153	5/30-5/31/91	Rn-222	6/3/91	0.08±0.02
138-RF-154	5/30-5/31/91	Rn-222	6/3/91	0.03±0.02
138-RF-155	5/30-5/31/91	Rn-222	6/3/91	0.03±0.02
138-RF-156	5/30-5/31/91	Rn-222	6/3/91	0.32±0.02
138-RF-157	5/30-5/31/91	Rn-222	6/3/91	4.16±0.05
138-RF-158	5/30-5/31/91	Rn-222	6/3/91	0.16±0.02
138-RF-159	5/30-5/31/91	Rn-222	6/3/91	0.80±0.03
138-RF-160	5/30-5/31/91	Rn-222	6/3/91	1.04±0.03

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY: Brooks

DATE: 51

Manford

ALBUQUERQUE LABORATORY

CUSTOMER: Bechtel National, Inc. - MISS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-34

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER: 3474

SAMPLES RECEIVED: 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
138-RF-161	5/30-5/31/91	Rn-222	6/3/91	2.14±0.04
138-RF-162	5/30-5/31/91	Rn-222	6/3/91	0.23±0.02
138-RF-163	5/30-5/31/91	Rn-222	6/3/91	14.30±0.08
138-RF-164	5/30-5/31/91	Rn-222	6/3/91	0.33±0.02
138-RF-165	5/30-5/31/91	Rn-222	6/3/91	10.45±0.07
138-RF-166	5/30-5/31/91	Rn-222	6/3/91	0.87±0.03
138-RF-167	5/30-5/31/91	Rn-222	6/3/91	0.11±0.02
138-RF-168	5/30-5/31/91	Rn-222	6/3/91	0.15±0.02
138-RF-169	5/30-5/31/91	Rn-222	6/3/91	0.47±0.03
138-RF-170	5/30-5/31/91	Rn-222	6/3/91	1.16±0.03
138-RF-171	5/30-5/31/91	Rn-222	6/3/91	4.81±0.05
138-RF-172	5/30-5/31/91	Rn-222	6/3/91	22.00±0.10
138-RF-173	5/30-5/31/91	Rn-222	6/3/91	25.65±0.11
138-RF-174	5/30-5/31/91	Rn-222	6/3/91	27.04±0.11
138-RF-175	5/30-5/31/91	Rn-222	6/3/91	0.13±0.02
138-RF-176	5/30-5/31/91	Rn-222	6/3/91	0.06±0.02
138-RF-177	5/30-5/31/91	Rn-222	6/3/91	0.23±0.02
138-RF-178	5/30-5/31/91	Rn-222	6/3/91	0.68±0.03
138-RF-179	5/30-5/31/91	Rn-222	6/3/91	21.90±0.10
138-RF-180	5/30-5/31/91	Rn-222	6/3/91	36.71±0.13

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

Grounds 52

DATE

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MISS
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO. 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
138-RF-181	5/30-5/31/91	Rn-222	6/3/91	0.71±0.03	
138-RF-182	5/30-5/31/91	Rn-222	6/3/91	0.07±0.02	
138-RF-183	5/30-5/31/91	Rn-222	6/3/91	1.13±0.03	
138-RF-184	5/30-5/31/91	Rn-222	6/3/91	0.19±0.02	
138-RF-185	5/30-5/31/91	Rn-222	6/3/91	2.53±0.04	
138-RF-186	5/30-5/31/91	Rn-222	6/3/91	17.16±0.09	
138-RF-187	5/30-5/31/91	Rn-222	6/3/91	1.49±0.03	
138-RF-188	5/30-5/31/91	Rn-222	6/3/91	0.57±0.03	
138-RF-189	5/30-5/31/91	Rn-222	6/3/91	0.29±0.02	
138-RF-190	5/30-5/31/91	Rn-222	6/3/91	0.36±0.02	
138-RF-191	5/30-5/31/91	Rn-222	6/3/91	1.31±0.03	
138-RF-192	5/30-5/31/91	Rn-222	6/3/91	2.51±0.04	
138-RF-010	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01	LQC
138-RF-027	6/3-6/4/91	Rn-222	6/5/91	0.09±0.01	FQC
138-RF-029	6/3-6/4/91	Rn-222	6/5/91	0.09±0.01	FQC
138-RF-030	6/3-6/4/91	Rn-222	6/5/91	0.04±0.01	FQC
138-RF-030	6/3-6/4/91	Rn-222	6/5/91	0.08±0.01	LQC
138-RF-031	6/3-6/4/91	Rn-222	6/5/91	0.03±0.01	FQC
138-RF-032	6/3-6/4/91	Rn-222	6/5/91	0.44±0.02	FQC
138-RF-032	6/3-6/4/91	Rn-222	6/5/91	0.42±0.02	LQC

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

Grounds 53

ALBUQUERQUE LABORATORY

CUSTOMER: Bechtel National, Inc. - MISS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-34

REPORT OF ANALYSIS

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER: 3474

SAMPLES RECEIVED: 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
138-RF-036	6/3-6/4/91	Rn-222	6/5/91	<0.02	LQC
138-RF-050	6/3-6/4/91	Rn-222	6/5/91	0.37±0.02	FQC
138-RF-053	6/5-6/6/91	Rn-222	6/7/91	0.15±0.02	FQC
138-RF-058	6/6-6/7/91	Rn-222	6/10/91	0.53±0.03	LQC
138-RF-061	6/5-6/6/91	Rn-222	6/7/91	0.23±0.02	LQC
138-RF-064	6/5-6/6/91	Rn-222	6/7/91	0.07±0.02	FQC
138-RF-066	6/5-6/6/91	Rn-222	6/7/91	1.33±0.03	FQC
138-RF-077	6/5-6/6/91	Rn-222	6/7/91	0.44±0.02	FQC
138-RF-077	6/5-6/6/91	Rn-222	6/7/91	0.45±0.02	LQC
138-RF-087	6/5-6/6/91	Rn-222	6/7/91	<0.02	FQC
138-RF-087	6/5-6/6/91	Rn-222	6/7/91	<0.03	LQC
138-RF-091	6/5-6/6/91	Rn-222	6/7/91	0.08±0.02	FQC
138-RF-098	6/5-6/6/91	Rn-222	6/7/91	0.06±0.02	LQC
138-RF-098	6/5-6/6/91	Rn-222	6/7/91	0.07±0.02	FQC
138-RF-100	6/5-6/6/91	Rn-222	6/7/91	0.32±0.02	LQC
138-RF-103	6/11-6/12/91	Rn-222	6/13/91	0.14±0.02	LQC
138-RF-106	6/11-6/12/91	Rn-222	6/13/91	0.13±0.02	LQC
138-RF-116	6/11-6/12/91	Rn-222	6/13/91	1.07±0.02	FQC
138-RF-121	6/11-6/12/91	Rn-222	6/13/91	<0.03	FQC
138-RF-126	6/11-6/12/91	Rn-222	6/13/91	0.04±0.02	LQC

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

Brounds 54

DATE

ALBUQUERQUE LABORATORY

CUSTOMER: Bechtel National, Inc. - MISS
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.: 74-34

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED: 6/25/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
138-RF-133	5/30-5/31/91	Rn-222	6/3/91	0.15±0.02	FQC
138-RF-135	6/11-6/12/91	Rn-222	6/13/91	0.06±0.02	LQC
138-RF-136	6/11-6/12/91	Rn-222	6/13/91	0.10±0.02	FQC
138-RF-143	5/30-5/31/91	Rn-222	6/3/91	0.10±0.02	FQC
138-RF-143	5/30-5/31/91	Rn-222	6/3/91	0.11±0.02	LQC
138-RF-146	5/30-5/31/91	Rn-222	6/3/91	<0.03	FQC
138-RF-160	5/30-5/31/91	Rn-222	6/3/91	1.40±0.03	FQC
138-RF-160	5/30-5/31/91	Rn-222	6/3/91	1.36±0.03	LQC

