30-18276

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February 24, 1994

John Austin
US NRC
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Subject: Responses to NRC Comments on the Northeast Ohio Regional Sewer District (NEORSD) Site Characterization Plan, Rev. 0, April 21,1993

Dear Sir:

On behalf of the Northeast Ohio Regional Sewer District (NEORSD), enclosed are the responses to the NRC comments on the subject Site Characterization Plan. These comments were transmitted to the NEORSD via your letter dated December 15, 1993.

A review of the NRC comments identified two types:

1). Request for additional information, clarification or justification regarding an activity.

2). Request for responses to specific questions

There did not appear to be any comments which identified significant deficiencies in the technical characterization program.

Therefore, based on the above, it is proposed that appropriate comments (see enclosed specific comment responses) be addressed through incorporation i.. ɔ the Final Site Characterization Report rather than through a revision to the Site Characterization Plan. This will help expedite the characterization/remediation process.

DA:94:010 NEORSD

NLID

If you have any questions, please don't hesitate to give me a call at (716)592-3431.

Very Truly Yours,

Theodore G. Adams

Theodore G. Adams
Vice President

Enclosure

cc: B. Koh
T. Lenhart
S. Nalluswami
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RESPONSES TO GENERAL COMMENTS ON THE NEORSD SITE CHARACTERIZATION PLAN REVISION 0 APRIL 1993

General Comments

a. English and metric units are intermixed throughout this SCP; it is suggested that such technical documents utilize metric units along with English units in parentheses.

b. The confidence level with regard to identifying "hot spots" should be addressed. Based on this confidence level, an estimate of the amount of activity that might miss detection and the associated radiological consequences of that amount of activity should then be determined. This is particularly applicable to those portions of the facility, where there is a heterogeneous distribution of Co-60.

c. Describe the survey meter calibration methods you plan to use.

RESPONSE

a. Future NEORSD technical documents (e.g. Site Characterization Report, Remediation Plan) will utilize metric units along with English units in parentheses.

b. The site characterization report will include the results of the sampling and analysis performed by NEORSD. A preliminary review of the data indicates that the contaminant can be found, in a log-normal distribution, throughout the North Fill and South Fill areas. Of the 434 samples from the South Fill area, Cobalt-60 contamination was detected in 246 samples above the minimum detectable levels. The highest concentration was 112 pCi/gm.

Similar results were obtained from the samples removed from the North Fill area. Of 254 samples, Cobalt-60 contamination was detected in 176 samples above the minimum detectable level. The highest concentration was 458 pCi/gm.

The radiological consequences of the Cobalt-60 contamination will be addressed in the Site Characterization Report and the Site Remediation Plan.

c. The survey meter calibration methods used for the site characterization efforts included:

- Calibration performed every 6 months

- Calibration of the Bicron microrem meter was with a Cs-137 standard traceable to NIST
- Calibration of the Ludlum Model 3 and 44-9 probe was with a Cs-137 standard traceable to NIST
- Calibration of the Ludlum microR meter was with a Cs-137 standard traceable to NIST
- Daily source checks were performed on all instruments
- Calibration sheets were maintained as quality records as part of the Project files.

RESPONSES TO SPECIFIC COMMENTS ON THE NEORSD SITE CHARACTERIZATION PLAN REVISION 0, APRIL 1993

1. Page 1-1, Section 1.0

The scope of the characterization should also include those other site areas that were exposed to the Co-60 contaminated sludge, including process areas and other contaminated site areas identified by ORISE. These additional areas should include areas where sludge or ash were deposited from treatment operations that took place. In identifying potentially contaminated areas, it may be useful to propose to use the areas that will be treated as "unaffected areas" and "affected areas" as described in NUREG/CR-5849.

RESPONSE

NEORSD has completed surveying and sampling the incinerators (1 and 4), the incinerator roof, vent roof, the auxiliary building roof and the four fume tanks at the Southerly wastewater treatment plant as part of a general survey/sampling project. However, NEORSD is not planning on conducting characterization of the Imhoffs, aeration tanks, or the west incinerator bank at this time.

2. Page 1-2, Section 1.1.2

Data Quality Objectives (DQO'S) typically address aspects of precision. accuracy, representativeness, comparability, and completeness. The DQO's as presented in this SCP do not appear to satisfy the guidance presented in the EPA publication, QAMS-005/80, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans." The quality level of the field and laboratory data should also be specified.

