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OFFICE MEMORANDUM

TO : LaMar J. Johnson, Group Leader, H-8

DATE: June 28, 1976

FROM : Margaret Anne Rogers, H-8 MAR

SUBJECT : A 415 -- FOLLOW - UP STUDIES RELATED TO THE HISTORY OF LASL MATERIALS DISPOSAL AREAS

SYMBOL : H8-76-303

As a result of my work on the history and environmental setting of Materials Disposal Areas A,B,C,D,E,F,G, and T, a number of problems have been identified and questions raised concerning the design of monitoring systems for these areas as well as for other Materials Disposal Areas and undesignated sites known to have had radioactive contamination. With the possible exceptions of Areas G and T all sites of concern would benefit from futher records search prior to the establishment of site-specific monitoring. Information gained from further records search on Areas A,B,C,D,E and F is likely to be slow since the most promising leads have already been explored. Therefore, some follow-up studies (preliminary to design of site-specific monitoring systems) are needed now so that design decisions can be expedited.

Since Areas A,B,C,D,E,F,G,and T have been prominently identified by LASL through the years as sites of concern, they should be studied first. All other sites of concern should be studied after design decisions on site-specific monitoring have been made for Areas A,B,C,D,E,F,G, and T.

Study Recommendations

General

Soil and vegetation samples should be taken for Areas A,B,C, D,E,F,G, and T. Sample location and chemical tests per sample should take into account present knowledge of the past history of the area. Pace and compass mapping (using engineering drawings as base maps) of sample locations should be done concurrently with sample collection. Samples should be collected only when there is every assurance that they will be analyzed while they are still in top condition. To insure the samples reach the laboratory in top condition their collection should be thoroughly planned in advance especially with regard to type of container and means of collection. Upon receipt of the results of sample analysis for each area a memo-to-file should be written. Included in this memo should be: 1. the pace and compass map of sample locations, 2. the date, time and weather conditons of sample collection 3. a description of how the samples were collected and what containers used, 4. the chemical analyses of samples, and 5. any other information concerning the collection and analysis of samples which would give the reader a better understanding of the results.

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Area A

1. Records search should be made in Health-Pysics-Group records in Record Storage for any information on activities at TA-21 which would lead to better waste characterization in the early pit as well as the present pit.
2. Soil and vegatation sampling should be done.
3. Holes should be augered and samples taken when:
   a. We know more about waste characterization,
   b. Geologic mapping has been accomplished,
   c. Soil and vegetation sampling has been done, so that the design layout for augered holes will be based upon logical, not random selection of points and therefore, give us good information on what if anything has moved from the pits.

Area B

1. Records search should be made in Health-Physics-Group records in Record Storage for any information on Area B or waste disposals during the time Area B was in use and should be made in Engineering Records Group for any drawings showing pit locations.
2. In the eastern part of Area B (which is not covered by asphalt), a serious attempt to define pits using a metal detector should be made.
3. Soil and vegetation sampling should be done after a reasonable attempt using the methods described in 1. and 2. has been made to locate pits within the area.
4. Holes should be augered and samples taken when:
   a. we know more about the location of the pits,
   b. geologic mapping has been accomplished,
   c. soil and vegetation sampling has been done, so that the design layout for augered holes will be based upon logical not random selection of points and therefore give us good information on what if anything has moved from the pits.

Area C

1. Records search should be made in Health-Physics-Group records in Record Storage for any information on Area C and in Engineering-Records-Group records for any information and drawings of Area C pits and shafts.
2. Soil and vegetation sampling should be done.
3. An attempt to locate, by use of the metal detector, disposals in the "vacant" area shown on the engineering drawing of Area C should be made.
4. Holes should be augered and samples taken when:
   a. we know more about the dimensions of the pits and locations of disposals not made in the pits and shafts,
   b. geologic mapping has been accomplished,
   c. soil and vegetation sampling has been done, so that the design layout of augered holes will be based upon logical not random selection of points and therefore give us good information on what if anything has moved from the pits, shafts, and other disposal

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locations in the area.

Area D

1. Every attempt should be made through interviews backed by documentation to establish that no other radioactive substance besides polonuim was used in the testing done in Chambers 1 and 2. If it can definitely be established that the chambers are contaminated by polonium only, then the need of any further environmental studies, or monitoring is doubtful since polonium has a short half-life and the last chamber test was in 1948.
2. Soil and vegetation samples might be useful at this time to determine the surface contamination by activities unrelated to Chambers 1 and 2 (and therefore the Area D as officially defined) but in the same locality. Such a study might lead to a redefinition of Area D.

Area E

1. At present I can make no specific recommendation on where to search for additional information on pit waste characterization or on the contamination in the fired chamber.
2. The metal detector should be used to determine pit locations. The engineering drawing of Area E should be used as a guide.
3. Soil and vegetation sampling should be done.
4. Holes should be augered and samples taken when:
   a. we know more about waste characterization,
   b. we know more about the dimensions and locations of pits,
   c. geologic mapping has been accomplished,
   d. soil and vegetative sampling has been done, so that the design layout of augered holes will be based upon logical not random selection of points and thereforegive us good information on what if anything has moved from the pits and chamber.

Area F

1. Records search should be made in Health-Physics-Group records in Record Storage for any leads to activities, groups, or disposals from 1946 thru the fifties which might be involved in Area F. Search also should be made in Engineering-Records-Group records for information and drawings of pits and holes in Area F.
2. The metal detector and any other applicable group equipment should be used to determine the location and dimensions of pit or pits and holes. The engineering drawing of the area should be used as a guide.
3. Soil and vegetation sampling should be done.
4. Holes should be augered and samples taken when:
   a. we know more about waste charaterization,
   b. we know more about the location and dimensions of pit(s) and holes,

c. geologic mapping has been accomplished,
d. soil and vegation sampling has been done,so that the design layout of augered holes will be based upon logical not random selection of points and therefore give us good information on what if anything has moved from the pits.

Area G

1. Soil and vegetation sampling should be done
2. Holes should be augered and samples taken when:
   a. Soil and vegetation sampling has been done,
   b. geologic mapping has been completed,
   c. continuing monitoring studies require it,so that the design layout of augered holes will be based upon logical not random selection of points and therefore give us good information on what if anything is moving from pits,shafts, and trenches. Since Area G is currently in operation and is the disposal area we know the most about, a decision to auger more holes should consider prior monitoring studies and present monitoring and clearly enhance our knowledge of the area. Futhermore a decision to auger more holes should consider current disposal operations in the area so that holes will neither impede nor be annihilated by them.

Area T

1. Soil and vegetation sampling should be done
2. Holes should be augered and samples taken when:
   a. soil and vegetation sampling has been done,
   b. geologic mapping has been accomplished,so that the design layout of augered holes will be based upon logical not random selection of points and therefore give us good information on what if anything is moving from absorption beds, shafts, and the retrievable storage area. Since Area T is currently in operation and our knowledge of the area's history is fairly good, a decision to auger more holes should very definitely demonstrate an improvement in concept over the numerous monitoring studies which have been done in the area. Futhermore a decision to auger more holes should consider current disposal operations in the area so that holes will neither impede nor be annihilated by them.

A memo-to-file should be written when any part of the follow-up studies is completed. If no work is completed in a 3-month period, then a memo-to-file should be written describing work-in-progress.

Even though I am unable to devote the major part of my time presently to these studies, I feel I am the most qualified person in the group to direct them and would like to have the assignment.

xc: M. L. Wheeler

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