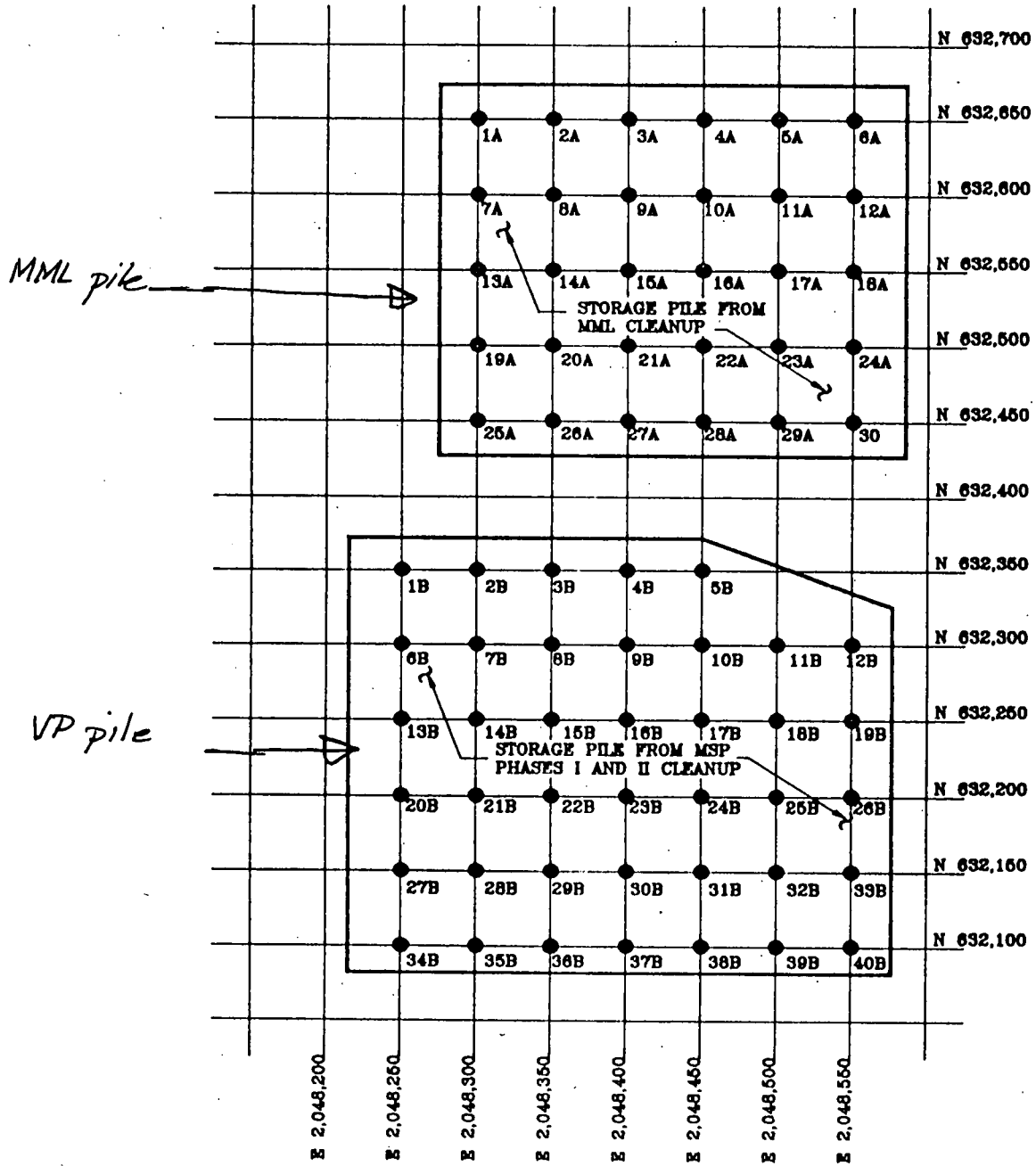
FQC = Duplicate "Field Quality Control" Sample at same location.
LQC = Duplicate "Laboratory Quality Control" Analyses.

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY

6 rooms 55



MIDDLESEX INTERIM STORAGE PILE

B4:SITE118:V1

56

MSP

085190

3474

ALBUQUERQUE LABORATORY

3474

CUSTOMER Bechtel National, Inc. - MSP Storage Piles
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS

TYPE OF ANALYSIS Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 6/6/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
118-RF-01A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-02A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-03A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-04A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-05A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-06A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-07A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-08A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-09A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-10A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-11A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-12A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-13A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-14A	5/20-5/21/91	Rn-222	5/24/91	0.03±0.02
118-RF-15A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-16A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-17A	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-18A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-19A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-20A	5/20-5/21/91	Rn-222	5/24/91	<0.04

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY M. R. McDougall

MSP

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MSP Storage Piles
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS
3474

TYPE OF ANALYSIS Radon Flux CUSTOMER ORDER NUMBER SAMPLES RECEIVED 6/6/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
118-RF-21A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-22A	5/20-5/21/91	Rn-222	5/24/91	0.04±0.02
118-RF-23A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-24A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-25A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-26A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-27A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-28A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-29A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-30A	5/20-5/21/91	Rn-222	5/24/91	<0.04
118-RF-01B	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02
118-RF-02B	5/20-5/21/91	Rn-222	5/24/91	0.28±0.02
118-RF-03B	5/20-5/21/91	Rn-222	5/24/91	0.32±0.02
118-RF-04B	5/20-5/21/91	Rn-222	5/23/91	0.25±0.02
118-RF-05B	5/20-5/21/91	Rn-222	5/23/91	0.06±0.02
118-RF-06B	5/20-5/21/91	Rn-222	5/23/91	0.06±0.02
118-RF-07B	5/20-5/21/91	Rn-222	5/24/91	0.04±0.02
118-RF-08B	5/20-5/21/91	Rn-222	5/23/91	<0.03
118-RF-09B	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02
118-RF-10B	5/20-5/21/91	Rn-222	5/24/91	0.10±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY M. R. McDougall

MSP

ALBUQUERQUE LABORATORY

CUSTOMER: Bechtel National, Inc. - MSP Storage Piles
ATTENTION: Michael McDougall
ADDRESS: P.O. Box 350
CITY: Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS: Radon Flux

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED: 6/6/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec
118-RF-11B	5/20-5/21/91	Rn-222	5/24/91	0.09±0.02
118-RF-12B	5/20-5/21/91	Rn-222	5/24/91	0.52±0.03
118-RF-13B	5/20-5/21/91	Rn-222	5/24/91	0.14±0.02
118-RF-14B	5/20-5/21/91	Rn-222	5/24/91	<0.03
118-RF-15B	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02
118-RF-16B	5/20-5/21/91	Rn-222	5/24/91	0.19±0.02
118-RF-17B	5/20-5/21/91	Rn-222	5/24/91	0.19±0.02
118-RF-18B	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02
118-RF-19B	5/20-5/21/91	Rn-222	5/24/91	0.15±0.02
118-RF-20B	5/20-5/21/91	Rn-222	5/23/91	0.13±0.02
118-RF-21B	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02
118-RF-22B	5/20-5/21/91	Rn-222	5/24/91	0.07±0.02
118-RF-23B	5/20-5/21/91	Rn-222	5/23/91	0.04±0.02
118-RF-24B	5/20-5/21/91	Rn-222	5/23/91	0.21±0.02
118-RF-25B	5/20-5/21/91	Rn-222	5/24/91	0.21±0.02
118-RF-26B	5/20-5/21/91	Rn-222	5/24/91	0.19±0.02
118-RF-27B	5/20-5/21/91	Rn-222	5/23/91	0.38±0.02
118-RF-28B	5/20-5/21/91	Rn-222	5/23/91	0.09±0.02
118-RF-29B	5/20-5/21/91	Rn-222	5/23/91	<0.03
118-RF-30B	5/20-5/21/91	Rn-222	5/23/91	0.12±0.02

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY M.R. McDougall

MSP

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MSP Storage Piles
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux CUSTOMER ORDER NUMBER SAMPLES RECEIVED 6/6/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
118-RF-31B	5/20-5/21/91	Rn-222	5/24/91	0.16±0.02	
118-RF-32B	5/20-5/21/91	Rn-222	5/23/91	0.51±0.02	
118-RF-33B	5/20-5/21/91	Rn-222	5/23/91	0.39±0.02	
118-RF-34B	5/20-5/21/91	Rn-222	5/23/91	<0.03	
118-RF-35B	5/20-5/21/91	Rn-222	5/23/91	0.28±0.02	
118-RF-36B	5/20-5/21/91	Rn-222	5/23/91	<0.03	
118-RF-37B	5/20-5/21/91	Rn-222	5/23/91	0.16±0.02	
118-RF-38B	5/20-5/21/91	Rn-222	5/23/91	0.25±0.02	
118-RF-39B	5/20-5/21/91	Rn-222	5/24/91	0.27±0.02	
118-RF-40B	5/20-5/21/91	Rn-222	5/24/91	0.04±0.02	
118-RF-07A	5/20-5/21/91	Rn-222	5/24/91	0.04±0.02	LQC
118-RF-09A	5/20-5/21/91	Rn-222	5/24/91	<0.04	FQC
118-RF-23A	5/20-5/21/91	Rn-222	5/24/91	0.05±0.02	LQC
118-RF-28A	5/20-5/21/91	Rn-222	5/24/91	<0.04	LQC
118-RF-29A	5/20-5/21/91	Rn-222	5/24/91	<0.04	FQC
118-RF-30A	5/20-5/21/91	Rn-222	5/24/91	<0.04	LQC
118-RF-04B	5/20-5/21/91	Rn-222	5/23/91	0.25±0.02	LQC
118-RF-09B	5/20-5/21/91	Rn-222	5/23/91	0.03±0.02	FQC
118-RF-10B	5/20-5/21/91	Rn-222	5/24/91	0.17±0.02	FQC

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
9021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY M.R. McDougall

60

DATE 6/10/91

MSP

ALBUQUERQUE LABORATORY

CUSTOMER Bechtel National, Inc. - MSP Storage Piles
ATTENTION Michael McDougall
ADDRESS P.O. Box 350
CITY Oak Ridge, TN. 37831-0350
W.O. NO.