RESPONSE:

The existing contaminated Cobalt-60 is not a substance governed by the EPA under RCRA, or CERCLA. Therefore, the aforementioned EPA guidance document is not applicable to this project. NEORSD has established lower limits of detection (LLD) for Cobalt-60 in various media to evaluate the data quality. For example, LLDs of 1.5 pCi/g and 20 pCi/l have been established for Co-60 in soil and water, respectively.

3. Page 1-3, Section 1.2

Are the MWQUIS and/or designee assignments similar to that of the RSO?

RESPONSE:

No, the MWQIS is responsible for overall project quality and health and safety. The RSO is solely responsible for radiological protection and control.

4. Page 1-4, Section 1.2

Para 2: Define what "major" and "field changes" in greater detail. Regarding "field changes," what level of supervisory or staff can initiate such a change(s)?

RESPONSE:

Major and minor field changes are addressed in the NEORSD procedure entitled "Field Changes". This procedure establishes the protocol for the review and approval including the level of authority required to approve major and minor changes.

In general major field changes are changes which:

1. **Adversely affect the quality of the data.**
2. **Cause a significant change in the cost of the field effort.**
3. **Create a major change in the scope of the field effort.**
4. **Cause significant delays in the schedule.**

The PM, Radiological Control Supervisor and PRSO approve major changes.

Minor field changes do not affect the quality of the data, the rationale for the field procedure, plans or sampling locations. Minor field changes are approved by the Radiological Control Supervisor.

5. Page 1-4, Section 1.2

Para 3: You state that changes to plan will be maintained at the District. Copies of the revisions should be sent to the NRC for approval.

Please provide an outline (organizational chart) of the management structure regarding

the SCP oversight.

RESPONSE:

Proposed major revisions to the approved Site Characterization Plan (See response to Comment No. 4) will be submitted to the NRC. Minor revisions will be maintained at the NEORSD as part of the NEORSD Remediation Project files.

An organizational chart of the NEORSD and contractor management structure regarding Site Characterization oversight will be incorporated into the Site Characterization Report.

6. Page 1-5, Section 1.3

Line 1: Should the reference be Section 11 instead of Section 12?
Line 2: Should the reference be Section 12 instead of Section 13?

RESPONSE:

Yes.
Yes.

7. Section 2.0, General

The other contaminated areas, identified by ORISE, other than the North and South Fill Areas, should also be discussed in this section.

RESPONSE:

The other contaminated areas identified by ORISE other than the North and South Fill Areas (e.g. Imhoff Tanks, West Incinerator bank area) will be incorporated into the Site Characterization Report.

8. Page 3-1, Section 3.1

The delineation of the 100-year flood plain is not clear (Figure 2). Please provide a figure clearly showing the limits of the 100-year flood plain.

RESPONSE:

A figure which clearly delineates the limits of the 100-year flood plain will be incorporated into the Site Characterization Report.

9. Page 3-3, Section 3.2.1

The major categories of soils underlying the SWTP should be illustrated with figures showing cross-sectional views.

RESPONSE:

Geologic cross sections of the North Fill and South Fill Areas will be incorporated into the Site Characterization Report. Site specific geologic information will not be available until the site characterization is completed.

10. Page 3-4, Section 3.2.2

Para 1: It appears that the phrase in the last sentence, "... to the north and east...", should be "... to the north and west..."

RESPONSE:

The Penn Central Railroad runs in an east and west direction, just north of the North Fill area.

11. Page 5-1, Section 5.0

a. General Comments: Please describe the methods and procedures for cleaning or decontaminating sampling tools between samples.

b. Do the areas, designated for sampling, in the North and South Fill Areas, include all known locations where ash or sludge fill operations took place?

RESPONSE:

a. Sampling shovels or sampling trowels used for collecting surface sampling were washed with a scrub brush in soap solution and then rinsed in clean hot water and

allowed to air dry.

Split spoon samplers used for collecting subsurface samples were washed using a scrub brush in soap solution and then rinsed in clean hot water and allowed to air dry.