REPORT OF ANALYSIS

3474

TYPE OF ANALYSIS Radon Flux CUSTOMER ORDER NUMBER SAMPLES RECEIVED 6/6/91

Customer Identification	Date Collected	Type of Analysis	Date Analyzed	pCi/M²/sec	
118-RF-15B	5/20-5/21/91	Rn-222	5/24/91	0.06±0.02	LQC
118-RF-25B	5/20-5/21/91	Rn-222	5/24/91	0.19±0.02	LQC
118-RF-27B	5/20-5/21/91	Rn-222	5/23/91	0.38±0.02	LQC
118-RF-28B	5/20-5/21/91	Rn-222	5/23/91	0.08±0.02	FQC
118-RF-39B	5/20-5/21/91	Rn-222	5/23/91	0.18±0.02	FQC

FQC = Duplicate "Field Quality Control" Sample At same Location.
LQC = Duplicate "Laboratory Quality Control" Analyses.

NOTE: ALL I.D.'s ending with "a" are from the MML pile; all those ending in "b" are from the VP pile.

☐ REPORTED VIA TELEPHONE

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY M. R. McDougall DATE MSR

9474

FUSRAP COMMUNICATIONS DISTRIBUTION
DOE/ORO TECHNICAL SERVICES DIVISION (CE-53)
BECHTEL NATIONAL, INC. — JOB 14501

TSD [Y] COMM TYPE 3BB
COMM REF
ADMIN RCD

SUBJECT Discussion with EPA Region II Concerning Neshaps

FROM Adler TO File COMM DATE 9/20/89

ADDR CODE [ ] [ ] CLOSES CCN WBS 191
NUMBER ST

SUBJECT CODE 2000 AFFECTED DOCUMENT

RESPONSE TRACKING INFORMATION

PRIMARY:
OWED TO: OWED BY: (ORG)
(ORG) TARGET DATE / / CLOSING CCN COMPL DATE / / CLOSING REF

SECONDARY:
OWED TO: OWED BY: (ORG)
(ORG) TARGET DATE / / CLOSING CCN COMPL DATE / / CLOSING REF

DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O
DIRECTOR, TSD	DTS							PROGRAM MANAGER	BPM		
DEPUTY DIRECTOR, TSD	DTS							DEPUTY PROGRAM MANAGER	BPM		
SITE MANAGER R. Alvin	DTS			McPhimer		✓		PROJECT MANAGER S. Leidle	BPM		
A. Avel	DTS			Adler		✓		R. Robertson	BPM		
W. Seay	DTS	✓		Wright		✓					
PROJECT SUPPORT GRP: J. Hart	DTS										
								CONSTRUCTION	BFC		
S. Oldham	DTS							ENVIRON HEALTH & SAFETY	BEH		
PRGM ANALYST. B. Hughlett	DTS							TM/TIMELINE	BEH		
SECRETARIES M. Seiber	DTS							FIELD OPERATIONS	BOP		
								PROCUREMENT	BPO		
TSD CHRON FILE		✓						PROJECT ADMINISTRATION	BPA		
TSD ACTION FILE								TECHNICAL REPORTS	BTR		
DOE/CONTRACTS: DAVIS/SMITH	DCO			SITES:				PROJECT CONTROLS	BPC		
DOE/HEADQUARTERS	DHQ			115/202 NFSS				PROJECT ENGINEERING	BPE		
				116 SLDS				PUBLIC AFFAIRS	BPR		
ANL:	ANL			117 / 118 MIDDLESEX				QUALITY ASSURANCE	BQA		
				137 / 138 WAYNE/MAYWOOD				PDCC READING FILE TO DOE			
ORAU:	ORAU			139 COLONIE (CISS)				FROM DOE			
				140 / 153 LATTY AVE/SLAPS				PDCC ADMIN RCD			
ORNL:	ORNL							CHRON FILE		Orig.	

COMMENTS

PLEASE RETURN TO PDCC FOR CORRECTIONS

1088-1362.2 [ ] PDCC, PLEASE REMOVE MY NAME FROM DISTRIBUTION FOR THIS TYPE OF DOCUMENT (SIGNED)

MEMORANDUM

Subject: Discussion With EPA Region II Concerning Neshap's Compliance Requirements for FUSRAP Sites 14301/7000

From: David Adler, BNI
To: File

On September 20, 1989, I spoke with Paul Giardina (Radiation Protection Branch: FTS-264-4418) about current, and developing, control measures mandated by the radionuclide NESHAP regulation. Paul indicated that there are no exemption procedures under the existing regulations for facilities covered by the regulations. Accordingly, DOE facilities are required to monitor radionuclide emissions, model potential human exposures using EPA approved modelling codes, and maintain results on-site -- regardless of the magnitude of such releases.

Paul also stated that the developing radionuclide NESHAP rulemaking (scheduled for promulgation on October 31, 1989) is likely to contain an exemption process for sources which only emit a small fraction of the control standard for radionuclides. Neither the "small fraction" allowed, or the actual control standard have been

selected yet by the EPA Administrator. Both will be specified in the October 31 rulemaking.

Applications for exemptions are likely to require some support in the form of monitoring and ~~[illegible]~~ exposure modelling. Accordingly, at least one round of monitoring and modelling will be required to gain an exemption from annual monitoring and reporting requirements.

Based upon this telephone conversation, it appears that development of a ~~[illegible]~~ sampling plan for CISS, NUFSS, and other DOE-owned sites is warranted. ~~[illegible]~~ No regulatory, or otherwise written guidance on sampling strategies is available from EPA. Paul indicated that we should work with people familiar with the EPA-approved models to determine what source-term characterization is required to "feed" the models.

085190 3474
079051

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831

Mr. Paul A. Giardina
Radiation Branch Manager
U.S. Environmental Protection Agency, Region II
Jacob K. Javits Federal Building
New York, New York 10278

Dear Mr. Giardina:

NESHAPs 1990 AIR EMISSIONS ANNUAL REPORTS FOR FUSRAP SITES

Please find enclosed the 1990 National Emissions Standards for Hazardous Air Pollutants (NESHAPs) Annual Reports for Calendar Year 1990 for Department of Energy (DOE) sites in the Formerly Utilized Sites Remedial Action Program (FUSRAP) in Region II. The enclosed reports have been prepared for your information in the spirit of a draft Memorandum of Understanding (MOU) between DOE and the EPA that will address, among several issues, procedures for complying with the radionuclide NESHAPs requirements under 40 CFR 61, Subpart H.

The annual reports were prepared based on DOE-Headquarters guidance for DOE Field Operations to fulfill the NESHAPs requirements under 40 CFR 61, Part H. Subpart H applies to operations at any facility owned or operated by DOE that may emit any radionuclides, other than radon, into the air. Radionuclide emission rates for non-radon emitters were calculated using the EPA-approved dose model AIRDOS-PC, as directed in 40 CFR Section 61.93.

Sites subject to Subpart H and for which annual reports have been prepared include the following six sites:

- Colonie Interim Storage Site (CISS)
- Maywood Interim Storage Site (MISS)
- Middlesex Sampling Plant (MSP)
- New Brunswick Laboratory Site (NBL)
- Niagara Falls Storage Site (NFSS)
- Wayne Interim Storage Site (WISS)

The information in the annual reports has been organized by site and source for ease of review.

If you have any questions, please contact me or William Seay at FTS 626-1830.

Sincerely,

Lester K. Price, Director
Former Sites Restoration Division

cc: William Seay, DOE/FSRD
Weldon Dillow, DOE/ENVPD
Andy Wallo, DOE/HQ
William G. Rosenberg, Assistant Administrator for Air and Radiation, U.S. EPA

U.S. Department of Energy
Air Emissions Annual Report
(under Subpart H, 40 CFR Section 61.94)
Calendar Year 1990

Site Name: Middlesex Sampling Plant (MSP), Middlesex, New Jersey

Operations Office Information

Office: Oak Ridge Operations - Former Sites Restoration Division

Address: P.O. Box 2001
Oak Ridge, TN 37831-8723

Contact: David Adler Phone: (FTS) 626-9634
(615) 576-9634

Site Information

Operator: Bechtel National, Inc.

Site Address: 239 Mountain Avenue
Middlesex, NJ 08846

Contact: Mike Redmon Phone: (FTS) 626-4718
(615) 576-4718

Mailing Address: P.O. Box 350
Oak Ridge, TN 37831-0350

Section I. Facility Information

Site Description

The site is located in the Borough of Middlesex, New Jersey. The MSP site occupies 3.9 ha (9.6 acres). There are four buildings on the site which is surrounded by a high chain-link fence. Most of the site is paved with asphalt. Building A was used as the administrative offices; Building B was a garage; Building C was a process building where ore was weighed, sampled and assayed; and Building D was a boiler house, the source of steam for the process building.

Based on historical weather data from 1951 to 1980, the average annual temperature is 11.6°C (52.9°F). The highest average monthly (July) temperature is 23.8°C (74.8°F) and the lowest is -1.1°C (30.1°F) (January). Average annual precipitation is 107 cm (41.7 in.) with an average annual snowfall of 69.9 cm (27.3 in.). Approximately 15 million people reside within 80 km (50 mi) of Middlesex, New Jersey.

Source Description

Waste source material at the site consists of two interior storage piles with surface areas of 8,838 m^2 (10,570 yd^2) and 6,673 m^2 (7,981 yd^2). The remaining area was considered a separate source and covers 23,330.6 m^2 (27,903 yd^2). The site is covered predominantly with asphalt. There is no input in the AIRDOS model to express the efficiency of the asphalt in controlling particulate emissions. The efficiency of the asphalt was assumed to be the same as 99 percent vegetative cover in order to run the model.

Section II. Air Emissions Data

Point Source	Type Control	Efficiency	Distance to Receptor
None	N.A.	N.A.	N.A.

Area Source	Type Control	Efficiency	Distance to Receptor
Pile A: 8,838 m^2	Synthetic pile cover	99 percent	300 m
Pile B: 6,673 m^2	Synthetic pile cover	99 percent	300 m
Rest of the area: 23,330.6 m^2	Asphalt and vegetative cover	99 percent	300 m

Radionuclide	Annual Quantity (Ci/yr)
Pile A	
U-238	5.385×10^{-7}
U-234	5.232×10^{-7}
U-235	2.290×10^{-8}
Ra-226	5.385×10^{-7}
Pile B	
U-238	4.066×10^{-7}
U-234	3.940×10^{-7}
U-235	1.730×10^{-8}
Ra-226	4.066×10^{-7}
Rest of the area	
U-238	8.571×10^{-7}
U-234	8.327×10^{-7}
U-235	3.780×10^{-8}
Ra-226	6.038×10^{-7}
Th-232	4.025×10^{-8}

N.A. = Not applicable

Section III. Dose Assessments

Description of Dose Model

The effective dose equivalent for both the hypothetical maximally-exposed individual was calculated in a two-step process. The first step consisted of modeling the release of particulates from the site using the methodology given in DOE's Remedial Action Priority System (RAPS) Mathematical Formulation. After the particulate release rate was determined, this information, along with local meteorological data for 1990, was used in the EPA's AIRDOS computer model. In the second step, the AIRDOS model was then used to calculate the effective dose equivalent for a hypothetical individual at 300 m (984 ft) from the site. To model a worst-case scenario, the distance of 300 m (984 ft) was used for the calculation because of the limits of the model; the input distance could not be decreased beyond a minimum of 300 m (984 ft).

Summary of Input Parameters

Average temperature for 1990 was 12.1°C (53.8°F)

Total precipitation for 1990 was 121.5 cm (47.4 in.)

For the wind speed, the AIRDOS file LEA0435.WND was used in the calculations

The maximally exposed individual was assumed to be 300 m (984 ft) from the site for the entire year.

Compliance Assessment

Effective Dose Equivalent: 0.0034 (mrem/yr)

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (See, 18 U.S.C. 1001).

Name: _____

Signature: _____ Date: _____

085190

067007

CCN

FUSRAP COMMUNICATIONS DISTRIBUTION
DOE/ORO TECHNICAL SERVICES DIVISION (CE-53)
BECHTEL NATIONAL, INC. — JOB 14501

TSD ☒ COMM TYPE L T G

COMM REF 90-159

ADMIN RCD

SUBJECT Shipment of 4 CRCL Subpart H & G Re Five DOE Sites

FROM Sey TO Simon COMM DATE 3/15/90

ADDR CODE (NUMBER ST) CLOSES CCN WBS 118, 137, 155, 115, 139

SUBJECT CODE 7340 AFFECTED DOCUMENT

RESPONSE TRACKING INFORMATION

PRIMARY:	
OWED TO:	OWED BY: (ORG)
(ORG) TARGET DATE / /	CLOSING CCN COMPL. DATE / / CLOSING REF
SECONDARY:	
OWED TO:	OWED BY: (ORG)
(ORG) TARGET DATE / /	CLOSING CCN COMPL. DATE / / CLOSING REF

DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O
DIRECTOR, TSD	DTS			ORAU	ORAU			PROGRAM MANAGER	BPM	1	
DEPUTY DIRECTOR, TSD	DTS			ORNL	ORNL			DEPUTY PROGRAM MANAGER	BPM	1	
SITE MANAGER: R. Albin	DTS							PROJECT MANAGER: S. Liedle	BPM		
D. Adler	DTS	1		T. Wright		1		R. Robertson	BPM	1	
W. Seay	DTS	1		L. Hufford		1					
Leading Files			2	M. Peel	MAL	1		ACCOUNTING			
PROJECT SUPPORT GRP: J. Hart	DTS							CONSTRUCTION	BPC		
S. Oldham	DTS							ENVIRON HEALTH & SAFETY	BEH		
PROM ANALYST: D. Hughlett	DTS										
SECRETARIES: M. Belber	DTS							TIMA/BERLINE	BEH		
R. Evans	DTS							FIELD OPERATIONS	BOP		
TSD CHRON FILE		1						PROCUREMENT	BPO		
TSD ACTION FILE								PROJECT ADMINISTRATION	BPA		
DOE/CONTRACTS, DAVIS/SMITH	DCO							TECHNICAL REPORTS	BTR		
DOE/HEADQUARTERS	DHQ							PROJECT CONTROLS	BPC		
								PROJECT ENGINEERING	BPE		
ANL: A.J. Dvorak	ANL			SITES:				PUBLIC AFFAIRS	BPR		
J.S. Devgun	ANL	1		115/202 NFSS				QUALITY ASSURANCE	BQA		
N.J. Beskid	ANL			117 / 118 MIDDLESEX				PDCC READING FILE — TO DOE			
J.M. Peterson	ANL			137 / 138 WAYNE/MAYWOOD				PDCC READING FILE — FROM DOE			1
M.A. Zurek	ANL			139 COLONIE (CISS)				PDCC — ADMIN RCD			
L. Green 7/02/90		1		140 / 153 LATTY AVE/SLAPS				PDCC — CHRON FILE	CAMC		

COMMENTS Reissue to add ANL + ARCL to distribution per John Miller on 7/9/90 70

PLEASE RETURN TO PDCC FOR CORRECTIONS

067007

3474

90-158

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723
March 15, 1990

Mr. Conrad Simon, Director
Air and Waste Management Division, 2AWM
U. S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Simon:

IMPLEMENTATION OF 40 CFR 61 SUBPART H AND Q AT FIVE DOE SITES

This letter presents Department of Energy's (DOE) proposed compliance strategy for five DOE-owned sites in Region II, which are subject to the revised NESHAPS standards promulgated on December 15, 1989. The sites are:

- Maywood Interim Storage Site (MISS), Maywood, New Jersey
- Middlesex Sampling Plant (MSP), Middlesex, New Jersey
- Wayne Interim Storage Site (WISS), Wayne, New Jersey
- Niagara Falls Storage Site (NFSS), Lewiston, New York
- Colonie Interim Storage Site (CISS), Albany, New York

Activities at these sites are being conducted as part of the DOE Formerly Utilized Sites Remedial Action Program (FUSRAP) and the Surplus Facilities Management Program (SFMP). The objective of these programs is to identify, clean up, or otherwise control sites where residual radioactive contamination exceeds current DOE guidelines.