Other drilling and downhole equipment (i.e. flutes, augers, drilling rods) were cleaned using a high pressure steam and allowed to air dry.

b. Yes, the areas designated for sampling the the North and South Fill area included all known locations where ash or sludge fill operations took place.

12. Page 5_3, Section 5.1.6

Specifications for radiation exposure measurements should be at 1 meter above ground surface.

RESPONSE:

All references to radiation exposure measurements will include the statement "The levels will be measured at 1 meter above the ground surface".

13. Page 5-3, Section 5.2

General: Will all subsurface boreholes be drilled into native soil or to depths in the native soil where Co-60 activity is clearly shown to be less than the unrestricted use limits?

RESPONSE:

Most boreholes were drilled through the ash and underlying sludge, and terminated when native soil was encountered. In some cases (e.g. BH-5, BH-141) ash was not encountered during drilling. Borings were, therefore, drilled into native soil to depths of approximately 25-40 feet.

Since Co-60 is not soluble and is contained solely in the ash, contamination of the native soil is not expected. Therefore, extensive drilling and sampling in the native soil was not necessary.

14. Page 5-3, Section 5.2

What is the predetermined level of confidence and allowable error based on?

RESPONSE:

The predetermined level of confidence and allowable error is based on EPA guidance used for determining levels of contamination in affected areas (SW-846, Chapter 9).

15. Page 5-5, Section 5.2.1

Para 1: Please define "elevated areas of radiation".

RESPONSE:

"Elevated area of radiation" refers to levels of gamma radiation in a specific area/location exceeding 2-3 times background levels.

16. Page 5-5, Section 5.2.2

General: What is the rationale for not using a systematic sampling protocol in the northern portion of the South Fill Area? Have ash fill operations taken place in this location? If so, why isn't a systematic sampling protocol being used?

What is the rationale for selecting sample locations on a 30 meter or 20 meter centers?

RESPONSE:

Ash fill operations did not take place in the northern portion of the South Fill Area. This area contained only a vegetative covering and an old sludge layer underneath. Therefore, random samples were collected from this area, rather than implementing a systematic sampling protocol.

The rationale for selecting 30 meters centers for the northern and southern portion of the South Fill area is that these areas were not used to dispose of ash. Therefore, this area was treated as an unaffected area. While unaffected areas do not need to be gridded, grid system was established to facilitate sampling and identify sampling locations.

A twenty meter center was chosen to accomplishing the objectives identified in Section 1.1.1. These objectives could reasonably be achieved using 20m x 20m grids, since ash was known to have been placed and dispersed at this location within the South Fill area.

17. Page 5-6, Section 5.2.2

Para 1: What is the rationale for expanding sampling from 20m x 20m centers to 30m x 30m centers in the northern and southern areas of the South Fill Area?

RESPONSE:

See response to Comment 16.

18. Page 5-6, Section 5.2.2

a. Paras 3 and 4: What is the basis for using the criteria that 50 percent of the grids are less than 1.5 times or more than 1.5 times the ambient background?

b. Para 4: Please define the term "ambient background". We assume that the background measurements you are referring to will be determined as stated in Section 6.1.

RESPONSE:

a. This criteria was used as a means of deciding whether to conduct additional surveying and sampling in areas thought to be unaffected.

b. While, it is recognized that Cobalt-60 is manmade and that there is no "natural" background, samples of the specified media were collected from nearby locations to establish baselines. Your assumption is correct.

19. Page 5-7, Section 5.2.2

Last Para: Describe the conditions under which the Project Health Physicist will decide whether subsurface samples are necessary, if elevated radiation levels are found.

RESPONSE:

Perhaps there is confusion over the use of the term Project Health Physicist. The Contractor Project Manager for the Site Characterization is also the RSO. If the PM/RSO identifies an elevated area of radiation (i.e. 2-3 times background) he has the authority to obtain surface samples and subsurface samples. (See Response to Comment 15)

20. Page 5-8, Section 5.3

You should state that you will comply with state and local government requirements for the abandonment of test pits, partially completed wells, and boreholes.

RESPONSE:

The Site Characterization Report will include the statement that "All boreholes were abandoned in accordance with state and local requirements. All procedures used for borehole abandonment will be discussed in the Site Characterization Report.