All five of these sites are subject to Subpart H of 40 CFR Part 61. We propose that compliance with the standard in this subpart be determined using an EPA-approved computer model such as COMPLY or AIRDOSE. In the unlikely event that the models show that these sites are not in compliance with the requirements of Subpart H, direct measurements are proposed to determine if the sites are in compliance. All of the computer modeling will be completed in time to support submittal of the required annual reports in June 1990.

Current site information indicates that three sites, MISS, MSP, and NFSS, are subject to Subpart Q of 40 CFR Part 61. Calculations that estimate the potential radon flux rate from CISS and WISS indicate that the radium content at these sites is insufficient to generate radon-222 flux rates in excess of the regulatory standards provided in Subpart Q. Accordingly, no flux measurements are planned for either of these piles. Documentation of these calculations can be provided upon request.

Since Subpart Q does not specify how radon flux measurements should be completed at these sites, a methodology for the measurement and calculation of radon flux from uranium mill tailings piles (40 CFR Part 61 Appendix B), with minor modifications, is proposed. The uranium mill tailings pile methodology requires that a minimum of 100 ten-inch radon canisters be collected from stabilized piles to determine radon flux rates. Since the interim waste piles at the subject sites are five to ten times smaller than the uranium mill tailing piles, we have taken the approach of establishing a sample density similar to that required for uranium mill tailings piles. We propose to use this sample density for each pile instead of a set number of samples per pile. Another factor considered in selecting the sampling density is that we have had difficulty locating a vendor for ten-inch radon canisters; therefore, we are proposing to use four-inch radon canisters that are readily commercially available. Based on the facts that the storage piles are smaller and only the smaller radon canisters are readily available, we submit that compliance with the Subpart Q standard will be comparably achieved by placing one four-inch canister per $100m^2$ on the surface of each pile for a period of 24 hours. The location of measurements will be based on a 10m grid system that will evenly distribute the collectors on each pile. This sample density compensates for the use of smaller detectors.

Sampling events will be scheduled so as to provide measurements representative of the long-term radon flux from the piles, considering weather and moisture conditions. Collectors will be analyzed using gamma spectroscopy. Monitoring is proposed to be conducted on a semi-annual basis.

This proposed Subpart Q compliance strategy requires EPA approval and adequate time to initiate implementation of the agreed upon strategy. Therefore, DOE requests 90 days after EPA approval of the strategy as a time frame for implementation. This time frame will allow for incorporation of any EPA comments, implementation of the first round of radon monitoring, and interpretation of the results from this monitoring.

A compliance waiver from site modification permitting requirements (40 CFR §61.11) is requested for all five sites for remediation and characterization activities. These sites are not permanent disposal sites and, in some cases, the sites and contaminated vicinity properties have not been completely remediated or characterized. In the future, some of the piles are scheduled for sampling. Additionally, material resulting from remedial activities at vicinity properties may be added to each pile. DOE interpretation of the definition of modification in 40 CFR §61.16 indicates

067007

that such activities would generally be considered modifications subject to 40 CFR Part 61 Subpart A requirements. DOE requests, however, that these types of activities, which are short-term activities, be granted a generic waiver from compliance under 40 CFR §61.11.

If you have any questions, please contact me at (615) 576-1830 or (FTS 626-1830) or David G. Adler at (615) 576-9634 or (FTS) 626-1830.

Sincerely,

William M. Seay, Acting Director
Technical Services Division

EW-93:Adler

cc: Robert Hargrove
Paul Giardina

085190 3474

Reissue Prior

CCN 067776 - 01

FUSRAP COMMUNICATIONS DISTRIBUTION
DOE/ORO TECH SERVICES DIV (CE-53)
BECHTEL NATIONAL, INC. - JOB 14501

TSD X COMM TYPE 10T

COMM REF _____

ADMIN RCD _____

SUBJECT STRATEGY TO IMPLEMENT 40CFR 61 SUBPARTS H & Q @ DOE-OWNED SITES

FROM SIMON TO SEAY COMM DATE 04/19/90

ADDR CODE _____

CLOSES CCN _____-_____ S WBS 191 SUBJECT CODE 7440

AFFECTED DOCUMENT

TRACS _____-_____

24 APR 90

RESPONSE TRACKING INFO

PRIMARY OWED TO Price ORG DTS OWED BY Wright ORG BEH

TARGET DT _____ CLOSING CCN _____-_____ COMP DT _____ CLOSING REF _____

SECONDARY OWED TO _____ ORG _____ OWED BY _____ ORG _____

TARGET DT _____ CLOSING CCN _____-_____ COMP DT _____ CLOSING REF _____

DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O
DIRECTOR, TSD	DTS	/	*	ORAU:	ORAU			PROGRAM MANAGER	BPM	/	
DEPUTY DIRECTOR, TSD	DTS			ORNL:	ORNL			DEPUTY PROGRAM MANAGER	BPM	/	
SITE MANAGER: R. Alsin	DTS			J. N. Wright		/		PROJECT MANAGER: S. Liedle	BPM	/	
D Adler	DTS			E McNamee		/		R Robertson	BPM	/	
W Seay	DTS	/									
								ACCOUNTING			
PROJECT SUPPORT GRP: J. Hart	DTS							CONSTRUCTION	BPC		
S Oldham	DTS							ENVIRON HEALTH & SAFETY	BEH	/	
PROM ANALYST, B. Hughlett	DTS										
SECRETARIES: M. Selber	DTS							TIMAVERLINE	BEH		
R Evans	DTS							FIELD OPERATIONS	BOP		
TSD CHRON FILE		/						PROCUREMENT	BPO		
TSD ACTION FILE								PROJECT ADMINISTRATION	BPA		
DOE/CONTRACTS DAVIS/SMITH	DCO							TECHNICAL REPORTS	BTR		
DOE/HEADQUARTERS	DHQ							PROJECT CONTROLS	BPC		
								PROJECT ENGINEERING	BPE		
ANL: A.J. Dvorak	ANL			SITES:				PUBLIC AFFAIRS	BPR		
J.S. Devgun	ANL			115/202 NFSS				QUALITY ASSURANCE	BQA		
N.J. Reekid	ANL			117/118 MIDDLESEX				PDCC READING FILE TO DOE			
J.M. Peterson	ANL			137/138 WAYNE/MAYWOOD				PDCC READING FILE FROM DOE			
M.A. Zurek	ANL			139 COLONIE (CIBA)				PDCC ADMIN RCD			
				140/1031 ATTY AVE/SLAPS				PDCC CHRON FILE	Orig.		

COMMENTS Received approval from J. Hart - DOE/TSD to issue to BNI/FUSRAP.

74

PLEASE RETURN TO PDCC FOR CORRECTIONS

067776

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

90 APR 20 AM 8:42

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

APR 19 1990

William M. Seay, Acting Director
Technical Services Division
U.S. Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, TN 37831-8723

Dear Mr. Seay:

This is in response to your letter of March 15, 1990 in which you presented a proposed strategy to implement 40 CFR 61 Subparts H and Q at five Department of Energy (DOE)-owned sites in Region II.

In your letter (Paragraph 3), you propose to determine compliance with the standard for this subpart using an U.S. Environmental Protection Agency (EPA) approved model such as the COMPLY or AIRDOS codes. The AIRDOS-PC or CAP-88 codes are appropriate for demonstrating compliance with Subpart H.

Compliance with Subpart Q can be demonstrated either by sampling (as you proposed for three of the facilities) or by calculation based on the ^{226}Ra source term in the pile. You indicated that DOE has determined that sampling is not necessary at the Wayne Interim Storage Site (WISS) and the Colonie Interim Storage Site (CISS). Please provide EPA documentation of the calculations on which these determinations are based.

Your proposed sampling regimen to characterize the radon flux from the Maywood Interim Storage Site (MISS), Middlesex Sampling Plant (MSP), and Niagara Falls Storage Site (NFSS) includes the establishment of sampling density similar to that required for uranium mill tailings piles. The EPA concurs with this design. As you noted in your letter, 40 CFR 61 requires the collection of ten-inch radon canisters from stabilized piles. Substituting four-inch canisters is unacceptable to EPA unless DOE first demonstrates that measurements taken with the smaller canisters produce data with accuracy equivalent to that generated with ten-inch canisters. While you mention difficulty in obtaining ten-inch canisters commercially, officials with EPA's Office of Radiation Programs (ORP) have informed me that they are available from DOE's Pacific Northwest Laboratory (PNL) as well as from

067776

Scientific Analysis Inc., 6012 E. Shirley Lane, P.O. Box 3112, Montgomery, AL 36019 (telephone 205-271-0643).

A compliance waiver from site modification permitting requirements cannot be granted for any of the sites during future characterization and remedial activities. Excavation and transfer of radioactive materials may result in offsite exposure to radionuclides and it is the responsibility of EPA to enforce 40 CFR 61 Subparts A and H in such cases. Prior to the onset of these activities, DOE must determine the EDE to the most exposed member of the general public with either the AIRDOS-PC or CAP-88 code. If the estimated maximum EDE resulting from the modification is less than 1% of the 10 mrem standard, then the modification does not need prior approval.

If you have any questions concerning the implementation of 40 CFR 61, please contact Dr. Alan Fellman of my staff at FTS-264-1316.

Sincerely,

Conrad Simon, Director
Air and Waste Management Division

085190

3474

CCN 69099

FUSRAP COMMUNICATIONS DISTRIBUTION
DOE/ORO TECHNICAL SERVICES DIVISION (CE-53)
BECHTEL NATIONAL, INC. — JOB 14501

TSD ☑ COMM TYPE I T G

COMM REF 90-289

ADMIN RCD

SUBJECT Implementation of 40 CFR Part 61, Subpart H and Q at Five DOE FUSRAP Sites

FROM Price TO Simon COMM DATE 6/22/90

ADDR CODE | | | (NUMBER ST) CLOSES CCN 068673 WBS 137, 139, 138, 118, 115

SUBJECT CODE 7310 AFFECTED DOCUMENT 068673, 067731

RESPONSE TRACKING INFORMATION

PRIMARY:
OWED TO: OWED BY: (ORG)
(ORG) TARGET DATE / / CLOSING CCN COMPL. DATE / / CLOSING REF

SECONDARY:
OWED TO: OWED BY: (ORG)
(ORG) TARGET DATE / / CLOSING CCN COMPL. DATE / / CLOSING REF

DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O
DIRECTOR, TSD	DTS		1	ORAU:	ORAU			PROGRAM MANAGER	BPM		1
DEPUTY DIRECTOR, TSD	DTS			ORNL:	ORNL			DEPUTY PROGRAM MANAGER	BPM		1
SITE MANAGER: R. Atkin	DTS		1	J.H. Wright		1		PROJECT MANAGER: S. Liedle	BPM		1
D. Adler	DTS			E.M. McNamee		1		R. Robertson	BPM		1
W. Seay	DTS		1	M.E. Kaye		1		C. Hickey	BPM		1
Reading Files			2					ACCOUNTING			
PROJECT SUPPORT GRP: J. Hart	DTS							CONSTRUCTION	BFC		
S. Oldham	DTS							ENVIRON HEALTH & SAFETY	BEH		1
PRGM ANALYST, B. Hughlett	DTS										
SECRETARIES: M. Seiber	DTS							TMA/EBERLINE	BEH		
R. Evans	DTS							FIELD OPERATIONS	BOP		
TSD CHRON FILE		1						PROCUREMENT	BPO		
TSD ACTION FILE								PROJECT ADMINISTRATION	BPA		
DOE/CONTRACTS: DAVIS/SMITH	DCO							TECHNICAL REPORTS	BTR		
DOE/HEADQUARTERS	DHQ							PROJECT CONTROLS	BPC		
								PROJECT ENGINEERING	BPE		
ANL: A.J. Dvorak	ANL			SITES:				PUBLIC AFFAIRS	BPR		
J.S. Devgun	ANL			115/202 NFSS				QUALITY ASSURANCE	RQA		
N.J. Beskid	ANL			117 / 118 MIDDLESEX				PDCC READING FILE TO DOE			
J.M. Peterson	ANL			137 /138 WAYNE/MAYWOOD				PDCC READING FILE FROM DOE			1
M.A. Zurek	ANL			139 COLONIE (CISS)				PDCC ADMIN RCD			
				140 / 153 LATTY AVE/SLAPS				PDCC CHRON FILE	Conc		

COMMENTS ATTACHMENT NOT RECEIVED By FUSRAP PDCC Enclosures located under CCN #068673.

77

PLEASE RETURN TO PDCC FOR CORRECTIONS

☐ PDCC, PLEASE REMOVE MY NAME FROM DISTRIBUTION FOR THIS TYPE OF DOCUMENT

069099

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723

90-289

June 22, 1990

Conrad Simon, Director
Air and Waste Management Division
Environmental Protection Agency, Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Simon:

IMPLEMENTATION OF 40 CFR PART 61, SUBPART H AND Q AT FIVE DOE FUSRAP SITES

The purpose of this letter is to provide you with information requested in your April 19, 1990, letter regarding DOE's proposed compliance strategy for Subparts H and Q of 40 CFR 61 for the five DOE-owned Formerly Utilized Sites Remedial Action Program (FUSRAP) sites located in Region II. This letter also describes how EPA comments on the proposed compliance strategy are being accommodated.

Enclosed are calculations for the Wayne Interim Storage Site (WISS) located in Wayne, New Jersey; and the Colonie Interim Storage Site (CISS) located in Colonie, New York. The calculations show that CISS and WISS meet the requirements of Subpart Q of 40 CFR Part 61, since the calculated radon flux rates are well below the 20 $pCi/m^2/s$ limit given in this Subpart.

As I am sure you are aware, DOE Headquarters and EPA Headquarters continue to evaluate the applicability of Subpart H to fugitive emissions from DOE remedial action sites. Enclosed for your information, are copies of air emission reports completed for five FUSRAP sites in Region II. These reports demonstrate that these sites are in compliance with the performance standards established by 40 CFR Part 61 Subpart H. Compliance was determined by computer modeling using AIRDOSE. As requested by your April 19, 1990, letter, we also intend to use the AIRDOSE model to evaluate, in advance, potential exposures that might result from future on-site remedial activities.

A modified compliance strategy to determine compliance with Subpart Q for the Niagara Falls Storage Site, Maywood Interim Storage Site, and the Middlesex Sampling Plant site has been developed in response to your comments on DOE's original proposal. The modifications include the use of 10 in. radon collectors and adjusting the sampling density for the use of the larger collectors. The sampling density has been adjusted, to account for the difference in the surface area between the 4 in. collectors previously proposed

and the 10 in. collectors, to maintain the same coverage for each pile as proposed in our initial letter. This approach is consistent with the methodology presented in Appendix B of 40 CFR 61. The new sampling density consists of one detector per 225 m^2 with a minimum of five collectors per pile. Radon monitoring will be initiated by July 18, 1990, absent additional comments from you and your staff.

If you have any questions, please contact me or David G. Adler at (FTS) 626-0948 or (615) 576-0948.

Sincerely,

L. K. Price

Lester K. Price, Director
Technical Services Division

Enclosures

cc: Dr. Alan Fellman, EPA Region II
Weldon Dillow, DOE-ORO,SE-31
Andy Wallo, DOE-GTN, EH-25
Jim Wagoner, DOE-GTN, EM-423