21. Page 5-10, Section 5.5

Regarding data logging and maintenance of logs and reports, please clarify who is responsible for completing reports? What QA controls (by who and frequency) will be applied?

RESPONSE:

The data logging and log maintenance is the responsibility of the site geologist. Logs will be reviewed by an independent geologist. The report will be prepared by the site geologist or another qualified geologist with assistance by the site geologist. Logging of radiological survey/sampling data is the responsibility of the radiological control technician. Logs/data sheets will be reviewed by an independent radiological control technician or PRSO. The finished report will be reviewed by the contractor PM, the NEORSD site engineer, and PM prior to issuance. The coordinator of Quality Assurance will perform audits/surveillances of drilling, sampling and sample handling activities during characterization.

22. Page 6-2, Section 6.3

Will you use split samples for the 10 percent QA sampling program?

RESPONSE:

No. The analyzed samples will be shipped to another commercial laboratory or to the NRC/ORISE laboratories to be reanalyzed.

23. Page 6-5, Section 6.4.1

Para 1: Please describe the methods to be used to avoid cross contamination of samples.

What is the basis for not installing monitoring wells around Lagoon A, B, and C?

RESPONSE:

a. To avoid cross-contamination, drilling equipment was decontaminated as detailed in the Response to Comment No. 11.

b. Lagoons A, B, and C are compacted clay lined lagoons and exhibit permeability of approximated 1 x 10^{-7} cm/sec. Furthermore, Cobalt-60 is insoluble. Considering the low permeability of the clay and insolubility of Cobalt-60, installation of monitoring wells around Lagoons A, B, and C was not warranted. The above statement was confirmed during sampling and analysis of the clay liner. Based on the results of samples collected 1' below the clay liner (Lagoons A, B, and C) there was no evidence of Cobalt-60 migration. Therefore, there is no need to install monitoring wells around the Lagoons.

24. Page 6-8, Section 6.4.1.2

Para 1: Please provide the methods and procedures to be used to dispose of radiologically contaminated water; also see Page 6-10, Section 6.5.2, para 2.

RESPONSE:

Potentially contaminated waste was sampled and analyzed onsite for Cobalt-60. The water was then either discharged to the Lagoons or discharged into the South Fill or North Fill area. No Co-60 was detected above the limits specified in 10 CFR 20.

25. Page 6-12, Section 6.8

Will you use split samples for the 10 percent vegetative QA sampling program?

RESPONSE:

No. See response to Comment 22.

26. Page 6-13, Section 6.9

How will area conditions (wind direction, wind speed, humidity, etc.) be considered when selecting samples for QA verification?

RESPONSE:

Daily area conditions were noted in the site log book. However, these conditions were not used to select the samples for QA verification, as samples were randomly selected for analysis by an offsite laboratory.

27. Page 6-13, Section 6.10

a. Para 1: The response of scintillation detectors is dependent on the energy of the photons measured. Will the exposure rate results from the scintillation detectors be correlated to the results from a pressurized ionization chamber (PIC), which is not energy dependent?

b. Para: You have proposed a single gamma rate measurement per 900 square meters for the North and South Fill Areas to characterize this site. Please provide the statistical basis for this approach.

RESPONSE:

a. Yes.

b. This statement is incorrect. See response to Comment 29.

28. Page 7-4, Section 7.4.1

Please describe testing to be performed on the air samples.

RESPONSE:

Each air sample will be counted for gross α and gross β activity immediately after completion of sampling and several hours later (the next day) to determine radioactivity concentration (minus radon daughters) to demonstrate compliance with 10 CFR 20 limits.

29. Page 7-5, Section 7.5.1

It is suggested that a minimum of one gamma exposure rate measurement be taken per soil sample location.

RESPONSE:

Nine gamma exposure rate measurements were collected per each 10m x 10m grid including the soil sample location.

30. Page 9-1, Section 9.0

Please indicate that the NEORSD/SP will use the new 10 CFR Part 20 requirements in the Radiological Control Plan.

RESPONSE:

Future site characterization efforts will be conducted in compliance with the new 10 CFR 20 requirements.

31. Page 13-2, Section 13.0

The NUREG/CR-5849 is still in "draft" form; the published date is June 1992 rather than May 1992.

RESPONSE:

This reference will be revised to read "Draft NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," NRC, June 1992.