085190 3474

DATE PROCESSED BY PDCC 07/17/91

CCN 079488 - 01

FUSRAP COMMUNICATIONS DISTRIBUTION
DOE/ORO FORMER SITES RESTORATION DIV (CE-53)
BECHTEL NATIONAL, INC. - JOB 14501

FSRD _ COMM TYPE 1TG

COMM REF 91-508

ADMIN RCD _____

SUBJECT RESULTS RADON FLUX MONITORING @MSP, NFSS, MISS & NBL

FROM ADLER, D TO GIARDINA COMM DATE 07/16/91

ADDR CODE _____

CLOSES CCN 077919-01 WBS 118 138 144 202 SUBJECT CODE 7440

AFFECTED DOCUMENT C 077919

TRACS _____-_____

RESPONSE TRACKING INFO

PRIMARY
OWED TO _____ ORG _____ OWED BY _____ ORG _____

TARGET DT _____ CLOSING CCN _____-___ COMP DT _____ CLOSING REF _____

SECONDARY
OWED TO _____ ORG _____ OWED BY _____ ORG _____

TARGET DT _____ CLOSING CCN _____-___ COMP DT _____ CLOSING REF _____

DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O	DISTRIBUTION	CODE	W/A	W/O
DIRECTOR, FSRD	DFSR		/	ORAU:	ORAU			PROGRAM MANAGER	BPM		/
DEPUTY DIRECTOR, FSRD	DFSR	/		ORNL:	ORNL			DEPUTY PROGRAM MGR.: P. Crowell	BPM		/
SITE MANAGER: D. Adler	DFSR	/		SAIC: B. McNeill	SAIC	/		R. Harbert	BPM		/
				A. Davis	SAIC	/		PROJECT MANAGER: S. Liedle	BPM		
				K. K. Atwood		/		M. Radmon	BPM	/	
PROJECT SUPPORT GRP: J. Hart	DFSR			G. L. Galen		/		C. Hickey	BPM	/	
S. Oldham	DFSR			L. D. Gilley		/		E. McNamee	BPM		
G. Hartman	DFSR	/						CONSTRUCTION	BFC		
PRGM ANALYST, B. Hughlett	DFSR							ENGINEERING & TECHNOLOGY	BET		
SECRETARY: M. Seiber	DFSR							ENVIRON HEALTH & SAFETY	BEH		
FSRD CHRON FILE		/						HEALTH & SAFETY	BEH		
FSRD NOTEBOOKS			/					TMA/EBERLINE	BEH		
READING FILE								OPERATIONS	BOP		
DOE/CONTRACTS: SMITH/FRENCH	DCO							PROCUREMENT	BPO		
DOE/HEADQUARTERS	DHQ							PROJECT ADMINISTRATION	BPA		
								TECHNICAL REPORTS	BTR		
ANL: A.J. Dvorak	ANL							PROJECT AUTOMATION	BAU		
C. Boggs	ANL			SITES: 115/202 NFSS				PROJECT CONTROLS	BPC		
L. Jensen	ANL			117 / 118 MIDDLESEX				PUBLIC AFFAIRS	BPR		
M.A. Zurek	ANL			137 /138 WAYNE/MAYWOOD				QUALITY ASSURANCE	BQA		
				139 COLONIE (CISS)				PDCC READING FILE TO DOE			
				140 / 153 LATTY AVE/SLAPS				PDCC READING FILE FROM DOE			/
				ADMIN RCD				PDCC CHRON FILE			

COMMENTS _____ 800

PLEASE RETURN TO PDCC FOR CORRECTIONS

☐ PDCC, PLEASE REMOVE MY NAME FROM DISTRIBUTION FOR THIS TYPE OF DOCUMENT _____ (SIGNED)

079488 91-508

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723

July 16, 1991

Mr. Paul A. Giardina
Radiation Branch Manager
U.S. Environmental Protection Agency, Region II
Jacob K. Javits Federal Building
New York, New York 10278

Dear Mr. Giardina:

RESULTS OF RADON FLUX MONITORING AT THE MIDDLESEX SAMPLING PLANT (MSP), NIAGARA FALLS STORAGE SITE (NFSS), MAYWOOD INTERIM STORAGE SITE (MISS), AND NEW BRUNSWICK LABORATORY (NBLS)

Please find enclosed radon flux monitoring data collected at the following sites in Region II under the Formerly Utilized Sites Remedial Action Program (FUSRAP): MSP, NFSS, MISS, and NBLS. This report has been prepared for your information in the spirit of a draft Memorandum of Understanding between DOE and EPA to provide data with respect to 40 CFR Part 61, Subpart Q. Enclosed are the data for each interim storage pile at MSP, NFSS, and MISS, as well as data for the entire site at MISS. Also enclosed is the data gathered from a designated waste area at the NBLS site. A sample location map for each site is also provided.

Results of sampling indicate that the sites are in compliance with the radon flux standard of 20 $pCi/m^2/s$. The storage pile at MSP designated on the location map as the MML cleanup pile had a range of radon flux rates from 0.03 - 0.04 $pCi/m^2/s$ and an average of 0.038 $pCi/m^2/s$; the storage pile designated as the Phases I and II cleanup pile had a range of radon flux rates from 0.03 - 0.52 $pCi/m^2/s$ and an average of 0.157 $pCi/m^2/s$. The waste containment facility at NFSS had a radon flux rate range of 0.04 - 0.72 $pCi/m^2/s$ and an average of 0.067 $pCi/m^2/s$. The small interim waste piles labeled Pile 1 and Pile 2 on the location map had a range of radon flux rates of 0.09 - 0.09 $pCi/m^2/$ and 0.07 - 0.09 $pCi/m^2/s$ respectively. Pile 1 had an average radon flux rate of 0.09 $pCi/m^2/s$ and Pile 2 had an average flux rate of 0.086 $pCi/m^2/s$. The MISS storage pile had a radon flux rate that ranged from 0.02 - 1.76 $pCi/m^2/s$ and had an average of 0.117 $pCi/m^2/s$. The entire Maywood site, excluding the storage pile, had a radon flux range from 0.02 - 36.7 $pCi/m^2/s$ and an average of 1.29 $pCi/m^2/s$. The waste area at NBLS had a range of radon flux rates from 0.05 - 3.86 pCi/m^2s and an average of 0.475 $pCi/m^2/s$.

079488

If you have any questions, please contact me at (615) 576-9634 or (FTS) 626-9634.

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

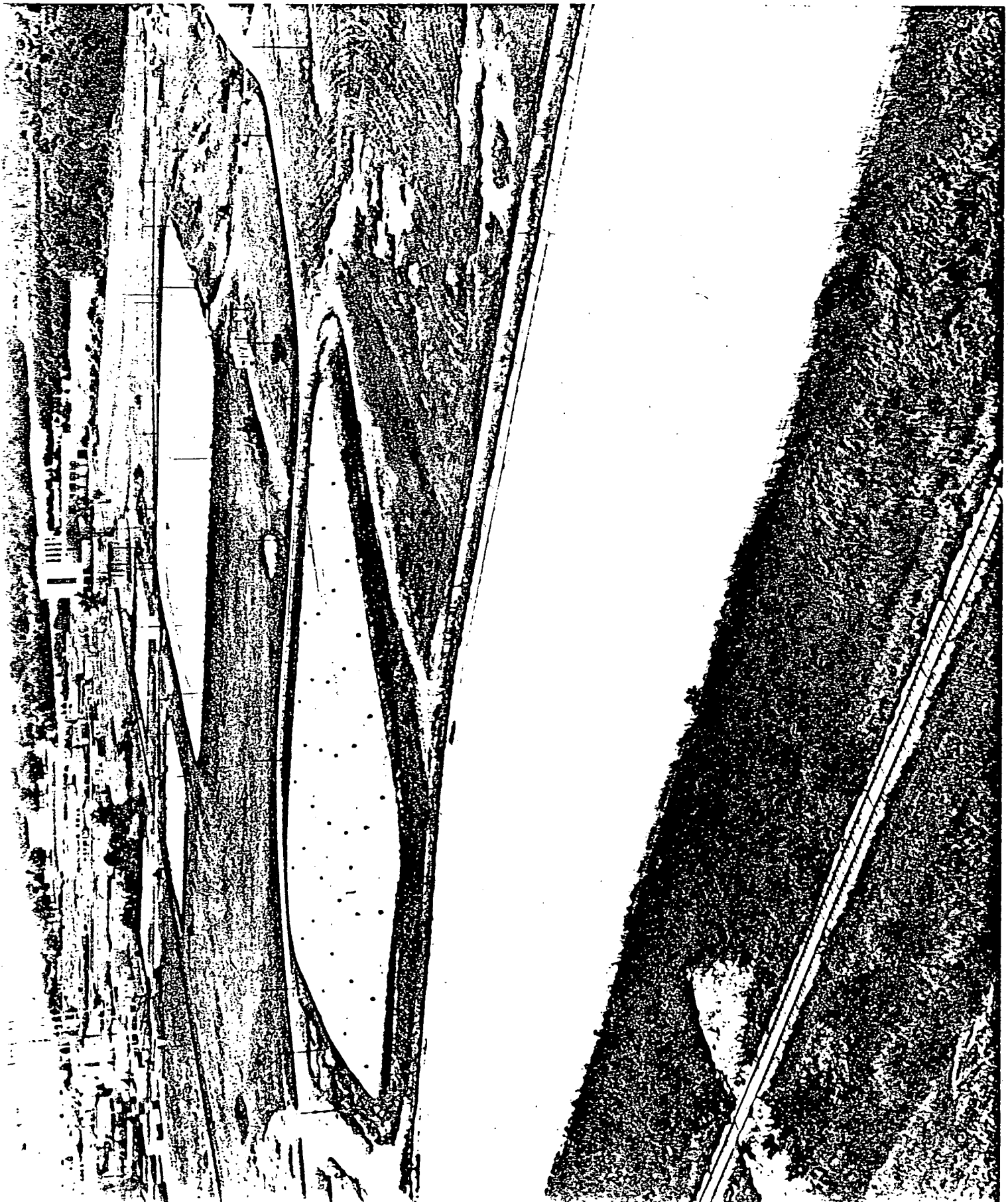
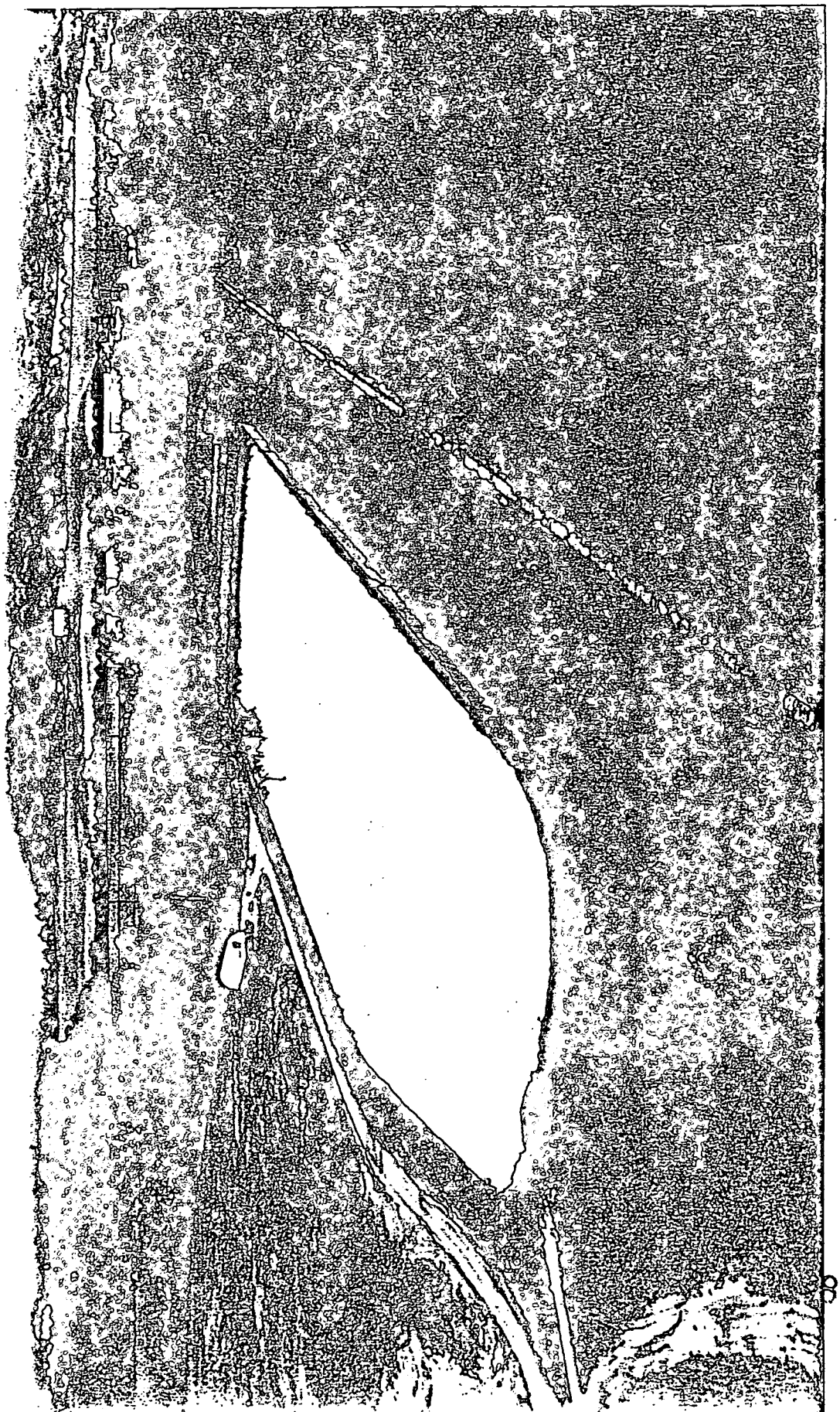
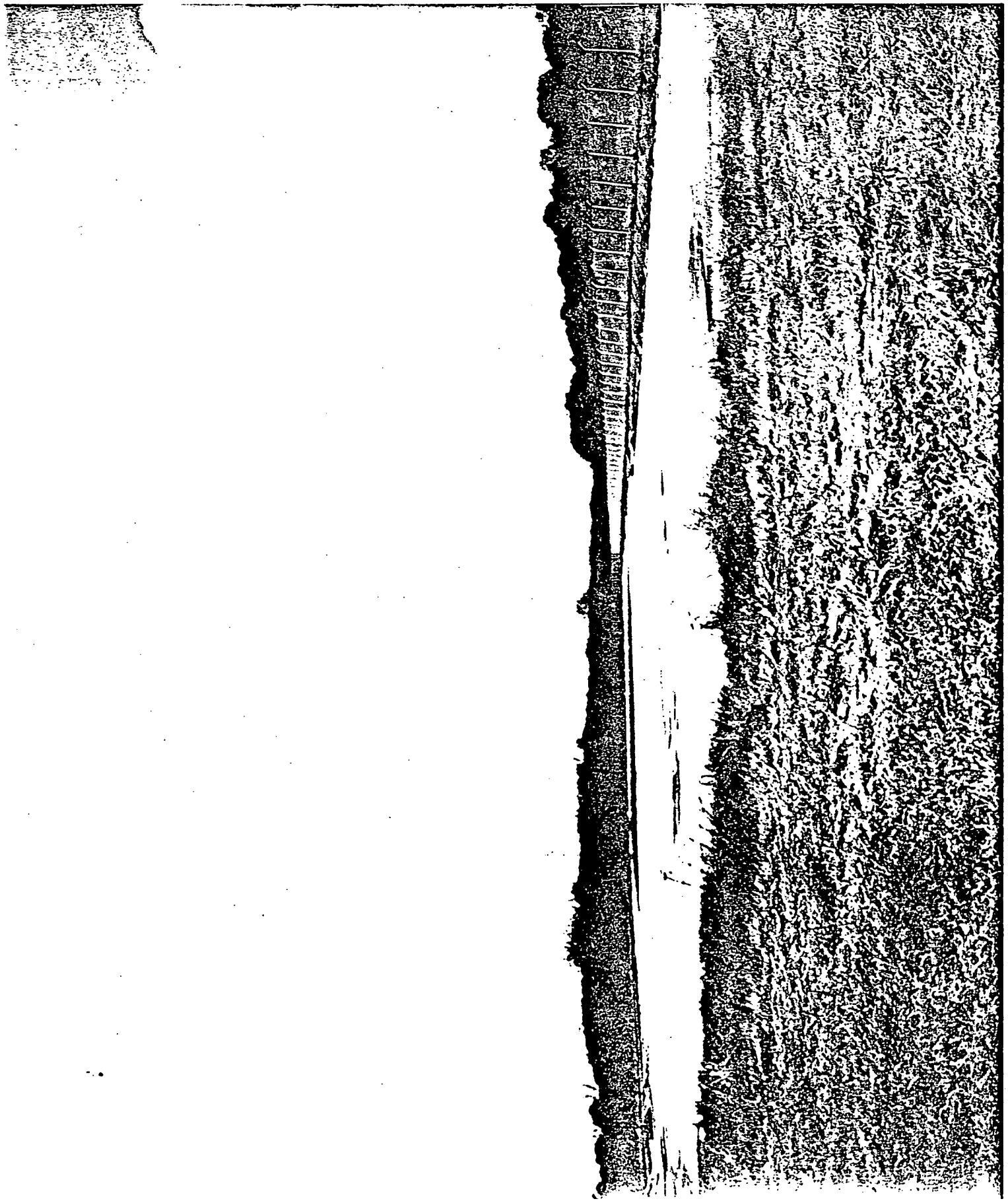
cc: Weldon Dillow, DOE/ENVPD, w/e
Andrew Wallo III, DOE/HQ, w/e

VENT PIPE

3474

DATES FOR ENCLOSED PHOTOGRAPHS

Photo Number*	Date
3570-1	8/83
3702-21	8/86
3896-76	10/87
4485-46	8/90
4899-63**	3/92

* Photo Number found on back of photo

** Photograph taken showing pit drained as a result of the pit 5 liner repair project